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Research Methods in Education (RME):for Master 2 Students Didactics and Applied Languages

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The present work is a University handout which
is adapted to our Master2 EFL learners

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1. What is Research Definitions

Research as it was defined by Leedy and Ormond (2010) it is the systematic process of collecting and analyzing information to increase our understanding of the phenomenon under study. It is defined by Merriam-Webster collegiate dictionary, tenth edition as the ability to search or investigate exhaustively, studious inquiry or examination; especially investigation or experimentation aimed at the discovery and interpretation of facts, revision of accepted theories or laws in the light of new facts, or practical application of such new or revised theories or laws. Research was defined by the MBA knowledge base (2010) as an original contribution to the existing stock of knowledge making for its advancement. It is the pursuit of truth with the help of study, observation, comparison and experiment. Research is all about addressing an issue or asking and answering a question or solving a problem, so firstly identify an issue, Talk with people who want or need the study possibly find out what's already known about it. Next talk with experts and/or read their reviews and the original research that has been done on the topic. Plan, cost, and do the study accordingly. Write it up and submit it for assessment. A good research work is not complete until it is documented and submit for assessment or better still for publication

1.1. Objectives

The purpose of research is to discover answers to questions through the application of scientific procedures. The main aim of research is to find out the truth which is hidden and which has not been discovered as yet. Though each research study has its own specific purpose, we may think of research objectives as falling into a number of following broad groupings:

- ❖ To gain familiarity with a phenomenon or to achieve new insights into it (studies with this object in view are termed as *exploratory* or *formulative* research studies);
- ❖ To portray accurately the characteristics of a particular individual, situation or a group (studies with this object in view are known as *descriptive* research studies);

- ❖ To determine the frequency with which something occurs or with which it is associated with something else (studies with this object in view are known as *diagnostic* research studies);
- ❖ To test a hypothesis of a causal relationship between variables (such studies are known as *hypothesis-testing* research studies).

1.2. Significance

“All progress is born of inquiry. Doubt is often better than overconfidence, for it leads to inquiry, and inquiry leads to invention” is a famous Hudson Maxim in context of which the significance of research can well be understood. Increased amounts of research make progress possible. Research inculcates scientific and inductive thinking and it promotes the development of logical habits of thinking and organisation. The role of research in several fields of applied economics, whether related to business or to the economy as a whole, has greatly increased in modern times. The increasingly complex nature of business and government has focused attention on the use of research in solving operational problems. Research, as an aid to economic policy, has gained added importance, both for government and business.

Research provides the basis for nearly all government policies in our economic system. For instance, government’s budgets rest in part on an analysis of the needs and desires of the people and on the availability of revenues to meet these needs. The cost of needs has to be equated to probable revenues and this is a field where research is most needed. Through research we can devise alternative policies and can as well examine the consequences of each of these alternatives. 6 Research Methodology Decision-making may not be a part of research, but research certainly facilitates the decisions of the policy maker. Government has also to chalk out programmes for dealing with all facets of the country’s existence and most of these will be related directly or indirectly to economic conditions. The plight of cultivators, the problems of big and small business and industry, working conditions, trade union activities, the problems of distribution, even the size and nature of defence services are matters requiring research. Thus, research is considered necessary with regard to the allocation

of nation's resources. Another area in government, where research is necessary, is collecting information on the economic and social structure of the nation. Such information indicates what is happening in the economy and what changes are taking place. Collecting such statistical information is by no means a routine task, but it involves a variety of research problems. These days nearly all governments maintain large staffs of research technicians or experts to carry on this work.

Thus, in the context of government, research as a tool to economic policy has three distinct phases of operation, viz., (i) investigation of economic structure through continual compilation of facts; (ii) diagnosis of events that are taking place and the analysis of the forces underlying them; and (iii) the prognosis, i.e., the prediction of future developments. Research has its special significance in solving various operational and planning problems of business and industry. Operations research and market research, along with motivational research, are considered crucial and their results assist, in more than one way, in taking business decisions. Market research is the investigation of the structure and development of a market for the purpose of formulating efficient policies for purchasing, production and sales. Operations research refers to the application of mathematical, logical and analytical techniques to the solution of business problems of cost minimisation or of profit maximisation or what can be termed as optimisation problems. Motivational research of determining why people behave as they do is mainly concerned with market characteristics.

In other words, it is concerned with the determination of motivations underlying the consumer (market) behaviour. All these are of great help to people in business and industry who are responsible for taking business decisions. Research with regard to demand and market factors has great utility in business. Given knowledge of future demand, it is generally not difficult for a firm, or for an industry to adjust its supply schedule within the limits of its projected capacity. Market analysis has become an integral tool of business policy these days. Business budgeting, which ultimately results in a projected profit and loss account, is based mainly on sales estimates which in turn depends on business research. Once sales forecasting is done, efficient production and investment programmes can be set up around which are grouped the

purchasing and financing plans. Research, thus, replaces intuitive business decisions by more logical and scientific decisions. Research is equally important for social scientists in studying social relationships and in seeking answers to various social problems. It provides the intellectual satisfaction of knowing a few things just for the sake of knowledge and also has practical utility for the social scientist to know for the sake of being able to do something better or in a more efficient manner. Research in social sciences is concerned both with knowledge for its own sake and with knowledge for what it can contribute to practical concerns. “This double emphasis is perhaps especially appropriate in the case of social science.

On the one hand, its responsibility as a science is to develop a body of principles that make possible the understanding and prediction of the whole range of human interactions. On the other hand, because of its social orientation, it is increasingly being looked to for practical guidance in solving immediate problems of human relations.”⁶ Marie Jahoda, Morton Deutsch and Stuart W. Cook, *Research Methods in Social Relations*, p. 4. Research Methodology: In addition to what has been stated above, the significance of research can also be understood keeping in view the following points:

(a) To those students who are to write a master’s or Ph.D. thesis, research may mean a careerism or a way to attain a high position in the social structure;

(b) To professionals in research methodology, research may mean a source of livelihood;

(c) To philosophers and thinkers, research may mean the outlet for new ideas and insights;

(d) To literary men and women, research may mean the development of new styles and creative work;

(e) To analysts and intellectuals, research may mean the generalisations of new theories. Thus, research is the fountain of knowledge for the sake of knowledge and an important source of providing guidelines for solving different business, governmental

and social problems. It is a sort of formal training which enables one to understand the new developments in one's field in a better way.

What makes people to undertake research? This is a question of fundamental importance. The possible motives for doing research may be either one or more of the following:

- ❖ Desire to get a research degree along with its consequential benefits;
- ❖ Desire to face the challenge in solving the unsolved problems, i.e., concern over practical problems initiates research;
- ❖ Desire to get intellectual joy of doing some creative work;
- ❖ Desire to be of service to society;
- ❖ Desire to get respectability.

However, this is not an exhaustive list of factors motivating people to undertake research studies. Many more factors such as directives of government, employment conditions, curiosity about new things, desire to understand causal relationships, social thinking and awakening, and the like may as well motivate (or at times compel) people to perform research operations.

1.3. Types

Many researchers tend to categorise research broadly into two categories: Basic Research and Applied Research. In categorising research based on the methodology, it can be broadly categorised into two divisions, each of which are sub divided into smaller categories: Quantitative Research and Qualitative Research. In practice the two approaches involve similar processes (e.g., Formation of one or more hypothesis, review of related literature, collection and analysis of data).

Quantitative

Quantitative research is based on the measurement of quantity or amount. It is applicable to phenomena that can be expressed in terms of quantity. It often starts with a specific hypothesis to be tested. They isolate the variables that are to be tested, control for extraneous variables, use a standardised procedure to collect some form of

numerical data, and use statistical procedures to analyse and draw conclusions from the data. Quantitative researcher seeks explanations and predictions that will generalise to other persons and places, their intent is to establish, confirm, or validate relationships and to develop generalisations that contribute to existing theories. They represent mainstream approach to research, hence carefully structured guidelines exist for conducting them. Concepts, variables, hypothesis and methods of measurement tend to be defined before the study begins and remain the same throughout (Leedy & Ormond 2010). Because all research work relies heavily on logical reasoning, quantitative researchers rely heavily on deductive reasoning, beginning with certain premise e.g. hypothesis and theories and draw logical conclusions from them. Though, it is worth noting that they are not exclusively deductive.

2. In reporting the result, the quantitative researchers make use of statistics parameters like mean, mode, median to represent the outcome of their research.
3. Results are usually presented in a report that employs formal scientific style.
4. In general, because it is conducted in a scientifically controlled environment like laboratory, it sometimes does not really represent the real naturalistic condition of the participant, it is seen as being artificial. Hence the findings of such research could be flawed as not being generalised rather more specific to a particular environment. Because quantitative design is appropriate for some specific type of research, it is always advisable to be flexible in its usage, as combining both quantitative and qualitative methods helps us to answer so many research questions, rather than limiting ourselves to only one approach.

Qualitative

This is concerned with qualitative phenomenon, i.e., phenomena relating to or involving quality or kind. Qualities that cannot easily be reduced to numerical values. For instance, when we are interested in investigating the reasons for human behavior, we quite often talk of 'Motivation Research', an important type of qualitative research. This type of research aims at discovering the underlying motives and desires, using in depth interviews for the purpose. They seek a better understanding of complex situations. Attitude or opinion research, i.e., research designed to find out how people

feel or what they think about a particular subject or institution is also qualitative research. Qualitative research is specially important in the behavioral sciences where the aim is to discover the underlying motives of human behaviour. Through such research we can analyse the various factors which motivate people to behave in a particular manner or which make people like or dislike a particular thing. The qualitative research process is more holistic and emergent with specific focus, design, measurement instruments (e.g. Interviews). In data collection, the researchers operate under the assumptions that reality is not easily divided into discrete measurable variables. The data analysis is more subjective in nature and the researcher made a considerable use of inductive reasoning. It is important to note here too that qualitative research is not exclusively inductive. During reporting, qualitative researchers construct interpretive narratives from their data and try to capture the complexity of the phenomenon under study (Leedy and Ormond 2010). It may be stated, however, that to apply qualitative research in practice is relatively a difficult job and therefore, while doing such research, one should seek guidance from experimental psychologists.

Descriptive Research

This is the most commonly used research types. Descriptive research includes surveys and fact-finding enquiries of different kinds, equally referred to as Ex post facto. They are often used to discover causes even when the researcher cannot control the variables. As posited by the MBA team, they are used to obtain information concerning the current status of the phenomena to describe "what exists" with respect to variables or conditions in a situation. The methods involved range from the survey which describes the status quo, the correlation study which investigates the relationship between variables, to developmental studies which seek to determine changes over time. There are two basic types of descriptive research: longitudinal studies and cross-sectional studies. Longitudinal studies: This is time series analyses that make repeated measurements of the same individuals, thus allowing one to monitor behaviour such as brand-switching. However, longitudinal studies are not necessarily representative since many people may refuse to participate because of the commitment required. Cross-sectional

studies: This study makes use of a sample of the population to make measurements at a specific point in time. A special type of cross-sectional analysis is a cohort analysis, which tracks an aggregate of individuals who experience the same event within the same time interval over time. Cohort analyses are useful for long-term forecasting of product demand. The researcher has no control over the variables, he can only report what has happened or what is happening.

Analytical Research

As posited by Nic Haffner in his paper "The Fundamentals of Writing Argumentative and Analytical Research Papers". The researcher is expected to have thoroughly explored the topic being covered such a way that his/her opinion on the topic could be viewed as an expert knowledge. The researcher is expected to use facts or information already available, and analyze them to make a critical evaluation of the topic under discuss. The goal is to provide expert knowledge in a way that is broken down into the writer's own words. In this research the writer answers the research question objectively by coming into the project with no pre-conceived opinions about the subject. Once the writer becomes familiar with the topic they are able to piece together their findings that best represent the purpose of the paper. Put simply, an analytical research paper combines serious contemplation with critical evaluations of the question

Applied Research

This is often referred to as Action research. It refers to scientific study and research that seeks to solve practical problems. Applied research is used to find solutions to everyday problems facing a society or an industrial/business organisation, cure illness, and develop innovative technologies. Research aimed at certain conclusions facing a concrete social or business problem is an example of applied research. Research to identify social, economic or political trends that may affect a particular institution or copy research or the marketing research are examples of applied research. The central aim of applied research is to discover a solution for some pressing practical problems.

Fundamental Research

As defined in wikipedia; it is defined as the research carried out to increase understanding of fundamental principles. Many at times the end results have no direct or immediate commercial benefits. However, in the long term it is the basis for many commercial products and applied research. It advances fundamental knowledge about the human world, it challenges the status quo. Fundamental research is the source of most new scientific ideas, it can be exploratory, descriptive, or explanatory; however, explanatory research is the most common.

Basic research generates new ideas, principles and theories, which may not be immediately utilized; though are the foundations of modern progress and development in different fields. Today's computers could not exist without the pure research in mathematics conducted over a century ago, for which there was no known practical application at that time. Basic research rarely helps practitioners directly with their everyday concerns. Nevertheless, it stimulates new ways of thinking about deviance that have the potential to revolutionize and dramatically improve how practitioners deal with a problem. A new idea or fundamental knowledge is not generated only, basic research can build new knowledge. Nonetheless, basic research is essential for nourishing the expansion of knowledge. The aim of basic research is directed towards finding information that has a broad base of applications and thus, adds to the already existing organized body of scientific knowledge. Basic research is mainly carried out by universities.

Conceptual Research

This is related to some abstract idea(s) or theory. It is a type of intermediate theory that attempt to connect to all aspects of inquiry (e.g., problem definition, purpose, literature review, methodology, data collection and analysis). Conceptual frameworks can act like maps that give coherence to empirical inquiry. Because conceptual frameworks are potentially so close to empirical inquiry, they take different forms depending upon the research question or problem.

It is generally used by philosophers and thinkers to develop new concepts or to reinterpret existing ones.

Empirical Research

This is a research that relies on experience or observation alone, often without due regard for system and theory. It is data based research, coming up with conclusions which are capable of being verified by observation or experiment. It is also called experimental research, in such a research it is necessary to get at facts firsthand, at their source, and actively to go about doing certain things to stimulate the production of desired information. In such a research, the researcher must first provide himself with a working hypothesis or guess as to the probable results. He then works to get enough facts (data) to prove or disprove his hypothesis. He then sets up experimental designs which he thinks will manipulate the persons or the materials concerned so as to bring forth the desired information. Such research is thus characterised by the experimenter's control over the variables under study and his deliberate manipulation of one of them to study its effects. Empirical research is appropriate when proof is sought that certain variables affect other variables in some way. Evidence gathered through experiments or empirical studies is today considered to be the most powerful support possible for a given hypothesis.

Other Types of Research

All other types of research are variations of one or more of the above stated approaches, based on either the purpose of research, or the time required to accomplish research, on the environment in which research is done, or on the basis of some other similar factor. From the point of view of time, we can think of research either as one-time research or longitudinal research. In the former case the research is confined to a single time-period, whereas in the latter case the research is carried on over several time-periods. Research can be field-setting research or laboratory research or simulation research, depending upon the environment in which it is to be carried out. Research can as well be understood as clinical or diagnostic research. Such research follow case-study methods or in-depth

approaches to reach the basic causal relations. Such studies usually go deep into the causes of things or events that interest us, using very small samples and very deep probing data gathering devices. The research may be exploratory or it may be formalized. The objective of exploratory research is the development of hypotheses rather than their testing, whereas formalized research studies are those with substantial structure and with specific hypotheses to be tested. Historical research is that which utilizes historical sources like documents, remains, etc. to study events or ideas of the past, including the philosophy of persons and groups at any remote point of time. Research can also be classified as conclusion-oriented and decision oriented. While doing conclusion oriented research, a researcher is free to pick up a problem, redesign the enquiry as he proceeds and is prepared to conceptualize as he wishes. Decision-oriented research is always for the need of a decision maker and the researcher in this case is not free to embark upon research according to his own inclination. Operations research is an example of decision oriented research since it is a scientific method of providing executive departments with a quantitative basis for decisions regarding operations under their control.

Applied Research in Education

Examples of quantitative research in education can be found in topics related to standardized test scores, placement testing, and achievement gaps between inner city and suburban schools, for instance. Occupational, professional and trade associations may inform the research topics and objectives. The American Educational Research Association, for example, may fund research on effective teachers. To develop specific measures for future study, a qualitative researcher may observe student interactions, review lesson plans and interview teachers, principals and students throughout the year. By contrast, to identify one or more generalizable variables that characterize effective teachers, a quantitative researcher may analyze finite, standardized, numerical data.

