CHAPTER – 4

4.0 INTRODUCTION:

In this chapter, the research methodology and procedure, experimental design, objectives of the study, variables, all hypotheses, sampling, group formation, preparation of the treatment, explanation of the four strategies with illustrations, the experiment, preparation of tools and testing, data collection, data analysis and interpretation, use of statistical techniques, collection and interpretation of descriptive data and importance of observation technique in educational research are presented.

4.1 UNDERSTANDING THE ROLE OF RESEARCH:

Research has been part of the language teaching scene for long enough to enable us to make some general observations about the nature of research and the contribution of research to language-pedagogy. Research is not started out of the blue. Individual studies fit into a research context. They are prompted by fundamental questions or practical needs. Thus, the research on teaching methods in the sixties responded to the theoretically interesting and
practically important questions, of whether the new audio-lingual method would lead to substantially better results than the traditional method. This was the research context of the Scherer-Wertheime study which was undertaken 'to draw some definite scientific conclusions about the relative merits of the two methods' (Scherer and Wertheimer 1964:12). It built up on three previous studies which the authors thought were inconclusive.

An interesting characteristic of research on language learning is that it generates challenging scientific concepts, models and predictions, in other words, theories in the T3 sense, such as the concept of 'interlanguage', 'the monitor theory', and the 'acculturation theory or the distinction between learning and acquisition.'

One of the crucial contributions of research to language teaching theory has been that it has introduced 'empirical procedures' into the study of language education. Research is 'empirical' when it employs observation, description, and experiments as research techniques. And it has already been noted that language teaching theory has had a strong preference for speculation, the expression of personal opinion, the explanation of practical experience, and participation in controversy – all perfectly
legitimate ways of finding directions provided they are balanced by systematic empirical procedures.

The language laboratory is the product of the language research. The day-to-day advanced language class-room techniques, new methods and approaches of teaching and learning language, English for science students, Engineering students, medicine students and so on are the underlying contribution of research on language teaching.

Thus, research represents an element of disciplined study and sustained enquiry. It provides documentation and evidence. It balances the commitment and global approach to teaching and the necessary value judgements of policy-making with an essential measure of information, conceptualization, and analysis, and an attitude of critical detachment and caution.

4.2 THE CASE FOR A RESEARCH APPROACH:

Research can be justified on several arguments:

1. Second language teaching – like any other educational enterprise – represents an investment in human and financial resources. It is a life-time career. It occupies many man-hours of student time. Considerable investment is required for
facilities, technical equipment and teacher education, and for
the production of instructional materials such as grammars,
text-books, dictionaries and audio-visual aids.

Planning, decision-making, practice, and innovation in
this area should therefore, not exclusively rely on tradition,
opinion, or trial-and-error but should be able to draw on
rational enquiry, systematic investigation, and, if possible,
controlled experiment.

2. In demanding research, it has been openly admitted that there
is a lack of knowledge in certain areas of language teaching.
This doesn’t mean that one knows absolutely nothing. On the
contrary, language pedagogy had accumulated a fund of
knowledge. An important task of research is to find out what is
known and to document it, and in this way, to give access to
the large body of information which already exists. At the
same time, research can dispel misinformation and reveal
those areas where knowledge is inadequate. It can indicate the
kinds of investigation that are needed to fill these gaps.

3. A further implication of a research approach is that it cannot
be expected language teaching improves suddenly or
miraculously as a result of an invention or some other
breakthrough. No can it be assumed that there is somewhere in the world a great teacher, expert, or guru who has all the answers. Instead it should be believed that any improvement in language teaching is likely to come about by planned cooperation in which fact-finding, hypothesis teaching, experimentation and the cumulative effect of many painstaking studies will in the long run be more productive than vehement argumentation or the wholesale acceptance of untested global solutions.

4. The individual teacher’s intuition and ingenuity, which have always contributed a great deal to the advancement of language pedagogy, continue to be important. Research is not an alternative to experience and invention. But, it should be practical experience that should be able to stand up to critical enquiry and to empirical tests.

5. The demand for research further implies that a continual examination of current practice should be made as form of ‘quality control’. Language teaching, like other educational activities, has a tendency to become institutionalized. Traditions have developed over more than a century; methods, content, age levels, and sequences of instruction have
remained relatively unchanged. So called ‘new’ methods, ‘new’ courses, and ‘totally different’ approaches often turn out to be only mild variations on traditionally established offerings.

Is the stubbornness of language teaching traditions due to the inevitabilities imposed by the nature of language or language learning, or is it the consequence of a lack of a critical attitude? One should be prepared to scrutinize one’s established practices. Research represents this questioning element in the educational process.

6. Lastly, by helping in developing a more objective outlook upon practice research can assist language pedagogy to grow in status as a ‘well-conceived, rationally supported and thoroughly professional endeavour’.

4.3 BROAD AREAS OF LANGUAGE TEACHING RESEARCH:

The broad areas of language teaching research can be summarized as:

1. the language learner and language learning processes,

2. the language teacher and teaching,
3. the environmental contexts of language teaching and learning,
4. the methodology and organization of language teaching,
5. language in general and the languages and related cultures and societies in particular,
6. historical studies of language teaching.

4.4 RESEARCH METHODOLOGY IN LANGUAGE RESEARCH:

Research is characterized by the fact that it employs explicitly stated methods of enquiry and is able to justify them. Broadly speaking, language teaching research, in the first instance, is educational research, and the principles and procedures of research in education and the behavioural sciences are applicable. These have been well set out in several works, for example, Entwistle (1973), Travers (1978), and Mason and Bramble (1978). In the second place, language teaching research has certain specific characteristics which make it different from other educational research because its subject matter is language. Hence, the research procedures of the language sciences are applicable. It is this interdisciplinary combination of language research with educational behavioural research that gives language teaching research its unique characteristics and peculiar
difficulties. Although, the research design and the techniques of data gathering and data analysis are essentially the same as research in other behavioural science in practice this is often deceptive, because the fact that we are dealing with language and language learning may make it difficult or inappropriate to apply familiar procedures. For example, if a study requires class-room observation that is available in educational research, the categories that have been developed may have to be rethought to meet the conditions of the language class.

