

# Doing Academic Research



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By

Ekpe Inyang

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By Ekpe Inyang

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## **A researcher is**

a researcher is  
a trader in reliable products  
that inform changes in policy and practice  
and fuel our inventive imagination  
for guaranteed, sustainable development

a researcher is  
an honest collector of data  
extracting, observing, measuring, questioning  
without the least bias or intention to harm

a researcher is  
a critical examiner of data  
triangulating, cross-validating, cleaning  
to ensure their accuracy

a researcher is  
a laboratory of sophistication  
equipped with tools of all sorts to sort  
reduce, analyse and manufacture  
products that enhance our understanding  
of issues, situations, events, phenomena  
too complex to comprehend  
by any other means

a researcher is  
an incorruptible judge, characteristically  
patient and prudent, taking the time and pain  
to gather enough, substantial evidence  
on which to draw conclusions

a researcher is  
a symbol of transparency  
impartiality, positive creativity  
and determination as insurance that  
our environment remains un-degraded and unpolluted  
in the face of struggles for growth and development

Ekpe Inyang, 9 August 2007



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## FOREWORD

University teachers have been having a difficult time trying to drill their students in the difficult, but rewarding, art of scientific writing. They have often complained about the low standards of long essays and theses their students produce. These pieces of research work constitute the culmination point of the years spent in the University and are supposed to reflect how high the standards of the institution are and how adequately its products are being prepared for the job market. On the other hand, poor projects are a sign that their authors still have a long way to go, and do not give a positive impression of the training institution they graduate from.

Ekpe Inyang's *Doing Academic Research* is a welcome introduction to scientific writing that takes care of all aspects of academic research. The author explains how to design a research project, describes the research process, defines research types, designs, methods and instruments, shows how to analyse and interpret data, and how to present the research results in a project or thesis.

Whether in the humanities and social sciences or in applied research, whether in qualitative or in quantitative research, this book provides answers to the apprentice researcher who is struggling to submit a piece of academic work. Ekpe Inyang's book provides guidelines on how to conduct research and write essays, research proposals and theses. It is the ideal student's companion and a precious working tool that teachers can effectively use in their classrooms.

Being a seasoned scholar himself, Ekpe Inyang has published extensively and is now providing his reader with a summary of his rich experience. We should appreciate this noble endeavour and make use of this wonderful guide.

Suh Joseph Che (PhD), Associate Professor  
Director of Advanced School of  
Translators and Interpreters (ASTI)  
University of Buea, Cameroon



## PREFACE

University and college students are usually required to carry out independent study and to write short or long academic essays on a regular basis. Such exercises, commonly called *assignments*, often pose a lot of problems, especially for first-year students. Similarly, the requirement for final-year students to conduct research and produce “projects,” such as dissertations or theses, can be a stressful experience for many.

Written in simple and straightforward language, *Doing Academic Research* will prove useful in reducing the stress that undergraduate students feel when conducting research and embarking on scientific writing. It contains several essential aspects of General Research Methodology, and attempts to simplify important concepts and procedures that students need to fully grasp in order to tackle their academic assignments with confidence. While undergraduate students are generally not given adequate grounding in research methodology, they are often required to carry out assignments that demand sound research knowledge and skills. This is unfortunate.

Completely restructured, thoroughly revised and expanded from the previous *Doing Academic Assignments*, *Doing Academic Research* is richly supported with examples and is intended to serve as a friendly companion to any student who aims for academic excellence. Practitioners in the field, and even teachers of Research Methodology, will also find the book useful as a revision guide.

The book is structured into three parts. Part One, “Introduction to General Research Methodology,” contains four chapters that cover the definitions and purpose of research, the research process, types of research, study designs, research methods, methods and instruments for data collection, and data analysis. Part Two, “Academic Assignments,” is made up of two chapters that prepare students for academic work, particularly by giving them tips on academic essay writing, by exposing them to various features of academic writing, and by helping them learn how to prepare bibliographies in the Harvard, American Psychological Association (APA), and Modern Languages Association (MLA) systems. Part Three, “The Thesis Project,” consists of two chapters that present students with details on how to conduct thesis research—selecting a topic, doing the literature review, developing the methodology, understanding the structure

and anatomy of a research proposal, writing the thesis or research article and, finally, organising the internship and thesis defence.

I extend my sincere gratitude, first of all, to the Almighty God for giving me the opportunity to interact, though informally, with a number of first-, second- and third-year students of the University of Buea in the South West Region of Cameroon. In the course of the interactions, I discovered some difficulties that students face in carrying out independent study and writing academic essays and reports. This inspired me to embark on the writing of this book. My experience as a lecturer of Research Methodology at the University College of Technology and Pan African Institute for Development – West Africa, both in Buea, helped me in no small way to develop what started as a thirty-page pamphlet into a book that is now over a hundred pages long.

