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Chapter Three
Tools and Procedures

3.0 Introduction

This chapter reviews various types of research studies and discusses the procedures adopted by the researcher to collect and analyze the data for the present study.

3.1 Types of Research Study

The results obtained in a research work depend much upon the credibility of the methods used. The choice of inappropriate methods or procedures can invalidate research work (Hillway 1969). Research studies can broadly be divided into two kinds: Descriptive and Experimental.

Descriptive research is concerned with the analysis of the relationships between non-manipulated variables. On the basis of the sample data, a descriptive researcher intends to arrive at conclusions or generalizations that have universal validity. The expectation is that if variable A is systematically associated with variable B, prediction of future phenomena may be possible. Descriptive research is also known as non-experimental or correlational research. It can be quantitative or qualitative in nature. Quantitative research consists of those studies in which the data can be analysed in terms of numbers whereas qualitative research deals scientifically with persons or events and so forth, without involving any
kind of statistical analysis. Qualitative research seeks to determine how a particular person or a group of individuals belonging to a specific category and/or their behaviour is affected by a certain fact or variable or stimulus. Qualitative data are collected in form of words (field notes, audio recordings, official records, views and comments, diaries etc.). Unlike quantitative research, hypothesis is not formed beforehand but the researcher tends to analyze obtained data inductively. A holistic picture emerges as the data are collected and examined. The data obtained through a qualitative research work can help us to form some broad generalisations. All research studies do not have to be exclusively either quantitative or qualitative. Descriptive research studies include the following methods: document or content analysis, ethnographic studies, surveys, case studies and so on. The different types of descriptive research studies may approach the problem differently but they all lead to generalisations beyond the given sample or situation.

In an experimental research study the investigator attempts to deliberately and systematically manipulate certain variables, stimuli or environmental conditions with a view to observing how these may affect the condition or behaviour of the subjects. The researcher must be aware of all the relevant factors so that he/she may be able to establish an association between manipulated factors and observed effects. After defining the problem, the researcher proposes a tentative hypothesis/answer to his/her problem and confirms or rejects the proposed hypothesis in the light of the experiment that is carried out. An experiment is carried out to establish a cause and effect relationship between a variable or factor and
some observed result under predetermined conditions. The experimenter can deal with a single variable or multiple variables at a time.

An experiment generally involves the comparison of the effects of a different treatment or no treatment. In an experimental study, generally, there are two groups of subjects: one that receives the treatment and the other that does not. The former is referred to as "experimental group" and the latter as "control group". The experimental and the control groups are as nearly equated as possible in terms of age, sex, IQ level and other characteristics. The experimenter can also administer pretest and posttest if the design of the experiment requires him/her to do that.

3.1.1 Various Types

In this section we discuss some important types of research studies.

a) Ethnographic Study: The ethnography as a research method was originally developed by anthropologists, who wished to study a society or some aspect of it or a culture in depth. In its early application this approach consisted of participation observation, conversation or interviews, and the use of informants to study the cultural characteristics of primitive people. Fieldwork is vital to this method of research.

The ethnographic research is no longer limited to anthropological studies. It has been used effectively in many a study like: social atmosphere of school, intellectual and emotional experiences of students, concerns and relations of staff and the administration, and class room observations etc.
Data on many variables are collected over an extended period of time in a naturalistic setting, usually through observation and interviews (Fraenkel and Wallen 1993). The emphasis in this type of research is on documenting the everyday experiences or activities of a group of individuals. Ethnographic researchers attempt to understand an ongoing situation or a set of activities that cannot be predicted in advance. That means, precise hypotheses are not formulated before the study begins. Interim conclusions are made and these are revised in the light of further observations.

b) Action Research: Action research is more useful to practitioner researchers who have identified a problem during the course of their work and think it is worthwhile to investigate it in some depth and if possible, to improve practice. Cohen and Manion (1980 in Bell 1993) describe action research as “essentially an on-the-spot procedure designed to deal with a concrete problem located in an immediate situation”. Action research is situational. It uses scientific methods but its focus is not on obtaining generalisable scientific knowledge but on obtaining precise knowledge for a particular situation and purpose. A constant monitoring of the research process over a period of time is possible. Necessary modifications or adjustments can be made in the light of feedback. The ultimate aim is to improve practice in some or the other way. Though the findings of action research are applicable to the immediate context, the research has a long-term perspective.

