CHAPTER III

DESIGN OF THE STUDY

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CHAPTER III
DESIGN OF THE STUDY

3.1 INTRODUCTION

In simplest terms research refers to search for knowledge. One can also define research as a scientific and systematic search for information on a specific topic, further that, the method or technique of conducting the research (data collection, data analysis and data interpretation) is called research methodology. In fact, research is an art of scientific investigation.

The Advanced Learner’s Dictionary of Current English lays down the meaning of research as “a careful investigation for inquiry especially through search for new facts in any branch of knowledge.”

Redman and Mory (2000) define research as a "systematized effort to gain new knowledge.”

Some people consider research as a movement, a movement, from the known to the unknown. It is actually a voyage of discovery. We all possess the vital instinct on inquisitiveness for, when the unknown confronts us, we wonder and our inquisitiveness makes us probe and attain full and fuller understanding of the unknown. This inquisitiveness is the mother of all knowledge and the method, which man employs for obtaining the knowledge of whatever the unknown, can be termed as research.

Research is an academic activity and as such the term should be used in a technical sense.

According to Clifford Woody (2001) research comprises defining and redefining problems, formulating hypothesis or suggested solution; collecting, organizing and evaluating data; making deductions, and reaching conclusions; and at last carefully testing the conclusions to determine whether they fit the formulating hypothesis.

D. Slesinger and M. Stephenson in the Encyclopedia of Social Sciences define research as “the manipulation of things, concepts of symbols for the purpose of generalizing to extend, correct or verify knowledge, whether that knowledge aids in construction of theory or in the practice of an art.”

Research is, thus, an original contribution to the existing stock of knowledge making for its achievement. It is the pursuit of truth with the help of study,
observation, comparison and experiment. In sort, the search for knowledge through objective and systematic method of finding solution to a problem is research.

The systematic approach concerning generalization and the formulation of a theory is also research. As such the term ‘research’ refers to the systematic method consisting of enunciating the problem, formulating a hypothesis, collecting the facts or data, analyzing the fact(s) and reaching certain conclusions either in the form of solutions(s) towards the concerned problem or in certain generalizations for some theoretical formulation. **The present research is experimental in nature:** this has been explained in detail in the following pages.

**Experimental research** is generally recognized as the most appropriate method for drawing causal conclusions about instructional interventions, for example, which instructional method is most effective for which type of student under which conditions. In a careful analysis of educational research methods, Richard Shavelson and Lisa Towne concluded that “from a scientific perspective, randomized trials (we also use the term experiment to refer to causal studies that feature random assignment) are the ideal for establishing whether one or more factors caused change in an outcome because of their strong ability to enable fair comparisons” (2002, p. 110).

Similarly, Richard Mayer notes: “experimental methods— which involve random assignment to treatments and control of extraneous variables—have been the gold standard for educational psychology since the field evolved in the early 1900s” (2005, p. 74). Mayer states, “when properly implemented, they allow for drawing causal conclusions, such as the conclusion that a particular instructional method causes better learning outcomes” (p. 75). Overall, if one wants to determine whether a particular instructional intervention causes an improvement in student learning, then one should use experimental research methodology.

Although experiments are widely recognized as the method of choice for determining the effects of an instructional intervention, they are subject to limitations involving method and theory. First, concerning method, the requirements for random assignment, experiment control, and appropriate measures can impose artificiality on the situation. Perfectly controlled conditions are generally not possible in authentic educational environments such as schools. Thus, there may be a trade-off between experimental rigor and practical authenticity, in which highly controlled experiments may be too far removed from real classroom contexts. Experimental researchers should be sensitive to this limitation, by incorporating mitigating features in their experiments that maintain ecological validity.
Second, concerning theory, experimental research may be able to tell that one method of instruction is better than conventional practice, but may not be able to specify why; it may not be able to pinpoint the mechanisms that create the improvement. In these cases, it is useful to derive clear predictions from competing theories so experimental research can be used to test the specific predictions of competing theories. In addition, more focused research methods—such as naturalistic observation or in-depth interviews—may provide richer data that allows for the development of a detailed explanation for why an intervention might have a new effect. Experimental researchers should be sensitive to this limitation, by using complementary methods in addition to experiments that provide new kinds of evidence.