As stated back in 4.1 that one of the crucial contributions of research to language teaching theory has been that it has introduced 'empirical procedures'. Through it has been greatly beneficial to introduce empirical procedures', in language teaching theory we have tended to neglect the collection of empirical data. The research approach during the past twenty-five years has counteracted this neglect to a certain extent, and the association of language teaching theory with educational, behavioural and linguistic research has introduced into language pedagogy greater awareness of empirical approaches, although, advances in this have been patchy. In the early sixties, for example UNESCO through its studies of languages for younger children strongly urged that pioneering efforts should be
supported by empirical investigations in different countries, but only few countries took up this lead.

Yet, in language pedagogy even today it has not yet been adequately recognized that empirical procedures have a role to play in every aspect or at every level of our theoretical framework.

A descriptive approach has its place in learner studies and in the study of teaching. Error analysis, as a technique of studying the patterns of difficulty in learning a second language, has been widely used in the seventies.

A descriptive approach to the study of teaching would survey language teaching and learning and observational studies of teaching in class-room settings. The IEA (International Association for the Evaluation of Educational Achievement) studies on English and French on foreign languages in different countries, are examples of surveys of achievement in English and French, and of teaching conditions and other background factors in these countries. However, factual data, based on systematic empirical investigations on teaching, are often very hard to come by. For example, during the seventies language educators, particularly, in the U.S.A, were attracted to individualization of instruction and to several new teaching methods, such as, the silent way, suggestopaedia, and
community language learning. While it is relatively easy to find partisan statements urging readers to adopt these new approaches, it is much more difficult, if not impossible, to obtain accurate accounts, based on observation or descriptive analysis, of how these innovative approaches operate in practice, let alone studies that use empirical methods to evaluate their effectiveness.

4.5 EXPERIMENTAL DESIGN:

Undoubtedly, experimentation is the most scientifically sophisticated research method. It is defined as observation under controlled conditions. It studies observable changes that take place in order to establish a cause and effect relationship. It is the description and analysis of what will be, what will occur or what can be made to occur under carefully controlled conditions. Experimentation consists in the deliberate and controlled modification of the conditions determining an event, and in the observation and interpretation of the changes that occur in the event itself.

Experimental research provides a systematic and logical method for answering the question, “If this is done under carefully controlled conditions, what will happen?” Experimenters
deliberately and systematically manipulate certain stimuli, treatments, or environmental conditions and observe how the condition or behaviour of the subject is affected or changed. They are also aware of other factors that could influence the outcome and remove or control them in such a way that they can establish a logical association between manipulated factors and observed effects. When one engages in experimental research, one does not merely describe a condition, determine the status of something or chronicle past events. Instead of confining activities to observing and describing what exists, one deliberately manipulates certain factors under highly controlled conditions to ascertain how and why a particular condition or events occur.

Experimentation is therefore, the name given to the type of educational research in which the investigator controls the educative factors to which a child or group of children is subjected during the period of inquiry and observes the resulting achievement.

4.5.1 The Post-Test-Only Control Group Design:

The investigator selected the post-test design for the study. This design is similar to the pre-test-post-test control group design except that pretests of the dependent variable are not administered to
the experimental and control group. The steps involved in the post-test only control-group design are as follows:

1. randomly assign subjects to the experimental and control group,
2. administer the treatment to the experimental group but not to the control group, and
3. administer the post-test to both groups.

The combination of random assignment and the presence of a control group serve to control for all sources of internal invalidity except mortality. Mortality is not controlled because of the absence of pre-test data on subjects. However, mortality may or may not be a problem, depending upon the study. If the study is relatively short in duration, for example, no subjects may be lost. In this case, the researcher may report that while mortality is a potential threat to validity with this design, it did not prove to be a threat in his or her particular study since the group sizes remained constant throughout the duration of the study. Thus, if the probability of differential mortality is low, the post-test-only design can be a very effective design.

The data yielded by this experimental design can be analyzed simply by doing a ‘t’ test comparison of the mean post-test scores of
the experimental and the control group. If more than two groups have been studied, then the mean post-test scores can be analyzed using analysis of variance. If the scores depart radically from the normal distribution, then a nonparametric test should be done.

4.6 OBJECTIVES OF THE STUDY:

1. To define some strategies of vocabulary teaching in the subject of English at lower level.
2. To prepare vocabulary explanations, exercises, vocabulary games and communicative tasks to teach vocabulary from five units from class IX text-book of English (lower level).
3. To try out the selected techniques with the students of class IX.
4. To measure the effects of different strategies on the retention and use of vocabulary.
5. To measure the effect of the treatment in relation to sex, I.Q. and achievement in the previous exam.
6. To compare the degree of retention and use of vocabulary among boys and girls, high I.Q. and low I.Q. students, and among high achievers and low achievers.
7. To study the feedback of the teachers who observed the experimental group undergoing the treatment.

8. To arrive at some recommendations for the teachers of English for vocabulary-teaching.

4.7 VARIABLES:

Variables are the conditions or characteristics that the experimenter manipulates, controls or observes.

If a hypothesis and its deduced consequences are well-conceived, two factors are precisely identified:

1. an independent variable, and

2. a dependent variable.

The independent variables are the conditions that the experimenter manipulates in his attempt to ascertain their relationship to observed phenomena.

The dependent variables are the conditions that appear, disappear or change as the experimenter introduces, removes or changes independent variables.

The experimenter constructs an experiment in which he attempts to control all conditions except the independent variable which he manipulates.
In educational research an independent variable may be a particular teaching method, a type of teaching material, a reward, or a period of exposure to a particular condition. The dependent variable may be a test score, the number of errors or speed in performing a task. Thus, the dependent variables are the measured changes in pupil performance attributable to the influence of the independent variables.