Action research needs to be planned in the same systematic way as any other type of research and the methods selected for gathering data will depend on the nature of the information required. Action research is not a
method or technique but an approach. Empiricism is its distinguishing feature. It relies chiefly on observation (participatory as well as non-participatory) and behavioural data (Cohen and Manion 1994). Action research has received more publicity in the social sciences over the years. It could be used in areas like teaching methods, procedures for evaluation, in-service development of teachers, administration and so on.

c) Case Study: The case study is an in-depth investigation of an individual unit - a single person, a group, a class, a school or a community. A ‘case study’ research can be carried out at a particular point of time (cross-sectional) or over a period of time (longitudinal). Case study is conducted to “determine the variables and the relationship among the variables” that influence the behaviour of the subject/s under study. In a way, it seeks to identify the causative factors and explanatory data to account for the ‘multifarious’ symptoms or phenomena that currently characterise the subject. Though there is a focus on the single unit in a case study, the case study researcher intends to establish generalisations about wider population to which that unit belongs.

d) Documentary Research: The purpose of documentary research is to study events or conditions of the past, to interpret educational or other documents and so on. It involves “careful collection of available records relating to the subject under investigation and a thorough analysis of what these records disclose together with a synthesis of the conclusions to be derived from them” (Hillway 1963). In documentary research data already exist in form of records, documents, monuments, pictures, and papers etc. Data may be classified into two main groups: Primary sources which
consist of firsthand information such as testimony of an eyewitness or an original written document; and Secondary sources which consist of second-hand information such as description of an event by a person who was not present when the event occurred. The importance of primary sources is generally stressed but we cannot neglect or overlook secondary sources. Authenticity of source materials is to be verified before the research work is started and the available documents or records have to be evaluated externally as well as internally.

3.1.2 Survey Research

Survey is an important type of research study. The aim of a survey is to obtain data from a considerable size of the representative sample of the population under study. Enough care has to be taken to ensure that the sample population is truly representative of the universe. The most common types of instruments used in a survey research are the questionnaire and the interview schedule. The other methods are observation, tests, and score cards. The mass of data obtained through questionnaires or interview or observation has to be reduced to a form suitable for analysis and interpretation. The researcher is then able to extract patterns or make comparisons or determine the relationships that exist between specific events or factors.

It is important for the researcher to carefully pilot the instruments before they are already administered to the selected sample. All respondents to the questionnaires or interview are asked the same questions. And it is desirable to make sure that all questions mean the same
to all respondents. Questions that may elicit vague responses should be avoided. The objectives of an observation should be clearly defined. A survey research makes use of both cross-sectional and longitudinal techniques. In a cross-sectional study data are gathered or measurements made at the same time for all individuals in the selected sample. The longitudinal study collects data over an extended period of time, so that change or growth within the group or sample can be discovered. We shall discuss the questionnaire and the interview schedule in some detail.

(a) The Questionnaire

The questionnaire is a written substitute for the interview schedule. The former is rather 'impersonal', unlike the interview. But, when properly constructed and personally administered, the questionnaire can prove to be a very useful device for collecting data in a survey research. The researcher has an opportunity to explain the purpose of the study and the meanings of the items that are not clear or to establish a rapport with the subject/s when the questionnaire is administered personally. The construction of a good questionnaire is not easy.

In order for a questionnaire to be good it must possess the following qualities. Directions or instructions should be clear and complete. Items should be arranged in a logical order. The questionnaire should help the respondents to organise their own thinking so that the researcher gets logical and objective answers. Questions should be as short as possible but long enough to elicit required information. Each individual question should deal with a single idea. Wording of the questions should be simple and
unambiguous. Enough care has to be taken not to reveal what kind of preferences or answers are expected from the respondents.

The type of questionnaire to be used depends on the purpose of the study and the kind of data the researcher wants to collect. The questionnaire can be controlled-response or closed-form type and unrestricted or open-form type. Many questionnaires contain both controlled-response and open-form type items. Controlled-response type questions require the respondents to mark 'yes' or 'no', or mark out an item from a list of suggested responses; or write a short response. It is easy to fill out closed-form questions and also easy to tabulate and analyze data gathered in this way. Controlled-response type questions can be coded. A code number is assigned to each of such questions and then the frequency of the occurrence is counted. For example, Number 1 for 'Yes' and 2 for 'No' or 1 for 'Female' or 2 for 'Male' and so on. On the other hand, open-form questions require the respondents to provide responses freely in their own words. Responses to such questions cannot be reduced to code numbers.

Questionnaires should be tested for their validity and reliability. The questionnaire is valid when it asks the right questions phrased in the least ambiguous manner. Pilot testing within a small group of persons similar to those who will be used in the study can be very useful. Suggestions from colleagues and experts in the field may help to improvise the questionnaire. Reliability of the questionnaire is inferred by a second administration or the administration of an alternate form. If the questionnaire elicits similar type
of responses from different subjects in similar conditions then it can be said to be reliable.

