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**MINISTRY OF HIGHER EDUCATION AND SCIENTIFIC RESEARCH**

**University of Ahmed ZABANA Relizane**
**Faculty of natural and life sciences**
**Departement of biological sciences**

جامعة غليزان
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**Course Title:**

# Research Methodology: An Introduction

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## Introduction

Research is an essential and powerful tool in leading man towards progress. Without systematic research there would have been very little progress. John W. Best has rightly said, "The secret of our cultural development has been research, pushing back the areas of ignorance by discovering new truths, which, in turn, lead to better ways of doing things and better products." Scientific research leads to progress in some field of life. New products, new facts, new concepts and new ways of doing things are being found due to ever-increasing significant research in the physical, the biological, the social and the psychological fields. Research today is no longer confined to the science laboratory.

At the university, research methodology is the backbone of all achievements, and most of the important publications in natural and life sciences depend on firm designs.

In natural sciences, such as physics, chemistry, and biology, research aims to understand the fundamental laws of nature. Scientists conduct experiments to test hypotheses about natural phenomena, develop new technologies, and solve practical problems. For example, biomedical research seeks to understand disease mechanisms and develop treatments, while environmental science investigates ecological processes and their impacts on the planet.

Researchers must then read research methodology articles, dissertations, theses, and books to develop pertinent research strategies and research traditions in their fields. A large number of students in the country, as is the situation in our University, are unable to conduct empirical studies though the course of methodology is taught in the License and Master years. This, in fact, should not be the case in the twenty-first century because the student who wishes to learn better and acquire more knowledge must make considerable efforts. Therefore, learning how to write a manuscript, be it an research or a master dissertation, has become a major part of the student's tasks.

Conducting research, or rather writing academic papers can be difficult, especially for novice researchers. Conducting research derives from the need for making new discoveries

and attaining higher degrees and respectability in society, and all the other relevant desires. As a result, its completion methods and techniques are numerous and are not easy to handle. Our students face a double challenge: on the one hand, they do not have the necessary tools which enable them to cope with the various situations which they encounter, and they cannot single out feasible topics on the other. Sometimes, there is little or no available data, and thus the prospects of solving a problem seem to be hazy. Consequently, the task is not merely to carry out a study, but to understand its nature, to make pilot and experience surveys, and to foresee some of the possible solutions.

Many other difficulties are by no means insurmountable. However, with practice and additional attention to the particular challenges faced by our students, students will be able to write scientific papers that are thorough, coherent, and practically acceptable.

**Course Structure**

The course is structured in a way that the first lectures are more relevant to the students who need an overall theoretical background about research; whereas, the last lectures are more appropriate to the students who wish to benefit from some details and practices. Nonetheless, all students, whether at the beginning or at further stages in their research projects, are hereby advised to read and muse deeply in the whole course in order to be aware of every single aspect and can get the necessary feedback on their enquiries.

Lecture 1 provides an introduction to research methodology. An awareness of some realities such as the relationship between research and knowledge, the relationship between the human needs and the pursuit of truth, and several other issues are crucial if research is to meet the required level of dignity and honour. The lecture ends up with a summary of the importance of research from different perspectives.

The connection between research, approaches, and methods is a defining feature of the master dissertation experience. Lecture 2 discusses the various ways of conducting research; that is, it provides students with options and strategies to deal intelligently with any research topic. The lecture offers guidance on how to maximize logic and organization in research.

Because the master dissertation is, in its essence, a step-by-step project, lecture 3 introduces the main strides of research conduction, and focuses on different actions to be done by the researcher. Academia principles and originality features are highlighted through examples to encourage the researchers to enjoy their work.

Lecture 4 focuses on the significance of the research problem to draw a clear image of how research should begin (a crucial component of a master dissertation), and introduces a number of techniques and instructions. Lecture 5 describes and discusses the process and the importance of selecting the appropriate methods which do not only guide the researcher, but are also means of increasing the validity and the value of the research results. Lecture 6

provides a thorough understanding of the nature of a sample design, how to sample a design, the characteristics and the different types of sample designs.

Last, but not least, Lecture 7 is much more concerned with how to develop pertinent ethical conduct. Research in the human sciences calls for human participants' help, and for this reason, it has to underline and ensure some degree of confidence, anonymity, and respect for all those who are involved in the different stages of the research. Lecture 7 has been included in the present course to provide novice researchers with insights into how to increase both internal and external validity of their research, and to enhance moral practices in their approach to all kinds of dilemmas.

Though the course aims to cover the essential parts of research and tries to address the major issues that students often encounter, there remain several principles of statistical analyses, measurement techniques, data collection methods, processing and analyzing data, and testing hypotheses which require a wider space to be covered. Even so, each of the lectures in the course ends up with a selection of exercises (Self-Assessments and Content Reviews) that may help students to review and come up with reliable notes on what has gone before. The selected exercises are not exhaustive; however, they are intended to develop some solid relationship between the students' understanding and the core constituents of the course.

**Course Objectives**

By the end of the course, students should be able to:

1/ Develop basic knowledge of research methodology in social sciences

2/ Identify appropriate research topics and develop scientific awareness

3/ Select and define an appropriate research problem

4/ Organize and conduct research in their area

5/ Acquire the quality of ethical conduct

## Course Applications
## History of Research

The age of earth is estimated to be about 4.6 billion years, and it is believed that life in the form of bacteria originated some 3.5 billion years ago. Human like beings (Homo erectus), the immediate ancestors of humans (Homo sapiens), first appeared on earth approximately 1.5 million years ago. It is also postulated that the first form of Homo sapiens evolved from these ancestors some 0.35 million years ago. Neanderthals and Cro-Magnons were early Homo sapiens. They transformed eventually to the present day modern humans (Homo sapiens sapiens) by about 40,000 years ago.

Primitive humans lived on hunting, fishing, and by gathering food from nature. They could not continue this lifestyle for long because of population pressure and its effect on carrying capacity of their dwelling place. Humans with their experiences in hunting and gathering learned many characteristics of wild plants and animals. In the meantime, they also discovered and learnt the use of fire. As the pressure of population on their existing resources increased and their means of sustenance started decreasing quantitatively and qualitatively, they had to look for some other means to produce food. This search for alternate food production culminated in the discovery of agriculture.

The origin of agriculture was with the first domestication of plants and animals. The food gatherers and hunters became farmers by this development,which happened somewhere around 8000 BC by the end of the Mesolithic Age or the Middle Stone Age. The socioeconomic revolution initiated by this new development became famous in anthropological and archaeological literature by Gordon Childe's phrase, 'Neolithic revolution'. According to Mark Cohen, an archaeologist specialized in ancient cultures of coastal Peru, agriculture developed strictly as a response to population pressure (Cohen 1977). This gave credence to the argument that agriculture was born out of necessity. It is estimated that world human population was about 5 million only when agriculture began to take shape. Presently, after 10,000 years, it is more than 7800 million or 7.8 billion! (World population crossed 7.7 billion in Nov.2018).