4.7.1. Variables In The Study:

The variables in this study are follows:

a. I.Q. and achievement score in the subject are controlled variables.

b. Sex is moderator variable, two levels of sex: 1. Boys 2. Girls

c. Dependent variables: use of vocabulary and retention of vocabulary.

d. Primary independent variables are the four strategies of vocabulary learning.

These four strategies are:

1. Explanation Translation method
2. Vocabulary Exercise
3. Vocabulary Games and
4.8 HYPOTHESES:

H₁ There will be no significant difference in the mean scores of post-test, delayed test and test of use between the experimental group and controlled group.

HYPOTHESIS RELATED TO SEX:

H₂ There will be no significant difference in the mean scores of post-test (words-known) in relation to sex.

H₃ There will be no significant difference in the mean scores of delayed test (words-known) in relation to Sex.

H₄ There will be no significant difference in the mean scores of Use-1 and Use-2 in relation to Sex.

HYPOTHESIS RELATED TO THE TYPES OF TECHNIQUES:

H₅ There will be no significant difference in the mean scores of post-test on known words taught through explanation translation method between the experimental and controlled group of boys only.

H₆ There will be no significant difference in the mean scores of post-test on easy words taught through explanation translation method between the experimental and controlled group of boys only.
H7 There will be no significant difference in the mean scores of post-test and delayed test on known words taught through explanation translation method in the experimental and controlled group of boys only.

H8 There will be no significant difference in the mean scores of post-test and delayed test on easy words taught through explanation translation method in the experimental and controlled group of boys only.

H9 There will be no significant difference in the mean scores of post-test on known words taught through vocabulary exercises between the experimental and controlled group of boys only.

H10 There will be no significant difference in the mean scores of post-test on easy words taught through vocabulary exercises between the experimental and controlled group of boys only.

H11 There will be no significant difference between the mean scores of post-test and delayed test on known words taught through vocabulary exercises in the experimental group of boys only.

H12 There will be no significant difference between the mean scores of post-test and delayed test on easy words taught through vocabulary exercises in the experimental group of boys only.
H₁₃ There will be no significant difference in the mean scores of post-test on known words taught through vocabulary games between the experimental and controlled group of boys only.

H₁₄ There will be no significant difference in the mean scores of post-test on easy words taught through vocabulary games between the experimental and controlled group of boys only.

H₁₅ There will be no significant difference between the mean scores of post-test and delayed test on known words taught through vocabulary games in the experimental group of boys only.

H₁₆ There will be no significant difference between the mean scores of post-test and delayed test on easy words taught through vocabulary games in the experimental group of boys only.

H₁₇ There will be no significant difference between the mean scores of post-test and delayed test on known words taught through communicative tasks between the experimental and controlled group of boys only.

H₁₈ There will be no significant difference between the mean scores of post-test on easy words taught through communicative tasks between the experimental and controlled group of boys only.
H₁₉ There will be no significant difference between the mean scores of post-test and delayed test on known words taught through communicative tasks between the experimental group of boys only.

H₂₀ There will be no significant difference between the mean scores of post-test and delayed test on easy words taught through communicative tasks between the experimental group of boys only.

H₂₁ There will be no significant difference in the mean scores of Use-I between the experimental group and the controlled group.

H₂₂ There will be no significant difference in the mean scores of Use-II between the experimental group and the controlled group.

H₂₃ There will be no significant difference in the mean scores of post test on known words taught through Explanation translation method between the experimental group and the controlled group of girls only.

H₂₄ There will be no significant difference in the mean scores of post test on easy words taught through Explanation translation method between the experimental group and the controlled group of girls only.
H25 There will be no significant difference in the mean scores of post test and delayed test on known words taught through Explanation translation method in the experimental group of girls only.

H26 There will be no significant difference in the mean scores of post test and delayed test on easy words taught through Explanation translation method in experimental group of girls only.

H27 There will be no significant difference in the mean scores of post test on known words taught through Vocabulary exercises between experimental and controlled group of girls only.

H28 There will be no significant difference in the mean scores of post test on easy words taught through Vocabulary exercises between experimental and controlled group of girls only.

H29 There will be no significant difference in the mean scores of post test and delayed test on known words taught through Vocabulary exercises in the experimental group of girls only.

H30 There will be no significant difference between the mean scores of post-test and delayed test on easy words taught through Vocabulary exercises in the experimental group of girls only.
$H_{31}$ There will be no significant difference in the mean scores of post-test on known words taught through Vocabulary games between the experimental and controlled group of girls only.

$H_{32}$ There will be no significant difference in the mean scores of post-test on easy words taught through Vocabulary games between the experimental and controlled group of girls only.

$H_{33}$ There will be no significant difference in the mean scores of post-test and delayed test on known words taught through Vocabulary games in the experimental group of girls only.

$H_{34}$ There will be no significant difference in the mean scores of post-test and delayed test on easy words taught through Vocabulary games in the experimental group of girls only.

$H_{35}$ There will be no significant difference in the mean scores of post-test on known words taught through Communicative tasks between the experimental and controlled group of girls only.

$H_{36}$ There will be no significant difference in the mean scores of post-test on easy words taught through Communicative tasks between the experimental and controlled group of girls only.
H₃₇ There will be no significant difference between the mean scores of post-test and delayed test on known words taught through Communicative tasks in the experimental group of girls only.

H₃₈ There will be no significant difference between the mean scores of post-test and delayed test on easy words taught through Communicative tasks in the experimental group of girls only.

H₃₉ There will be no significant difference between the mean scores of Use-I between the experimental group and controlled group of girls only.

H₄₀ There will be no significant difference between the mean scores of Use-II between the experimental group and controlled group of girls only.