My immense gratitude to Elijah Etim for the wonderful contribution on text analysis and for the enormous help in the preparation of the index. I sincerely lack the words to express my heartfelt appreciation to Mark MacAllister of the North Carolina Zoo Society, for his diligent, generous, insightful and inspiring peer-reviewing support. I will not forget to mention my children, Joy, Offy, Beya, Arah and Okum, for their unspeakable perseverance in many ways. Special thanks to my late wife, Eni Inyang, for enduring my deliberate dedication of so much time to the development of this book during a period when I should have reserved more time and energy for my family. Thanks are also due to my former course director at the University of Strathclyde, Ann Glen, who not only gave me sound coaching in Research Methodology but put at my disposal personal textual resources that helped me in no small way to develop myself in this domain.

# CHAPTER ONE

## INTRODUCTION

Assignments are an important part of university education and professional training. They encourage hard work, increase the scope, level and quality of students' independent study or research, inculcate in students good reading habits, and improve their writing skills. Students are required to write academic essays, theses or projects as proof of their independent study. To write a good academic essay or thesis requires a good structure, the appropriate and correct use of language, strong analytical and presentation skills, and adequate clarity in the writing.

In the case of an academic essay, students may be required to meet a target of 3000 to 6000 words for a normal assignment—a short essay, seminar paper or an exposé (usually done in a group and presented in a lecture room). The length may be specified in terms of the number of pages, with detailed requirements for line-spacing and paper size. Students may be asked to submit an essay of four to twelve pages for these assignments. It should be noted that there are no general specifications in length, as these vary from college to college, university to university, and even within departments. Other general specifications are 1.5 or double line-spacing on A-4 size paper for both short essays and theses. Given the obvious lack of standardisation, it is advisable to consult the research manual produced or recommended by your department and to follow the instructions of your lecturer or supervisor.

Some students take this to be an easy task, since they are free to gather materials from books or other sources. Because of this, some even think they can simply copy from existing sources, without considering the obvious fact that the collected materials will not arrange and organise themselves in a way that makes sense within the context of the requirements of an essay or a thesis. Some students usually wait until a few days before the deadline before rushing to finish the assignment, and then perform poorly.

The reason students are given assignments is so that they can demonstrate their academic development. Teachers often mark these far more stringently than they do tests or examination papers. Students must

take their assignments seriously, start them early and strive to show academic and professional improvement.

### **Questions to consider**

1. Assignments are an important part of university education and professional training. Discuss.
2. List the types of assignments that higher education students are normally given.
3. What skills are higher education students expected to demonstrate when given assignments?
4. What mistakes do higher education students frequently make when asked to carry out academic assignments?

**PART I:**  
**GENERAL RESEARCH METHODOLOGY**



# CHAPTER TWO

## DEFINITION AND PURPOSE OF RESEARCH

### 2.0 Introduction

As human beings, we are by nature very inquisitive, always searching for new information and seeking explanations for unfamiliar phenomena that confront us daily. Specifically, we engage in gathering and analysing information, sometimes formally but mostly informally, sometimes systematically but most often casually and unsystematically.

What we often do, as described above, can be considered research, the main purpose of which is to increase our knowledge and understanding of our environment. However, some of the activities qualify more as research than others. In this chapter, we will define *research*, determine what is considered research, and discuss how useful it is to us as individuals, to our professions and to our nations as a whole.

### 2.1 Definition of research

Research is a process of inquiry that involves the systematic gathering, analysis and interpretation of data or information. Grinnell (1993) considers it as a careful, systematic, and patient study and investigation in some field of knowledge, undertaken to establish facts or principles. He further defines it as a structured inquiry that utilises acceptable scientific methodology to solve problems and create new, generally useful knowledge. Scientific research methods involve systematic observation, classification and interpretation of data.

### 2.2 Purpose and importance of research

The main purpose of research is to find ways of providing lasting solutions to the ever-increasing problems confronting mankind.

The many disciplines and fields of study we have today started off with

limited, crude, and inadequate bodies of knowledge. But, through systematic study, new bodies of knowledge are created and added to the knowledge base while old ones are replaced, modified or validated and maintained.

Knowledge acquired through research helps in analysing and better understanding prevailing and emerging situations, leading, in turn, to new definitions, interpretations, applications and, ultimately, discoveries. For example, the early man observed that some of the plant materials he left behind after eating the desired parts grew into new plants. This observation was translated into knowledge that ultimately led to the development of agriculture.