### 3.2 EXPERIMENTAL DESIGNS

Three common research designs used in experimental research are between subjects, within subjects, and factorial designs. In between-subjects designs, subjects are assigned to one of two (or more) groups with each group constituting a specific treatment. For example, in a between-subjects design, students may be assigned to spend two school years in a small class or a large class. In within-subjects designs, the same subject receives two (or more) treatments. For example, students may be assigned to a small class for one year and a large class for the next year, or vice versa. Within-subjects designs are problematic when experience with one treatment may spill over and affect the subject's experience in the following treatment, as would likely be the case with the class size example. In factorial designs, groups are based on two (or more) factors, such as one factor being large or small class size and another factor being whether the subject is a boy or girl, which yields four cells (corresponding to four groups). In a factorial design it is possible to test for main effects, such as whether class size affects learning, and interactions, such as whether class size has equivalent effects for boys and girls.

### 3.3 RANDOMIZED TRIALS IN EDUCATIONAL RESEARCH

Experimental research helps test and possibly provide evidence on which to base a causal relationship between factors. In the late 1940s, Ronald A. Fisher (1890–1962) of England began testing hypotheses on crops by dividing them into groups that were similar in composition and treatment to isolate certain effects on the crops. Soon he and others began refining the same principles for use in human research.
To ensure that groups are similar when testing variables, researchers began using randomization. By randomly placing subjects into groups that say, receive a treatment or receive a placebo, researchers help ensure that participants with the same features do not cluster into one group. The larger the study groups, the more likely randomization will produce groups approximately equal on relevant characteristics. Nonrandomized trials and smaller participant groups produce greater chance for bias in group formation. In education research, these experiments also involve randomly assigning participants to an experimental group and at least one control group.

In educational research, it is customary to distinguish between experimental and observational research methods, quantitative and qualitative measures, and applied versus basic research goals.

First, if experimental methods are preferred for testing causal hypotheses, what is the role of observational methods, in which a researcher carefully describes what happens in a natural environment? Observational methods can be used in an initial phase of research, as a way of generating more specific hypotheses to be tested in experiments, and observational methods can be used in conjunction with experiments to help provide a richer theoretical explanation for the observed effects. However, a collection of observations, such as portions of transcripts of conversations among students, is generally not sufficient for testing causal hypotheses. An important type of observational method is a correlational study, in which subjects generate scores on a variety of measures. By looking at the pattern of correlations, using a variety of statistical techniques, it is possible to see which factors tend to go together. However, controlled experiments are required in order to determine if the correlated factors are causally related.

Second, should educational research be based on quantitative measures (e.g., those involving numbers) or qualitative measures (e.g., those involving verbal descriptions)? Experiments may use either type of measure, depending on the research hypothesis being tested, but even qualitative descriptions can often be converted into quantitative measures by counting various events.

Third, should educational research be basic or applied? In a compelling answer to this question, Donald Stokes argues for “use-inspired basic research” (1997, p. 73). For example, in educational research, experimental researchers could examine basic principles of how instruction influences learning, that is, experiments aimed at the basic question of how to help people learn within the practical setting of schools.
3.4 MOTIVATION IN RESEARCH

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

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 relationship, social thinking and awakening, and the like may as well motivate (or at times compel) people to perform research operations.

The following section presents the research questions, research objectives and research hypothesis for this study.

3.5 RESEARCH QUESTIONS

1. What would be the achievement of the students in English Languages treated through Bilingual Method?
2. What would be the achievement of the students in English Languages treated through Direct Method?
3. Is Bilingual Method more effective than the direct method for teaching English as a second language to the secondary level students under West Bengal Board of Secondary Education?
4. Does the performance of students in language learning by the direct method as compared to the bilingual method is inferior in respect of listening, reading, writing and speaking?
5. Does improvement in language learning results in the improvement of language structure and vocabulary comprehension?
6. What would be the retention of the students in English Languages treated through Bilingual Method and Direct Method?
3.6 OBJECTIVES OF THE PRESENT STUDY

1. To estimate the achievement of students in English treated through Bilingual Method.
2. To estimate the achievement of students in English treated through Direct Method.
3. To compare the achievement of students in language learning by the Direct Method and Bilingual Method
4. To compare the achievement of students on four skills of language learning, namely. Listening, speaking, reading and writing.
5. To compare the achievement of students in language learning in respect of language structure and vocabulary comprehension.
6. To compare the retention of students in language learning by the Direct Method and Bilingual Method

3.7 HYPOTHESES OF THE PRESENT STUDY

H₁: The achievements of students treated through Direct Method and Bilingual Method do not differ significantly.