**HYPOTHESIS RELATED TO I.Q.**

H₄₁ There will be no significant difference between the mean scores of post-test on known words between the students of high I.Q. and low I.Q. of experimental group.

H₄₂ There will be no significant difference in the mean scores of post-test on known words between the students of high I.Q. and low I.Q. of controlled group.
H₄₃ There will be no significant difference in the mean scores of post-test on known words between the students of high I.Q. experimental group and controlled group.

H₄₄ There will be no significant difference in the mean scores of post-test on known words between the students of low I.Q. experimental group and controlled group.

H₄₅ There will be no significant difference in the mean scores of delayed-test on known words between the high I.Q. and low I.Q. experimental group.

H₄₆ There will be no significant difference in the mean scores of delayed-test on known words between the high I.Q. and low I.Q. controlled group.

H₄₇ There will be no significant differences in the mean scores of delayed-test on known words between the high I.Q. experimental group and controlled group.

H₄₈ There will be no significant differences in the mean scores of delayed-test on known words between the low I.Q. experimental group and controlled group.
$H_{49}$ There will be no significant differences between the mean scores of post-test and delayed-test on known words in the high I.Q. and low I.Q. students of experimental group.

$H_{50}$ There will be no significant difference in the mean scores of differences between the post-test and delayed-test on known words in high I.Q. and low I.Q. students of controlled group.

$H_{51}$ There will be no significant difference in the mean scores of differences between the high I.Q. experimental group and the high I.Q. controlled group on known words.

$H_{52}$ There will be no significant difference in the mean scores of differences between the low I.Q. experimental group and the low I.Q. controlled group on known words.

$H_{53}$ There will be no significant difference in the mean scores on test of Use-I between the students of high I.Q. and low I.Q. of experimental group.

$H_{54}$ There will be no significant difference in the mean scores on test of Use-II between the students of high I.Q. and low I.Q. of experimental group.

$H_{55}$ There will be no significant difference in the mean scores on test of Use-I between the students of high I.Q. and low I.Q. of controlled group.
There will be no significant difference in the mean scores on test of Use-II between the students of high I.Q. and low I.Q. of controlled group.

There will be no significant difference in the mean scores on test of Use-I between the students of high I.Q. experimental group and the high I.Q. controlled group.

There will be no significant difference in the mean scores on test of Use-I between the students of low I.Q. experimental group and the low I.Q. controlled group.

There will be no significant difference in the mean scores on test of Use-II between the students of high I.Q. experimental group and the high I.Q. controlled group.

There will be no significant difference in the mean scores on test of Use-II between the students of low I.Q. experimental group and the low I.Q. controlled group.

HYPOTHESIS RELATED TO THE ACHIEVEMENT SCORE

There will be no significant difference in the mean scores of post-test on known words between the high achievement score and the low achievement score students of experimental group.
$H_{62}$ There will be no significant difference in the mean scores of post-test on known words between the high achievement score and the low achievement score students of controlled group.

$H_{63}$ There will be no significant difference in the mean scores of post-test on known words between the high achievement score students of experimental group and controlled group.

$H_{64}$ There will be no significant difference in the mean scores of post-test on known words between the low achievement score students of experimental group and controlled group.

$H_{65}$ There will be no significant difference in the mean scores of delayed-test on known words between the students of high achievement and low achievement experimental group.

$H_{66}$ There will be no significant difference in the mean scores of delayed-test on known words between the students of high achievement score and low achievement controlled group.

$H_{67}$ There will be no significant difference in the mean scores of delayed-test on known words between the students of high achievement experimental group and high achievement controlled group.
There will be no significant difference in the mean scores of delayed-test on known words between the students of low achievement experimental group and low achievement controlled group.

There will be no significant difference in the mean scores of differences between the post-test and delayed-test on known words in high achievement and low achievement students of experimental group.

There will be no significant difference in the mean scores of differences between the post-test and delayed-test on known words in high achievement and low achievement students of controlled group.

There will be no significant difference in the mean scores of differences between the high achievement experimental group and high achievement controlled group on known words.

There will be no significant difference in the mean scores of differences between the low achievement experimental group and low achievement controlled group on known words.

There will be no significant difference in the mean scores on the test of Use-I between the high achievement students and the low achievement students of experimental group.
H74 There will be no significant difference in the mean scores on the test of Use-II between the high achievement students and the low achievement students of experimental group.

H75 There will be no significant difference in the mean scores on the test of Use-I between the high achievement students and the low achievement students of controlled group.

H76 There will be no significant difference in the mean scores on the test of Use-II between the high achievement students and the low achievement students of controlled group.

H77 There will be no significant difference in the mean scores on the test of Use-I between the high achievement students of experimental group and the high achievement students of controlled group.

H78 There will be no significant difference in the mean scores on the test of Use-I between the low achievement students of experimental group and the low achievement students of controlled group.

H79 There will be no significant difference in the mean scores on the test of Use-II between the high achievement students of experimental group and the high achievement students of controlled group.

H80 There will be no significant difference in the mean scores on the test of Use-II between the low achievement students of experimental group and the low achievement students of controlled group.
4.9 POPULATION:

All the boys and girls studying English lower level text-book prescribed by Gujarat Text-book Board studying in Std. IX

4.10 SAMPLING:

W.G. Cochran (quoted in Sidhu Kulbirsingh 1992 : 252) has said "In every branch of science we lack the resources to study more than a fragment of the phenomena that might advance our knowledge". For studying any problem, it is difficult to study the whole population or universe. Studying the entire universe is not viable in many ways. It is, therefore, convenient to pick up a sample out of the universe proposed to be covered by the study. But sampling needs much care.

Sample: A sample is a small proportion of a population selected for observation and analysis. It is a collection consisting of a part or subset of the objects or individuals of population which is selected for the express purpose of representing the population. By observing the characteristics of the sample, one can make certain inferences about the characteristics of the population from which it is drawn.