2. Research methodology

2.1. Definitions

Buckley and Chiang define research methodology as “a strategy or architectural design by which the researcher maps out an approach to problem-finding or problem-solving.” According to Crotty, research methodology is a comprehensive strategy ‘that silhouettes our choice and use of specific methods relating them to the anticipated outcomes, but the choice of research methodology is based upon the type and features of the research problem. According to Johnson *et al.* mixed method research is “a class of research where the researcher mixes or combines quantitative and qualitative research techniques, methods, approaches, theories and or language into a single study. In order to have diverse opinions and views, qualitative findings need to be supplemented with quantitative results. Therefore, these research methodologies are considered to be complementary to each other rather than incompatible to each other. Qualitative research methodology is considered to be suitable when the researcher or the investigator either investigates new field of study or intends to ascertain and theorize prominent issues. There are many qualitative methods which are developed to have an in depth and extensive understanding of the issues by means of their textual interpretation and the most common types are interviewing and observation.

This is the most common format of data collection in qualitative research. According to Oakley, qualitative interview is a type of framework in which the practices and standards be not only recorded, but also achieved, challenged and as well as reinforced. As no research interview lacks structure most of the qualitative research interviews are either semi-structured, lightly structured or in-depth. Unstructured interviews are generally suggested in conducting long-term field work and allow respondents to let them express in their own ways and pace, with minimal hold on respondents’ responses.

Pioneers of ethnography developed the use of unstructured interviews with local key informants that is., by collecting the data through observation and record field notes as well as to involve themselves with study participants. To be precise,

unstructured interview resembles a conversation more than an interview and is always thought to be a “controlled conversation,” which is skewed towards the interests of the interviewer. Non-directive interviews, form of unstructured interviews are aimed to gather in-depth information and usually do not have pre-planned set of questions. Another type of the unstructured interview is the focused interview in which the interviewer is well aware of the respondent and in times of deviating away from the main issue the interviewer generally refocuses the respondent towards key subject. Another type of the unstructured interview is an informal, conversational interview, based on unplanned set of questions that are generated instantaneously during the interview.

In contrast, semi-structured interviews are those in-depth interviews where the respondents have to answer preset open-ended questions and thus are widely employed by different healthcare professionals in their research. Semi-structured, in-depth interviews are utilized extensively as interviewing format possibly with an individual or sometimes even with a group. These types of interviews are conducted once only, with an individual or with a group and generally cover the duration of 30 min to more than an hour. Semi-structured interviews are based on semi-structured interview guide, which is a schematic presentation of questions or topics and need to be explored by the interviewer. To achieve optimum use of interview time, interview guides serve the useful purpose of exploring many respondents more systematically and comprehensively as well as to keep the interview focused on the desired line of action.] The questions in the interview guide comprise of the core question and many associated questions related to the central question, which in turn, improve further through pilot testing of the interview guide.

In order to have the interview data captured more effectively, recording of the interviews is considered an appropriate choice but sometimes a matter of controversy among the researcher and the respondent. Hand written notes during the interview are relatively unreliable, and the researcher might miss some key points. The recording of the interview makes it easier for the researcher to focus on the interview content and

the verbal prompts and thus enables the transcriptionist to generate “verbatim transcript” of the interview. Similarly, in focus groups, invited groups of people are interviewed in a discussion setting in the presence of the session moderator and generally these discussions last for 90 min. Like every research technique having its own merits and demerits, group discussions have some intrinsic worth of expressing the opinions openly by the participants. On the contrary in these types of discussion settings, limited issues can be focused, and this may lead to the generation of fewer initiatives and suggestions about research topic.

Observation is a type of qualitative research method which not only included participant's observation, but also covered ethnography and research work in the field. In the observational research design, multiple study sites are involved. Observational data can be integrated as auxiliary or confirmatory research forts to examine, investigate as well as restructure the realities, theories and applications. Research methods reflect the approach to tackling the research problem. Depending upon the need, research method could be either an amalgam of both qualitative and quantitative or qualitative or quantitative independently. By adopting qualitative methodology, a prospective researcher is going to fine-tune the pre-conceived notions as well as extrapolate the thought process, analyzing and estimating the issues from an in-depth perspective. This could be carried out by one-to-one interviews or as issue-directed discussions. Observational methods are, sometimes, supplemental means for corroborating research findings.

2.2. Objectives

The main objective of research to obtain new finding and validate existing data about phenomena studied through systematic, scientific, controlled, careful and rigorous investigation. The type of research classified as pure research, applied research, descriptive research, analytical research, fundamental research, conceptual research, empirical research, longitudinal research, laboratory research, exploratory research, conclusion orie

nted research. To make judgment about causeeffect relationship, experimental design might use.

The research includes survey, fact finding, case study, correlation study, comparative study enquiries of different kinds. Main focuses of chapter to understanding of type of research and research design to prepare empirical analysis and also describes main variables operationalize and explains measure selection behavior. Research design is used to collect the relevant data and technique to facilitate the smooth scaling of the various research operations making yielding maximal information. Research design is also provides backbone structure to researcher for planning of answering the research question or testing from hypothesis. This type of research design includes descriptive design, exploratory design, experimental design, longitudinal design, crosssectional design, casual design, action research design, cohort research design and case study design.

Research: The research is related to systematic investigation on the basis of the methodology of research and knowledge on a particular topic or subject, the user group, the research problem it investigates etc. According to Creswell (2003) need to focus on three methods like quantitative, qualitative and mixed method approaches. There are five major objectives of social research, i.e,

- (1) Manipulation of Things, Concepts and Symbols,
- (2) Generalization,
- (3) Verification of Old Facts,
- (4) Extension of Knowledge, and
- (5) Knowledge May be Used for Theory Building or Practical Application.

1. Manipulation of Things, Concepts and Symbols:

While, dealing with things the scientist remains at the concrete level. He is able to purposefully handle things for experimentation. But at this level his results are at best limited to the particular thing in a specific situation and none else. Therefore the concepts symbolizing the things and their properties are also dealt with, so as to make much sense to conduct controlled inquiries through abstract notions. Use of concepts

or symbols in the process of manipulation not only reduces the content and load of the things but also provides the scientist with greater facility and effect.

2. Generalization:

The sole purpose with which manipulation of things, concepts or symbols is undertaken is to arrive at statements of generality. It implies that the findings of controlled investigation should be a conclusion which will enable us to expect that under certain class of conditions influencing a class of things, something will happen in a generalized manner, notwithstanding its degree.

In any case the absence of generality cannot characterize science. Therefore the propositions derived on the basis of observations and through manipulation of things, concepts or symbols may vary in their levels of generality, may maintain a high or low degree but should never reach the null point. Otherwise those will move beyond the framework of science. In this regard, Slesinger and Stepheson have given the example of a physician or automobile mechanic as playing the role of a researcher. Whereas the automobile mechanic endeavors to generalize about the automobiles, the physician attempts to make ailments for a given class of patients.

3. Verification of Old Facts:

A major purpose of social research is verification of conclusions which have already been accepted as established facts. Since there is no place for complacency in the arena of science, the established system of knowledge always warrants frequentative scrutiny so as to confirm whether or not the observations are in accordance with the predictions made on the basis of the established corpus of knowledge. In case it is confirmed, the empirical observation strengthens the established system of knowledge. Otherwise in the light of the research outcome, the system of established corpus of knowledge calls for revision or even rejection.

4. Extension of Knowledge:

As a sequel to generalization the seemingly inconsistencies in the existing corpus of knowledge are brought into light and attempts are made to reconcile these

inconsistencies. The new general proposition, established as an outcome of research also identifies gaps in the established system of knowledge. A gap in knowledge implies the inadequacy of the theory as well as the failure of a conceptual scheme to explain and account for certain aspects of a social phenomenon.

The gap is bridged up in the light of the new empirical observations. Thus knowledge gets expanded. The expansion of systematic knowledge occurs at least in a couple of ways. First in cognizing certain aspects of phenomena which were not examined in these terms prior to the advent of the new general proposition. Secondly in the light of new observation, the phenomena under investigation may be incorporated in a comparatively large class of phenomena, so as to be governed by a uniform law. As a result, the new system of knowledge not only accumulates more units under its conceptual scheme, but also appreciates greater depth of understanding and bettering of predictions.

5. Knowledge May be Used for Theory Building or Practical Application:

By seeking to explain the unexplained social phenomena, clarifying the doubtful one and correcting the misconceived facts relating to it, social research provides the scope to use the fruits of research in two possible ways:

- (a) Theory building
- (b) Practical application.

In its basic or pure form social research gathers knowledge for the sake of it, for building a theory in order to explain human behaviour in its totality, only for the satisfaction of knowing. For construction of theoretic models, the researcher organizes knowledge into propositions and then meaningfully articulated those propositions to constitute a more abstract conceptual system pertaining to a class of phenomena, influenced by a certain class of conditions. In its practical or applied form, social research gathers information regarding the betterment of quality of life in social settings. The findings of social research are used as the means to an end, not construed just as an end in itself. From its utilitarian point of view the results of social research

provide decision makers with proper guidelines for policy making, social welfare, amelioration of practical problems, mitigation or resolution of social conflict and tensions as well as rectification and removal of social evils.

2.3. Scope

The scope of a study explains the extent to which the research area will be explored in the work and specifies the parameters within the study will be operating.

Basically, this means that you will have to define what the study is going to cover and what it is focusing on. Similarly, you also have to define what the study is not going to cover. This will come under the limitations. Generally, the scope of a research paper is followed by its limitations.

As a researcher, you have to be careful when you define your scope or area of focus. Remember that if you broaden the scope too much, you might not be able to do justice to the work or it might take a very long time to complete. Consider the feasibility of your work before you write down the scope. Again, if the scope is too narrow, the findings might not be generalizable. Typically, the information that you need to include in the scope would cover the following:

1. General purpose of the study
2. The population or sample that you are studying
3. The duration of the study
4. The topics or theories that you will discuss
5. The geographical location covered in the study
6. To learn in depth how you can write an engaging Introduction section, check out this course designed exclusively for researchers.

3. Methodology vs methods

3.1. Definitions

It seems appropriate at this juncture to explain the difference between research methods and research methodology. Research methods may be understood as all those methods/techniques that are used for conduction of research. Research methods or techniques*, thus, refer to the methods the researchers *At times, a distinction is also made between research techniques and research methods. Research techniques refer to the behaviour and instruments we use in performing research operations such as making observations, recording data, techniques of processing data and the like. Research methods refer to the behaviour and instruments used in selecting and constructing research technique. For instance, the difference between methods and techniques of data collection can better be understood from the details given

Type Methods Techniques

1. Library (i) Analysis of historical Recording of notes, Content analysis, Tape and Film listening and Research records analysis. (
2. ii) Analysis of documents Statistical compilations and manipulations, reference and abstract guides, contents analysis.
3. 2. Field (i) Non-participant direct Observational behavioural scales, use of score cards, etc. Research observation
4. (ii) Participant observation Interactional recording, possible use of tape recorders, photo graphic techniques.
5. (iii) Mass observation Recording mass behaviour, interview using independent observers in public places.
6. (iv) Mail questionnaire Identification of social and economic background of respondents.
7. (v) Opinionnaire Use of attitude scales, projective techniques, use of sociometric scales.

8. (vi) Personal interview Interviewer uses a detailed schedule with open and closed questions.
9. (vii) Focused interview Interviewer focuses attention upon a given experience and its effects.
10. (viii) Group interview Small groups of respondents are interviewed simultaneously.
11. (ix) Telephone survey Used as a survey technique for information and for discerning opinion; may also be used as a follow up of questionnaire.
12. (x) Case study and life history Cross sectional collection of data for intensive analysis, longitudinal collection of data of intensive character.
13. 3. Laboratory Small group study of random Use of audio-visual recording devices, use of observers, etc. Research behaviour, play and role analysis

From what has been stated above, we can say that methods are more general. It is the methods that generate techniques. However, in practice, the two terms are taken as interchangeable and when we talk of research methods we do, by implication, include research techniques within their compass.

Research Methodology use in performing research operations. In other words, all those methods which are used by the researcher during the course of studying his research problem are termed as research methods. Since the object of research, particularly the applied research, it to arrive at a solution for a given problem, the available data and the unknown aspects of the problem have to be related to each other to make a solution possible. Keeping this in view, research methods can be put into the following three groups:

1. In the first group we include those methods which are concerned with the collection of data. These methods will be used where the data already available are not sufficient to arrive at the required solution;

2. The second group consists of those statistical techniques which are used for establishing relationships between the data and the unknowns;

3. The third group consists of those methods which are used to evaluate the accuracy of the results obtained. Research methods falling in the above stated last two groups are generally taken as the analytical tools of research.

Research methodology is a way to systematically solve the research problem. It 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.

Researchers not only need to know how to develop certain indices or tests, how to calculate the mean, the mode, the median or the standard deviation or chi-square, how to apply particular research techniques, but they also need to know which of these methods or techniques, are relevant and which are not, and what would they mean and indicate and why. Researchers also need to understand the assumptions underlying various techniques and they need to know the criteria by which they can decide that certain techniques and procedures will be applicable to certain problems and others will not. All this means that it is necessary for the researcher to design his methodology for his problem as the same may differ from problem to problem. For example, an architect, who designs a building, has to consciously evaluate the basis of his decisions, i.e., he has to evaluate why and on what basis he selects particular size, number and location of doors, windows and ventilators, uses particular materials and not others and the like. Similarly, in research the scientist has to expose the research decisions to evaluation before they are implemented.

He has to specify very clearly and precisely what decisions he selects and why he selects them so that they can be evaluated by others also. From what has been stated above, we can say that research methodology has many dimensions and research methods do constitute a part of the research methodology.

“*Methodology*” implies more than simply the methods you intend to use to collect data. It is often necessary to include a consideration of the concepts and theories which underlie the methods. For instance, if you intend to highlight a specific

feature of a sociological theory or test an algorithm for some aspect of information retrieval, or test the validity of a particular system, you have to show that you understand the underlying concepts of the methodology.

When you describe your methods it is necessary to state how you have addressed the research questions and/or hypotheses. The methods should be described in enough detail for the study to be replicated, or at least repeated in a similar way in another situation. Every stage should be explained and justified with clear reasons for the choice of your particular methods and materials.

Research methodology is a systematic way to solve a problem. It is a science of studying how research is to be carried out. Essentially, the procedures by which researchers go about their work of describing, explaining and predicting phenomena are called research methodology. It is also defined as the study of methods by which knowledge is gained. Its aim is to give the work plan of research.

Methodology is the systematic, theoretical analysis of the methods applied to a field of study. It comprises the theoretical analysis of the body of methods and principles associated with a branch of knowledge. Typically, it encompasses concepts such as paradigm, science and philosophy, theoretical model, phases and quantitative or qualitative techniques.

A paradigm /'pærədəɪm/ is a distinct set of concepts or thought patterns, including theories, research methods, postulates, and standards for what constitutes legitimate contributions to a field. A methodology does not set out to provide solutions - it is, therefore, not the same as a method. Instead, a methodology offers the theoretical underpinning for understanding which method, set of methods, or best practices can be applied to specific case, for example, to calculate a specific result. It has been defined also as follows: Merriam–Webster and Baskerville. (1991).

1. "the analysis of the principles of methods, rules, and postulates employed by a discipline"
2. "the systematic study of methods that are, can be, or have been applied within a discipline"

3. "The study or description of methods"

Research methods are the various procedures, schemes and algorithms used in research. All the methods used by a researcher during a research study are termed as research methods. They are essentially planned, scientific and value-neutral. They include theoretical procedures, experimental studies, numerical schemes, statistical approaches, etc. Research methods help us collect samples, data and find a solution to a problem. Particularly, scientific research methods call for explanations based on collected facts, measurements and observations and not on reasoning alone. They accept only those explanations which can be verified by experiments.

3.2. Objectives

Well-defined objectives of research are an essential component of successful research engagement. If you want to drive all aspects of your research methodology such as data collection, design, analysis and recommendation, you need to lay down the objectives of research methodology. In other words, the objectives of research should address the underlying purpose of investigation and analysis. It should outline the steps you'd take to achieve desirable outcomes. Research objectives help you stay focused and adjust your expectations as you progress.

The objectives of research should be closely related to the problem statement, giving way to specific and achievable goals. Here are the four types of research objectives for you to explore:

General Objective

Also known as secondary objectives, general objectives provide a detailed view of the aim of a study. In other words, you get a general overview of what you want to achieve by the end of your study. For example, if you want to study an organization's contribution to environmental sustainability, your general objective could be: a study of sustainable practices and the use of renewable energy by the organization.

Specific Objectives

Specific objectives define the primary aim of the study. Typically, general objectives provide the foundation for identifying specific objectives. In other words, when general objectives are broken down into smaller and logically connected objectives, they're known as specific objectives. They help define the who, what, why, when and how aspects of your project. Once you identify the main objective of research, it's easier to develop and pursue a plan of action. Let's take the example of 'a study of an organization's contribution to environmental sustainability' again. The specific objectives will look like this:

To Determine Through History How The Organization Has Changed Its Practices And Adopted New Solutions

To Assess How The New Practices, Technology And Strategies Will Contribute To The Overall Effectiveness

1. Educational research plays a crucial role in knowledge advancement across different fields of study.
2. It provides answers to practical educational challenges using scientific methods.
3. Findings from educational research; especially applied research, are instrumental in policy reformulation.
4. For the researcher and other parties involved in this research approach, educational research improves learning, knowledge, skills, and understanding.
5. Educational research improves teaching and learning methods by empowering you with data to help you teach and lead more strategically and effectively.
6. Educational research helps students apply their knowledge to practical situations.