H₂: The achievements of students treated through Direct Method and Bilingual Method in four skills of English Language do not differ significantly.

H₃: The achievements of students treated through Direct Method and Bilingual Method on the structure of English Language do not differ significantly.

H₄: The effects of interactions between strategies and content organization on the achievement of students in English do not differ significantly within the school.

H₅: The retention of students treated through Direct Method and Bilingual Method in four skills of English Language do not differ significantly.

3.8 SCOPE AND DELIMITATIONS OF THE STUDY

3.8.1 SCOPE OF THE STUDY

- This study would be restricted to students of class IX only
- This study would also be restricted to the students under W.B.B.S.E. only.
• The teaching would also be restricted to a selected prose piece and a poetry piece from the English Text Book “Bliss” from Class IX only.

3.8.2 DELIMITATIONS OF THE STUDY

• The present study has been delimited to the students of class IX only

• The study is limited to the students studying under West Bengal Board of Secondary Education (W.B.B.S.E.) only.

• The study considers students below the age group of 15 years only.

• The study also considers teachers teaching English Method in the selected schools of West Bengal Board of Secondary Education (W.B.B.S.E.) only.

SOURCES OF DATA

Both Creswell (1994) and Zikmund (2003) describe the survey method to be best suited for gathering view of perceptions, because of its consistency and robustness. Data were collected from the primary sources as well as secondary sources. In order to obtain empirically dependable answers to the research questions and to test the formulated hypotheses, the researcher developed two types of tools: Instructional tool and Evaluation tool. The researcher made two lesson plans on proposed prose piece to teach in both the bilingual and the direct methods. The researcher also made a standardized, reliable and valid achievement test for making evaluation tool.

3.9 POPULATION AND SAMPLE

3.9.1 Population: A research population is generally a large collection of individuals or objects that is the main focus of a scientific query. It is for the benefit of the population that researches are done. However, due to the large sizes of populations, researchers often cannot test every individual in the population because it is too expensive and time-consuming. This is the reason why researchers rely on sampling techniques. A research population is also known as a well-defined collection of individuals or objects known to have similar characteristics. All individuals or objects within a certain population usually have a common, binding characteristic or trait.

 Usually, the description of the population and the common binding characteristic of its members are the same. "Government officials" is a well-defined group of individuals which can be considered as a population and all the members of this population are indeed officials of the government.
Types of Population in Research

Target Population: Target population refers to the entire group of individuals or objects to which researchers are interested in generalizing the conclusions. The target population usually has varying characteristics and it is also known as the theoretical population.

Accessible Population: The accessible population is the population in research to which the researchers can apply their conclusions. This population is a subset of the target population and is also known as the study population. It is from the accessible population that researchers draw their samples.

The population of the study are the students of class IX under W.B.B.S.E.

3.9.2 Sample: This refers to the number of items to be selected from the universe to constitute a sample. This is usually a major problem before a researcher. The size of sample should neither be excessively large, nor too small. It should be optimum. An optimum simple is one which fulfils the requirements of efficiency, representatives, reliability and flexibility. While deciding the size of sample, researcher must determine the desired precision as also an acceptable confidence level for the estimate. The size of population variance needs to be considered as in case of larger variance usually a bigger sample is needed. The size of population must be kept in view of for this also limits the sample size. The parameters of interest in a research study must be kept in view, while deciding the size of the sample. Costs too dictate the size of sample that we can draw. As such, budgetary constraint must invariably be taken into consideration when we decide the sample size.