In this study a sample of 200 students was taken up following the purposive sampling method.
The table below clearly presents the sample.

**Table 4.1 : Selection of the Sample**

<table>
<thead>
<tr>
<th>Name of the school</th>
<th>SAMPLE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>EXPERIMENTAL GROUP</td>
<td>CONTROLLED GROUP</td>
</tr>
<tr>
<td></td>
<td>BOYS</td>
<td>GIRLS</td>
</tr>
<tr>
<td>Shri S. Z. Waghela High School</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>Shri B.V. Kanya Vidhyalaya</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>M.T. High School</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table no 4.1 shows that there were total 200 students. Out of that 100 were boys and 100 were girls. Out of 100 boys 50 were in the experimental group and 50 were in controlled group. The Boys were from the same school Shri S. Z. Waghela High School. In the same way out of 100 girls 50 were in the experimental group and 50 were in the controlled group. Most of the girls in the experimental group come from the nearby villages, where parents are illiterate. Their level of learning and infrastructure of school is also quite low.
in comparison to that of the controlled group girls. The experimental group girls were from Shri B.V. Kanya Vidhyalaya school and controlled group girls were from M.T. High School, Kambhat.

4.11 GROUP FORMATION:

First of all, the investigator administered the I.Q. test on the students of class IX. The population included students studying English at lower level at class IX in the town of Kambhat in the district of Anand. Only those students who were almost equal in the four classes were included. Similarly, achievement scores in the subject of English at the last year annual examination was taken up as the second controlling variable.

Then, the group were equalized on the basis of I.Q. test and achievement score. From that the pairs were formed. Total 50 pairs of boys and 50 pairs of girls were made. The following examples of 5 pairs from each will clarify the point more clearly:
The above table only presents the sample of five (5) pairs, whereas the following table presents the equalization of total students in experimental and controlled group on the basis of I.Q. and achievement score.
Table no. 4.3 Equalization Of Experimental And Controlled Group

On The Basis Of I.Q. Scores And Achievement Scores.

<table>
<thead>
<tr>
<th></th>
<th>EXP. GROUP</th>
<th>CONT. GROUP</th>
<th>EXP. GROUP</th>
<th>CONT. GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nos</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Avg</td>
<td>103.11</td>
<td>102.12</td>
<td>66.38</td>
<td>66.67</td>
</tr>
<tr>
<td>SD</td>
<td>10.0049</td>
<td>8.49</td>
<td>19.87</td>
<td>19.80</td>
</tr>
<tr>
<td>%</td>
<td>--</td>
<td>--</td>
<td>55.78</td>
<td>56.025</td>
</tr>
</tbody>
</table>

In the table 4.3 on the equalization of experimental and controlled group, on the basis of I.Q. scores and achievement scores the mean score of the I.Q. and achievement score in experimental group is 103.11 and 66.38 respectively whereas the mean score of the I.Q. and achievement score in controlled group is 102.12 and 66.67 respectively. Thus, it can be said that from the above data that the group were almost equal on the basis of I.Q. level and achievement score.

4.12 PREPARATION OF THE TREATMENT:

For the designing of the treatment vast and detailed study was done of the various exercises of vocabulary development. Different books and internet was used for the same. Reader's Digest, a well-
known magazine's "word-power" section that occurs on the second and third page of the magazine was also thoroughly studied.

A survey of well-known English medium and Gujarati medium school was done in order to find out the ways English teachers adopted in explaining unfamiliar words and even to find out the ways adopted by them for the retention of words.

During the survey in schools, it was found that vocabulary is a totally neglected part while teaching prose or poetry. If this were the case in Gujarati medium schools, it could be understandable, but even in English medium schools, vocabulary is just told by means of telling the meaning of the word directly. That meaning were just told for the sake of the topic being taught. It was observed that in Gujarati medium schools, through the study words were translated in Gujarati, no such technique was found for the retention of words.

Then, the list of exercises was prepared that were used in schools for teaching of vocabulary and even from the text-book of English. List of vocabulary exercises in school contained one or two items like Give meaning of the words and 'Frame appropriate sentence using the words given in brackets'. But to a great surprise, even the text-books lack varieties of vocabulary exercises.
Then with the help of internet and studying some of the vocabulary books, a list of some interesting and latest techniques was prepared. Some of the items contained in the list are:

1. Describing a picture
2. Listen and draw (words)
3. Questionnaires
4. Role playing
5. Discussion
6. Two stories in one
7. Strip stories
8. English (advertisements)
9. Open your diary
10. Synonym and Antonym exercises
11. Scale exercise
12. Semantic field exercises like:
   a. Listing relationship Display with vocabulary key.
13. Dictionary work
14. Vocabulary Games like
   a. I spy b. Hidden Object c. Key-word
   d. Memory game e. Pencil and paper game
15. Teaching idioms
16. Teaching with opposites
Thus, after a detailed study and discussion, four strategies were decided to teach vocabulary. These four strategies are:

1. Explanation Translation
2. Vocabulary Exercises
3. Vocabulary Games
4. Communicative Tasks

After that the five units from the text-book of English lower level std IX were selected for teaching vocabulary through the four techniques mentioned above.

All the target words from those five units were taken out and a list was made of them. After that, all the target words were written on stripes of cards. In this way each card contained one target word.

After that, all the target words cards were separated according to the four strategies means the target words were classified into four techniques. The nature of the word was the main criteria to classify the words into the four strategies. e.g. the word 'DISTURB' was put under EXPLANATION-TRANSLATION because this word can be better explained through this method rather than in vocabulary exercise and vocabulary games. It can't even go under communicative tasks. It was done in the following way.
'DISTURB'

- You are studying and suddenly the neighbour switches on T.V., there is a loud noise. This means the neighbours disturb you.

- Your sleep gets disturbed by the noise of the traffic.

- Phone calls are the biggest disturbance when you are sleeping.