2.3. Scope

The scope of research methodology is wider than that of research methods. Thus, when we talk of research methodology we not only talk of the research methods but also consider the logic behind the methods we use in the context of our research study

and explain why we are using a particular method or technique and why we are not using others so that research results are capable of being evaluated either by the researcher himself or by others. Why a research study has been undertaken, how the research problem has been defined, in what way and why the hypothesis has been formulated, what data have been collected and what particular method has been adopted, why particular technique of analysing data has been used and a host of similar other questions are usually answered when we talk of research methodology concerning a research problem or study

3.3. Types

Pure Research or Basic Research: The research carried out for new idea generation, new facts and fundamental principle for human knowledge. Based on experimentation and observation by following rigorous standards and methodologies to meet specific objective and ensure credibility of conclusions of research published into pre-reviewed journals. Pure research was studies on elements after Mendeleev's periodic table published and Penicillin discovery by Alexander Flaming was big step in discovery of antibiotic in medicinal science. Pure research is marvelous change setup of human mind and it generates knowledge and education.

Applied Research : Applied research main aim to discover solution, to provide knowledge and to applied social research data into decisions to solve problems associated with serious risks. With help of employing experimental research, accepted known theories, principles, case studies and interdisciplinary research one can solve certain problems. Characteristics: Solve problematic facts

- .• Without generalize objective studies individual or specific cases.
- Represent how things can be changed
- .• Tries to correct problematic facts.

Qualitative Research: Qualitative research refers to much more subjective non-quantitative, use different methods of collecting data, analyzing data, interpreting data for meanings, definitions, characteristics, symbols metaphors of things. Qualitative research further classified into following types:

Ethnography: This research mainly focus on culture of group of people which includes share attributes, language, practices, structure, value, norms and material things, evaluate human lifestyle.

Ethno: people, Grapho: to write, this discipline may include ethnic groups, ethno genesis, composition, resettlement and social welfare characteristics.

Phenomenology: It is very powerful strategy for demonstrating methodology to health professions education as well as best suited for exploring challenging problems in health professions educations.

Social Research Methodology

Case Study Research: It is used to generate deep understanding of complex issue in real life matter. It involve wide variety of principle in medicine for examine patient.

Quantitative Research: Quantitative research aim to measure numeric figures, quantity, amounts, used extensively in field of economics and commerce. Quantitative research refers as systematic empirical investigation of phenomena quantitative data and their relationship.

Descriptive Research: The research which is determines "the way things are". The descriptive research may include behavior observation research, you can observe a lot by watching and survey research.

Types of Descriptive Research:

- Observational Method•

Survey Method

- Case Study Method.

Observation Method: This is type of correlation research which adopt researcher observes ongoing behavior. There may be 3 types of approach for observational researches are covert observation, overt observation and research participation

.b. Survey Method: The brief interview or discussion with some person about relevant topic. It is used to take opinion, thought and feelings. In this predetermined set of question should give to the indulging of population interest towards.

c. Case Study Method: These studies are related to analysis of events, periods, persons, decisions, policies, and institutions studied by one or more methods. Study

is conducted on the basis of inquiry of subject instance of class of phenomena that provides an analytical frame.

Analytical Research: It is related with carrying analysis on certain phenomenon with the help of analytical tools. Analytical research used already available facts and information; analyze them to make critical evaluation.

Type of Analytical Research:

a. **Reviews:** The search involves meta-analysis of quantitative methods of review. It also relates with making formal assessment of various research with intention of making any useful change or conclusion if necessary.

b. **Historical Research:** It is a systematic collection and evaluation of data to explain, understand events, action and describe that occurred in past. Historical research source material may include documents, numerical records, oral statements and records. The main aim of historical research to find critical search for truth to conceptualize, histories and contextualize to explain there is no agreed definition of what time period constituted on temporary history has existed or can exist.

c. **Philosophical Research:** This research is related to the theoretical bases of branch of experience and knowledge which is fundamental in nature of reality, knowledge and existence.

d. **Research Synthesis:** To summarizing the facts related with particular question, two or more research studies are assessed.

Techniques of Survey Research are:

- Questionnaires
- Interviews
- Survey

e. **Grounded Theory:** Grounded theory out of many discoveries or construction theories and their data obtained systematically with the help of comparative analysis. The methodology after revision should be more flexible and widely adopted to assume reality of external world. This may include qualitative data, interviews, and review of records, surveys and observations. These research place priorities on study phenomenon over method of study, the researcher role are important in creating categories and interpreting data beside strategies as tools or prescriptions.

Fundamental Research: To acquire the new knowledge experimentation and theoretical work has to done primarily. It increases scientific knowledge of researcher and has no planned or immediate uses, their results may be useful in future. Benefits of Fundamental Research

- Economical gaining
- Benefits to society
- New knowledge acquisition

Conceptual Research: The research is conducted on the basis of already present information and observation on given topic. It can be used in developing theories or new interpretation by abstract concepts and ideas. While conducting a conceptual research, choose the topic, collect relevant literature, identify specific variables, generate the framework, this type of research is mainly relies on previously conducted studies, already existing relevant information and literature.

Empirical Research: This type of research based on collection of data which lead to generation of new ideas, observation and experiments or by using scientific instruments. The study conclusion is drawn from concretely empirical evidence and verifiable evidence. It is derived from Greek word Empeirikos which means "experienced".

Longitudinal Research: In this type of research, we conduct much observation of subject variables for long time (over a weeks, months and years), without interfere with subject. Collection of data at the onset of study and gather repeatedly over a period of time depends on length of study to observe how variable change in this duration. Main importance of longitudinal research is in studying development and lifespan issues. Types of Longitudinal Studies:

- a. **Retrospective Study:** This study may involve to looking at historic information for past records.
- b. **Cohort Analysis:** In this type of study group being selected based on historical, geographic, birth.
- c. **Panel Study:** Involves sampling a cross-section of individuals.

Laboratory Research : In laboratory research provide conditions with technological research, measurement and experiments are to be performed. Any chemical

substances, microscopically, parasitological, hematological, immunological, biochemical, tissue culture research can be carried out into laboratory. It involves study of natural science with experiments.

Exploratory Research: This research is conducted for not clearly defined problems. It helps to determine data collection method, research design and selection of subjects. It depends on reviewing of literature, information collection through informal discussion with consumer's competition. Way to implement exploratory research into research plan. We need to focus on groups mainly contain 8 to 12, ask them relevant question on subject and issue being searched.

Types of Research Research Design:

4. Research design is used to reduce the costs, bear a significant control on the consistency of the results accomplished, provides a solid base for the complete research.

Pure Research Applied Research Quantitative Research Ethnography Phenomenology
Case Study Grounded Theory Historical Research Qualitative Research Mixed
Research Descriptive Research Observational Method Survey Method Case Study
Method Analytical Research Review Historical Research Philosophical Research
Research Synthesis Fundamental Research Conceptual Research Empirical Research
Logitudnal Research Trend Study Cohort Analysis Panel Study Laboratory Research
Exploratory Research Conclusion Oriented Research

Social Research Methodology the help of preplanning, it is possible to minimum spending money, effort and to get maximum information. Research design is used to collect the relevant data and technique to facilitate the smooth scaling of the various research operations making yielding maximal information. Poor groundwork of research design displeases the entire project.

Types of Research Design

Types of Research Design: A researcher must have knowledge of various types of research designs to choose which type of research design should be applied for the research. There are different types of research designs which are explained below.

6.2.1 Descriptive Design: Descriptive design includes phenomena being researched and characteristics of population. To describe internal validity does not

require characteristics of population. It used for statistics of data, average and frequencies. Advantage:

- Amount of data gathered by this research and which can be used for future references
- It gives overviews of study which is helpful to determines variables used for study.
- Limitation of study can use for development or as a useful tools.
- Disadvantage:
 - To disapprove hypothesis, outcome of descriptive design cannot be used.
 - Study depends on measurement and instrumentation for observation

5. • Using observational method outcome can be collected.

6. Exploratory Design: Design used for research where no design study is done before. Later investigation can be understood to get knowledge through this design. The study used for explanation whether future study is possible or not and data can be used for further development for more research. Type of Research Design

Descriptive Design	Exploratory Design	Experimental Design	Longitudinal Design
Sectional Design	Causal Design	Action Research Design	Cohort Research Design
Case Study Design			

Type of Research and Type Research Design Advantage:

- Research priority can be determined through exploratory design.
- All answer like What, Why, how we can get through data collection
- Background data can be collected through exploratory design for particular topic.

Disadvantage:

- Whole population can be generalizing through data of exploratory research
- Unstructured style of research. This design is followed to realize following purposes:
 - Clarifying concepts and defining problem.
 - Formulating problem for more precise investigation
 - Increasing researcher's familiarity with problem.
 - Developing hypothesis.
 - Establishing priorities for further investigation.

Experimental Design: The causal relationship where particular cause leads to same effect, cause will proceed to effect so degree of association is major. The procedure is main which controls all factors of experiment. Experimental design uses more measurements and more groups for longer periods of time. Advantage:

- Placebo effects can be determined from treatment effects.
 - From single study high level of evidence can be collected.
 - It determines cause of something to take place. Disadvantage:
 - Because of technical or ethical reasons few types of procedures cannot be performed.
 - It might not fit into real time.
 - If procedure uses special equipment and facilities, experiments can be costly.
- Basic Principles of Experimental Design:

- Principle of replication
- Principle of randomization
- Principle of local control

Types of Experimental Design

- Pre-experimental
 - True experimental
 - Quasi experimental
- Pre-Experimental Design: After implementing factors of effect and causes various groups are kept under observation. The research is conducted to understand investigation necessary for particular group

Types of Pre-Experimental Research:

- Static-group comparison
 - One-shot case study research design
 - One group pretest posttest research design
- True Experimental Research Design: To prove or disprove hypothesis statistics analysis required. To build relationship between (cause effect) groups, a true design required. It needs random distribution, variable can be manipulated and control group is not changed.

Longitudinal Design: This research design makes multiple observation, repetitive study and experiments. This involved same group of people for study over period of time. The variables are identified and causes are found which made variables have caused change in their behavior. This also called panel research design. Advantage:

- Data can be collected from particular phenomenon.

- Various variable established causal relationship
- Pattern of change can be tracked.

Disadvantage:

- Method is changed over time, but researcher assumes that present trend may remain same for future also.

Cross-Sectional Design: The research design calculated among study participants at some time. Research variable data analyze from sample population which is collected from given point of time.

Type of Research and Type Research Design it has selection based on differences rather than selection, dependence based on existing variations; no time dimension so distinguishing features can be analyzed.

Advantage:

- Study used for large number of subjects.
- Grouping not selected, randomly based on population grouping is done.
- At a point in time provides characteristics of result.
- Results performed on population are more reliable
- Use large number of subject involves.

Disadvantage:

- Very difficult to find same interest phenomena or subjects.
- Outcome does not provide any historical occurrence because of time-bound procedures
- Different outcome from different time-frame.
- Cause and effect relationship cannot be determined from this research.

Action Research Design: In this exploratory and understanding of problem is developed to follow characteristic based path to made strategies of intervention. Various forms are collected to follow new intervention strategies until problem strategies established. This path is cyclic; provide initializing, hypothesizing and specifying problem to make interventions and assessments.

Advantage:

- Because of cooperative and adaptive nature it can be used in community or world situation.
- It mainly focuses on solution driven and practical besides than theories.
- It increases change of learning from experiences also viewed as cyclic.
- Outcome is related to practice.
- Researcher has nothing to hide and controlled information. Disadvantage:
- It is responsibility of researcher to enhance change so difficult to perform conventional studies.
- Test result may be bias one due to over- involvement of researcher.
- Documentation is really difficult because of no standard format.

It is cyclic in nature so action research is difficult to conduct.

Cohort Research Design: This study conducted on short population over a period of time. It is generally deal with statistics section of population which is relevant to investigational problem.

Open- cohort study involve rate-based data and closed-cohort involve all participant enter instudy at a specific point, no new participant allowed in later.

Advantage:

- Action research study is mandatory because involving random people in study is unethical also it is a risk-based study.
- To provide insights into overtime effect, study should be flexible.
- Primary source and secondary source data can be used.
 - Need to avoid debate related to cause and effects because, it can gauge probable cause before outcome.

Disadvantage:

- No involvement of randomization, so lower than other research which select random participant.
- Research has to wait for condition because it takes long time, so result credibility may change by variable.
- Factor between two cohort groups cannot be controlled.

Casual Design: They relates with understanding of phenomenon with statements "If A, then B".

According to assumptions and norms one can make certain changes in this kind of research. The explanation of test by hypothesis seeks by majority of scientists like dependent variable, independent variable, variation in one phenomenon, variation in other phenomenon. The following impact need to include in casual design: Non-Superiorness: The relationship independent of variation and between two variables is called third variable. Appropriate Time Order: Before dependant variable independent variable must be tackled. Empirical Associate: Finding relationship between dependant and independent variables. Advantage:

- Chances of replicate are more.
- Study has systematic subject selection and has internal validation.
- It helps the word better understanding by providing link between variables and eliminates possibilities.

4. Research Methods in Education

According to (Wellington, 2000) research means the act of investigating about a certain phenomenon using observation, experimentation and logical analysis to get sufficient information about the problematic issue in order to draw conclusions and try to provide suggestions for the improvement of the existing situation. Educational research has often been characterized by two different paradigms which are positivism and interpretivism. Positivism means a scientific approach. It stems from the idea that true knowledge is objective. The positivist researcher looks for quantitative data and generalization. Science and scientific studies are positivist as they are objective and separate facts from values. On the other hand, interpretivism relies on the exploration of perspectives to develop insights into specific situations. It is based on qualitative data and interviews; the case study is incorporated in the interpretive paradigm as it acknowledges the researcher's subjectivity and searches for personal knowledge.

The idea of the interpretive versus positivist view is closely linked to the existence of qualitative and quantitative research approaches. Qualitative research involves a variety of empirical materials such as observation, personal experience

and interviews. It is associated with interpretivism which perceives reality as a construct which people interpret in different ways. It is employed in the field of education mainly because the educational researcher needs to pursue research that is grounded on people's experience.

After setting the objectives of a research, the investigator has to be aware about the issue of how these objectives can be met and leads to consider the appropriate research design taking into account that our research design is supposed to provide us with a suitable framework for data collection, analysis and interpretation, shows which research methods are enough appropriate. Therefore, For the sake of gathering the necessary data for the present investigation, a variety of qualitative and quantitative data collection methods were set up to better cross-check data. The present research design is carefully governed by the notion of 'fitness for purpose'. its aim of determines its methodology and design.

The Research Approach

The present study opts as well as for a combination of quantitative and qualitative approaches regarded as a worthy method in improving understanding. In practice, both approaches are frequently considered to be suitable within a single investigation. It is up to the researcher to choose a specific approach which will allow him to obtain a somehow clear understanding of the topic. Before defining, giving the strengths, and justifying the use of the combination of both quantitative and qualitative approaches that seems much more appropriate to draw the reader's attention to each one of them in isolation.

Yet, it is of great value here to make a clear distinction between three main concepts used in both approaches: data, information, and knowledge. Data are the primary source or the ground to start with. They are characterized by being abstract, general, and with no context; whereas, information can be defined as being data in context. Now, if this information widens one's horizon and increases his/her understanding about living the world; it is then called knowledge.

Quantitative Approach

The quantitative research is more or less grounded in the positivist social sciences paradigm which primarily reflects the scientific method of the nature sciences (Creswell, 1994; Jennings, 2001). This approach is primarily based on a number of values, including: a belief in an objective reality; knowledge of which is gained from data that can be directly practised and established between independent observers. In addition to this, phenomena are areas under discussion to natural laws that humans realize in a logical manner through empirical testing. This can be undertaken through making use of two main approaches of reasoning, i.e., inductive and deductive hypotheses resulting from a scientific assumption.

Deductive reasoning or "*top-down*" approach is about moving from general to the more specific. Figure 3.2 may better illustrate the process of deductive approach.