Before the arrival of agriculture, humans were probably contented with the satisfaction of their basic requirements of food and shelter only. The quest for secondary needs including clothing developed gradually, which called for more sophisticated technologies. In the primitive way of life, when humans depended solely on hunting, fishing, and gathering, they had limited time to devote to cultural activities, because the greater part of the daywas spent in search of food to prevent starvation. Therefore, it is often argued that

most of the characteristics of modern development coincided only with permanent settlement. Humans have been inquisitive and learned many things based on observation and by trial and error. Our ancestors tried to explain various natural phenomena, paving theway for primitive religious concepts and religions. Some persons were designated as priestswho explained every phenomenon as God's creation under authority. Priests began to claim special channels of communication with the gods leading to the establishment of a system of religious authority passed on from one generation to another. In course of time, a rigid dogma of nature's processes developed. Any deviation from religious teachings was not allowed, and those who dared to break the authority away from traditions faced dangerous consequences.

This retarded the search for truth for centuries. The oppression and curbs from religious authorities on freethinking and scientific pursuits were most rampant in Europe during the 'Middle Ages' (fifth to fifteenth century), and this period is called the 'Dark Ages' of Europe. It is distressing to note that humans could wait up to about sixteenth century to break the religious hold onmatters concerning the universe and offer accurate explanations for various phenomena

"Research design is a master plan specifying the methods and procedures for collection and analyzing the needed information." William Zikmund "Research design is the plan, structure and strategy of investigation conceived so as to obtain answers to research questions and to control variance." Kerlinger Thus we can say that a research design is the arrangement of condition for collection and analysis of data in a manner that aims to generalize the findings of the sample on the population. Though the present document was designed for the third-year students, it may target master students as another important audience. A considerable proportion of these individuals often show little or no command of the required research methodology, and thus they need guidance and advice. The present document provides them with a step-by-step approach and road map to do research.

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**Lecture 1: What is Research?**

**Introduction**

This lecture is intended to introduce students to the field of research, its importance in academia and people's life, how it is conceived by educationalists and experts, and how it has developed throughout the years. Many people have defined or described research and research methodology from different perspectives. Some of these definitions and portrays may give a clear picture of the whole course and its scope of interest.

**1. 1 Definitions of Research**

The literal meaning of 'research' is meticulous search. However, in popular usage, research is a systematic search for answering a particular question, solving a problem, or gathering information, especially for a project, literary work, cinema, or a television series. In academic fields, the term research is used to denote activities such as defining, redefining, and solving problems; observing facts and their interpretation; formulation of hypotheses and their testing through experiments; revision of existing theories and laws; and practical application of information already generated. Before the emergence of modern science, experimentation and scientificmethod were unheard terms, and the 'research' was mainly through logical reasoning. It is, therefore, quite natural that some of the basic distinctions in logic have carried over into contemporary research. Consequently, the inductive and deductive methods of reasoning became part of modern science and research. Logic, reason, and evidences are essential parts of modern research.

Research in natural sciences and social sciences employ different methodologies and approaches based on the nature of disciplines. Objective measurements are far easier in natural sciences but comparatively difficult in social sciences. For example, in disciplines such as physics and chemistry, it is relatively easy to keep the conditions under control during experiments, and the results obtained by any researcher are testable and repeatable. However,

as social sciences deal with phenomena arising from the activity of humans, it calls for a different approach to research. Understanding and studying human behaviour is a complex process, and therefore, the context of social science research keeps changing. This problem is apparent in most applied sciences such as agriculture and medicine too, which are also the creation of humans.

In most scientific disciplines, research is used as a tool to understand and solve problems for the benefit of people. Discovery of antibiotics for the treatment of diseases affecting humans or the discovery of fertilizers to take care of depleting soil fertility are examples. Similar to the above simple examples, several other examples of discoveries and inventions that made the life of humankind easier and comfortable can be quoted.

Research is also used as a management tool. Most managers use appropriate research techniques for routine as well as strategic long-term management. Research is used as a tool in defence for chalking out better strategies. In everyday life, even non-scientists such as journalists, judges, lawyers, police, scriptwriters, and artists make use of research to solve and settle issues related to their profession.

Walliman (2001), in defining research, highlights the idea that students at university should know well what the term "research" means, i.e. they should leave out any misunderstanding or confusion because the term is used in many fields. He states that research "is a term loosely used in everyday speech to describe a multitude of activities, such as collecting masses of information, delving into esoteric theories, and producing wonderful new products". So, Walliman tries to introduce the term "Research" as a concept from an academic point of view, distinguishing it from what it might have as meanings or connotations in other domains and disciplines.

Hancock and Algozzine (2006) find that the core of research is "about answering questions as we attempt to understand the world around us!", and that in developing theses and dissertations "research involves systematic actions that help the researcher add credibility

to the questions and answers engaged in his or her research" (p. 3). That is, we may all be considered as researchers owing to our search for answers and solutions; however, in academic circles research is more methodical, the fact that raises its reliability and validity. Research methods and research procedures are then distinctive features of real research; they require the researcher to put forward a research question, to prepare a specific design, to select an appropriate population and sample, and to verify the findings.

Researchers are not concerned with research at the tertiary level merely for the sake of research. They are concerned with research as a necessary component in creating a tradition of performance in their context, one that is primarily based on improving faster and better problem-solving activities which, in their turn, increase the students' achievement and learning outcomes. This distinction can be clearly explained by the following definitions:

In **The Research Methods in Education Handbook for the Open University Masters Programme**, "Research" is considered to be "used to cover a wide range of activities that differ substantially in all sorts of ways; and there is considerable disagreement about what should and should not count as research. At one extreme, the term covers forms of educational inquiry designed to contribute to disciplinary knowledge in, for example, the psychology or sociology of education. Equally, though, educational research may be primarily intended to inform policy making or practice, or it may take the form of inquiries carried out by policy makers, school managers, or teachers, in order to further their own activities".

## 1. 2 Objectives of Research

Natural Sciences

In natural sciences, such as physics, chemistry, and biology, research aims to understand the fundamental laws of nature. Scientists conduct experiments to test hypotheses about natural phenomena, develop new technologies, and solve practical problems. For example, biomedical research seeks to understand disease mechanisms and develop treatments, while environmental science investigates ecological processes and their impacts on the planet.

Social Sciences

Social sciences, including sociology, psychology, and economics, focus on human behavior and societal structures. Research in these fields aims to understand how individuals and groups interact, the factors influencing behavior, and the functioning of societies. This knowledge is used to inform policies, improve social systems, and address issues such as inequality and mental health.

Humanities

Research in the humanities, encompassing fields like history, literature, and philosophy, explores human culture, thought, and expression. Scholars analyze texts, artifacts, and historical records to understand cultural contexts, human experiences, and the evolution of ideas. This research enriches our understanding of human creativity and provides insights into contemporary cultural issues.

Applied Sciences and Engineering

In applied sciences and engineering, research is geared towards practical applications and innovation. Engineers and applied scientists develop new materials, technologies, and processes to solve specific problems and improve quality of life. For instance, research in renewable energy technologies aims to develop sustainable energy sources, while civil engineering research focuses on building resilient infrastructure.

Business and Management

Research in business and management examines organizational behavior, market dynamics, and strategic decision-making. It aims to improve business practices, enhance organizational performance, and inform policy-making. For example, marketing research explores consumer behavior to develop effective advertising strategies, while organizational research investigates leadership and team dynamics.