The Sample of the study will be 00 students of class IX of Kolkata and South 24 Parganas districts of West Bengal

3.10 TOOLS AND TECHNIQUES OF RESEARCH

Tool: - In order to obtain empirically dependable answers to the research questions and to test the formulated hypotheses, the researcher has to develop two types of tools:
1) Instructional tool and
2) Evaluation tool.

The researcher has to make two lesson plans on proposed prose piece to teach in both the bilingual and the direct methods. The researcher also has to make a standardized, reliable and valid achievement test for making evaluation tool.

**Design**

*Total sample (200)*

- School-1: 50
  - Exp.: 25
  - Cont.: 25
- School-2: 50
  - Exp.: 25
  - Cont.: 25
- School-3: 50
  - Exp.: 25
  - Cont.: 25
- School-4: 50
  - Exp.: 25
  - Cont.: 25

**Experimental Design (200)**

- Experimental Group (100)
  - Pre-test (Achievement test in English)
  - Teaching through Bilingual Method
  - Post-test (Achievement test in English)

- Control Group (100)
  - Pre-test (Achievement test in English)
  - Teaching through Direct Method
  - Post-test (Achievement test in English)
3.11 DEFINITION OF IMPORTANT TERMS

Operational Definition:

**Bilingual Method of Teaching:** Bilingual method means a method where two languages i.e., the mother tongue and target language are used. Here mother tongue is used to achieve target language. This method is based on the similarities and differences may be of situation, sounds, vocabulary, structure etc. If these differences or common things are known well, then learning of a foreign language is facilitated considerably when the child is learning his mother tongue, he becomes familiar with the situations and picks up the language correctly. While learning the foreign language, the situations are created again in order to make the child to learn the foreign language.

**Direct Method of Teaching:** Direct Method of teaching English means teaching English directly through English medium. In this method, mother tongue is not used at all. It is also called the natural method of teaching. This method came as a reaction against bilingual method. According to Webster’s New International Dictionary, “Direct method is a method of teaching a foreign language, especially a modern language through conversation, discussion and reading, in the language itself, without the use of pupil’s language, without translation and without the study of formal grammar. The words are first taught by pointing to object or picture or by performing actions.”

RESEARCH INSTRUMENT

Selection of Research Instrument

Selection of instruments is very important. Selection is guided by the purpose, the group, individuals with whom the instrument will be used and other technical aspects like suggested by Pfeiffer and Ballew (1998), who have given ‘25’ technical considerations for selecting an instrument. They are validity, reliability, objectivity, theoretical base, behavioural orientation, observability, special training, language, sophistication, complexity, supplementation, adaptability, transparency, fakeability, norms, availability, copyright restrictions, time required, expense, special materials, noxiousness, scoring complexity, data reduction, handouts and familiarity. Out of technical aspects, reliability, validity and objectivity are the most important. The instruments must have high reliability and validity.
RESEARCH TOOL

TOOLS AND TECHNIQUES OF RESEARCH

To obtain required answers to the research questions and to test the formulated hypotheses, the researcher has to develop two types of tools Instructional tool and Evaluation tool. In addition to this the researcher made two lesson plans on proposed prose and poetry piece to teach in both the bilingual and the direct methods. The researcher also made a standardized, reliable and valid achievement test for making evaluation tool.

3.12 ANALYSIS AND INTERPRETATION OF DATA

After the scores are available, there is need to interpret the scores on the basis of conceptual framework and relevant theoretical aspects. For this we make use of quantitative techniques.

Statistical techniques are extensively used in large institutions. They provide an indispensable tool for collecting, organizing and interpreting data expressed in numerical terms. By synthesizing the data, these methods can facilitate the derivation of conclusions and formulation of generalizations. In research, we gather data for various attributes or qualities which exhibit differences in magnitude and which may vary along many dimensions. Such attributes or qualities are called variables. When we have two variables, it is called Bi-Variate data. Thus we may like to know the degree of relationship between the two variables of such data. This degree of relationship is known as correlation. It is represented quantitatively by the coefficient of correlation. Its value ranges from -1.00 to +1.00.

3.13 REFERENCING METHOD

Harvard Style of Referencing is use in this research

In scientific and technical report writing a researcher will often want to refer to other work that is somehow related to your own. It is best to do this in a clear and unambiguous way. Indeed, failure to properly acknowledge the sources may leave a researcher open to accusations of plagiarism.