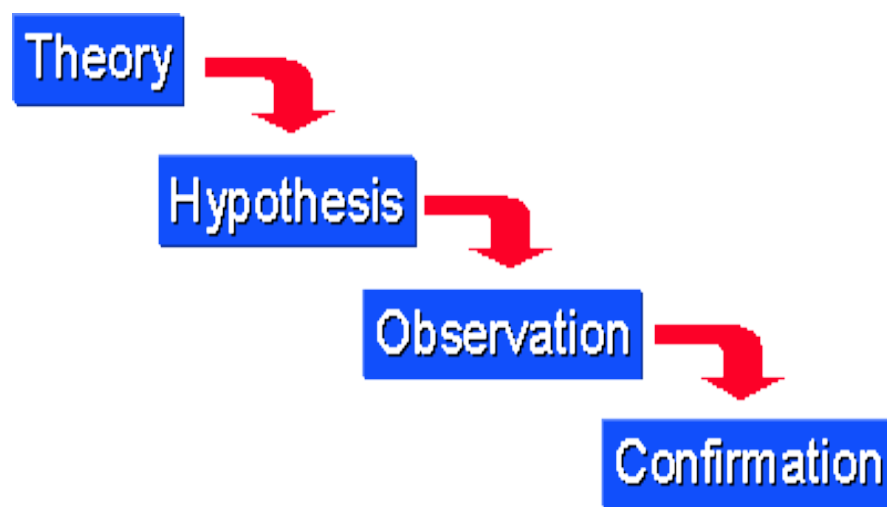


Figure 1: The Process of Deductive Approach Adopted from (Trochim and Donnelly: 2008)

On the other hand, inductive reasoning or as it is sometimes labeled “*bottom up*” approach is about moving from specific observations to broader generalizations and theories. Figure 3.3 highlights that process:

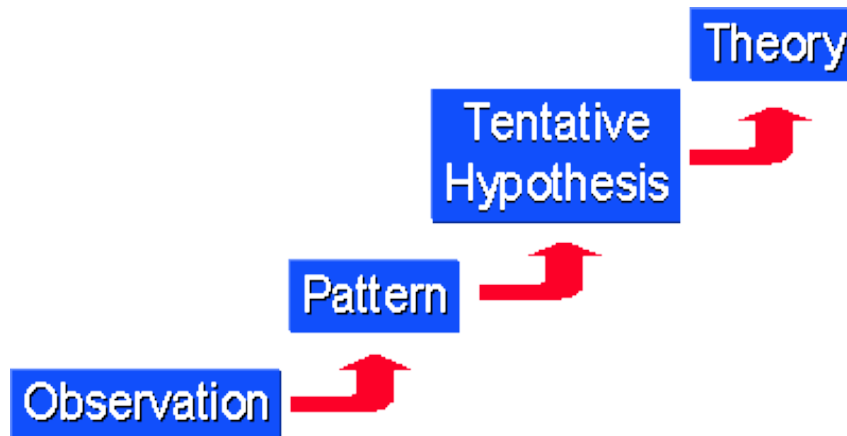


Figure 2: The Process of Inductive Approach Adopted From (Trochim and Donnelly ,2008)

Furthermore, researchers who assume a more deductive approach use theory to conduct the design of the study and the interpretation of the results. They are likely to abstract data from the participants into statistical representations rather than textual pictures of the phenomenon. This means that the entire research process is objectively constructed and the findings are usually representative of the population under investigation.

Its main strengths are *precision* and *control*. Control is achieved through sampling and design; whereas, precision is perceived in the reliable quantitative measurement. A further strength is experimentation which leads to statements about causation, since the systematic manipulation of one variable can be shown to have a direct causal outcome on another when other variables have been dropped out or controlled (Babbie, 1995; Blanch et al., 1999).

Moreover, hypotheses are tested through a deductive approach, and the use of quantitative data permits statistical analysis (Welman et al., 2001). Despite all the benefits quantitative approach comprises, one of the limitations reported by critics is that scientific quantitative approach denigrates human individuality and the ability to think (Walle, 1996). In the same line of thought, Gilbert (1993) argues that its mechanistic philosophy tends to reject several concepts related to freedom, choice, and moral responsibilities. This lead to the point that a scientific approach cannot, in fact, be absolutely objective, since subjectivity is involved in the choice of a problem as valuable of research and in the interpretation of the results. (Bensafa,2015)

Qualitative Approach

Qualitative research attempts to study the everyday life situation of different groups of people and communities in their natural setting; it very useful to study educational settings and processes. (Denzin and Lincoln, 2003) state that qualitative research includes an interpretive, naturalistic approach to its subject matter; it tries to make to interpret, phenomena in terms of the meaning people bring to them. In the same way, Domegan and Fleming (2007:24) argue that “*Qualitative research also aims to explore and to investigate issues about the problem on hand, because very little is known about the problem*”.

According to (Creswell, 2003) qualitative research includes set of elements namely: different knowledge claims, enquiry strategies, and data collection methods and analysis. Meanwhile, Qualitative data sources include participant observation, interviews, questionnaires, documents and texts, and the researcher's impressions and reactions (Myers, 2009).

Sprinthall et al., (1991: 101) claims: “*Data is derived from direct observation of behaviours, from interviews, from written opinions, or from public documents*”. Brysman and Burgess (1999: 45) assert: “*Some researchers prefer to use mixed methods approach they aim to have advantage of the differences between quantitative and qualitative methods, and combine these two methods for use in a single research*

project depending on the kind of study and its methodological foundation". The following table summarizes the common differences between the two approaches:

Table.1: Comparison Between Qualitative and Quantitative Methods Adopted from (Farrington and Nelson: 1997)

Qualitative Approaches	Quantitative Approaches
✓ Inductive approach to conducting Interviews.	✓ Deductive approach to taking physical counts
✓ Sampling approach related to relative value of data sources.	✓ Sampling approach related to a pre-determined statistical design
✓ Observation recorded in representational form (images, narratives, notes)	✓ Observations recorded as pre classified categories or numbers
✓ Open-form observation approach subject to contextual variables	✓ Closed-form observational approach to meet already-established methodological criteria
✓ Interpretation situation-driven, representing specific situations and difficult to generalize	✓ Interpretation procedure-driven, deriving objective facts and easy to generalize

The aim of combining both approaches is to improve an evaluation by ensuring that the limitations of one type of data are balanced by the strengths of another. This will also ensure that understanding is improved by integrating different ways of knowing. Most evaluations will collect both quantitative data (numbers) and qualitative data (text, images); however, it is important to plan in advance how these

will be combined. Coll and Chapman (2000:28) assert: “Some research questions will be readily answered using qualitative means, others quantitative, and some will be best addressed using a combination of the two. What is necessary, is the appropriate research designs”.

In the same vein, (Blaikie,1991; Smith et al., 1991; Creswell, 1994; Decrop,1999); Bowen,2003); Massey, 2003) emphasize the following benefits of combining qualitative and quantitative methods:

- ✓ While the quantitative design strives to control for bias so that facts can be understood in an objective way, the qualitative approach strives to understand the perspective of the programmed stakeholders, looking to first- hand experience to provide meaningful data (Easterby-smith et al, 1991).
- ✓ The accumulation of facts and causes of behavior are addressed by the quantitative methodology, whereas the qualitative methodology addresses concerns with the changing and dynamic nature of reality (Bowen, 2003).
- ✓ Quantitative data are collected under controlled conditions in order to rule out the possibilities that variables other than one under study may account for the relationships identified, while qualitative data is collected within the context of its natural occurrence (Massey, 2003).

Combining both approaches will help the researcher to seek reliable and valid results so that data can be representative of a true and full picture of the problematic situation. In addition, some research questions raised in this study will be readily answered using qualitative means, others quantitative, and some will be best addressed using a combination of the two. (Bensafa,2015)

Data collection seems to be as a compulsory step and quite crucial component to conducting our current case study-based research work. Hence, it is the process of gathering and measuring information on targeted variables in an established systematic fashion, its helps to answer relevant questions and evaluate outcomes. The data collection component of research is generally common to all fields of study. The main goal for data collection is to capture quality evidence that will be translated to rich data

analysis and allows the building of a persuasive and credible answer to questions that have been put.

Regardless of the field of study or preference for defining data (quantitative or qualitative), accurate data collection is essential to maintaining the integrity of research. Both the selection of appropriate data collection instruments (existing, modified, or newly developed) and clearly delineated instructions for their correct use reduce the likelihood of errors occurring. A formal data collection process is necessary as it ensures that data gathered are both defined and accurate and that subsequent decisions based on arguments embodied in the findings are valid. The process provides both a baseline from which to measure and in certain cases a target on what to improve. Thought, generally, case study conceived as complicated and hard task; O’Leary (2004:150) remarks: Collecting reliable data is a hard task, and it is worth remembering that one method is not inherently better than another. This is why whatever data collection method to be used would depend upon the research goals, advantages, as to the disadvantages of each method.

The principle collection categories include: participant observation, interviews and focus group (Elias et al., 2001). In this study, three techniques as the analysis of data will be used: a semi-structured interview, a questionnaire and classroom observation, a detailed description of these instruments is provided bellow. But before, the setting as well as the informants (sample population) involved in the study is given.

For the validity of data collected, the researcher opts for the use of the above sources or at least three of them for better cross-checking the gathered information. “*A combination of data source is likely to be necessary in most evaluations because often no one source can describe adequately such a diversity to features as is found in educational settings and because of the need for corroboration of findings by using data from these different sources, collected by different methods and by different people (i.e., triangulation)*”. Weir and Robert (1993:137).

Furthermore, the use of only one a single method may not provide satisfactory results; the investigator had recourse to the use of triangulation of data sources. This technique allows to cross-checking results and enables to have a better understanding and provide a clear picture of a particular phenomenon. In this respect, Cohen et al.,(2007:141) who advocate that: "...triangular techniques in the social sciences attempt to map out, or explain more fully, the richness and complexity of human behaviour by studying it from more than one standpoint and, in so doing, by making use of both quantitative and qualitative data". Triangulation as a key-parameter in this research work is expressed in Denzin's words (1978) Quoted in (Dörnyei 2007: 165)The term triangulation refers to the generation of multiple perspectives on a phenomenon by using a variety of data sources, investigators, theories, or research methods with the purpose of corroborating an overall interpretation.

This study has used a descriptive factor analysis on a belief questionnaire administered to language students. To support these hypotheses, a descriptive study was undertaken with EFL Second-year students at the University of Tlemcen. The sample comprised of 20 members. A triangulation of approaches was adopted in data collection instrumentation and analysis. The research tools opted for are: a questionnaire, semi-structured interview and classroom observation; using qualitative and quantitative analyses.

The use of multiple methods of collecting data is distinctive in case study research to confirm the accuracy of the data and to form substantial evidence. Both quantitative and qualitative data are of identical importance to the present research. Quantitative design has provided the researcher with numerical data that can be measured. Meanwhile, the qualitative method has helped the researcher to make a clearer picture about the contribution of literary texts in developing the overall EFL learners' language awareness.

Teachers' Semi- Structured Interview

The Semi-structured interview has been used as data collection instrument or technique. The researcher has a list of key themes, issues, and questions to be covered. In this type, the classification of questions can be changed depending on the direction of the interview. A guide (rubrics) is also used, but additional questions can be asked. (Kajornboon, 2004). Furthermore, it is a method of research used in the social sciences. While a structured interview has a rigorous set of questions which does not allow one to divert, a semi-structured interview is open, allowing new ideas to be brought up during the interview as a result of what the interviewee says. It is The interviewer in a semi-structured interview generally has a framework of themes to be explored.

General Objectives

This instrument is rooted in the history of data collection instruments. Cohen *et al.*, (2000:267) highlighted the importance of the interview:

Interviews enable participants be they interviewers or interviewees to discuss their interpretations of the world in which they live, and to express how they regard situations from their own point of view. In these senses the interview is not simply concerned with collecting data about life: it is part of life itself, its human embeddedness is inescapable.

Corbetta (2003:270) adds “*The order in which the various topics are dealt with and the wording of the questions are left to the interviewer’s direction*”. The strengths of this type of interview are the additional questions that can be asked and the ones that have not been anticipated in the beginning of the interview. Note taking or tape recording can help the researcher to report the interview. This gives him more opportunities to check out the views and opinions of the interviewees. In this vein, David and Sutton (2004:87) argue: “*Having key themes and sub- questions in advance*

lies in giving the researcher a sense of order from which to draw questions from unplanned encounters”.

Besides, Cohen (2006) raised the point that many researchers tend to use semi-structured interviews because questions can be prepared ahead of time. This means that interviewer is allowed to be prepared and appear competent during the interview. Additionally, the instrument gives informants the freedom to express their views in their own terms. Furthermore, semi-structure interviews can provide reliable, comparable qualitative data and encourages two-way communication.

Those being interviewed can ask questions of the interviewer. In this way it can also function as an extension tool confirms what is already known but also provides the opportunity for learning. Often the information obtained from semi-structured interviews will provide not just answers, but the reasons for the answers. Also, when individuals are interviewed they may more easily discuss sensitive issues help field staff become acquainted with community members. Outsiders may be better at interviewing because they are perceived as more objective, i.e., using both individual and group interviews can optimise the strengths of both.

Therefore, the objectives of using a semi-structured interview in the present research is to answer the research questions raised in this investigation, and test the hypotheses derived from them. In addition, it will serve to detect the similarities and differences among those master students in how they respond to technical writing, the difficulties encountered when using this type of lecturing, and to highlight the students' impressions, expectations, and recommendations.

Harrell and Bradley (2009:16) summarize the strengths of this instrument as follows:

- ✓ Positive rapport between interviewer and interviewee. Very simple, efficient and practical way of obtaining data about things that can't be easily observed (feelings and emotions, for example).
- ✓ High Validity. People are able to talk about something in detail and depth. The meanings behind an action may be revealed as the interviewee is able to Speak for themselves with little direction from interviewer.
- ✓ Complex questions and issues can be discussed / clarified. The interviewer can probe areas suggested by the respondent's answers, picking-up information that had either not occurred to the interviewer or of which the interviewer had no prior knowledge.
- ✓ Pre-Judgment: Problem of researcher predetermining what will or will not be discussed in the interview is resolved with few "pre-set questions" involved, the interviewer is not "pre judging" what is and is not important information.
- ✓ Easy to record interview (video / audio tapes).

Procedures

As far as the semi-structured interview procedure is concerned, the researcher arranged a meeting with each teacher. The meeting was held in the department English language and lasted about 20 minutes. In the beginning the researcher explained the rationale behind this semi structured interview, i.e., determining the difficulties as well as the lacuna encountered second-year student students when dealing with literary texts.

Some introductory remarks were developed aiming fundamentally at putting the teachers in the vein of the study. Those remarks were for example: *“you are not obliged to answer all the questions, in case a question is not clearly understood, it can be paraphrased, you can skip some questions till the end ...etc”*. The questions included in this semi structured interview were grouped under three rubrics: (a) Teachers' profile, (b) Issues, tensions, and challenges associated with writing, and (c) Methodologies and techniques to assist students overcome their difficulties in writing scientific papers.

In this sense, very general questions were asked first, primarily related to their field of specialism (language teacher or subject specialist), the degree they hold, and the professional experience. Then, more specific questions about the real issue of the investigation were asked. Believing that the more the researcher succeeds in recording all the possible details about the answers, the more data will have to be analysed, both audio and video recordings equipments were used. After that, all teachers were thanked for their insightful comments, impressions, and further suggestions as requested. This was processed intentionally to obtain more varied data and recommendations.

There are three types of interviews: structured, semi structured and unstructured. The first type involves an organization in content and procedure i.e. a schedule is set to determine the sequence and wording of the questions (Cohen et Al, 2007). The second type of interviews allows new questions to be brought up during the interview as a result of what the interviewee says. The last type of interviews do not follow a system of pre-determined questions, this kind of interviews depend on the respondents' collaboration since the interviewer has just to explain the nature of the issues discussed. Hitchcock and Hughes (1995: 153) relate the different types of interviews to a number of elements summarized in the following way:

- ✓ The nature of the questions to be asked;
- ✓ the degree of control over the interview exercised by the interviewer;
- ✓ the numbers of people involved;
- ✓ The overall position of the interview in the research design itself.

The researcher categorized different types of interviews while conducting research work. The choice of one specific kind is determined by some elements such as: the levels of formality, the flexibility and the role of the interviewer this would help her select the appropriate type of interview at each stage of the study. The following table summarizes each type with its number of limitations and strengths. (Bensafa,2015)

Table.2: An Overview of the Main Advantages and Drawbacks of the Types of Interviews adopted from (Dörnyei,2003)

Types	Avantages	Drawbacks
Structured	<ul style="list-style-type: none"> ➤ Misunderstanding can be, instantly, resolved during the interview. (Wallace,1998) ➤ For Cargan (2007: 108) structured interviews is useful because it is ➤ Easy to administer ➤ Simple to analyze ➤ Inexpensive 	<p>For Wallace (1998: 146)</p> <ul style="list-style-type: none"> ➤ It takes much longer to implement questionnaire orally than in writing ➤ Less possibility of anonymity (unless the interviewer and interviewee are complete strangers) <p>For Cargan (2007: 108)</p> <ul style="list-style-type: none"> ➤ Simplicity leads to many disadvantages ➤ Fixed alternative answers may force respondents to indicate opinions that they really do not hold, discrepancies in interpretation may not readily evident with fixed replies and no information will be available as to the reasons for the answers given.