## 1.3 Motivation in Research

In earlier days, our ancestors dabbled in research because of necessity and the quest to unravel the unknown. At present, many people take up research as a career. Yet, some others pursue research as a hobby and become amateur scientists because of some specific interests. One or more of the following may be the motives in doing research.

*Excitement of discovery*:Many want to become scientists or researchers enthused by the chance of adding something new to the existing knowledge base. The excitement of discovery or invention is a strong motive to take up research. In fact, most of the breakthroughs happened in science were due to this quality of a few enthusiasts. *Pursuit of prestige*: Scientists,who pursue a career in research, usually commands respect in society. The theories, principles, and other findings they make increase the status of scientists and may bring fame and glory to the researchers.

*In depth knowledge on a subject*: The person who undertakes research on a subject gets an opportunity to study that subject in depth.

*Service to society*: The society derives many benefits out of research. By using appropriate research techniques, the causes and remedies for many problems currently affecting the society such as food security and climate change can be found out.

*Need for publications*: For a successful career in an academic or research institution, publications are necessary especially to get promotions. In fact, many institutions rate their scientists based on the number and quality of publications made out of research.

*Obtaining a higher degree*: Students in agriculture or fields such as medicine and

engineering need to submit a thesis or dissertation to get Master's degree. However, for a doctorate degree in any discipline, research and consequent report in the form of a thesis is mandatory.

*Better management*: Most managers use appropriate research techniques for routine as well as strategic long-term management.

*A tool in defence*: Research is used as a tool in defence for chalking out better strategies.

*Research in everyday life*: In everyday life, even no-scientists such as journalists, lawyers, police officers, scriptwriters, and novelists make use of research to solve and settle issues related to their profession.

**Benefits of Conducting Research**

The benefits of research are many to the society as well as the person who conducts research. Whatever be themotives of the researchers, the society enjoys the following benefits:

*Expanding frontiers of knowledge*: The 'body of knowledge' of various scientific disciplines expands through research.

*New inventions and discoveries*: This is the main objective of research in applied sciences and technologies.

*Solving problems affecting the society*: By using appropriate research techniques, the causes of many problems currently affecting the society can be found out and remedies suggested.

*Increasing efficiency and reducing costs*: Efficient machines and better problem solving increase the efficiency of work and reduce the cost of production.

*Research strives to make life easier*: Examples include better transport and communication facilities that made the world a better place to live in.

*Luxury and comfort*: Examples are many. Research for better houses, house materials, transportation, comfortable clothes, and many others provide luxury and comfort for a better living.

*Infotainment*: Information plus entertainment is infotainment. There are umpteen

opportunities for entertainment now because of spurt in technologies. Computers, Internet, and smart phones made information retrieval and its dissemination fast and cheap.

*Economic growth*: Research is also needed for speeding up business, efficient factories, new

## Characteristics of Good Research

The body of knowledge comprising various disciplines grows through research.Technological advancements in any field are through research efforts of numerous people. Good research is characterized by certain attributes.

*Research is based on the work of others*: Research is an activity based on the work of others. This does not mean that you are copying the work of others, but look to the work that has already been done to provide a basis for what and how you might conduct your work.

*Research is a blend of logic and imagination*: Research is guided by the rules of logical reasoning, and the logical processes of induction and deduction. Imagination and thought are used for making hypotheses and theories.

*Research tries to identify and avoid bias*: Evidences can be biased. Bias can occur during the planning of experiment, its implementation, data collection, interpretation, and reporting. Sometimes, nationality, gender, ethnicity, age, and political views of the researchers may influence them to go for biased evidences or interpretations. Possible sources of bias and how bias is likely to influence evidences and interpretations must be understood and precautions must be taken.

*Repeatability*: Repeatability is an important characteristic of good research. If we repeat the research, we should get the same results.

*Research must be generalisable to other settings*: Research is universal in nature. The findings and results obtained in one setting must be suited to other settings also.

*Research is systematic*: Scientific research is systematic and structured with specified steps in a sequence. Although it does not rule out creative thinking, it rejects mere speculation and

intuition in arriving at conclusions.

*Research generates new questions*:An enquiry into a newphenomenon generates new questions, which must also be answered.

*Research is an apolitical activity*: Research is not authoritarian and should not have any 'politics' behind it. It should be undertaken for the betterment of society and not for selfish or destructive purposes.

### Qualities of a Researcher

Researchers may have some inherent qualities. They should strive to attain qualities, which theymay not have. The following are some qualities, which all the researchers must try to develop. Among these, the first two—the scientific attitude and research attitude—are the prime qualities every researcher should possess.

*Scientific attitude*: Attitudes are predispositions to react positively or negatively to some object. Scientific attitude is the attitude of a person to promote the use of scientific approaches and rationales to react to any object. Researchers should not succumb to superstitions, unfounded information, word of mouth, or pseudoscience.

*Research aptitude*: Not all those coming to the field of research may have a research aptitude. Researchers should be inquisitive and curious about things and events around them. They should have genuine interest in the subject and a mindset to unravel the unknown. In other words, they should have a 'research mind'.

*Persistence*: To become a successful scientist, one must be persistent and continue ahead of research through publications, especially peer-reviewed research papers. Persistence means the traits such as perseverance, patience, tenacity, thoroughness, and determination to achieve something. A researcher should be patient enough to wait for the results. Sometimes, they may not get the desired results within the stipulated time. Certain investigations are time consuming, involve drudgery, and require the help of many people. Undue hurry will not yield anything.

*Self-motivation*: Self-motivation is an important quality for scientists. Selfmotivated scientists produce more results than others do.

*Courage to ask questions*: Researchers should ask questions about things, which they cannot agree or do not understand. They should ask 'what', 'how', 'when', and 'why'; and find answers by critically observing, experimenting, consulting, discussing, and reasoning.

*Skepticism and receptivity*: A critical attitude is essential for all scientists. Do not simply accept the data and interpretations. Evaluate them with an open mind. Strike a balance between skepticism and receptivity. You must always entertain new concepts and ideas rather than confronting them with a negative response or criticism.

*Objectivity*: The conclusion drawn by a researcher should be objective, and that it should be based on findings revealed through actual data. The researcher should strive to remain impartial to the outcome of the research, and ensure that prejudiced or emotional leanings of a researcher should not in anyway influence the conclusion.

*Industriousness*: Research is not an easy job. Those who are lazy and longing for comfort and luxury will not become a successful researcher, and the society will not gain anything from them. Researchers should aspire to make new discoveries and inventions by sustained and dedicated work. There is no retirement for good researchers.

*Honesty and truthfulness*:Researchers should be honest in their approaches.They should followthe established ethics, and should not commit any fraud or misconduct. They will record honestly the observations and experimental results, and try to avoid all types of plagiarism.

*Open-mindedness*: A researcher should be impartial. They should not have any pre-conceived notions or biases towards researchable issues.Theywill only be guided by facts, reasons, and logic.

*Above-average intelligence*: Scientists need not be super intelligent. It is often noted that intellectualswithout the other needed qualities of a scientist seldom achieve anything in

provide data for further research; i.e. they may open the door for other concerns and general issues due to their reliance on collecting data from people's experiences and daily life practices.