Gujarati synonym: વિકલ્પ કરવો, ભાંબ બંગ કરવું

In the same way, the word 'SUPPOSE'

'SUPPOSE'

- Suppose you were the prime minister, what would you do?

- Suppose you win a ten lakh rupees lottery, how would you feel?

- To think, to consider something to be likely to believe to be true

Gujarati synonym: માનવું, માની બેઠું, ધારી બેઠું

In the same way camel, pot, salt, museum, zoo, whale etc. were put under vocabulary exercises and they were taught through various vocabulary exercises like Match A with B and then write the word from the above words and then complete the following blanks.
e.g.

A                              B

Ship of the Dandi March
Gandhiji did Salt
Used to store water Pot

Now complete the sentence and fill the blank.

Ship of the desert – Camel
Gandhiji did Dandi March – Salt
Used to store water – Pot

Match the following description with suitable picture. Write the word for that picture in the blank.

1. A large animal with a long neck that lives in desert areas and has one or two humps on its back. camel

2. Any of different types of usually round vessel or container, esp. one made of clay, metal or glass. It is with or without a lid pot

3. A common white thing made from sea water. We have it in our kitchen. We put it into dal. It is always there in pickles : salt

The above is the example of only one variety of vocabulary exercises, which were framed.
Words like loud, sad, hot, peep, into etc. can be explained better through vocabulary games, as actions can be performed, games can be played using these words. So such words were kept under vocabulary games.

Words like light a fire, joke, mad, draw-back, tired, check etc. can be taught better if students communicate using them, so they were put under communicative tasks.

Thus, the nature of the word was taken into consideration for classification. After classification, experts’ opinions were taken regarding the same. Experts put some suggestions for certain words and division of words were again revised and necessary changes were made.

Thus, after detailed study, the treatment was prepared for those five units using predecided vocabulary teaching strategies. These four strategies are:

1. Explanation Translation
2. Vocabulary Exercise
3. Vocabulary Games
4. Communicative Tasks

Treatment was executed on the small group of fifteen students, reactions and results were observed. Before implementing the
treatment in the class-room, experts' opinions were taken regarding the treatment. Along with it, the experience of the execution of the treatment was also discussed. Experts suggested some changes regarding the treatment. The changes are listed below:

1. Give only Gujarati synonym instead of using it in a complete sentence.
2. Don't use word or teach vocabulary under grammatical stress, teach in the most natural way.
3. As far as possible, use examples from day to day life.
4. At some places, verb or noun or adjective is mentioned after the word in brackets. Avoid that; let them learn only the word and its use.
5. Some exercises appear to be dull in vocabulary, replace them with some interesting one.
6. In some of the words in explanation, translation method, give their English meaning a more lucid way.
7. The noise factor will be affected while teaching some of the vocabulary games. Will that be encouraged in the school?
8. Put some of the cue-cards exercises in the communicative tasks, that will better serve the purpose of the words you have chosen for it.
9. In one of the vocabulary exercise match A with B exercise is given and then the target word is to be used by the student completing that match A with B and in that only Ex.2, description of word is given with giving some of the interesting cues. If that exercise is accompanied by a picture, the retention will be better.

Thus, taking experts' opinions into consideration, necessary changes were made following to their valuable suggestions.

4.12.1 The Four Strategies With Illustration:

The treatment was designed using the following four strategies.

4.12.1.1 Explanation Translation:

Simple and interesting sentences were framed to explain words. Different sentences were framed to explain one word. Students were asked Gujarati synonym. As the sentences were simple, much time was saved and students easily gave the Gujarati synonyms. As the sentences were framed in English and the explanation was done through at least two or three sentences, the investigator was successful in bringing out the students from traditional translation method. Simple sentence let them get at the meaning, although not in English but in Gujarati. Explanation of the word through the sentences also helped in retention of the word. The illustration of few words will clarify the method more clearly:
CHEERFUL:

i. My mother always opens the door with a cheerful face.

ii. If you are cheerful, you are happy.

iii. A cheerful face makes others cheerful.

iv. Happy, Lively, delighted

Gujarati synonym: આંખની માનપિયો

SEARCH:

i. At the time of examination, your English notebook is lost, what you will do? You will search it everywhere.

ii. When you go to some new place, you search for a good hotel.

iii. To look for, to seek, to explore.

Gujarati synonym: ખોભૂં, ખાંલેવું

ANCIENT:

i. Students studied in Ashrams in ancient India.

ii. Vadodara Museum has a collection of ancient things like old coins, swords and spears.

iii. Of very old time.

iv. In history, in the second chapter, (this year) you have read about the ancient civilizations.

Gujarati synonym: પુરાણ
4.12.1.2 Vocabulary Exercises:

Vocabulary development exercises were framed. These were to a greater or lesser extent removed from the kind of situational or contextual learning that we have in their textbooks.

The purpose of a vocabulary exercise is to develop the learner's command of the target language vocabulary, not simply to find out whether she/he knows a particular item of vocabulary or not. However, a close relationship exists between tests and exercises, since many exercises can be made into tests and vice-versa.

The vocabulary exercises were framed in such a way that they not only enrich the knowledge of the target word but also enrich other vocabulary areas too.

Although, the instructions at some places were translated in Gujarati, instructions in English were also understood by the students to some extent after teaching of unit : II, this was an interesting thing that occurred during vocabulary Exercises.

Varieties of vocabulary exercises were taken, to teach target words. Interest and newness were the factors kept in mind while framing vocabulary exercises. Before teaching the target words through vocabulary exercises words were introduced by the investigator through simple sentences.
Few illustrations clarify the strategy:

A. Specific / General Exercise:

Some words are more specific or particular and others are more general, although they may refer to the same things. For example 'rose' is more specific than flowers, because a rose is a particular kind of flower, but a flower is more specific than a plant. Plants also include other growing things such as bush or vegetables. In the following exercise, see if you can find words to fill in the blanks. Read the given detail carefully.