Type	Avantages	Drawbacks
Semi-Structured	<p>For Nunan (1992) and Wallace(1998)</p> <ul style="list-style-type: none"> ➤ A great amount of flexibility is given to the interviewer ➤ A certain power and control is given to the interviewee ➤ It provides more privileged access to more in-depth information 	<p>For Mitchell and Jolley (2013)</p> <ul style="list-style-type: none"> ➤ It is Time consuming which can be mainly related to freedom and flexibility, the two most important characteristics of the semi-structured interview; ➤ The follow-up questions may cause problems for the researcher while analyzing and interpreting data as those questions may not be the same for all

Type	Avantages	Drawbacks
Unstructured	<p>For Dorney (2007)</p> <ul style="list-style-type: none"> ➤ A maximum flexibility ➤ may motivate respondents to provide more in-depth and detailed information than under any other formal circumstance. 	<p>For Norton (2009)</p> <ul style="list-style-type: none"> ➤ Novices in the area of research may not succeed in this type of research as they lack experience. ➤ It takes a very long time and may involve a lot of content. Much freedom may have a negative impact as the interviewee may provide details which are not useful and make data analysis more difficult for the researcher.

The Questionnaire

It is believed that questionnaires can yield not only one type of data about the respondent. In this respect, (Dörnyei, 2002), identified three types namely: *factual, behavioral, and attitudinal*.

1. *Factual questions* also called '*classification questions*' or '*subject descriptors*' are used to give information about who the respondents are. They typically cover demographic characteristics (e. g., age, gender, and race), residential location, marital and socioeconomic status, level of education, religion, occupation, as well as any other background information that may be relevant to interpreting the findings of the survey.

2. *Behavioral questions* are used to show what the respondents are doing or have done in the past. They generally ask about people's actions, life-styles, habits, and personal history. Perhaps the most well-known questions of this type in L2 studies are the items in language learning strategy inventories that ask about the frequency one has used a particular strategy in the past.

3. *Attitudinal questions* aim to find out what people think. This category concerns *attitudes, opinions, beliefs, interests, and values*. These five interrelated terms are not always distinguished or defined very clearly in the literature.

In other to have factual behavioral and attitudinal data about a small or large scale of participants under examination, Brown, J. (2001:6) defines them as: "... *any written instruments that present respondents with a series of questions or statements to which they are to react either by writing out their answers or selecting from among existing answers*". There is a general agreement among research methodologists (Nunan,1992;Wallace, 1998; Cohen et al.,2000, 2007;Richards, 2001; Dörnyei,2003,

2007; Norton, 2009) that this research tool is acknowledged tools for the following reasons:

- ✓ It is considered as a highly systematic and structured research tool;
- ✓ It saves time, efforts and financial resources;
- ✓ Answers are typically characterized by their honesty as they are completed in an anonymous way;
- ✓ Subjects have more time to think about their answers;
- ✓ It is administered to a large scale as well as small number of participants;
- ✓ It may be administered by another person on the behalf of the researcher;
- ✓ It is seen as a useful way to gather quantitative information “... *that is relatively easy to tabulate and analyse*” Richards,(2001:60)

However, literature related to this research tool has also reported a number of drawbacks such as the lack of flexibility, the ambiguity of questions and, the subjects are not able to ask for clarification. Moreover, they may not be motivated to complete all the questions. The students' questionnaire aims to:

- Identify and determine the learners' views;
- Check the students' interest;
- Evaluate the literature teaching situation from the learners' point of view.

This part focuses on the questionnaire and how it has been conceived in identifying the problems generated when writing a scientific paper. To do so, a brief overview of the questionnaire and the types of study questions for which it is most suited are highlighted. It is worth mentioning that the greater deal of this part is devoted to a discussion of the steps involved in using the instrument in this study or what is called questionnaire design as well.

The questionnaire is viewed as list of a research or survey questions asked to respondents, and designed to extract specific information. It serves four basic purposes: to (1) collect the appropriate data, (2) make data comparable and amenable

to analysis, (3) minimize bias in formulating and asking question, and (4) to make questions engaging and varied.

Moreover, a common understanding amongst scholars is that the questionnaire is an instrument used to collecting and recording information about a particular issue including a list of questions. For the fulfilment of this purpose, the questionnaire can be completed in one of the following two basic ways: (a) with the absence of researcher i.e. the respondents are given the questionnaire to answer with no reference or help of the researcher. (b) with the presence of the researcher. This last is referred to as an interview (structure, semi-structure, or unstructured). This does not deny that the questionnaire cannot be answered with the presence of the researcher.

Strengths and Weaknesses of the Questionnaire

According to (Dörney, 2002) the main desirability of questionnaires is their exceptional efficiency in terms of: researcher time, researcher effort, and financial resources. when administering a questionnaire to a group of people, one can collect a huge amount of information in less time, and the personal investment required will be a fraction of what would have been needed for, say, interviewing the same number of people. When the questionnaire is well constructed, processing the data can also be fast and relatively straight forward, especially by using some modern computer software. These beneficial considerations are very important, chiefly for those who are doing research in addition to having a full-time job (Gillham, 2000).

This means that they are very *versatile*, the fact that they can be used successfully with a variety of people in a variety of situations targeting a variety of topics. Consequently, the vast majority of research in the behavioral and social sciences involve at collecting some sort of questionnaire data.

The following Strengths motivated the researcher to use this instrument as a data collection method (Kemper, 2003)

- ✓ Good for measuring attitudes and eliciting other content from research participants inexpensive (especially mail questionnaires and group-administered questionnaires) ;
- ✓ Can administer to probability samples;
- ✓ Quick turnaround ;
- ✓ Can be administered to groups ;
- ✓ Perceived anonymity by respondents possibly high ;
- ✓ Moderately high measurement validity for well-constructed and well-tested questionnaires;
- ✓ Low drop rate for closed-ended questionnaires ;
- ✓ Ease of data analysis for closed-ended items .

Furthermore, the main advantages of the questionnaire is that it is relatively easy to analyse and familiar to library staff and managers. Yet, it allows the researcher to get in touch with a large sample of the given population and can be contacted at relatively low cost as it is simple to administer. Additionally, the format of the questionnaire is likely to be familiar to most respondents; which in return make it simple and quick for them to complete it as they will have time to think about their answers and are not usually required to reply immediately

Although the previous description of the merits of questionnaires might suggest that they are highly recommended instruments, the Questionnaires may have some serious limitations, and some of these have led certain researchers to claim that questionnaire data are not reliable or valid. It is with no doubt that it is very easy to produce unreliable and invalid data by means of ill-constructed questionnaires. Gillham (2000:1) points out, in research methodology “*no single method has been so much abused*”

Types of Questionnaire

It is believed that the importance of questionnaires in collecting survey data from a large audience, but are not sure about the placement of different types of questions within the questionnaire. There are different types of questionnaires possible that pollsters can send to their audience, and the format of questionnaire depends entirely on what information is to be extracted from respondents. Two types of questionnaire can be listed here: open-ended and closed-ended. This categorization is of course-based on the nature of the questions included.

Table. 3. Types of questionnaire

Types of Questionnaire	Definition
<i>Open Ended Questionnaire</i>	<p>This format make the participants feel free when expressing their opinions about the topic or the issue they are asked about. In addition to this, the questions used have no predetermined set of answers. This means that the respondent is free to answer whatever he/she feels right. If so, the researcher can obtain true, insightful and even unexpected suggestions. In other words, reliable and visible data can be ensured.</p> <p><i>"The desire to use open-ended questions appears to be almost universal in novice researchers, but is usually rapidly extinguished with experience. " Robson (1993:243) cited in Dörney (2002:15)</i></p>

Types of Questionnaire	Definition
<i>Closed Ended Questionnaire</i>	<p>In this type, multiple choice questions are used. In other word, the participants are exposed to predetermined number of answers for each question. However, that number is not limited i.e. there is no rule of how many answers should be provided. One of the main advantages of including this type in case studies is the opportunity to perform preliminary analysis as the research will have a bird-eye view about what will be provided as answers.</p> <p>In this study, i.e., determining the difficulties encountered by second-year-students while dealing with literary texts , both types are used to ensure more validity and reliability of the results and thus, enhancing the quality as to the sustainability of teaching Literature in an EFLsituation</p>

Questionnaire Design

A careful consideration has been given to the design of the research questionnaire. This was to ensure greater validity and reliability of the information obtained. However, it was not an easy task since efforts were needed in developing the

different stages of the design. Aiken (1997: 58) points out "*Questionnaires can be designed to minimize, but not eliminate, dishonest, and careless reporting.*" cited in Dörney (2002:16) the following figure illustrates more.

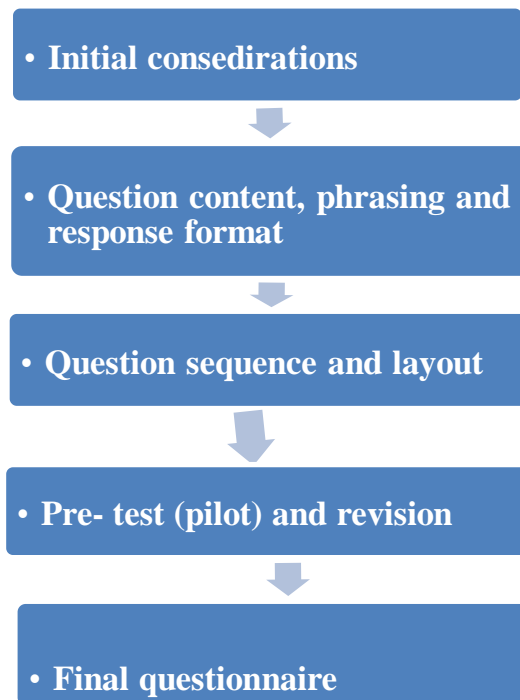


Figure.1. Questionnaire Design adopted from (Dörney ,2002)

This part is about explaining the process of questionnaire design with reference to the main objective of this study. In the first phase, *initial considerations*, was important for the researcher to have a clearer idea about which pieces of information he was in need to collect. Thus, knowing exactly which population is targeted. In addition to this, it is useful to consider how the findings will be analysed. All this, may have an impact on the design of the questionnaire. When it comes to the second phase, i.e., *question content, phrasing and response format*, it was significant as it related the core of the process, i.e., the questions themselves. Here the researcher ensured that the questions: First, will add value because if a question is just ‘nice to know’ and does not add value, it is of great deal to leave it out; second, are apparent and easy to understand; and third, answer what he is asking and do not cause confusion.

Speaking about the third phase, i.e., *question sequence and layout*, it was about how logic could be built. This means that the researcher should number, order and group the questions. This can be handled by: (a) using what is called rubrics, (b) placing simple questions at the beginning, (c) routing some questions

Concerning the fourth phase, i.e., *piloting the questionnaire*; one can say that methodologically and academically speaking, it was fruitful to conduct a pilot study or pre-test with a small sample of respondents before addressing it (the questionnaire) to the target population. This helped the researcher in (a) checking whether the questions are understandable as well as easy to answer, (b) highlighting the areas of confusion and any routing errors, (c) providing an estimate of the average time needed to complete the questionnaire.

The Questionnaire layout

Referring to the procedures of administrating the questionnaire; the researcher arranged a meeting with 20 students and gave them the questionnaire to fulfill. Yet, not all students answered the questions with the presence of the researcher as they asked to take it with them and give it back later on.

The questionnaire administered to the students tried to provide data concerning their way of learning literature. A multiple choice questions were used so as to limit the students' responses to die provided alternatives from which they had to tick an appropriate answer that corresponded to the case they were encountered with.

The purpose behind this questionnaire was to gather more data about. It contains generally two types of questions namely: open-ended questions and closed-ended questions i.e., fixed response questions. The questionnaires are believed that then would supply a set of questions that allows the participant to answer the question in their own words. In this sense, Open- ended questions enable respondents to manage what they want to say and how they wish to say it. This may result in as many variations of answers as there are respondents

a. With closed-ended questions, the researcher has some control of both the type and quality of response. These types of questions suggest a range of responses from which the respondent may choose. In general, closed questions are quick to complete and straight forward to code and do not discriminate unduly on the basis of how articulate the respondents are (Wilson & McLean 1994, as cited in Cohen *et al* (2000).

3) Which skill do you think is the most difficult?

- a) Reading
- b) Speaking
- c) Writing
- d) Listening

E.g., do reading literary texts contribute to the development of your reading skill?

Yes

No

If yes, according to you how?

Piloting the Questionnaire

After designing the questionnaire, the researcher has to pilot the study that should be conducted for the sake of relevance, refine its content, wording length...etc i.e. identify problems in wording and inappropriate items, and to cure any possible misunderstandings and ambiguities in the questions before they are used. Schreiber (quoted in Given 2008:624) defines pilot study as follow “:... Is a small-scale implementation of a larger study or of part of a larger study. Pilot studies last for shorter amounts of time and usually involve a smaller number of Participants, sites, or organizations”. This idea has been also stated by Sudman and Bradburn (1983:283) “if you do not have the resources to pilot- test your questionnaire, don’t do the study”.

The questionnaires, generally, depend on the actual wording of the items (minor differences can influence the response pattern) a vital part of questionnaire

construction is '*field testing*' that is "*piloting*" the questionnaire at different stages of its development on the target sample the instrument as been designed for. These trial runs allow the researcher to collect feedback about how the instrument works and whether it performs the research it has been designed for. This information leads to make alterations and perfect the final version of the questionnaire. According to Dorney (2002:16) Pilot test highlights the following problems:

- ✓ whose wording may be unclear;
- ✓ which are difficult for the respondent to answer to;
- ✓ which may be omitted because they may contrast the initial expectations or they may not provide any exceptional information or because they may measure something irrelevant;
- ✓ which may introduce a problem to code into a small set of meaningful categories when dealing with open-ended questions ;

Piloting also denotes a set of problems or potential pitfalls concerning:

- ✓ the questionnaire' administration ;
- ✓ the dealing out with the answers;

Valuable feedback can also be gained about:

- ✓ The final version of the questionnaire;
- ✓ The clarity of the instructions;
- ✓ The necessary length of time to complete the instrument.

The importance of the piloting is in sharp contrast with the reality that so many researchers completely omit the pilot stage from their research design. Regardless of how experienced the questionnaire designer is, any attempt to shortcut the piloting stage will seriously put at risk the psychometric quality of the questionnaire (Moser & Kalton, 1971). This idea is also reinforced by

Oppenheim (1992:47) Cited in Dorney (2002:65)

Questionnaires do not emerge fully-fledged; they have to be created or adapted, fashioned and developed to maturity after many abortive

test flights. In fact, every aspect of a survey has to be tried out beforehand to make sure that it works as intended.

Similarly, the aim of a pilot is to increase the reliability, validity and practicability of the research instruments. Weir and Roberts (1994:138) state: “*the value of piloting instruments before actually employing them in final data collection is paramount*” then they add that the purpose from piloting the instruments is to “*identify ambiguities, other problems in wording, and inappropriate items, and provide sample data to clarify any problems in the proposed methods of analysis prior to the collection of data in the study proper*” Weir and Roberts (1994:139). Respectively, Oppenheim (1992:47) adds *Questionnaires have to be composed and tried out, improved and tried out again, often several times over, until we are certain that they can do the job for which they are needed*”.

Consequently, some samples have been administered to a number of language teachers aiming at checking out the shortcomings of the questions and minimize the risks of bias. Based on these comments some modifications have been accrued. Furthermore, some items in the questionnaire were omitted since they do not provide useable data. Meanwhile, some others were added to ensure gaining the necessary information in the present work. Later on, the questionnaire was put under two distinct rubrics (see appendixB’) to facilitate the task for the informants while answering the questions. As it has been described above, the reason behind a pilot study is to reduce the risk of bias besides, the detection of some problems and difficulties of feasibility that the researcher has identified, and this is mainly due to the following reasons:

- ✓ The structure of the questionnaire;
- ✓ Repetition and useless of a number of questions.

Finally, Piloting the research instruments is of a paramount importance, the investigator has attempted to pilot the interview questions in order to avoid ambiguity and misunderstanding of a number of questions.

Classroom Observation

Observation is a research tool used to examine persons in natural settings. Therefore, the use of observation helps the researcher to get a deep understanding of the studied phenomenon. Cohen et al., (2007: 396) argue that “*Because observed incidents are less predictable there is certain freshness to this form of data collection that is often denied in other forms, e.g., a questionnaire or a test*”

In participant-as-observer type of research, on the other hand" observers become participants during the treatment of the group by revealing their identities and the goal of their research. In this type of observation method, researchers are able to '*discern ongoing behaviour as it occurs and are able to make appropriate notes about its salient features.*' Cohen *et al* (1994:110). As opposed to participant-as-observer, in *complete participant* type of research, observers become participating members of the group of interest without revealing their identities or research goals to the group. However, this type of research poses several methodological problems:

- since researchers may become so self-conscious about revealing their true selves that they may easily lose the research perspective;
- it is difficult for the researcher to decide what to observe because he/she cannot evoke responses or behaviour and must be careful not to ask questions that might raise the suspicions of the persons observed;
- Recording observations or taking notes is impossible on the spot; these have to be postponed until the observer is alone. Nevertheless, time lags in recording the observations may cause selective bias and distortions through memory. Frankfort *et al* (1997: 282-285)

Case Study

In a scientific research, it is of great importance to choose the appropriate method, though combining the advantages of the different methods can help to achieve an objective position. But in using either a combination of approaches or only one, research must be conducted with methodological rigor. This methodological rigor is based first on the selection of the appropriate research model that will give valid outcomes. Nunan (1992) selects nine types of research in applied linguistics which are: experimental, ethnography, case study, classroom observation, introspective, elicitation, interaction analysis and programme evaluation. Each of these methods differs in terms of purposes, foci and key characteristics.