**Experiments:** The experiment seems to be more associated with the scientific method, and thus must not be used, or at least avoided, in the social sciences. Problems such as individuals' exposure to the experiment may give rise to many ethical issues which should be taken into consideration.

**Surveys:** The major characteristic of a survey is to find consistent answers to consistent questions. Surveys are intended principally to ask people questions; therefore, questionnaires and interviews may occupy a major place in conducting research using a survey.

## Conclusion

A research design can and does help the researcher to anticipate and overcome the limitations that are associated especially with the sequence of actions on the way to get the needed information. Choosing an appropriate design informs the researcher of what to change, what to add, and what to keep in the course of his research; it provides him with colleagues' feedback and insights into other aspects of research.

## Content Review

1. What is a research design?

2. Which research type do you think "Case Study" best fits within?

3. Having chosen "Action Research" as the design of your study, what are its main advantages?

## Self-Assessment Exercise

1. Hypotheses are always formulated at...............................................experienced researchers.

2. The ...............variable is known as ........... and the influenced variable is termed........

3. The....................................variable may consist in the kind of instruction given to students.

## 5.3. 3 Hypotheses

A hypothesis is a (tentative) statement put forward as a suggested answer or solution for a pressing practical problem (thesis). A hypothesis can also refer to *two or more variables to be confirmed or rejected empirically*. Therefore, hypotheses are always formulated at the outset of research by novice and experienced researchers and the activities included in the research aim to verify these hypotheses (Singh, 2006, p. 54).

## 5.3. 4 Variables

Variables, in the social sciences, often mean the quantifiable attributes of a phenomenon such as events or objects. These attributes are measured in order to discover their interaction and how one variable influences another. The influential variable is known as *the independent* and the influenced variable is termed *the dependent* (Balnaves & Caputi, 2001, p. 46). In some studies, the independent variable may consist in the kind of instruction which we give to students. The dependent variable, in this case, may consist in the students' achievement. Achievement is often assessed, or rather measured by tests.

## 5.4 Different Research Designs

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

**Action Research:** This type is very popular in the social sciences. It is conducted mainly in people's workplaces in fields such as education and health. It is useful, for instance, for teachers who seek to solve classroom problems and improve students' performance. It reflects the idea of practical purposes and the need for change.

**Case Studies:** The case study is the type of design or approach used by researchers to observe the characteristics of an individual, a school or an institution, or just one element of these, with the intent to look deeply into and study many phenomena. Case studies can

elaborated design will allow the researcher to discuss the details of his project with others (focus group, supervisor...) and get from them useful insights.

## 5.3 Important Concepts Relating to Research Design

### 5.3. 1 Methodology

The term *methodology* and *theoretical paradigm* (quantitative or qualitative) are sometimes used interchangeably by scholars. It gives an idea of the stance in which the researcher is working. "The methodology develops an explanation as to why the research method (s) under discussion have been chosen" (Paltridge, & Starfield, 2007, pp. 118-119). However, "*Methods* refer to the actual research instruments and material used. The chosen methodology informs the choice of methods and what counts as data." (ibid, p. 119).

### 5.3. 2 Research Strategy

From the above literature, one may notice that at the beginning of the research,

> ...the social researcher is faced with a variety of options and alternatives and has to make strategic decisions about which to choose...There is no 'one right' direction to take. There are, though, some that are better suited than other for taking special issues. In practice, good social research is a matter of 'horses for courses', where approaches are selected because they are appropriate for specific types of investigation and specific kinds of problems... (Denscombe, 2007, p. 3)

The term "*Research Strategy*" or "*approach*" needs to be selected earlier so as the researcher feels confident and starts from a solid groundwork. Selecting a convenient strategy may help the researcher to gain time and effort; a convenient strategy will allow the researcher to be confident about the significance, feasibility, participants, accuracy and objectivity, and many other matters in his research (ibid, p. 5). The researcher may select the survey, the case study, the experiment, or even the mixed-methods approach as a strategy to conduct his research.

**Lecture 5: The Research Design**

**Introduction**

Many issues must be taken into consideration when researchers start framing the plans of their research. These issues can be summarized into the aims and purposes of the research, the main research questions, the setting and constraints on the research, the ethical issues, sampling, the resources required, and so on. Considering all these issues is an indicator of which research blueprint is likely to be more acceptable at the start of a study.

**5.1 Meaning of Research Design**

The research design is the overall plan put forward by researchers to carry out an investigation. It gives a clear picture of both the construction and conduction of the research (Balnaves & Caputi, 2001, pp. 27-29). Therefore, "a completed research design shows the step-by-step sequence of actions in carrying out an investigation essential to obtaining objective, reliable, and valid information" (Mauch & Park, 2003, p. 123).

**5.2 Need for Research Design**

In research, there is no single plan to be followed. A research plan or design is in fact determined by its appropriateness for the investigation in question, i.e. "The purposes of the research determine the methodology and design of the research"(Cohen, Manion, & Morrison, 2005, p. 73). For example, the survey approach may fit the purpose of making generalizable comments of a field; the experimental or action research is appropriate in the case of an intervention; and an ethnographic model might be more suitable if the intention is to conduct an in-depth study (ibid).

According to Hunt (2005, pp. 67-68), when the overall plan is written down, it may provide the researcher with the idea of changing and expanding things. It may also make the researcher notice that he needs to do various things before even he starts designing. A well

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3. Claim for the problem that your claim solves: When researchers read critically, they may discover a good research problem; the last few pages of a draft are sometimes the space where almost all writers formulate a final claim which might give rise to other important questions that the researcher can rely on.

If the above suggestions are taken into consideration by the researcher, then he will be able to formulate a question that is worth answering and find or create a problem that is worth solving. In many fields such as politics and international diplomacy "no skill is valued more highly than the ability to recognize a problem that others should take seriously, then to articulate that problem in a way that convinces them to care"(ibid, pp. 70-71).

## Conclusion

Researchers, whether novice or experienced, are supposed to discover problems in their workplace or elsewhere through careful observation or critical reading. Their task is to figure out the nature of the problem and not only report facts about it; their real task is to formulate a question that is worth answering or put forward a problem that really requires a solution.

## Content Review

1. What is a research problem?

2. What are some of the necessary steps involved in identifying the research problem?

3. Why is the defining of the research problem a crucial stage?

## 4.3 Necessity of Defining the Problem

Defining the problem can be synonymous, or rather imitative of refining the topic at the very beginning of the research. This can be done through the first readings on the part of the researcher and his discussions with the advisor in order to frame the major questions and the approach (Lipson, 2005, 70-71). It then begins by understanding whether or not the topic is researchable and manageable, which will help the researcher to come up with a more sharpened thesis topic and analyze it within the limits of the time allotted (ibid, p. 71). Once the thesis topic has been sharpened and the questions have been clearly settled down, the novice research must start thinking through the aims, methods and possible analyses (Norton, 2009, p. 87) to avoid any attendant pitfalls.

In describing the content and form of the research proposal, which is a document that candidates must develop at the onset of their research, Davis (2005, p. 53) invites researchers to solidify their "hypothesis and objectives", and to clarify what they "want this research to achieve". This indicates once again that the hypothesis or the suggested answer to the main question, which in a way or another reflects the main problem, must be put forward and illuminated earlier. The identification of the problem is then a pre-requisite which entails all the aforementioned researcher's actions.