Increases in quality knowledge yield advancements in science and technology and provide the basis for improvements in agriculture, health, medicine, and industry. These foster economic growth and development. This explains why many countries invest a lot of resources in research.

## 2.3 Characteristics of research

Kumar (1999) presents a detailed discussion on the characteristics of research. He notes that in order for any process of inquiry to qualify as research, it must have most, if not all, of the following characteristics: it must be:

- Controlled
- Rigorous
- Systematic
- valid and verifiable
- empirical
- critical

### 2.3.1 Controlled

Research often attempts to establish cause-and-effect relationships in the face of a multiplicity of interacting factors. In this case, it must be *controlled*. “Controlled” means making sure that the study is set up in a way that minimises the effects of other intervening factors in the relationships so that the cause-and-effect links can be established without any doubt.

However, whereas control can be achieved in the physical sciences since most of the research is carried out in laboratories where external factors can be avoided, it is difficult to achieve this in the social sciences,

which focus on issues relating to society, an open system with a continuous interplay of complex and unpredictable factors that cannot be avoided or checked.

### **2.3.2 Rigorous**

This simply means that the researcher must be scrupulous in ensuring that the procedures for obtaining answers to questions are relevant, appropriate and justified.

The degree of rigour that is possible, however, again varies between the physical and social sciences, with the latter often subject to less rigorous principles.

### **2.3.3 Systematic**

This means that the procedures adopted for the study must follow a logical, step-by-step sequence. This logical procedure represents a natural way of thinking and doing things in the scientific tradition.

### **2.3.4 Valid and verifiable**

Conclusions drawn on the basis of the findings—the evidence—are correct and can be verified by the researcher and by other people interested in the research.

### **2.3.5 Empirical**

This concept implies that conclusions are drawn on the basis of hard evidence obtained from information gathered from actual experiences and observations, and not from the imagination or manipulation of facts.

### **2.3.6 Critical**

The process of inquiry adopted must be free of any drawbacks, and the procedures used must withstand critical scrutiny.

## **2.4 The concepts of reliability and validity in research**

Research is often evaluated on the basis of the reliability and validity of its instruments and procedures. Reliability is related primarily to measurement results, and validity to what is measured. Cozby (2001) provides clear

definitions of these concepts.

**Reliability** is defined as the ability of an instrument to produce the same or similar results each time it is used to take measurements under the same or similar conditions. For example, if you use a scale balance to weigh a certain quantity of dried cocoa in the morning and find that it weighs 50 kilograms, a second weighing in the afternoon should produce a measurement of 50 kilograms—unless the cocoa has been modified or if the scale balance is faulty. Similarly, a questionnaire administered a week ago and finding that a certain village had 100 females and 200 males should show similar results if administered today. Otherwise the questionnaire would be considered unreliable, unless other factors affected the results.

The reliability of a research instrument, such as a questionnaire or interview schedule, may be affected by the wording of the questions (whether questions are clear or ambiguous, simple or difficult), a change in the physical setting (where, for instance an interview was conducted and is now conducted), the mood of the respondent (whether, for example, the interviewee was in the same mood as when he or she was approached in the previous interaction), the nature of the interaction between the interviewer and interviewee (whether, for instance, the interviewer was expressing undue superiority or inferiority towards the interviewee), and the regression effect of the instrument (whether the respondents can remember the questions, or if they have been reconsidering their responses in the previous interview and have now decided to respond differently).

**Validity** can be defined as the ability of a research instrument to measure what it was designed to measure. This has to do with whether, for instance, the questions formulated in a questionnaire or interview schedule are adequately linked to the objectives of the study. Such links can be validated easily when working with objective concepts like age, height, and weight, but can become difficult to validate when considering concepts like effectiveness, attitude, aptitude, wealth, and so on, as the terms can mean different things to different people.

There are three types of validity: construct validity, internal validity, and external validity. **Construct validity** refers to the adequacy of operational definitions of variables. Since variables may be abstract constructs, it is possible to measure what was not intended. To avoid this situation, concepts such as “wealth” should be dissected into measurable variables like “income per month” and so on, which everyone can understand and interpret in exactly the same way.

**Internal validity** is the capacity to draw conclusions about causal relationships from the data. A study is said to have high internal validity

when strong inferences can be made that one variable caused another.

**External validity** is the extent to which the results of a study can be extrapolated or generalised to other populations, areas, or settings. This is linked to sample size and sampling technique. The larger the sample size, the more possible it is to make generalisations.