Literature review of the research models, the investigator is more interested in a case study for the theoretical reasons that are advocated below. There is a variety of descriptions of the case study approach. Yin (1993:11) states that it “*refers to an event, an entity, an individual or even a unit of analysis. It is an empirical inquiry that investigates a contemporary phenomenon within its real life context using multiple sources of evidence*”. For Anderson (1998: 152) a case study is “*concerned with how and why things happen, allowing the investigation of contextual realities and the differences between what was planned and what actually occurred*”. It is intended to focus on a particular issue, feature or unit of analysis. This method helps to understand the complex real-life activities in which several sources of evidence are used.

Case study provides an understanding of a complex issue or object as can extend experience or add strength known through previous research. Case study is mainly used in the fields of education and psychology, chiefly its effectiveness when used to test a “*specific instructional strategy*” it provides a systematic way for gathering, analysing data and report the results to gain great depth about particular problem or situation. More explicitly, Mertens (1998:145) states:

- provides a variety of participant perspectives;
- uses multiple data collection techniques;
- exercises the incorporation of e learning and face-to-face instructional models within a technology wealthy situation;

Rhee (2004: 72) states that “*Case studies are highly used among researchers, who are in favour of this method since it seems to be more reliable. They are detailed examination of an event (or series of related events) which the analyst exhibits the operation of some identified general theoretical principles*”

The use of case study to investigate an area of interest is mainly appropriate as described by Patton (1987:18) “*Case studies become particularly useful where one needs to understand some particular problem or situation in great-depth, and where one can identify cases rich in information*”. Meanwhile, Case studies are criticised by some “as lack of scientific rigour and reliability and that they do not address the issues of generalizability” (Johnson, 1994). Though in case study there is some strength; For instance, it enables the researcher “*to gain a holistic view of a certain phenomenon or series of events*” Gummesson, (1991:83) and can offer a surrounding picture as many sources of evidence are used.

The present research design is a descriptive and interpretive case study that is analysed largely through qualitative methods with a small quantitative component. Qualitative researchers tend to analyse their data inductively. In a descriptive and interpretive case study, the researcher analyses, interprets and theorises about the phenomenon against the backdrop of a theoretical framework. It is believed that qualitative case studies in education are often framed with concepts, models and theories. An inductive method is then used to support or challenge theoretical assumptions. Since “*meaning*” is the essential concern to qualitative approach (Bogdan and Biklen, 2003), the participant’s perspectives on their own conceptions of practice will be the focus. Hence, the framework developed in this thesis supports evaluating participant perspectives. Findings were discussed in relation to existing knowledge with the aim of demonstrating how the present study has contributed to expanding the knowledge base.

Strengths and Weaknesses of Case Study

According to (Dörnyei, 2007) case studies are highly recommended methods for obtaining a deep description of a complex social issue surrounded within cultural context. It gives rich and in-depth insights that other method can yield, allowing

researchers to examine how an intricate set of circumstances come together and interact in chapping the social context. In the same line of thought, Van (2005:195) notes: “*Case study research has become a key method for researching changes in complex phenomena over time*”. Many of the processes investigated in case studies cannot be adequately researched in any of the other common research methods.

Though, the case study is ideally suited for being combined with other research approaches namely: a *subsequent survey* in mixed-methods approach with Regards to its weaknesses, case study methodology is often contrasted disapprovingly with large scale experimental method, with the strength of one approach being the weaknesses of the other. This contrast is inappropriate and rather unmerited because the types of methodologies are proposed to achieve different goal. Consequently, case study may present set of limitations being a prototype of qualitative research, many of the potential shortcomings of the qualitative approach could be encountered because of the delicate liability of this method in terms of idiosyncratic changeability and audience criticality, in most cases it may be worth using a multiple case design or case study in combination with other methods. (Dörnyei, 2002). The bellow table serves to identify some advantages and disadvantages when using case study.

Table. 5. Advantages and Disadvantages of Case Study adapted from (Yin, 1994)

Advantages of Case studies	Disadvantages of Case Studies
<p>✓ the examination of the data is often conducted within the context of its use (Yin, 1984);</p>	<p>✓ case studies are often accused of lack of rigour. Yin (1984:21) notes that “<i>too many times, the case study investigator has been sloppy, and has allowed equivocal evidence or biased</i></p>

	<i>views to influence the direction of the findings and conclusions”.</i>
<ul style="list-style-type: none"> ✓ variations in terms of intrinsic, instrumental and collective approaches to case studies allow for quantitative and qualitative analyses of the data; ✓ Yin (1984:25) also notes that <i>“case studies can be based ... entirely on quantitative evidence”.</i> 	<ul style="list-style-type: none"> ✓ Case studies provide very little basis for scientific generalisation since they use a small number of subjects, some conducted with only one subject. The question commonly raised is <i>“How can you generalise from a single case?”</i> Yin (1984:21).

Advantages of Case studies	Disadvantages of Case Studies
<ul style="list-style-type: none"> ✓ the detailed qualitative accounts often produced in case studies help to explore or describe the data in real-life environment; ✓ help to explain the complexities of real-life situations which may not be captured through experimental or survey 	<ul style="list-style-type: none"> ✓ Case studies are often labelled as being too long, difficult to conduct and producing a massive amount of documentation (Yin, 1984). ✓ case study method is its dependency on a single case exploration making it difficult to reach a generalising conclusion (Tellis, 1997). ✓ Yin (1993) considered case

research	methodology 'microscopic' because of the limited sampling cases. To Hamel <i>et al.</i> (1993) and Yin (1994), however, parameter establishment and objective setting of the research are far more important in case study method than a big sample size
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To sum up, the investigator provides a brief discussion of case studies in terms of the different types, strength and weaknesses of case studies found in the literature. Case studies are considered useful in research as because they enable researchers to examine data at the micro level. Also viewed as an alternative to quantitative or qualitative research, case studies can be a practical solution when a big sample population is difficult to obtain. Although case studies have various advantages, they present data of real-life situations and they give better insights into the detailed behaviours of the subjects of interest, they are also criticised for their inability to generalise their results.

They have been criticised for its lack of rigour and the tendency for a researcher to have a biased interpretation of the data. Grounds for establishing reliability and generality are also subjected to scepticism when a small sampling is deployed. Often time, case study research is dismissed as useful only as an exploratory tool. Despite these criticisms, researchers continue to use the case study method particularly in studies of real-life situations concerning social issues and problems. Case studies are widely reported for various disciplines and domains in the literature.

Category of case study

There are several categories of case study. Yin (1984) notes three major categories, namely exploratory, descriptive and explanatory case studies. These categories are better explained in the following table:

Table 5. Types of case study adopted from (Dorneiy, 2009)

Categories of case study	Definition
Exploratory case studies	<ul style="list-style-type: none"> ✓ investigate any phenomenon in the data which serves as a point of the researcher’s interest; ✓ Prior fieldwork and small scale data collection may be conducted before the research questions and hypotheses are set as a prelude which helps prepare a framework of the study; ✓ A pilot study is considered an example of an exploratory case study and is crucial in determining the protocol that will be used
descriptive case studies	<ul style="list-style-type: none"> ✓ Describe the natural phenomena which occur within the data in question; ✓ The main aim set by the researcher is to describe the data as they occur; ✓ They may be in a narrative form

Categories of case study	Definition
explanatory case studies	<ul style="list-style-type: none"> ✓ Examine the data closely at a surface and deep level in order to explain the phenomena in the data. ✓ investigator may form a theory and test it on the basis of the data, (McDonough, 1997) ✓ It is deployed for causal studies where pattern-matching can be used to investigate certain phenomena in very complex and multivariate cases. ✓ These complex and multivariate cases can be explained by three main theories: a knowledge-driven theory, a problem-solving theory, and a social-interaction theory. The knowledge-driven theory .Yin and Moore (1987)

According to McDonough (1997) there are other categories include interpretive and evaluative case studies. Through interpretive case studies, the researcher aims to interpret the data by developing conceptual categories, supporting or challenging the assumptions made regarding them. In evaluative case studies, the researcher goes further by adding their judgement to the phenomena found in the data. Yin (1984) cautions researchers against any attempt to separate these categories or to conceive them as a hierarchy.

Yin (1984:15) states:

A common misconception is that the various research strategies should be arrayed hierarchically. Thus, we were once taught to believe that case studies were appropriate for the exploratory phase of an investigation that surveys and histories were appropriate for the descriptive phase, and that experiments were the only way of doing exploratory or causal inquiries.

Finally, a case study can be exploratory when a programme has no clear set of outcomes, it can help identify performance measures or pose hypotheses for further evaluative work. Nisbet and Watt (1984) commented that a case-study has four stages. table3.5 may illustrate what has been said:

Table.5: Stages of Case Study from adapted (Nisbet and Watt ,1984)

<i>Stages of Case study</i>	<i>Definition</i>
open phase	This is a general review of the case without prejudgement
Focus	The researcher in this stage identifies the central events or features in the case and then focuses

	on these selected aspects and tentatively formulates hypotheses.
Draft	This entails writing the preliminary draft of interpretation.
Check	The interpretations are presented to informants for feedback and critical comments.

The Sample Population

In any educational setting, and whatever type of the research is conducted, the investigation should be based on a sample population. It is therefore of great importance to make a distinction between sample and population. In this vein, research methodologists (Cohen et al.,2000; Sapsford et al., 2006; Dörnyei,2007) make an agreement on the fact that sample is just part or small group of the whole population. Several terms, thus, are used to refer to sample such as a subset(Cohen et al.,2000),census inquiry (Dawson, 2002) and realistic population(Lodico et al., 2006).The entire subjects or the population is generally labeled ideal population (Lodico et al., 2006). In this regard, Richards (2001:58) writes, “sampling involves asking a partial of potential population instead of the total population and seeks to create a sample that is representative.”

In the field of research, any investigation is evaluated according to the research methods and the suitability of the sampling. The role of this latter is acknowledged in educational research for its significance as it saves time and efforts, and avoids bias, unreliability of results and claims the generalisability of the study (Sapsford et al.,2006). Yet, the decision upon the sampling selection and size is not an easy process; as it covers a number of essential parameters, namely: The theoretical

population, the study population, Sampling methods is divided into; probability and non-probability. This can be summarized in the following figure :

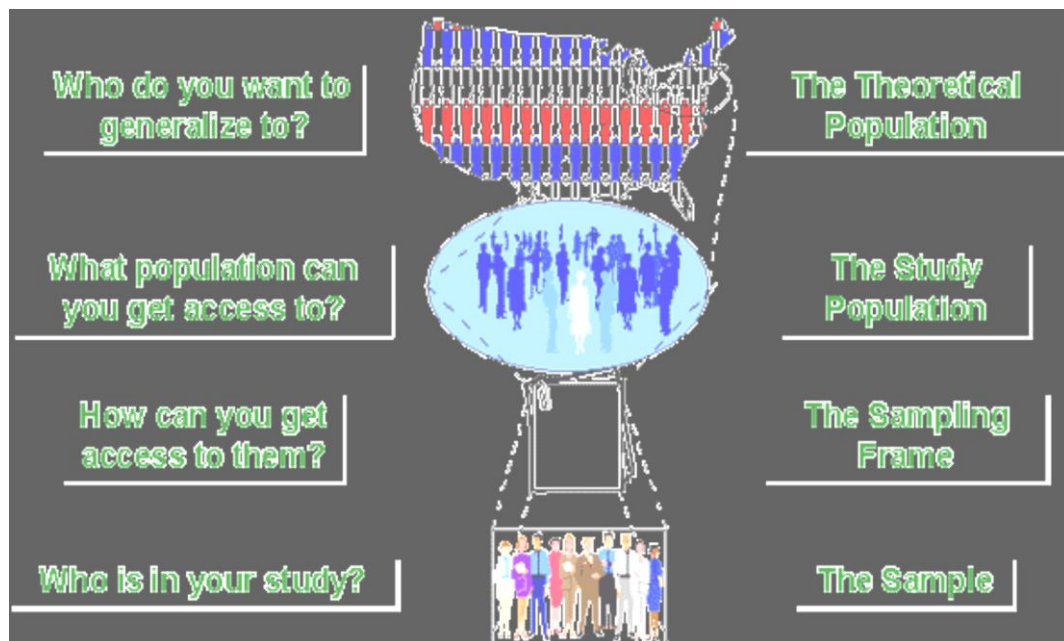


Figure3. Some Important Stages for Sampling

The former is also known as random sampling (Cohen et al., 2000). Selection in this type is a matter of chance. Each member of the entire population can be included in the study. In this vein, Lodico et al.,(2006:143) write “*random sampling is conducted in such a way that every person in the population has an equal and independent chance of being selected*”. This form is widely acknowledged by applied linguists for providing explanation, prediction, generalisability of results as well as the representativeness of the wider population. The latter, i.e., the non-probability sampling is also labeled purposeful sampling.

As its name implies, it does not aim to generalize the results to whole population, but rather to provide a description of the results of the group under investigation. In this vein, Cohen et al., (2000:102): “*The selectivity which is built into a non-probability sample drives from the researcher targeting a particular group, in the full knowledge that it does not represent the wider population*”. As literature may

reveal, there is a general consensus among research methodologists (Nunan, 1992; Cohen et al., 2000; Dawson, 2002; Lodico et al., 2006; Dörnyei, 2007; Tomal, 2010) that each sampling method has a variety of techniques. In this vein, Dörnyei (2007:96) defines a sample as: “the group of participants whom the researcher actually examines in an empirical investigation” and the population as “the group of people whom the study is about”.

Selecting a sample can be accomplished following two methods; a probability or a non-probability one. In this case, the investigator is the only one who can reliably settle on the method which suits his or her research work. Cohen et al. (2011) maintain that differences between those two methods can be seen in the chances “of beings elected. For “a probability sample” those chances are known while in a non probability sample” they are unknown’. Therefore selecting a sample can be accomplished following two methods;

Probability and Non-Probability Sampling

In the sight of thoughts: *“non-probability sampling is choosing the respondent by choice”* Lodico(2006:36) this type has advantages as well as disadvantages, its weakness is that: *“it does not permit generalizing from the sample to the population because the researcher has no reassurance the the sample is representative of the population”* Connaway et al.,(2010: 117) in other words, the researcher has the ultimate control over the whole process. However, according to Fraenkel et al., (2012: 93) argues *“Every member of the population presumably had an equal chance of being selected”*, i.e., probability sampling is that anybody of the population have the opportunity to participate on the sample.

According to (Cohen,2011) *“inclusion”* and *“exclusion”* are the key-concepts; either to include members or exclude others by chance for a probability sampling or to decide *“definitely”* which to include and which to exclude. A final element required for those who want recourse to the use of a non-probability sampling is that they need to be aware of limits to generalization, Cohen et al., (2011: 155)states *“ sample does not*

represent the wider population; it simply represents itself.” At the same time other researchers (Remenyi, 1998; Patton, 2002; Singh and Bajpai, 2008; Cohen et al, 2011) have shared the view that a non-probability method of sampling is mainly used in qualitative research, action research and in small-scale projects. The following table serves to outline and define the major techniques used in sample selection.

Table.4. Major Sampling Schemes in Mixed-methods Approach
Adapted from (Teddlie and Tashakkori, 2010: 359)

Sampling Techniques	Definition
<i>Simple Random Sampling:</i>	✓ is when we choose a participant aimlessly, in which each one can be selected: <i>"a large enough sample of randomly selected members is widely accepted by researchers to be approximately representative of the population from which is taken"</i> (brown, 2012 et al dorneyi, 2007).