## 4.4 Techniques Involved in Defining a Problem

Booth, Colomb and Williams (2003, pp. 68-70) suggested some ways for researchers which aim at formulating the problem at the outset of research as follows:

1. Ask for help: Talk to teachers, classmates, relatives, friends...or anyone who is interested in your topic.

2. Look for problems as you read: The researcher may find a research problem when he detects a contradiction, an incomplete explanation, or some inconsistency.

4. The problem should not be devised so as the answer can be "yes" or "no". Research should provide us with knowledge of why things are found the way we find them and how these things work. We do not only need answers, but implications.

## 4.2 Selecting and /identifying the Problem

Because the identification of a problem is of paramount importance, the researcher should know how to recognize and define his problem, a preliminary action that can proceeded through the following steps (Singh, 2006, p. 23):

1. Determining the field of research in which a researcher is keen to do the research work.

2. The researcher should develop the mastery on the area or it should be the field of his specialization.

3. He should review the researches conducted in area to know the recent trends and studies in the area.

4. On the basis of review, he should consider the priority field of the study.

5. He should draw an analogy and insight in identifying a problem or employ his personal experience of the field in locating the problem. He may take help of a supervisor or an expert of the field.

6. He should pin-point specific aspect of the problem which is to be investigated.

Sometimes, at this stage, researchers are faced with other requirements. They need to find "a problem whose solution makes all of us see the world in new way" (Booth, Colomb & Williams., 2003, p. 68). This is what characterizes experienced teachers, but novice researchers may also find "a good research problem" or try to clarify "an old one" to make a big contribution to their field of study. That is, consumed or already defined problems are less tackled than new ones.

6. Can I avoid any deception or misrepresentation in my dealings with the research subjects?

## 3.3 Criteria of Good Research

According to Kothari (1990, p. 20), good research is one that is systematic (it rejects guessing and intuition), logical (it is characterized by logical reasoning), empirical (it relies on concrete data), and replicable (its results can be verified by other researchers). Sometimes, it is worth assessing the reliability, the validity, and the generalizability of the research to answer the question "Is it a good research?" (Swetnam, 2004, p. 23). If it is reliable, the same procedures or actions would lead to the same results; if it is valid, the researcher is observing or measuring the right phenomenon; and if it is generalizable, the work is useful to other people or situations. Checking the above criteria is also required to maintain academic integrity.

## 3.4 Problems often Encountered by our Students

### 3.4.1 Choice of a Topic

Choosing one's research topic is perhaps the main single decision that a researcher is supposed to take. It requires some focus on one's interests, professional and future life, and on the objectives of this piece of research, and what the latter might bring to the researcher's institution or workplace (Blaxter, Hughes & Malcolm, 2006, p. 22). Then, what must be mentioned here is that after having read enough literature, and in order to conduct research, students "need to start by identifying a question which demands an answer, or a need which requires a resolution, or a riddle which seeks a solution, which can be developed into a research problem: the heart of the research project"(Walliman, 2001, p. 20). That is, there must be a clear and suitable problem to address. Suitability is meant to indicate that the problem is interesting and significant (ibid, p. 21).

# Lecture 3: The Research Process

## Introduction

Academics at all levels devote their time and efforts to research. Research takes place almost everywhere: "in laboratories and libraries, in jungles and ocean depths, in caves and in outer space. It stands behind every new technology, product, or scientific discovery-and most of the old ones"(Booth, Colomb & Williams, 2003, p.9)

### 3.1 How Social Research is done

To conduct research is to inquire into some aspects of the world around us, and research as such is supposed to be very academic; i.e. it must be systematic, critical and scientific. Any work will have to meet some requirements to convince the public or readers (Swetnam, 2004, p. 1). Namely, the readers must find grounded recommendations and conclusions (ibid).

### 3.2 The Research Process

Before tackling any problem, the social researcher faces a variety of choices of how to conduct his or her research. In fact, each choice or direction has advantages and disadvantages, that is, there is no right or wrong direction and it all depends on whether the selected approach fits the investigation and its purposes (Denscombe, 2007, p. 3). To ensure starting on a firm and solid path, there are some criteria and conditions to be taken into consideration. The social researcher must feel confident to answer "yes" to, at least, the following questions (ibid, p.5):

1. Does the research have significance in relation to some practical or theoretical issue?
2. Is there sufficient time for the design of the research, data collection and data analysis?
3. Will an adequate number and a suitable diversity of people, events, etc. be included?
4. Will the data be precise and detailed?
5. Can I avoid being biased because of my personal values, beliefs and background?

Research, in many fields, uses inductive reasoning and deductive reasoning. In inductive reasoning, the researcher uses systematic observations to come up with generalizations from the analysis of data; however, in deductive reasoning, the researcher relies on a general statement and then seeks evidence that would support or disconfirm that statement. The former is known as the "bottom-up" approach, and the latter is referred to as the "top-down" approach" (ibid, p. 5)

## Content Review

1. What features are necessary to consider so as to distinguish between qualitative and quantitative research?

2. Identify the major research approaches. Give examples if it is possible.

3. What makes research methods different from research methodology?

4. In a few lines compare and contrast between research and the scientific process (method).

## Self-Assessment Exercise

1. If ........ a few resources and the research is limited ......., then a ...... is more appropriate.

2. Sometimes, the ....... are preferred ........... words not numbers. In this case, a ........ the ......... best choice.

3. Researchers, in social sciences, have the opportunity to use ..................... within the study.

that the researcher can get a better understanding of the thing that is being investigated if
he/she views it from different positions" (ibid, p. 134)

## 2.4 Research and the Scientific Process

In life, we ask questions all the time because we need to know what makes a lot of our
surroundings be or look like as we find them. We just need to know the truth. This need or
desire to find an answer is what makes everyone a researcher (Hancock & Algozzine, 2006,
p. 3). But, conducting good research requires the application of some research procedures
(ibid, p.4) which can be itemized as follows:

1. What we want to study (*the research question*)

2. How do we want to study it (*the design*)

3. Whom we want to study (*the "case," "cases," or "sample"*)

4. How best to acquire information (*the data-collection techniques*)

5. How best to analyze or interpret the information that we acquire (*the data analysis*)

6. How and with whom to share our findings (*the dissemination process*)

7. How to confirm our findings (*the verification process*).

Through scientific research, researchers attempt to obtain accurate and reliable
information to solve important issues and problems. Scientific research is then associated
with the application of systematic methods and techniques to understand different
phenomena. The steps which make up a scientific process (Lodico, Spaulding & Voegtle,
2006, p. 4) are described below:

1. First, the researcher asks a question;

2. Next, he/she collects new data;

3. Then, he/she analyzes the data;

4. After that, he/she interprets and reports findings;

5. Finally, he/she generates a new question to investigate next.

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

The most frequently used research methods have been described by Blaxter, Hughes and Malcolm (2006, pp. 167-179) as follows:

1. *Documents:* This method is used by almost all researchers because they need to read, interpret, and analyze what others have written. Researchers should know more about their problems through consulting various sources.