If you get stuck, call the teacher.

<table>
<thead>
<tr>
<th>SPECIFIC</th>
<th>GENERAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROSE</td>
<td>Flower</td>
</tr>
<tr>
<td></td>
<td>• (sweet smell, red, pink, yellow in colour)</td>
</tr>
<tr>
<td></td>
<td>• Pandit Nehru liked the most.</td>
</tr>
<tr>
<td>DOVE</td>
<td>Plant</td>
</tr>
<tr>
<td></td>
<td>A white coloured bird with short legs</td>
</tr>
<tr>
<td>WOOD PECKER</td>
<td>A bird with strong beak</td>
</tr>
<tr>
<td>CUCKOO</td>
<td>A singing bird</td>
</tr>
<tr>
<td>TRUNK</td>
<td>Tree</td>
</tr>
<tr>
<td></td>
<td>The main stem / support of a tree</td>
</tr>
</tbody>
</table>
B. Area of reference exercise:

Match the following words with area of reference in which they are most commonly used. (use a dictionary if needed).

<table>
<thead>
<tr>
<th>WORDS</th>
<th>AREA OF REFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Museum</td>
<td>Weapon, Pointed end</td>
</tr>
<tr>
<td>Zoo</td>
<td>Artist, Buddha, God</td>
</tr>
<tr>
<td>Whale</td>
<td>Bones, science lab</td>
</tr>
<tr>
<td>Planetarium</td>
<td>Mummies, visitors</td>
</tr>
<tr>
<td>Sword</td>
<td>Animals, cage, children</td>
</tr>
<tr>
<td>Spear</td>
<td>Past, king, weapon</td>
</tr>
<tr>
<td>Statue</td>
<td>Sea, big, oil</td>
</tr>
<tr>
<td>Skeleton</td>
<td>Building, sky, Vadodara, Mumbai</td>
</tr>
</tbody>
</table>

4.12.1.3 Vocabulary Games:

Different interesting vocabulary games were framed to add an element of fun or relaxation along with the development of vocabulary.

The aim of vocabulary games was to increase emphasis on the importance of motivation and of the appropriate kind of positive effective atmosphere in the class-room.
Secondly, there was an increasing emphasis on the importance of ‘real’ communication. If a game works properly, it very often supplies a genuine desire to communicate in the target language even within the artificial confines of the class-room.

One of the characteristics of the organization of games was a competitive element. The competitive element was often balanced by a co-operative element especially when the class was divided into ‘teams’. The members of each team co-operate for the success of their team.

Games were carefully organized and clear, easily understood explanations were prepared. Vocabulary is a teaching topic which leads itself very easily to the games approach, and there are literally hundreds of vocabulary games ranging from elementary to advanced level.

The games prepared by the investigator for teaching of the vocabulary were developed after studying varieties of vocabulary games. Along with fun, learning, motivation factor of newness in the games were paid attention to. Before teaching the target words, through the vocabulary games the investigator introduced the words through simple sentences. This enabled the students to enjoy the game and participate in it.
Few illustrations of vocabulary games are:

1. **Word chain**:

   Target words – GIFT, FACE, HUNTING

   The teacher will write the words “Gift, face, hunting” on the blackboard and will ask the pupils to give another word beginning with the rhyming word or the words with change of internal letters or beginning with the first or last letter for e.g. leg-log

   More examples:

   - **Lion** – Nail
   - **Leg** – Glass
   - **Gift** – Lift, shift, lick
   - **Face** – Race, Phase
   - **Thinking** – Shooting, hunter

   The (class) pupils were divided into two group. The group which gave more words became a winner.

2. **Find some one who**:

   The teacher selected a group of related items and prepared a set of about five to six sentences.

   Example: Find someone who likes to eat 6 times a day. Find someone who does not like swimming etc.
The sentence could be written on the blackboard or on slips of paper. Pupils could be asked to move about the class and try to find out the name of their friends which they can enter against each sentence. Alternatively, pupils could work in smaller group and do the same activity.

SENTENCES:

1. Find someone who has never got any gift on his / her birthday.
2. Find someone who always gets many (gifts) presents on his / her birthday.
3. Find someone who has got a bicycle as a gift on his / her birthday.
4. Find someone who always gives gifts on his / her parents, brother, sister, friends on birthdays, anniversaries etc.
5. Find someone who has a round face, black eyes and a fair complexion.
6. Find someone whose face is oval shaped.
7. Find someone who has many pimples on his / her face.
8. Find someone who has ever done hunting (even of a small bird)
9. Find someone who has seen hunting.
4.12.1.4 Communicative Tasks:

Different communicative tasks were prepared and implemented on the students to lay emphasis on language in use rather than language as structure.

The purpose of communicative task was to give emphasis on the semantic objective of the language which means the meaning of language in real life situation and context.

Secondly, the need of the learner to communicate his feelings and thoughts to other and understand the feelings and thoughts of others in the target language (English) was taken into account.

Thirdly, it laid stress on the functional value of the language and to developed the speech ability, with different ways of expression. The language thus used possibilities of acquisition of new words, rather than learning of them.

To make students communicate in the target language appeared to be the toughest job to the investigator and that too with certain words. So, to create an atmosphere of English in the class, and teaching the target words, and teach the target words through the communicative approach, the investigator herself started using lot of English in the class. She described, narrated, told a story or spoke a few sentences on familiar themes. This approach was very helpful in
providing an encouragement platform to the students to communicate in English. Before teaching the target words through communicative tasks, the investigator introduced the words through simple sentences. This enabled the students to use the words while communicating.