Sampling Techniques	Definition
<i>Stratified Random Sampling:</i>	✓ is <i>"one in which the population is divided into subgroups or 'strata', and a random sample is then selected from each subgroup"</i> (fink, 2007: 11). In this type, the researcher divides participants into subgroups, according to specific characteristics, such as: age, gender... etc. MacNealy(2007: 156)

	<p>further advises <i>"arranging the original unit into categories so that the distribution of a particular group in the population of interest will be closely replicated in the sample"</i></p>
<p><i>Quota Sampling:</i></p>	<p>✓ is the same as accidental sampling except that: <i>"it takes steps to ensure that the significant diverse elements of the population"</i> (connaway et al powel, 2010: 118). And we can clearly understand the definition of quota sampling through the explanation of Hnery when he said: <i>"Quota sampling allows the interviewer discretion in the selection of the individuals for the sample"</i> (henry, 2007: 22).</p>

Sampling Techniques	Definition
<p><i>Accidental Sampling:</i></p>	<p>✓ it called also convenience, it includes people who agree to participate on the sampling. This method is usually used on quantitative design because the samples that are collected are easily accessible</p>

<p><i>Snowball Sampling:</i></p>	<p>✓ This type of sampling is used when the subject we want to make research about is not too common or limited by some population . Snowball sampling is used <i>"in those cases when the population of interest cannot be identified other than by someone who knows that a certain person has the necessary experience or characteristics to be included"</i> (macnealy, 2007: 157)</p>
<p>Cluster Sampling:</p>	<p>✓ <i>"cluster sample occurs when you select members of your sample in clusters rather than in using separate individuals"</i> (etal in Tejero, 2006). Here, we focus on clusters or groups more than individuals. also, it can be defined as: <i>"the selection of a few groups and data are collected from all group members"</i> (henry, 2007: 29).</p>

<p>Sampling Techniques</p>	<p>Definition</p>
<p><i>Purposive Sampling:</i></p>	<p>✓ is based on the researcher's: <i>"knowledge of the population and the objectives of the research"</i> (connaway et al powel, 2010: 119), so the main idea in this technique is that the researcher should stick to the objectives of the research.</p>

<p><i>Systematic Sampling:</i></p>	<p>✓ is usually preferable and more convenient for the researcher, according to Kish systematic sampling includes: "<i>selection of sampling units in sequences separated on lists by the interval of selection</i>" (kish, 2007: 21). In another vein, this type is: "<i>the selection of the sample from the population list is made by randomly selecting a beginning and choosing every name</i>" (Macnealy, 2007: 155).</p>

Representativeness

After the choice of the method for the present study, the researcher has to seek for a representative population. However, the sampling is not an arbitrary process; it is based on scientific techniques and researchers must overcome this problem by choosing a smaller and more manageable number of people to take part in their research. In quantitative research, it is thought that if the sample population is selected carefully using the correct procedures, it is then, possible to reach valid results that can generalise the whole population under investigation. For many qualitative researchers, however, the goal is not only being able to generalize their work for the whole research population, but rather might seek to describe and explain what is happening within a smaller group of people, this might provide insights into the behaviour of the wider research population, but they accept that everyone is different and that if the research were to be conducted with another group of people the results might not be the same.

Thus, when conducting any kind of survey to collect information, or when choosing some particular cases to study in detail, the question inevitably arises: how representative is the information collected of the whole population? In other words, how similar are the characteristics of the small group of cases that are chosen to those of all the cases in the whole type group. To be able to make accurate judgements about a population from a sample, the sample should be as representative as possible. Talking about population in research, it does not necessarily mean a number of people. Population is a collective term used to describe the total quantity of things (or cases) of the type which is the subject of your study. So, a population can consist of objects, people or even events (e.g. schools, miners, revolutions). A complete list of cases in a population is called a sampling frame. This list may be more or less accurate.

Representativeness means that the sample includes the same distribution of characteristics as the total population. It is achieved via probability sampling. However, this quality is not available in all respects as it is limited to those features that are relevant to the study. Babbie (2009:198) adds “...a sample is representative of the population from which it if the aggregate characteristics of the sample closely approximate those same aggregate characteristics in the population”. Thus, representativeness is often implied from the analysis of the sample which leads to make assumptions about the degree of similarity existing in the features of the selected groups and the total number of the people who are concerned with the generalizations that have to be made from the study. It is a very essential element.

4.1. Scope

- ❖ The researcher should think about when, where, how and what to observe.
- ❖ He/ she should think about the duration of the period of observation.
- ❖ The researcher should take into consideration the timing of the observation (morning or afternoon).
- ❖ He/ she should think about the context of the observation.
- ❖ He/ she should concentrate and be attentive.
- ❖ The researcher has to focus on details.

- ❖ The researcher has to record the events of the observation.

4.2. Objectives

Research methodology simply refers to the procedure or plan of action for conducting a research. It defines techniques and tools used to collect process and analyze data regarding the research topic. Research methodologies tell the systematic method for acquiring data and studying it for deriving out crucial findings. This is an important process that helps in solving problems and making business decisions. It enables management for properly organizing their efforts in a right direction for generating an idea. Methodology of research indicates and influences the overall validity and reliability of whole research to be conducted. Methodology answers mainly two questions regarding research that are how the data used for study was acquired and how it was analyzed to derive out the findings. Research methodologies are broadly classified into two main categories: Quantitative research methods and Qualitative research methods. Quantitative research is one which is based on quantitative terms and involves collection of numerical data, analyzing it and drawing conclusions using numbers. Qualitative research on other hand, is one which is done using non-numerical and unquantifiable elements like feelings, emotion, sound etc..

Develops Better Insight into Topic

Research methodology provides better familiarity with the research topic by properly explaining each concept associated with it. It aims at the proper analysis of every aspect and accurately portrays all findings of the project.

Provides Systematic Structure

Research methodology eases the process of whole research to be done. It clearly defines the tools and techniques to be used for collecting, analyzing and interpreting the data to find out the solutions.

Enhance the Research Quality

It determines the reliability and validity of the whole research work. Research methodology tells accurate sources from where data should be taken for studying purpose which thereby improves the quality of research done.

Derive Better Solutions

Research methodology helps in deriving crucial findings for solving business problems. It performs an in-depth study of various projects, develops a better understanding and detects all problems.

Aids in Decision Making

Decision making is another important role played by research methodology. It supports management in organizing their efforts in generating a new idea. Research methodology by providing direction for various activities of the project helps managers for efficient decision making.

Inculcates Logical and Systematic Thinking

It develops the logical thinking ability of individuals. Research methodology evaluates every element of the project and highlights them in detail. It represents every aspect in a simplified manner which improves logical thinking

- ❖ The researcher can record information about the natural behaviour of a group.
- ❖ The researcher can collect reliable information easily.
- ❖ The subjectivity of the informants is eliminated.

4.3. Sources of knowledge

According to Donald Ary (2010:2-8), there are five major sources of knowledge. Those are experience, authority, deductive reasoning, inductive reasoning and scientific approach. Experience is a familiar and well-used source of knowledge.

Deductive reasoning is a logical approach where you progress from general ideas to specific conclusions. It's often contrasted with inductive reasoning, where you

start with specific observations and form general conclusions. Deductive reasoning is also called deductive logic or top-down reasoning.

Note: Deductive reasoning is often confused with inductive reasoning. However, in inductive reasoning, you draw conclusions by going from the specific to the general. What is deductive reasoning? In deductive reasoning, you'll often make an argument for a certain idea. You make an inference, or come to a conclusion, by applying different premises.

A premise is a generally accepted idea, fact, or rule, and it's a statement that lays the groundwork for a theory or general idea. Conclusions are statements supported by premises.

Deductive logic arguments

In a simple deductive logic argument, you'll often begin with a premise, and add another premise. Then, you form a conclusion based on these two premises. This format is called "premise-premise-conclusion."

Examples: Deductive logic arguments

Premise All insects have exactly six legs.

Premise Spiders have eight legs.

Conclusion Therefore, spiders are not insects.

Premise Blue litmus paper turns red in the presence of acid.

Premise The blue litmus paper turned red after I dropped some liquid on it.

Conclusion Therefore, the liquid is acidic.

Validity and soundness

Validity and soundness are two criteria for assessing deductive reasoning arguments.

Validity

In this context, validity is about the way the premises relate to each other and the conclusion. This is a different concept from research validity.

An argument is valid if the premises logically support and relate to the conclusion. But the premises don't need to be true for an argument to be valid.

Examples: Valid (but untrue) deductive arguments Example 1

1. If there's a rainbow, flights get canceled.
2. There is a rainbow now.
3. Therefore, flights are canceled.

Example 2

1. All chili peppers are spicy.
2. Tomatoes are a chili pepper.
3. Therefore, tomatoes are spicy.

Both of these arguments are valid. Even though the premises are completely made up, they relate to each other in a way where you can justifiably infer the conclusion.

In an invalid argument, your premises can be true but that doesn't guarantee a true conclusion. Your conclusion may inadvertently be true, but your argument can still be invalid because your conclusion doesn't logically follow from the relationship between the statements.

Examples: Invalid deductive arguments Example 1

1. All leopards have spots.

2. My pet gecko has spots.
3. Therefore, my pet gecko is a leopard.

Example 2

1. All US presidents live in the White House.
2. Barack Obama lived in the White House.
3. Therefore, Barack Obama was a US president.

Both of these are invalid because the truth of the premises doesn't necessarily lead you to a true conclusion. You end up with a correct conclusion in the second example, but both arguments take the same invalid format.

Soundness

An argument is sound only if it's valid and the premises are true. All invalid arguments are unsound.

If you begin with true premises and a valid argument, you're bound to come to a true conclusion.

Examples: Sound deductive reasoning

1. Flights get canceled when there are extreme weather conditions.
2. There are extreme weather conditions right now.
3. Therefore, flights are canceled.

Example 2

1. All fruits are grown from flowers and contain seeds.
2. Tomatoes are grown from flowers and contain seeds.

3. Therefore, tomatoes are fruits.

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Scribbr editors not only correct grammar and spelling mistakes, but also strengthen your writing by making sure your paper is free of vague language, redundant words and awkward phrasing.

See editing example

Deductive reasoning in research

Deductive reasoning is commonly used in scientific research, and it's especially associated with quantitative research.

In research, you might have come across something called the hypothetico-deductive method. It's the scientific method of testing hypotheses to check whether your predictions are substantiated by real-world data.

This method is used for academic as well as non-academic research.

Example: Deductive research problem You work as an organizational researcher at a large insurance organization. Currently, the organization is dealing with increasing levels of employee burnout, and you're tasked with finding a solution to this problem.

Here are the general steps for deductive research:

1. Select a research problem and create a problem statement.
2. Develop falsifiable hypotheses.
3. Collect your data with appropriate measures.

4. Analyze and test your data.
5. Decide whether to reject your null hypothesis.

Importantly, your hypotheses should be falsifiable. If they aren't, you won't be able to determine whether your results support them or not.

Example: Deductive research approach
You predict that going from a five-day work week to a four-day work week (without any reduction in pay) will help reduce or prevent burnout by improving employee well-being.

You formulate your main hypothesis: Switching to a four-day work week will improve employee well-being. Your null hypothesis states that there'll be no difference in employee well-being before and after the change.

You collect data on employee well-being through quantitative surveys on a monthly basis before and after the change. When analyzing the data, you note a 25% increase in employee well-being after the change in work week.

Using a statistical test, you find that your results show statistical significance. You reject your null hypothesis and conclude that your results support your main hypothesis.

Deductive vs. inductive reasoning

Deductive reasoning is a top-down approach, while inductive reasoning is a bottom-up approach.

In deductive reasoning, you start with general ideas and work toward specific conclusions through inferences. Based on theories, you form a hypothesis. Using empirical observations, you test that hypothesis using inferential statistics and form a conclusion.

Inductive reasoning is also called a hypothesis-generating approach, because you start with specific observations and build toward a theory. It's an exploratory method that's

often applied before deductive research. In practice, most research projects involve both inductive and deductive methods.

4.4. Validity

Validity is often defined as the extent to which an instrument measures what it purports to measure. Validity requires that an instrument is reliable, but an instrument can be reliable without being valid. For example, a scale that is incorrectly calibrated may yield exactly the same, albeit inaccurate, weight values. A multiple-choice test intended to evaluate the counseling skills of pharmacy students may yield reliable scores, but it may actually evaluate drug knowledge rather than the ability to communicate effectively with patients in making a recommendation. While we speak of the validity of a test or instrument, validity is not a property of the test itself. Instead, validity is the extent to which the interpretations of the results of a test are warranted, which depend on the test's intended use (i.e., measurement of the underlying construct).

Much of the research conducted in health care involves quantifying attributes that cannot be measured directly. Instead, hypothetical or abstract concepts (constructs), such as severity of disease, drug efficacy, drug safety, burden of illness, patient satisfaction, health literacy, quality of life, quality of provider–patient communication, and adherence to medical regimens, are measured. Hypothetical constructs cannot be measured directly and can only be inferred from observations of specified behaviors or phenomena that are thought to be indicators of the presence of the construct.¹ Measurement of a construct requires that the conceptual definition be translated into an operational definition. An operational definition of a construct links the conceptual or theoretical definition to more concrete indicators that have numbers applied to signify the “amount” of the construct. The ability to operationally define and quantify a construct is the core of measurement.

To understand how a construct might be operationally defined, consider the example of the efficacy of a new drug product. The ability to improve a patient's health may be measured by the decrease of certain symptoms, the delay in onset of a

certain disease, length of remission, or the prevention of certain clinical complications. Likewise, the theoretical construct of medication adherence may be operationally defined as a one-month recording of number of missed doses as measured by a medication-event monitoring system (MEMS), which includes microprocessors that record the occurrence and time of each opening of a prescription vial. An operational definition of patient satisfaction with health care might be “patient self-reported responses to items on the 18-item short-form version of the Patient Satisfaction Questionnaire (PSQ).”⁶ An even more precise understanding of the operational definition would involve an examination of the specific items on the PSQ-18 instrument. How critical a concise operationalization, including data sources and aggregation of information, is in terms of measurement validity is illustrated with a simple outcome, such as onset of diabetes mellitus. A drug’s ability to delay onset could be measured through simple chart review, but diagnosis of diabetes will depend on a patient’s decision to seek health care and the provider’s ability to recognize symptoms and make the proper diagnosis. Thus, regularly scheduled follow-up visits and the use of explicit screening protocols will likely increase the accuracy of the estimate and yield a more valid result. In addition, Crocker and Algina¹ have pointed to the importance of a theoretical foundation by noting that “constructs cannot be defined only in terms of operational definitions but must also have demonstrated relationships to other constructs or observable phenomena.” New research that gathers information on the constructs measured by a specific instrument, even one that has been widely used in research, contributes to the evidence regarding the construct validity of that test. In this sense, all of the different studies and validation strategies that provide evidence of a test’s validity for making specific inferences about groups of respondents are part of construct validation. Validity evidence is built over time, with validations occurring in a variety of populations. Comprehensive literature reviews on measurement approaches are therefore critical in guiding the selection of measures and measurement instruments.

Construct validity. This type of validity is a judgment based on the accumulation of evidence from numerous studies using a specific measuring instrument. Evaluation of construct validity requires examining the relationship of the

measure being evaluated with variables known to be related or theoretically related to the construct measured by the instrument.^{1,7} For example, a measure of quality of life would be expected to result in lower scores for chronically ill patients than for healthy college students. Correlations that fit the expected pattern contribute evidence of construct validity. All evidence of validity, including content- and criterion-related validity, contributes to the evidence of construct validity. Content validity. This type of validity addresses how well the items developed to operationalize a construct provide an adequate and representative sample of all the items that might measure the construct of interest. Because there is no statistical test to determine whether a measure adequately covers a content area or adequately represents a construct, content validity usually depends on the judgment of experts in the field.

Criterion-related validity. This type of validity provides evidence about how well scores on the new measure correlate with other measures of the same construct or very similar underlying constructs that theoretically should be related. It is crucial that these criterion measures are valid themselves. With one type of criterion-related validity—predictive validity—the criterion measurement is obtained at some time after the administration of the test, and the ability of the test to accurately predict the criterion is evaluated. For example, surrogate outcomes such as blood pressure and cholesterol levels are based on their predictive validity in projecting the risk of cardiovascular disease, even though some of these associations have been recently questioned. Another type of criterion-related validity is concurrent validity. In establishing concurrent validity, scores on an instrument are correlated with scores on another (criterion) measure of the same construct or a highly related construct that is measured concurrently in the same subjects. Ideally, the criterion measure would be considered to be the gold standard measure of the construct.

This strategy of determining the validity of a measure might be seen in a situation in which a new instrument has some advantage over the gold standard measure, such as an increased ease of use or reduced time or expense of administration. These advantages would justify the time and effort involved in the development and validation of a new instrument. An example of such a situation is a

researcher developing a self-administered version of an instrument that had been validated for person-to-person interviewer administration. Another example is a clinical researcher wanting to use a brief screening instrument for a condition, such as depression, instead of administering a more extensive measure. Investigators in one study, for example, examined the validity of a single-item question “Do you often feel sad or depressed?” against a more extensive, validated instrument for identifying depression after a stroke.⁸ The same approach applies to sources of diagnostic data. For example, researchers may want to determine the validity of using administrative claims data to measure a construct represented by a certain clinical event, such as hospitalization for acute myocardial infarction, rather than using chart reviews, which are time-consuming and costly. Selecting an appropriate and meaningful criterion measure can be a challenge.