2. *Interviews:* When they employ this method, researchers are supposed to question and discuss topics with people. The interview can be more useful in getting data than the observation or the questionnaire.

3. *Observation:* When using this method, researchers may be involved (participant) as they may not. The researcher is supposed to watch, records, and analyzes the vents. This method is time consuming both in collecting the data and in analyzing them.

4. *Questionnaires:* are widely used as social research techniques. They are used to elicit from people opinions or ideas about their experience and, thus interpreting the results is not as easy as one might think. Researchers must be very careful in putting questions which will yield the needed data. The questionnaires can be e-mailed, sent by post, or administered over the phone.

Questionnaires, interviews, observation and documents are then available tools for the social researcher to collect empirical data. They are considered to be very helpful to get evidence about the researcher's problem, and to provide him with an obvious image of and exact measurement of things (Denscombe, 2007, p. 133). Researchers, in social sciences, have the opportunity to use different methods within the study. "The principle behind this is

refers to the researcher's efforts to isolate the conditions which determine the events or changes in order to be able to watch and experience the effects in different situations. That is, the experimental approach deals mainly with the "cause and effect" phenomenon which involves several stages before the conduction of the experiment.

6. *Evaluation Research:* This type is considered to be descriptive, for it is generally designed to deal with social issues. It does not only seek to get facts, but it also tries to explain deeper aspects of the elements being investigated. It aims, for instance, to study projects from the perspective of what they might cost and bring as benefits with the intention of improving and developing a situation.

7. *Action Research:* This type looks like the experimental research, except for the fact that it is conducted in a real world situation, and not in a laboratory. In this type, the researcher does not intend or try to isolate the variables from where they are naturally functioning; the researcher depends heavily on observation and behavioural data.

From the literature above, one may understand that there are many types of research. Each one of these types is dictated by the nature of the problem to be solved, the type of data to be collected, the methods to be used in collecting the data and in their analysis, and the scope of the study and its objectives. These conditions, among others, must be weighed carefully by researchers.

**2.3 Research Methods versus Methodology**

Any research requires the collection and analysis of data, which is generally done through reading documents, observing people and phenomena, asking questions, or using a combination of these ways. The latter are known as *research methods,* i.e. "all those methods which are used by the researcher during the course of studying his research problem" (Kothari, 1990, p.8). Whereas, *research methodology*

Based on the above literature, it has become clear that *qualitative* and *quantitative* research approaches differ at many levels. Each type has its own features and is used depending on many criteria. Sometimes, researchers employ a combination of these two approaches in the same study.

## 2.2 Research Approaches

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

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

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

3. *Descriptive Research*: Descriptive research employs observation to collect data. It attempts to establish norms through examining situations, i.e. it enables researchers to predict what might happen again under similar circumstances. In this type of research, interviews, questionnaires, and visual records can be utilized.

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

5. *Experimental Research*: This type of research differs from the preceding research approaches, especially in terms of the researcher's control over the variables. Control here

**Lecture 2: Methods and Methodology**

**Introduction**

Fundamentally, in the social sciences, the goal of conducting research is to solve a problem or remedy a situation, intending to improve some practices. Therefore, deciding on the appropriate overall research methodology must be at the planning stage because it enables the researcher to consider the feasibility, the ultimate findings, and all the attendant evils which might come out in the course of the research.

**2.1 Types of Research**

It is important for novice researchers to distinguish, from a broad perspective, between *qualitative* and *quantitative* research. One way to make a clear distinction between the two is to consider the following distinctive features (Hancock & Algozzine, 2006, pp.7-9):

1. If there are only a few resources and the research is limited by time, then a quantitative approach is more appropriate. This is due to the use of tools such as tests to measure specific variables. However, a qualitative approach requires more time and more resources, for it utilizes interviews, focus groups, observations, and so forth.

2. If there is an intention to identify a large number of influential variables, a qualitative approach will be more useful. That is, a qualitative approach will help to know more about an issue rather than putting a finger on only a few variables.

3. Because quantitative research can be carried out with a small number of participants, researchers prefer it to qualitative research which entails an easy access to the participants in the study.

4. Sometimes, the research findings are preferred in the form of words not numbers. In this case, a quantitative approach may be the best choice.

5. If there is a need to understand a problem or a situation from the participants' perspective and not the researcher's perspective, the qualitative research type is more suitable.

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Research is also very helpful in business and economy, for it provides information about needs and how to meet these needs. Many more matters in life require research; problems of industry, working conditions are all matters necessitating research (Kothari, 1990, pp. 5-6).

**Lecture 4: The Research Problem**

**Introduction**

It has been said that a good piece of research starts as a questions that needs to be answered, or a situations that confronts people, at work or at school, and requires an immediate remedy. However, a few novice researchers, however, are unaware of the word "problem". "Problem" means many things for many practitioners: teachers and students.

**4.1 What is a Research Problem?**

A research problem is a difficulty in a situation whereby an individual or a group that attempts to solve or remedy. In most cases, there must also be causes and effects; i.e. dependent and independent variables in two different courses of action, with an urgent need for some satisfaction (Kothari, 1990, p.24). According to Walliman (2001, pp. 22-23), researchers need to be warned at this very important stage of selecting a problem about four (04) mistakes, so that they can understand it well and can deal with it. These mistakes are summarized as follows:

1. The choice of a problem should not be only personal, but one of a wider interest. Researchers may learn for themselves, but are, at the same time, supposed to contribute to the public knowledge.

2. The formulation of a problem should not only involve mere comparisons of data from here and there, without revealing new ideas or giving insights into new aspects. The problem should state the objectives in a clear manner.

3. Setting the problem to find out the degree of correlation between variables is not enough, which may result in a number could not explain the cause or causes leading to that degree of the correlation. What is also needed is the nature of the link between variables.

### 3.4.2 The Literature Review and its Importance

Literature reviews are distinctive features of research and are conducted in many different ways. All of these are characterized by the incorporation of more interaction with material through critical evaluation (Finn, 2005, pp.89-90). The aim and importance of a literature review derive from the need to understand and justify a research question in a given research area, but not to just summarize concepts, theories, applications and the like (ibid, p. 90). When students carry out a literature review, they aim to find out the people speaking about what they are interested in, specifically their research objectives, and to show their supervisors that they have read in depth about their topics (Biggam, 2008, p. 50).

### 3.4.3 Qualitative and Quantitative Research

It is very crucial and very strategic for beginning researchers to understand the differences between qualitative and quantitative research because the selection of an appropriate approach depends mainly on the goals and preferences of the researcher (Hancock & Algozzine, 2006, p. 7). If the researcher wants to describe the state of affairs from a distance, then the qualitative approach seems to be the best choice, and if he seeks to discover relations between variables, the quantitative will be more fitting. This is only because "Qualitative research approaches collect data through observations, interviews, and document analysis and summarize the findings through narrative or verbal means" (Lodico, Spaulding & Voegtle, 2006, p. 15); whereas, "All quantitative research approaches summarize results numerically" (ibid, p. 12) with some differences in the goals and the ways they collect data.