(b) The Interview Schedule

The interview is an important research technique used in survey research. Cannell and Kahn (1968 in Cohen and Manion 1994) define a research interview as follows: ‘(The interview is) a two-person conversation initiated by the interviewer for the specific purpose of obtaining research relevant information and focused by him on content specified by research objectives of systematic description, prediction, or explanation’. In a sense, it is an oral questionnaire. There are several advantages of the interview. The interviewer can obtain detailed bits of information by establishing a rapport with the subjects. The researcher can explain explicitly the purpose of the interview and if there are misunderstandings or misinterpretations they can be clarified immediately. The interviewer must have a clear conception of what information is required and the questions should be arranged in a logical sequence. An extremely long interview should be avoided. The researcher must assure the subjects that their responses will be held in strict confidence. If it is possible, the interview should be tape-recorded. If it is not, then the responses should be noted down retaining the actual wording so far as possible. The interview can serve as a primary means of gathering data or can also be used to follow up unexpected results or to validate other methods.
There are four types of interview: (i) the structured interview, (ii) the unstructured interview, (iii) the non-directive interview; and (iv) the focused interview. In the ‘structured interview’ content and procedures are organised in advance. The sequence and wording of the questions is predetermined by a means of schedule. There is little room for modification in this type of interview. The ‘unstructured interview’ has a greater flexibility and freedom. The specific research objectives determine the content of the questions but the sequence and wording are not set in advance. In the ‘non-directive’ interview there is minimal direction or control exercised by the interviewer. Respondents are allowed to express personal feelings as fully and spontaneously as possible. There is a more interviewer control in the ‘focused interview’. It focuses on subjects’ responses regarding a particular question under study. Data from such research interview enables the interviewer to substantiate or reject previously formulated hypotheses.

The structured interview is most frequently used as a method to elicit information in social and educational research. Construction of an interview schedule is considered very important. Three kinds of items are used in the construction of schedules. These are: (i) ‘fixed alternative’ responses, in which the respondents choose from two or more alternatives; (ii) open ended responses, in which a ‘frame of reference’ is provided for the responses but there is a minimum restriction on the answers and the expression; and (iii) preference scales, is a set of verbal items to which the interviewee responds by indicating degree of agreement or disagreement on a given scale of alternatives such as - Strongly agree, Agree, Undecided, Disagree, and Strongly Disagree. Validity of an interview is greater when it
is based upon a carefully designed structure and it thus ensures the elicitation of significant information.

3.1.3 Target Population and Sample

The present study aims at identifying Learning Styles of Good Learners of English at the Undergraduate level in the state of Gujarat. The Good Language Learner has not been defined in SLA literature. But for the purpose of the present study the researcher set a specific criterion for a Good Learner of English in our situation. The Good Learner in this study was the one who had secured at least sixty percentage or more marks in English Language paper in the previous examination. No proficiency test was administered in this regard. The research did not intend to focus on all learners of English in general but on those students who had shown a proven mastery in English language paper in the last exam. The study also did not intend to focus only on the students who offered English Literature or Language as their special subject at college. Undergraduate level means the ‘tertiary stage’ of education. Like many other states in India, Gujarat has opted for the 10+2+3 pattern of education. The scope of the study is delimited to those students who study English at the collegiate level as a special subject or as one of the subjects. The study intended to cover students from diverse educational and socio-economic backgrounds. Both male and female learners are represented in this study.

The sample was drawn from colleges in Ahmedabad, Anand and Vallabhbh Vidyanagar. A total number of 125 students were selected for the representative sample of the universe. All of the subjects were from the
Arts and the Commerce faculties, from both Gujarati and English medium school backgrounds, from middle and upper economic classes, from rural and urban areas and of both male and female sexes. The teachers of these students were consulted before the students were approached and their teachers too recommended them as Good Learners of English.

3.2 Tools for Data-Collection

Since this research study depends mainly on a survey, it was necessary to use tools for data collection such as a questionnaire and an interview format. Given below are the procedures adopted for the standardization of the tools for data collection.

3.2.1 The Questionnaire

A majority of subjects were to be approached through a questionnaire and therefore, the investigator found it necessary to pay greater attention to the preparation of the questionnaire. The following procedure was adopted for piloting and finalisation of the items in the questionnaire.