### **Questions to consider**

1. What would you consider as your own working definition of *research*?
2. With that definition in mind, discuss:
  - a) The purpose and importance of research, and
  - b) The characteristics of research.
3. With concrete examples, show how research can contribute, and/or has contributed, to the development of your profession and your nation.
4. Write short notes on:
  - a) construct validity,
  - b) internal validity, and
  - c) external validity.



# CHAPTER THREE

## THE RESEARCH PROCESS

### 3.0 Introduction

Research can be described as a journey with the purpose of inquiry. The journey, referred to as the *research process*, can be divided into nine main steps or stages:

- research problem
- research design
- sample
- research proposal
- instruments for data collection
- data collection
- data processing
- research report
- communication of research results

All but the last stage are absolutely compulsory in any research endeavour. Kumar (1999) provides a succinct discussion of the first eight stages.

### 3.1 Formulating a research problem

Formulating a research problem is like deciding on the destination of a journey before setting off. Without a destination in mind, one will not know which direction to take. Formulating the problem consists of identifying a broad area of research interest and brainstorming within that broad area in order to focus on specific areas from which to select the research topic. Once a tentative topic has been selected, the researcher then develops a rationale which highlights the nature of the problem and why it is relevant for research. The rationale can, in turn, help in the fine-tuning of the topic itself.

With the rationale or research problem (often stated separately as *statement of the problem* and *significance of study*) in mind, the next step

is to formulate the research questions (which help to further clarify the problem), the hypothesis, and the aim and objectives of the study.

### 3.2 Conceptualising a research design

A research design is the logical idea about the research plan, the type of which is dependent upon the type of research conducted. Conceptualising a research design consists of describing the study design, sampling strategy, research methods and data collection and analysis tools.

A research design helps organise the research project in a way that guarantees that required data are collected at the right time and without bias.

### 3.3 Selecting a sample

A *sample* is a small collection or unit that represents an entire population or area by virtue of the fact that it includes the important characteristics or features of the larger collection. It is important to select a proper representative sample because of the difficulty of conducting research on every unit of the population or area, given huge constraints both in time and logistics. But in order for a sample to be representative, it must be selected using an appropriate sampling strategy.

There are many sampling strategies, procedures and techniques. Six will be considered here:

- random sampling strategy
- stratified random sampling strategy
- systematic sampling strategy
- quota sampling strategy
- snowball sampling strategy
- purposive sampling strategy.

**Random sampling strategy** gives each unit an equal chance of being selected. This is used in order to avoid bias towards the selection of certain units—individuals, say, or groups or plots of land. This strategy is employed when it does not matter which unit is selected, provided the required number is obtained.

In selecting a sample using the random sampling strategy, the names of units could be simply written on pieces of paper, folded and put into a box and shuffled before picking them one by one from the lot until the required number (sample size) is obtained. This technique is known as

fishbowl draw, and is often used in lottery.

Another technique of random sampling, which is more demanding, time-consuming and rigorous, is to use a table of random numbers, included in some research methodology textbooks, to select sample units. The procedure is as follows:

- Establish a sampling frame by numbering all the identified units of a population or area of study.
- Select (using the fishbowl technique) the page from which to start, if the table contains more than one page.
- From the page, select the column or row from which to select the starting number, again using the fishbowl technique.
- From the starting number, select the other numbers, in a predetermined direction, to correspond to the sample size already decided.
- On the selected numbers, underline one, two or three digits (beginning or ending digits, as predetermined), depending on the number of digits represented by the total number of units in the population or area. For example, if the population comprises 300 units or individuals, three digits are underlined, since 300 has three digits.
- From the underlined digits, select those that fall within the range of the sampling frame by circling them. Those that do not fall within the range (that is, those either larger or smaller) are discarded by skipping them.
- Select the specific units to form the sample by matching the selected numbers to the corresponding numbers on the sampling frame. If an already-selected unit is again selected, ignore it and move on to the next.
- If by now the sample size has not yet been achieved, move on to the subsequent columns or rows, or start the procedure over again until the required number of units has been selected.

***Stratified random sampling strategy*** ensures that each important stratum (for example, a focus group in a population or habitat type within an ecological area) is given an equal chance of being equally represented in the sample. This process, therefore, involves developing several sampling frames (depending on the number of strata) and random sampling within each stratum as described above. The stratified random sampling strategy is appropriate, for example, in a situation where a researcher wishes to identify and establish a species list of the animals in

an ecological area. The researcher must consider all the habitat types, including those that fall within the highland and lowland regions, dry lands and wetlands, and so on—otherwise the research will not truly represent the entire area. Another example is in working to understand the economic situation of communities in a geographical area. The most important considerations may be the economic activities of the communities, the proximity of communities to roads and markets, and so on.