### Self-Assessment Exercise

1. Good research is one that is...................................................................and replicable

2. The aim and importance of a literature review derive from..........................................., but not to just summarize concepts, theories,..............................and the like.

science. However, a scientistwith above-average intelligence can succeed by hard work and performing better in other qualities required for scientists.

*Knowledge*: Researchers should be proficient in their subject. They should be willing to collect all the relevant literature connected with the researchable topic, read them critically, analyze them, and learn them.

*Imagination*: Imagination is essential for insight and for problem solving. Most scientists are surprisingly imaginative; however, when imagination is combined with both determination and a vision, the result can be wonderful

*Self -confidence*: Self-confidence encourages motivation to tackle challenges and foster optimism.

*Search for perfection*: The researcher will repeat experiments carefully and systematically, if required, and will not manipulate results under any circumstances.

*Team spirit*: Certain problems cannot be solved by an individual scientist because of the vastness of the problem. Sometimes, the problem may bemultidisciplinary, and a team comprising of experts from different disciplines is required. The researcher should be able to work in a team where personal ego or dislikes will not have a place.

### 1.4 Significance of Research

The significance of research lies in its main function which is" to improve research procedures through the refinement and extension of knowledge" (Singh, pp. 4-5). This latter is associated with many other aspects of social studies (ibid):

a. The function of research is to help making decisions concerning the refinement or extension of knowledge in a particular area.

b. The function of research is to improve students' learning by solving classroom problems, i.e. helping teachers to implement more effective techniques.

c. Another function of research is to aid staff and administrators to improve the education systems. Research here contributes to facilitating the teaching learning process.

purpose is to ensure representativeness in order to generalize the findings, then particular sampling strategies must be used, and if the purpose is to conduct an in-depth analysis of a phenomenon, samples that might bring rich information are needed (ibid, p. 56).

## 6.2 Steps in Sampling Design

According to Singh (2006, p. 95), there are five major steps that the researcher must go through to design his sample and sketch it cycle. Singh has described them as follows:

1. The researcher identifies the universe and the population of his study.

2. The researcher applies the necessary techniques to selects the type and the size of the sample he needs.

3. If any ethical issue rises here (some people may refuse to participate), the researcher has to extend the invitation until the size desired is reached.

4. At this stage, the researcher applies the appropriate data collection methods to collect data from the real number of the participants.

5. From those who do form the data producing sample, the researcher settles down findings and makes conclusions.

## 6.3 Characteristics of a Good Sample Design

According to Singh (2006, p. 92), the list below includes the core characteristics of a good sample design. This is not, of course, an exclusive one and has been adapted to meet the requirements of the present paper.

1. A good sample is the true representative of the population corresponding to its properties.

2. A good sample is free from bias. In its selection, there must be no influence from the investigator.

3. A good sample maintains accuracy. It must yield accurate data and does not involve errors.

4. A good sample is a comprehensive one; i.e. it must be controlled by the specific purpose of the study.

5. A good sample must be economical, especially in terms of energy, time and money.

6. A good sample is one that helps the investigator to approach the participants and gather data from them easily.

7. A good sample makes the research work a more feasible task.

## 6.4 Different Types of Sample Designs

At this stage of research, the researcher must opt for either probability (random sample) or non-probability (purposive sample). "In the former, every member of the wider population has an equal chance of being included in the sample;...In the latter, some members of the wider population definitely will be excluded and others definitely included" (Cohen, Manion, & Morrison, 2007, p.110). A probability sample is selected randomly and is useful to make generalizations because it seeks representativeness of the population. Whereas, a no-probability sample does not highlight representativeness of the population, but a small group or a section of it (ibid). Non-probability samples include convenience sampling, quota sampling, purposive sampling, dimensional sampling, and so on (ibid, pp. 113-115).

In practice, there is no single way or technique that a researcher can use to sample his design. Biggam (2008, pp. 88-90) provides a list that includes: random sampling, simple random sampling, stratified sampling, cluster sampling, systematic sampling, quota sampling, and convenience sampling.

**Random sampling:** This is a complete random selection of a sample of a population. An example of this type could be the random selection of people in the street; i.e. the researcher may stand somewhere and tries to ask them questions on whether they are going to vote or not because it is not easy to ask everyone.

**Simple random sampling:** This is one type of random sampling. Unlike random sampling, simple random sampling guarantees the chance of being selected for every member, and this

requires working with a smaller number of people and a good choice of the time and the place (street).

**Stratified sampling:** It refers to breaking down the target population into small identifiable groups (Strata) and taking a sample from each group (Stratum).

**Cluster sampling:** This type is identical to stratified sampling. But, the selection of samples from the groups (Clusters) must be random. The researcher selects some clusters to reduce their number, and then takes a sample from each of these latter randomly.

**Systematic sampling:** It occurs when the researcher takes a sample from his target population at equal or regular intervals. The researcher may take, for example, every fifth, tenth, or fifteenth name of a student on a list.

**Quota sampling:** This is sometimes known as no-probability sampling. It does not involve random sampling, and the researcher decides beforehand the type and number of members. It also does not highlight the question of representativeness. Some people (members) are stopped in the street and asked questions just because they are aged 20.

**Convenience sampling:** This is another example of non-probability sampling."Convenience" refers to the fact that it is used by researchers because it is convenient to them. The researcher may interview his students or staff because he has an easy access to them. Representativeness is not an underlying claim if this sampling has been selected.

**Conclusion**

Many criteria must, in fact, be considered in designing a sample. The sampling strategy, the characteristics of the sample, and the type of the sample itself must be planned and deliberate. Arbitrariness must be substituted with suitability, and the purposes of the research must go hand in hand with all the aforementioned choices.

**Content Review**

Which process should a researcher go through in sampling a Design? Why?

**Lecture 7: Ethical Issues in Research**

**Introduction**

In conducting research in the social sciences, there must be some awareness of the attendant evils which may harm the participants. The sources of these moral or ethical issues vary from one research to another, but most of them may stem out of the nature of the project, the context in which it is carried out, the data collection methods to be used, the procedures to be adopted, the nature of the participants, and even the type of data collected (Cohen, Manion, & Morrison, 2005, p.49).

**6.1 Ethical Issues: What do they mean?**

From a very broad perspective, ethics are those "moral principles governing behaviour-the rules that dictate what is right and or wrong". Yet ...what constitutes right and or wrong is subjective, defined by groups with particular aims." (Hegtvedt, 2007, p.144). That is, ethical issues refer to the violation of a set of rules which are intended to ensure good academic conduct on the part of the researcher, and protection of rights on the part of human participants.

In an attempt to answer the question "What do ethical issues mean?", Norton (2009) put forward three major criteria to increase the validity of research. These are *informed consent; privacy and confidentiality; and protection from harm*. Participants are entitled to be informed of their role and the value of the research. Their consent to take part is also needed to avoid any mid-way problems. As for privacy and confidentiality, it must be made clear, at the very beginning of the research, which person or people will have access to the data provided by informants, and the identity of these informants must be concealed in all research findings. In addition, the informants' academic achievement and confidence need protection from all types of harm.