(a) The Pilot Version

The pilot version of the questionnaire consisted of 49 items in total (see Appendix). The first item was devoted to the personal details of the respondents. These included: Name, Sex, Age, Year of Study, College / Institution, Results of the Last Exam: English Language Paper and Overall;
and Medium of Instruction. The remaining items focused on the various learning strategies. Of these six items were open-ended and the rest were controlled response items in which the respondents had to mark 'yes' or 'no' against each of them.

The pilot version was tried out on a small sample of 20 students. It was also circulated among 10 ELT experts for comments and suggestions. Having given the pilot version of the questionnaire to the sample, the researcher found out that: (a) students could understand most of the items in the questionnaire and responded to them without any difficulty; (b) they needed some help in items number: 2, 7, 15, 26, 38, and 39; and failed altogether to understand items number: 12, 16, 20, 34, 41, 43, 44, 46, and 47 despite a short intervention and explanation by the researcher. In view of experts' comments and discussion with the sample, necessary changes were made in the pilot version to prepare the final version of the questionnaire. The last mentioned and other items number: 22, 25, 37, 42 and 45 were dropped in the final version of the questionnaire. In total there were six open-ended items in the pilot version – number: 12, 26, 29, 34, 37 and 44. Of these two items - 26 and 29 were retained in the final version. Both of these dealt with metacognitive strategies. Item number 30 in the final version of the questionnaire did not appear in the pilot version. It was later added to the final version.

The comments and suggestions received from the ELT experts were studied and summarised by the investigator. The major points among these included: (a) it was pointed out that the technical terminology used in the questionnaire may not be understood by the students and so, it should be
avoided as far as possible, (b) the number of items in the questionnaire may inhibit some learners and therefore it was advisable to reduce the number of questions to a reasonable level; and (c) in view of the difficulty in processing open-ended questions, it was desirable to drop all except two open-ended items and to construct the questions using controlled-response formula.

In addition to these major points, the experts’ comments also helped the investigator to identify items in the questionnaire that were not specific enough and would have been difficult in terms of analysis of the strategy used by the learner. On the basis of these comments and suggestions as well as the experience of the students, the investigator carried out certain changes in the questionnaire and arrived at the final version of the questionnaire for data collection on the use language learning of strategies.

(b) The Final Version

The final version of the questionnaire consisted of two parts: (i) personal information questions and (ii) questions on the use of language learning strategies (see Appendix). The questionnaire assured the subjects that their responses will be used only for research purpose and that their identity shall not be revealed.

The personal information section elicited data on the following: Name, Sex, Age Group, Class, College / Institution, Main Subject (if any), Faculty, Results of the Last Exam: Overall and English Language Paper; and Medium of Instruction at the school level.
The second section of the questionnaire elicited information on the use of language learning strategies. There were 34 questions in all. And they dealt with four different categories of learning strategies, viz. cognitive, metacognitive, social and affective. There were 15 questions on cognitive strategies, 11 (9 controlled-response and 2 open-form) on metacognitive strategies, 5 on social strategies and 3 on affective strategies. Individual cognitive strategies covered in this questionnaire are: practice, memory, imitation, recombination, imagery, self-talking in English, testing knowledge of the language, guessing, note-taking, resourcing, analysis, inference, L1-L2 comparison, and developing L2 system. Individual metacognitive strategies included in the questionnaire are: monitoring, advance organisers, evaluation, creating practice opportunities, selecting suitable learning styles or strategies, deciding goals for learning and efforts to meet the standards of language use taught in the classroom. Social strategies covered in the questionnaire are: approaching Target Language speakers, efforts to understand the target language culture, and asking questions related to the correct use of language. Examples of affective strategies are: recording or reflecting upon language learning experiences, thinking in mother tongue and rewarding oneself after the successful completion of a language task. Among the total 34 items, 32 are controlled response and 2 are open-ended (items no. 19 and 22). The open-ended items are aimed at collecting data regarding the relative importance given either to form or meaning of language or both by Good Language Learners: and behavioural pattern to overcome problems while speaking English.
3.2.2 Interview Schedule

In addition to the use of the questionnaire for data collection, it was found necessary to interview some of the respondents for in-depth investigation on the use of language learning strategies. For this purpose the researcher decided to approach a randomly selected sample of respondents. Evidently the controlled response format of the questionnaire does not allow some vital information to be yielded through that mode. Therefore, the interview can be a more valuable tool for data collection on learning strategies. However, a totally unstructured interview can present a variety of problems such as unsystematic and incomplete answers, lack of sequence in the discussion of important points, and difficulty in retrieving the data for analysis and interpretation. Keeping these problems in mind it was decided to structure the interview in the best possible manner. For the purposes of reliability and validity the investigator prepared an interview format. The interview format consisted of a set of questions related to the items in the questionnaire. Since the questionnaire contained only two open ended items it was decided to focus on some of the remaining areas in the cognitive, metacognitive, social and affective strategies during the interview.