Often, the ultimate criterion a researcher would like to be able to predict is too distant in time or too costly to measure. The “criterion problem” exists for many of the ultimate criterion measures investigators would like to predict in health care research. For example, a study that aims to evaluate the effect of pharmaceutical care on the “health” of hypertensive patients will likely not have the necessary follow-up time to establish that the intervention results in reduced morbidity or mortality. Instead, a surrogate outcome, such as reduction in blood pressure, is used. Cost of administration of the “best” criterion measures may also be a barrier. For example, an investigator may want to validate a new self-report measure of medication adherence with concurrent measurement using a MEMS cap. However, because MEMS technology is expensive, a less costly measure, such as pill count or refill records, may instead be used to provide evidence of concurrent validity.

4.5. Reliability

"Without reliability, there is no validity." Many of us who develop and use educational assessments were taught to take this maxim for granted as a fundamental principle of sound measurement. The Standards for Educational and Psychological Testing (AERA et al., 1985), along with most major measurement texts (e.g., Crocker & Algina, 1986; Cronbach, 1990), present reliability as a necessary, albeit insufficient,

condition for validity. Theoretically, reliability is defined as "the degree to which test scores are free from errors of measurement... Measurement errors reduce the reliability (and therefore the generalizability) of the score obtained for a person from a single measurement" (AERA et al., 1985, p. 19). Typically, reliability is operationalized by examining consistency, quantitatively defined, among independent observations or sets of observations that are intended as interchangeable—consistency among independent evaluations or readings of a performance, consistency among performances in response to independent tasks, and so on. In fact, Feldt and Brennan (1989) describe the "essence" of reliability analysis as the "quantification of the consistency and inconsistency in examinee performance" (p. 105). on issues of reliability or generalizability across tasks (products or performances by the person or persons about whom conclusions are drawn) and across readers (interpreters or evaluators of those performances).

Less standardized forms of assessment, such as performance assessments, present serious problems for reliability, in terms of generalizability across readers and tasks as well as across other facets of measurement. These less standardized assessments typically permit students substantial latitude in interpreting, responding to, and perhaps designing tasks; they result in fewer independent responses, each of which is more complex, reflecting integration of multiple skills and knowledge; and they require expert judgment for evaluation. Empirical studies of reliability or generalizability with performance assessments are quite consistent in their conclusions that (a) reader reliability, defined as consistency of evaluation across readers on a given task, can reach acceptable levels when carefully trained readers evaluate responses to one task at a time and (b) adequate task or "score" reliability, defined as consistency in performances across tasks intended to address the same capabilities, is far more difficult to achieve (e.g., Breland, Camp, Jones, Morris, & Rock, 1987; Dunbar, Koretz, & Hoover, 1991; Shavelson, Baxter, & Gao, 1993).

In the case of portfolios, where the tasks may vary substantially from student to student and where multiple tasks may be evaluated simultaneously, inter-reader reliability may drop below acceptable levels for consequential decisions about

individuals or programs (Koretz, McCaffrey, Klein, Bell, & Stecher, 1992; Nystrand, Cohen, & Martinez, 1993).¹ Validity researchers in performance assessment, building on the pioneering work of Messick (1964, 1975, 1980, 1989) and Cronbach (1980, 1988) that expanded the definition of validity to include consideration of social consequences, have stressed the importance of balancing concerns about reliability, replicability, or generalizability with additional criteria such as "authenticity" (Newmann, 1990), "directness" (Frederiksen & Collins, 1989), or "cognitive complexity" (Linn, Baker, & Dunbar, 1991). This balancing of often competing concerns has resulted in the sanctioning of lower levels of reliability, as long as "acceptable levels are achieved for particular purposes of assessment" (Linn et al., 1991, p. 11; see Messick, 1992, and Moss, 1992, for a review). Where acceptable levels have not been reached, recommendations for enhancing reliability without increasing the number of tasks or readers beyond cost-efficient levels have typically involved (a) increasing the specification of tasks or scoring procedures, thereby resulting in increased standardization, and (b), in the case of portfolios, disaggregating the contents so that tasks may be scored, independently, one task at a time. Wiley and Haertel (in press) offer a promising means of addressing task reliability without the constraining assumption of homogeneity of tasks.

As part of a comprehensive assessment development process, they suggest carefully analyzing assessment tasks to describe the capabilities required for performance, scoring tasks separately for the relevant capabilities, and examining reliability within capability across tasks to which the capability applies. While this supports the use of complex and authentic tasks that may naturally vary in terms of the capabilities elicited, it still requires detailed specification of measurement intents, performance records, and scoring criteria. So although growing attention to the consequences of assessment use if validity research provides theoretical support for the move toward less standardized assessment, continued reliance on reliability, defined as quantification of consistency among independent observations, requires a significant level of standardization. Given the growing body of evidence about the impact of high-stakes assessment on educational practice (Corbett & Wilson, 1991; Johnston, Weiss, & Afflerbach, 1990; Smith, 1991), this privileging of standardization

is problematic. As Resnick and Resnick (1992) conclude, to the extent that assessment results "are made visible and have consequences" (p. 55), efforts to improve performance on a given assessment "seem to drive out most other educational concerns" (p. 58).

There are certain intellectual activities that standardized assessments can neither document nor promote; these include encouraging students to find their own purposes for reading and writing, encouraging teachers to make informed instructional decisions consistent with the needs of individual students, and encouraging students and teachers to collaborate in developing criteria and standards to evaluate their work. A growing number of educators are calling for alternative approaches to assessment that support collaborative inquiry and foreground the development of purpose and meaning over skills and content in the intellectual work of students (Greene, 1992; Willinsky, 1990) and teachers (Darling-Hammond, 1989; Lieberman, 1992). If Resnick and Resnick (1992) are correct in their conclusion that what isn't assessed tends to disappear from the curriculum, then we need to find ways to document the validity of assessments that support a wider range of valued educational goals. And, as Wolf, Bixby, Glenn, and Gardner (1991) have suggested, we need to "revise our notions of high agreement reliability as a cardinal symptom of a useful and viable approach to scoring student performance" and "seek other sorts of evidence that responsible judgment is unfolding" (p. 63).

Unquestionably, reliability serves an important purpose. Underlying our concerns about reliability are both epistemological and ethical issues. These include the extent to which we can generalize to the construct of interest from particular samples of behavior evaluated by particular readers and the extent to which those generalizations are fair. There are, however, alternative means of serving those purposes. The decision about which strategy to use should depend upon the aims and consequences of the assessment in question. In the sections that follow, I explore the potential of a hermeneutic approach to drawing and warranting interpretations of human products or performances.² Although the focus here is on reliability (consistency among independent measures intended as interchangeable), it should be

clear that reliability is an aspect of construct validity (consonance among multiple lines of evidence supporting the intended interpretation over alternative interpretations). And as assessment becomes less standardized, distinctions between reliability and validity blur. one in which all parties concerned (including researcher and researched) approach each other as equals. These differing perspectives provide alternative resolutions to concerns about such issues as subjectivity, objectivity, and generalizability that psychometricians have confronted in building their interpretations.

4.6. Generalization

Regardless of whether one is using a hermeneutic or psychometric approach to drawing and evaluating interpretations and decisions, the activity involves inference from observable parts to an unobservable whole that is implicit in the purpose and intent of the assessment. The question is whether those generalizations are best made by limiting human judgment to single performances, the results of which are then aggregated and compared with performance standards, or by expanding the role of human judgment to develop integrative interpretations based on all the relevant evidence. With a psychometric approach, generalizability is warranted in quantitative measures of consistency across independent observations (across tasks, readers, and so on). As I argued above, the nature of the warrant privileges more standardized forms of assessment. When operationalized in this way, inadequate consistency puts the validity of the assessment use in jeopardy.

While consistency or consensus supports the validity of the interpretations in both psychometric and hermeneutic approaches, the difference "rests in how it is addressed. Here I will consider the way generalizations may be constructed and warranted from more hermeneutic perspectives and how this, in turn, expands possibilities for assessment. Generalization Across Tasks With respect to generalization across tasks, the goal of a more hermeneutic approach is to construct a coherent interpretation of the collected performances, continually revising initial interpretations until they account for all of the available evidence. Inconsistency in students' performance across tasks does not invalidate the assessment. Rather, it

becomes an empirical puzzle to be solved by searching for a more comprehensive or elaborated interpretation that explains the inconsistency or articulates the need for additional evidence. A well-documented report describes the evidence available to other readers so that they may judge its adequacy for themselves in supporting the desired generalization. Moreover, when the interpretation informs a subsequent action, such as a revised pedagogical strategy, the success of the action becomes another warrant of the validity of the working interpretation.

This is consistent with the characterization of the hermeneutic circle by Packer and Addison (1989) as a dialectic between problem and solution that furthers the concern of the reader. In terms of task selection, hermeneutic approaches to assessment can allow students and others being assessed substantial latitude in selecting the products by which they will be represented—a latitude that need not be constrained by concerns about quantitative measures of consistency across tasks. As my hiring illustration suggested, permitting those assessed to choose products that best represent their strengths and interests may, in some circumstances, enhance not only validity but also fairness. With psychometric approaches to assessment, fairness in task selection has typically been addressed by requiring that all subjects respond to equivalent tasks, which have been investigated for bias against various groups of concern (Cole & Moss, 1989). Neither approach ensures fairness: With the psychometric approach, we may present students with tasks for which there is differential familiarity, and with the hermeneutic approach, students may not be prepared to choose the products that best represent their capabilities.

However, both approaches to fairness in task selection are defensible and deserve discussion. Generalization Across Readers With respect to generalization across readers, a more hermeneutic approach to assessment would warrant interpretations in a critical dialogue among readers that challenged initial interpretations while privileging interpretations from readers most knowledgeable about the context of assessment. Initial disagreement among readers would not invalidate the assessment; rather, it would provide an impetus for dialogue, debate, and enriched understanding informed by multiple perspectives as interpretations are

refined and as decisions or actions are justified. And again, if well documented, it would allow users of the assessment information, including students, parents, and others affected by the results, to become part of the dialogue by evaluating (and challenging) the conclusions for themselves. Concerns about the objectivity (and hence the fairness) of such a process have been thoughtfully addressed by qualitative researchers from both hermeneutic and postpositivist empirical traditions of research. Phillips (1990), a persuasive defender of postpositivist empirical research, citing Scriven's (1972) distinction between quantitative and qualitative senses of objectivity, notes that consensus or agreement among independent observations is no guarantor of objectivity. Rather, he defines objectivity, procedurally, as acceptance of a critical tradition: "The community of inquirers must be a critical community, where dissent and reasoned disputation (and sustained efforts to overthrow even the most favored of viewpoints) are welcomed as being central to the process of inquiry" (pp. 30-31). Moreover, he notes, objectivity is no guarantor of "truth":

A critical community might never reach agreement over, say, two viable alternative views, but if both of these views have been subjected to critical scrutiny, then both would have to be regarded as objective.... And even if agreement is reached, it can still happen that the objective view reached within such a community will turn out to be wrong—this is the cross that all of us living in the new nonfoundationalist age have to learn to bear! (p. 31). This dialogic perspective on the role of the critical community of interpreters in an age where no knowledge is viewed as certain is consistent with the recent writing of Cronbach (1988, 1989) and Messick (1989) on the philosophy of validity. It is also consistent with the writing of hermeneutic philosophers. Here, however, a comparison among the hermeneutic perspectives that I described earlier reflects instructive differences in the role of the readers' preconceptions and the role of the power dynamics within the social context when interpretations are formed. Proponents of hermeneutic philosophy and depth hermeneutics would question the possibility of "objective" knowledge that required readers to bracket their preconceptions. Bernstein (1983), citing Gadamer, argues that we cannot bracket all our prejudices because there is no knowledge or understanding

without prejudice (foreknowledge). (Imagine trying to interpret a response written in an unknown foreign language.)

The point is to discriminate between blind and enabling prejudices by critically testing them in the course of inquiry. In a very real sense, attention to reliability actually works against critical dialogue, at least at one phase of inquiry. It leads to procedures that attempt to exclude, to the extent possible, the values and contextualized knowledge of the reader and that foreclose on dialogue among readers about the specific performances being evaluated. A hermeneutic approach to assessment encourages such dialogue at all phases of the assessment. As Bernstein (1983) argues, the absence of a sure foundation against which to test knowledge claims does not condemn us to relativism: Themes in the work of Gadamer, Habermas, and others writing in the hermeneutic and critical traditions look to "dialogue, conversation, undistorted communication, communal judgment, and the type of rational wooing that can take place when individuals confront each other as equals" (p. 223). If interpretations are warranted through critical dialogue, then the question of who participates in the dialogue becomes an issue of power, as proponents of critical or depth hermeneutics would remind us. In articulating criteria for valid assessment in the service of accountability purposes, a number of assessment specialists have explicitly advised against using the judgments of classroom teachers (e.g., Mehrens, 1992; Resnick & Resnick, 1992).

Resnick and Resnick, for instance, assert: A principal requirement of accountability and program evaluation tests is that they permit detached and impartial judgments of students' performance, that is, judgments by individuals other than the students' own teachers, using assessment instruments not of the teachers' devising.... Like accountability tests, selection and certification tests must be impartial. The public function of certification would not be met if teachers were to grade the performance of their own students, (pp. 48-50) In contrast, other educators raise concerns about the absence of teachers' voices in mechanisms of accountability that affect them and their students (e.g., Darling-Hammond & Snyder, 1992; Erickson, 1986; Lieberman, 1992). Erickson, for instance, laments the fact that teachers' accounts of their own practices

typically have no place in the discourse of schooling. He notes that in other professions, including medicine, law, and social work, "it is routine for practitioners to characterize their own practice, both for purposes of basic clinical research and for the evaluation of their services" (p. 157) and that "the lack of these opportunities [for teachers] is indicative of the relative powerlessness of the profession outside the walls of the classroom" (p. 157).

Similar concerns have been raised about the role of students in assessments that have consequences in their lives (e.g., Greene, 1992; Willinsky, 1990). From a psychometric perspective, the call for "detached and impartial" high-stakes assessment reflects a profound concern for fairness to individual students and protection of stakeholders' interests by providing accurate information. From a hermeneutic perspective, however, it can be criticized as arbitrarily authoritarian and counterproductive, because it silences the voices of those who are most knowledgeable about the context and most directly affected by the results. Quantitative definitions of reliability locate the authority for determining meaning with the assessment developers. In contrast, Gadamer (cited in Bernstein, 1983) argues that the point of philosophical hermeneutics is to correct "the peculiar falsehood of modern consciousness: the idolatry of scientific method and of the anonymous authority of the sciences" (p. 40) and to vindicate "the noblest task of the citizen decision-making according to one's own responsibility instead of conceding that task to the expert" (p. 40).

Of course, the validity of any consequential interpretation, including the extent to which it is free from inappropriate or "disabling" prejudices, must be carefully warranted through critical, evidence-based review and dialogue. The process proposed is not dissimilar from the way decisions are made and warranted in the law (see Ricoeur, 1981). Again, neither a psychometric nor a hermeneutic approach guarantees fairness; however, a consideration of the assumptions and consequences associated with both approaches leads to a better informed choice. Implications I now return to my title, "Can there be validity without reliability?" When reliability is defined as consistency among independent measures intended as interchangeable, the answer is,

yes. Should there be? Here, the answer is, it depends on the context and purposes for assessment. My argument shares much with Mishler's (1990) views on reliability as a means of warranting knowledge claims: Reformulating validation as the social discourse through which trustworthiness is established elides such familiar shibboleths as reliability, falsifiability, and objectivity.

These criteria are neither trivial nor irrelevant, but they must be understood as particular ways of warranting validity claims rather than as universal, abstract guarantors of truth. They are rhetorical strategies . . . that fit only one model of science, (p. 420) Like Mishler, I am not advocating the abandonment of reliability. Rather, I am advocating that we consider it one alternative for serving important epistemological and ethical purposes—an alternative that should always be justified in critical dialogue and in confrontation with other possible means of warranting knowledge claims. As Messick (1989) has advised, such confrontations between epistemologies illuminate assumptions, consequences, and the values implied therein. Ultimately, the purpose of educational assessment is to improve teaching and learning. If reliability is put on the table for discussion, if it become an option rather than a requirement, then the possibilities for designing assessment and accountability systems that reflect a full range of valued educational goals become greatly expanded. I believe the dialogue I have proposed here is not only timely but urgent.

At a crossroads in education: There is a crisis mentality accompanied by a flurry of activity to design assessment and accountability systems that both document and promote desired educational change. Current conceptions of reliability and validity in educational measurement constrain the kinds of assessment practices that are likely to find favor, and these in turn constrain educational opportunities for teachers and students. A more hermeneutic approach to assessment would lend theoretical support to new directions in assessment and accountability that honor the purposes and lived experiences of students and the professional, collaborative judgments of teachers. Exploring the dialectic between hermeneutics and psychometrics should provoke and inform a much needed debate among those who

develop and use assessments about why particular methods of validity inquiry are privileged and what the effects of that privileging are on the community.

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