Other scholars look at the matter from a more general perspective. Swetnam (2004, pp. 7-8) sees that any researcher has as a responsibility to guarantee that:

a- No harm should come to participants in the research either physically, mentally or socially.

b- Particular care is taken not to exploit the vulnerability of children, the elderly, the disabled or those disadvantaged in any way.

c- no physical or environmental damage should be caused.

d- Wherever possible participants are informed of the nature of the work and give their consent.

e- The research follows equal opportunities principles.

f- Anonymity and privacy, where requested, are guaranteed and honoured.

g- Nothing is done that brings your institution into disrepute.

## 6.2 Ethics and Sampling

In many studies, where human participants are invited, issues of rights and privacy protection as mentioned above rise. For these reasons, among others, the US government, for instance, "set up a commission in 1974 that produced the Belmont Report in 1979. In 1991, may US government agencies adopted a number of regulations to protect human participants"(Perry, Jr., 2005, p. 67). Other examples of associations and boards concerned with this type of protection are the British Psychological Society (BPS) and the American Psychological Association (APA) which

> have both agreed guidelines on the ethical issues involved in psychological research. The BPS currently have a booklet of statements (1993), covering a range of issues, and also a code of conduct (1985) adopted through a postal ballot of all its members...The APA (1987) has a more comprehensive setoff ethical principles comprising ten major

categories, each with several sub-principles. The general public can bring complaints to the ethics committee who then adjudicate...(Coolican,393-394)

All the above principles "stress that psychological research should lead to better understanding of ourselves and to the enhancement of the human condition and promotion of human welfare" (ibid). They stress the need for free inquisitiveness so as to guarantee wider and more valid knowledge.

### 6.3 Ethics and the University's Public face

As it was hinted at earlier, ethics must be highly considered because they may add to the fame of the institution or university where the research is being conducted. They may also present the university in bad light in case they are violated. Undoubtedly, the researcher is the university's public face in the way he researches and in how people perceive the research. In many universities, researchers cannot start their projects unless they satisfy the ethics committee with their research plans in terms of the sample, data collection, methodology, and so forth (Steane, 2004, p. 59-64). According to (Booth, Colomb & Williams, 2003, p.274), respectful (ethical) researcher will face the following choices at the onset of his project:

1. Ethical researchers do not plagiarize or claim credit for the results of others.

2. They do not misreport sources, invent data, or fake results.

3. They do not submit data whose accuracy they do not trust, unless they say so.

4. They do not conceal objections that they cannot rebut.

5. They do not caricature or distort opposing views.

6. They do not destroy data or conceal sources important for those who follow.

It is seems to be very challenging to apply these principles because the "don'ts" may bring the researcher to "dos" which may not appeal to him; i.e. to practices which are considered to be wrong in today's world. The ultimate aim has to be far beyond any personal desires; researchers and consumers of research must think of creating an ethical community.

## 6.4 The Principle of Informed Consent

*"Informed Consent"* refers the code or rule that participants are free to participate or refuse to participate, and that they are entitled to be informed of the implications of their participation. In other words, "Informed consent is the principle that individuals should not be coerced, or persuaded, or induced into research against their will, but that their participation should be based on voluntarism, and on a full understanding of the implications of participation"(Green & Thorogood, 2004, pp. 57-58). As for the right to non-participation, both before and during the study, Coolican (1994, p. 401) finds that in any research, the investigator is obliged to:

1. Give the participant full information as to the likely level of discomfort and to emphasize the voluntary nature of the exercise and right to withdraw at any time.

2. Remind the participant of this right to withdraw at any point in the procedure where discomfort appears to be higher than anticipated.

3. Terminate the procedure where discomfort levels are substantially higher than anticipated and/ the participant is obviously disturbed to an unacceptable level.

The participants' consent and co-operation are necessary to assist the investigator. In some studies, informed consent is utterly crucial because the participants' right can be impaired. Frankfort Nachmias and Nachmias (1992, qtd in Cohen, Manion & Morrison, 2005, p. 50) say:

> When research participants are to be exposed to pain, physical or emotional injury, invasions of privacy, or physical or psychological stress, or when they are asked to surrender their autonomy temporarily (as, for example, in drug research), informed consent must be fully guaranteed. Participants should know that their involvement is voluntary at all times, and they should receive a thorough explanation beforehand of the benefits, rights, risks, and dangers involved as a consequence of their participation in the research project.

In other contexts such as the case of pedagogical research, researchers are also advised to be careful when dealing students and staff as their participants. The idea is that researchers may not feel the influence exercised on students, for instance, in convincing them to participate in a study, believing that it is due because there will be some pedagogical benefits (Norton, 2009, pp. 181-182). On the other hand, teachers may receive an equal impact. If, for example, the researcher is to develop a phenomenological portrait of the staff in their workplace, some members may refuse to take part, in which case the researcher cannot get a full depiction of the situation (ibid).

**Conclusion**

Acting ethically is a pre-requisite in research. It entails important and liable decisions at the design phase of the research project. Because students are asked to participate in research, for they are easy to reach in their classrooms and most of them appear to be more willing than other participants, many elements of coercion are likely emerge. The more students are involved in research, the more vigilant researchers have to be.

**Content Review**

1. What are ethics and what are ethical issues in research?

2. In your view, how could a sample affect research?

3. Is the principle of "*Informed Consent*" really crucial in research? How?

## Conclusion

As teachers and researchers, one of the most challenging moments in our lives is to fulfill our duties as really required. We find ourselves obliged to infer knowledge, to contribute to research, to continue to build relationships, and to encounter problems both at home and outside of it. To develop a liable person and maintain good research conduct, it is fundamental for us to keep working hard, and to believe that research is our window to the world. We, as teachers and researchers, have to pursue the truth despite all the costs and limitations in our disciplines. We have to survive! We have to find a compromise between our personal, professional and academic desires. Survival is our feeling of joy because it is empowered by the need for broadening wisdom and intelligence, experience and expertise.

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**Lecture 6: Population and Sampling**

**Introduction**

In defining populations and samples in terms of nature, size, and interrelationship, Gibilisco (2004, p. 38) pointed out that:

> In statistics, the term population refers to a particular set of items, objects, phenomena, or people being analysed. These items, also called elements, can be actual subjects such as people or animals, but they can also be numbers or definable quantities expressed in physical units.

The total number of items, objects or people is known as the population of the study, and the group or small number chosen from it is referred to as a sample. Because the study of the whole population is impossible and impractical due to some issues which encounter the researcher such as time and money, the technique of sampling becomes indispensible; i.e. the research work cannot be undertaken without it (Singh, 2006, p. 81).

**6.1 Implications of a Sample Design**

In any study a researcher wants to conduct, there must be a selection of participants. These latter are the people who will be given treatment, asked questions, or observed as they behave, and the technique used to select these participants depends heavily on the type of research (Lodico, Spaulding & Voegtle, 2006 ,pp.139-140). In qualitative research, the participants are selected on the basis of their traits and the knowledge they have to answer the questions, with no intention to generalize the results; whereas, in quantitative research, there is often a desire to generalize from the sample to the whole population (ibid). The sample is the source of data which will help the researcher to answer the questions or test the hypotheses (Perry, Jr, 2005, pp. 55-56) because in involves the cases, subjects, or using the most recent term participants who are supposed to provide the research with the necessary data. The importance of the sample also lies in choice and the objectives of the study. If the

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