In line with the established procedures the interview format was also tried out on two respondents. The format was also circulated among the ELT experts for their comments and suggestions. This piloting of the interview format helped the investigator to improve upon the first draft and to arrive at the final version of the interview format.
(a) Pilot Version

The first draft of the interview format was treated as a pilot version (see Appendix). The pilot version of the interview schedule contained a total of 20 questions dealing with all the four broad categories of learning strategies. It was tried out on two respondents in Ahmedabad. These pilot interviews were audio recorded and the experience of piloting was used for arriving at the final draft of the interview format. The following points were noted during the piloting of the interview format:

1. It was found necessary to use a battery operated tape recorder because finding a place with an adequate electric supply can create delays and inconvenience to the respondents.

2. The pilot draft of the interview format was rather long and it was found necessary to reorganise the questions in the pilot draft, so that certain major topics were covered under main questions and minor information could be elicited through sub questions.

3. In addition to the audio recording it was decided that the investigator would keep notes of the discussion.

(b) Final Draft

On the basis of the field trial the final draft of the interview format was prepared. The final version of the interview schedule consisted of 10
questions in all. Care was taken to include questions on cognitive, metacognitive, social and affective strategies (see Appendix).

3.3 Data Analysis

The following section reports on the procedures and statistical measures adopted to analyse the data obtained through the strategy questionnaire. It also discusses the Computer Analysis and Visual Presentation of the data.

3.3.1 Statistical Measures

The investigator adopted such statistical measures as were suitable for the kind of data that were to be analysed. There were 125 respondents to the strategy questionnaire. They provided data in form of either 'yes' or 'no' response to each of the question on the use of a learning strategy in a particular learning situation. The responses were converted into quantitative form for the application of appropriate statistical measures.

There were five learner attributes that were studied in relation to the learning strategies employed by the Good Learners of English at Undergraduate level in Gujarat state. These were – sex, age group, faculty, medium of instruction, and language competence. For comparison between the use of different strategy groups or categories and various learner attributes the researcher used Z- test, which is appropriate for a larger sample. Interpretation of available data was based on Z-score. Mean, SD
and Z-score for each comparison are presented in a tabular form elsewhere in the thesis.

The statistical measures used for the analysis of the data were as follows:

Coefficient of variation (C.V.) has been calculated using the following formula.

\[ C.V. = \frac{s}{\bar{X}} \times 100 \]

where \( s \): standard deviation of the sample
\( \bar{X} \): sample mean of the sample.

Hypothesis:

The hypothesis is \( H_0: \mu_1 = \mu_2 \) against \( H: \mu_1 \neq \mu_2 \), i.e. \( H_0: \) There is no significant difference between two population mean, where \( \mu_1 \) is the mean of first population and \( \mu_2 \) is the mean of second population.

To test the above hypothesis we have used Z-test and the formula for calculating the Z-scores is as follows:

\[ Z = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{s^2_1}{n_1} + \frac{s^2_2}{n_2}}} \sim N(0,1) \text{ Distribution} \]
where $X_1$: mean of first sample
$X_2$: mean of second sample
$s_1^2$: variance of first sample
$s_2^2$: variance of second sample
$n_1$: size of first sample
$n_2$: size of second sample.

Z-scores are compared with the Z-table values. Z-table value at 5 % level of significance is $Z_{0.05} = 1.96$.

If $Z$-score < $Z_{0.05}$, then accept hypothesis $H_0$ at 5 % level of significance (i.e. there is no significant difference between the means of two populations.) otherwise reject $H_0$ at 5 % level of significance (i.e. there is significant difference between the two population means.

3.3.2 Computer Analysis

Data on the learning strategies adopted by Good Language Learners and the Better Language Learners were obtained through a strategy questionnaire. A total of 32 controlled-response items were analyzed with the help of the Microsoft Excel (version 2000) programme which is an integral part of the Microsoft Office, a widely used computer software. Microsoft Excel is specially used for statistical data analysis. The tables and charts presented in chapter five were also created with the help of this programme.
3.3.3 Visual Presentation

Available data was analyzed to arrive at conclusions on the use of learning strategies by students at the undergraduate level in the state of Gujarat. For an easy and clear interpretation of the data, the investigator has presented them in tabular form as well as in the form of pie and bar charts.