**Systematic sampling strategy** starts with the numbering of all the units in a population or area. These units are divided into segments or intervals determined by the percentage of the population or area to use as a sample. The unit in the first segment is selected by random sampling; this gives its position in that segment (first, second, third, etc.). Then that position is used to select the units of the subsequent segments. For example, if a community has 20 households and the researcher wants to select 20% as sample for a study, each segment will contain four units (because 20% of 20 is 4), and there will be a total of five segments. If the unit selected from the first segment occupied the third position, the third unit of each of the remaining segments is selected, which will yield a total of five units representing the five segments.

**Quota sampling strategy** consists of standing or sitting at a convenient point and asking people of specified visible characteristics (such as gender or race, well-dressed or poorly-dressed) to become members of the sample. This exercise is continued until the required number, or quota, is obtained.

**Snowball sampling strategy** is the selection of a sample using networks. One starts with a few individuals, groups or organisations and asks them for help in contacting other individuals, groups or organisations to obtain the required information. The exercise is continued until the required number is obtained or the required information has been collected.

**Purposive sampling strategy** consists of identifying the likelihood that any one unit within a population or an area can provide useful information, and then targeting those units that are most likely to provide the most, or the best, information. For example, to study the history of a community, it is logical to select the most elderly people in the community as subjects, rather than to involve all of the groups represented in the community. As well, to identify and establish a species list of the arboreal species in a

country, one will obviously choose to study only the forest areas, leaving out the grasslands and deserts.

### 3.4 Writing a research proposal

A research proposal is a document, a work plan, an outline or a statement of intent that describes the whole research project. It describes how, where, when and why the research will be conducted. More specifically, it outlines the study area, elaborates on the research problem, establishes the theoretical basis of the research, describes the research design (the sample and sampling strategy, and the methods that will be employed for data collection and analysis), and highlights the precautionary measures that will be taken to ensure that the research does not affect anyone negatively. In summary, a research proposal must necessarily include: (a) an **introduction** (describing the study area and stating the problem and its significance for study, as well as its main and specific objectives), (b) **literature review** (stating what other researchers have found or said about the field of study), and (c) **methodology** (describing how the research will be conducted).

A research proposal can be likened to house and site plans developed, for instance, by a town planner, or lesson notes prepared by a teacher. In the same way as the former guides a builder in the construction of a planned house and, the latter, a teacher in the teaching of a planned lesson, a research proposal serves as a guide throughout the research process. It should be written in such a way that any other researcher could use it to conduct the study in almost, if not exactly, the same way as the writer intended.

### 3.5 Developing instruments for data collection

The researcher must design a variety of questionnaires, interview guides, interview schedules, and observation forms for collecting raw data from the field (primary data), or a special form for extracting information from documents that already exist for other purposes (secondary data). The instruments are very useful because, without them, one will not be able to collect data.

### 3.6 Collecting the data

After developing the research proposal and constructing the data collection instruments, the next step is to actually go into the field—or the laboratory,

library or archive—and collect the necessary data. Data collection involves administering questionnaires, conducting interviews, carrying out observations, taking measurements, conducting censuses or inventories and/or extracting information from existing documents.

This research stage is important because data must be gathered in order to answer research questions or test hypotheses.

### **3.7 Processing the data**

Data processing or analysis is described simply as reducing the data to forms that make the most sense. The extent to which this can be done depends on whether the data are quantitative or qualitative. For example, quantitative data could be reduced to graphs, tables and charts. Qualitative data can be reduced to substantive statements (in text form) arranged in themes, as well as descriptive or narrative accounts. Quantitative data can be more easily reduced to simpler forms than qualitative data. For qualitative data to be subjected to the same degree of analysis, it, in some cases, may be converted to quantitative data through content analysis.

Data processing is important because, until this is done, one cannot make sense of the mass of data collected. In other words, it is only after having processed the data that one can attempt to interpret them.

### **3.8 Writing a research report**

Writing a research report is generally the last and, for many, one of the most difficult steps in the research process, the other being data analysis. Once the data have been analysed or reduced into outputs—descriptive or narrative accounts, thematic statements, tables, graphs and charts—it should be easy to use these to write up a report.

A research report is a document that presents, in a logical, academic style, where and when the research was conducted, theories and what other researchers have found or said about the field of study, the methods and procedures employed in collecting and analysing the data, the findings and their interpretations, and the conclusions drawn on the basis of the evidence, as well as recommendations for future research, where necessary. The report is the only concrete evidence to prove that the research has been conducted. It is very useful in that it documents the research results. It should be noted that, until the research report is completed, the research project cannot be considered completed.