There are a number of different standard ways of referencing other people’s work, but they all share some features.

Main Features of the Harvard System

Citations and references follow these general principles:
A citation appears, in parenthesis, in the main text. It normally consists of the author's name, year of publication and (optionally) page numbers. It is intended to uniquely identify an individual item in the reference list.

The reference list gives full details for each citation that appears in the main text. The structure and format of an individual reference may vary, depending on the type of work being referred to. For example, identifying a web page requires a uniform resource locator (URL), while identifying a book does not.

A citation is inserted at the appropriate point in your text. This is intended to indicate the existence of related work that is relevant to the current text. A full reference is given separately for each citation. This is intended to give sufficient information to enable the reader to trace (and in principle acquire) a copy of the corresponding work.

The Citation

There are two ways to cite a work - which one is chosen depends on whether or not the author's name can appear in the text without interrupting its flow.

If the author's name can be used without interrupting the flow of the text, then it is cited by inserting the date of the referred work, within round brackets, immediately after the author's name. For example:

... Brin and Page (1998) designed a search engine that is widely used and has earned them a great deal of money ... 

Reference List


If, on the other hand, the author's name would interrupt the flow of the text, then the author's name is included within the brackets, along with the date. For example:

... Google's search engine (Brin, S. & Page, L. 1998) is widely used and has contributed greatly to the company's success ... 

Quotations

It is sometimes necessary to quote a passage of text from a related work. If the passage is a single sentence or shorter then it is simply enclosed in quotation marks, and accompanied by a citation in the normal way. For example:

Creaney (2009) advises that "If the passage is a single sentence or shorter then it may simply be enclosed within quotation marks".
It is recommended that "If the passage is a single sentence or shorter then it may simply be enclosed within quotation marks". (Creaney 1990).

Reference List


Each reference in the list should begin on a new line and they should be sorted by author name.

- If an author has several works in the list, then those references should be sorted by year - with the earlier ones coming first.
- If an author has several works in the same year, then those references should be distinguished by appending a lower case letter to the date.

This is illustrated in the example below.

Brin, S. & Page, L., 1998. The Anatomy of a Large-Scale ... ... 
Creaney, N., 2005a. (Editor), AICS '05, Proceedings of ... ... 
Creaney, N., 2005b. Generating Quantifiers ... ... 
Creaney, N., 2006. (Guest Editor), Artificial Intelligence Review ... 
Knuth, D.E. & Moore, R.W., 1975. An Analysis of ... ... 

Reference of Journal Article

A reference to a journal article has the following structure:

- **Author's surname** followed by a comma.
- **Author's initials** in capitals, with full-stop after each and a comma after the final full-stop.
- **Year of publication** followed by full-stop.
- **Full title of the article - not in italics** - with capitalization of first word and proper nouns only - followed by full-stop unless there is a sub-title. If there is a sub-title, this follows a colon at end of full title, with no capitalization except for proper nouns - followed by full-stop.
- **Full title of journal**, in italics, with capitalization of key words - followed by comma.
- **Volume number**
- **Issue/Part number** in brackets, followed by comma.
- **Page numbers** preceded by "pp." for a range of pages and "p." for a single page - followed by full-stop.


Standard Harvard Style

The description given in this knol is based on the related British Standards (British Standards Institution 1989, 1990), but in practice there are often minor variations in usage - particularly outside the UK.

Most of the more common reference types and formats are listed above, and alternative lists can be found in Anglia Ruskin University (2007), De Montford University (2008) and, of course, British Standards Institution (1989, 1990). You may occasionally find the need to reference a type of work that is not covered by any of the above cases. If you are unable to find an exact match then you may have to improvise. If so, you should be guided by the following advice:

1. Adopt and adapt the best matching case from those above.

2. Ensure that your reference is clear and unambiguous, and that you give sufficient information to enable your reader to find the source.

If you are in any doubt about how to reference a particular item, you should follow the conventions of the institutions that you are working in. In a university or college you might ask advice from your lecturer or librarian. Alternatively you might consult any existing reports within your institutions to learn what previous authors have done.
REFERENCES