(the investigator spoke about herself and others, introduced general functions of day to day life and so and kept on preparing the encouragement platform for the students to speak in English). The following areas were introduced:

1. About you: the identification of self
2. Yourself and others: the identification of other people
3. Please: requests, offers, suggestions, permission, possibility to do things
4. Finding the way: direction
5. Can I?: possibility, prohibition, necessity, ability, desire to do things
6. Where?: location
7. When?: time
8. Describe it!: Information about things, substances and conditions
9. I like: likes, dislikes and preferences
10. I want: wants and needs, people, things and substances

11. Doing things: actions

12. Getting things done: requesting / persuading, other to act

This type of exercise built up the most confident and friendly atmosphere between the investigator (teacher) and the students. Then the target words were introduced through the communicative tasks.

Illustrations of few tasks are as follow:

Target words: by car, expensive, boating, coin.

1. Let us plan:

Teacher: Tomorrow, at 5.00 a.m. we shall leave for Mount Abu. We will neither go by bus nor by car, we shall go by train.

Pupil-1: A car will cost Rs. 2000. Going by train will cost Rs. 200. It is cheap and enjoyable.

Pupil-2: I will take a camera with me.

Pupil-3: My mother will either prepare sandwiches or bread rolls for breakfast. I shall bring for all of them.

Pupil-4: Don’t forget to bring one rupee coin. We shall check our weight on weighing machine at the railway platform.

Pupil-5: Teacher, what else shall we do besides tracking on Mount Abu.

Pupil-6: We shall take up a boat and go for boating in Nakhi Lake.
The works either...... Or, neither......nor were taught before communicative task through vocabulary games, which students were using in communication)

(The final draft of the treatment is attached in the appendix)

4.13 PREPARATION OF TOOLS AND TESTS:

I.Q. test administered on the students before formation of group, was prepared by Krishnakant Desai. It was Desai verbal – non verbal I.Q. test.

After the execution of the treatment the test to measure intensity of retention and use were prepared.

4.13.1 Test Of Retention:

Dictionary defines retention the continued use, existence or possession of something or someone or in other words we say memory. Here the test of retention was taken to check the retention of target words taught. The test was validated through the responses and suggestion of some experts.

To check the retention ability of the students, the list of target words was prepared. That list also consisted of other words, which were not taught. All the words were mixed. The test of retention was given two times to test the effect of the treatment. First time it was
given immediately after giving the treatment. This test of retention consisted of two exercises as follows

(A) Tick the words which are new (unfamiliar) to you. (a list consisted of target words and other words which are not taught to them)

(B) Tick the words which are easy for you and the words which are 'Difficult’ for you. (This list also consisted of target words and other words, same as list A).

Second time, the test of retention was given after three months. In this test of retention, two exercises were given. In the exercise (of known words) the list consisted only of target words taught to the students. No extra words were added. The exercise was: ‘tick the words which are unfamiliar (new) to you’. In the exercise of (easy words) students were asked to write ‘E’ for Easy and ‘D’ for Difficult words. This list consisted of some extra new words other than the target words.

Retention test was shown to the teachers of English (copies of all these tests are attached at back. Appendix: 3)

4.13.2 Test Of Use:

Test of use was also prepared after a deep study of various types of tests and exercises in vocabulary testing. It was also validated through the response and suggestions of some experts.
The test of use was taken twice. First time immediately after giving the treatment along with the test of retention. First time the following items were included in the test of use:

1. Find out the sentence in which the word is rightly used.
2. Fill in the blanks with the appropriate word from those given in the brackets.
3. A list of words is given, select the suitable word and answer the following questions.

After a span of three months, second time in the test of the use the students were given the words, that were included in the treatment and they were asked to write a paragraph using those words. They were asked to write a paragraph on the following topics.

1. Khambhat
2. Zoo
3. Circus
4. My birthday party.

The students were having fun and were enjoying the test of use both the times.

The following table gives the schedule of the ‘Test of Retention’ and ‘Test of Use’
Table No.: 4.5

The Schedule Of Testing

<table>
<thead>
<tr>
<th>Tests</th>
<th>No of times given</th>
<th>Time intervals to give tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test of Retention</td>
<td>Two times</td>
<td>( T_1 ) (Post test) ( T_2 ) (Delayed Test)</td>
</tr>
<tr>
<td></td>
<td>( T_1 ) ( T_2 )</td>
<td>Immediately After the treatment</td>
</tr>
<tr>
<td>Test of use</td>
<td>Two times</td>
<td>USE-1 Immediately after the treatment was given</td>
</tr>
</tbody>
</table>

4.14 THE EXPERIMENT:

After finalizing the treatment, the investigator executed the treatment on the experimental group within a span of three months. Along with the teaching of units (lessons) vocabulary was taught as designed in the treatment. Teaching of the reading lessons was equally given importance. Explanation of the unit was done by asking different questions and by giving examples. After that, vocabulary was taught through all the four strategies.

The table 4.4 describes the design and exposure of the treatment.
TABLE NO 4.4:

Treatment To The Experimental Group

<table>
<thead>
<tr>
<th>Name of the school</th>
<th>Title of the lessons (unit)</th>
<th>No. of hours allotted to each unit</th>
<th>No. of weeks (total)</th>
<th>Total no. of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Shri S.Z. Waghela High School (Boys:50)</td>
<td>1. Beautiful bird</td>
<td>7 Hours</td>
<td></td>
<td>35 Hours</td>
</tr>
<tr>
<td></td>
<td>2. A cheerful man</td>
<td>7 Hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Neither this, nor that</td>
<td>7 Hours</td>
<td>12 Weeks</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. The other side</td>
<td>7 Hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. William Tell</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table no. 4.4 shows that the two schools selected for the experiment were Shri S.Z. Waghela High School for boys. Total 50 boys were included in the experimental group.

The second school selected for the experiment was Shri B.V. Kanya Vidyalaya for girls. Total 50 girls were included in the experimental group.

The treatment was given in the class-room during school hours. Mostly the periods allotted in Shri S.Z. Waghela High School
were after the assembly meeting i.e. 1st and 2nd. The school is located at Bethak Road, Khambhat.

While the treatment to the experimental girls group was mostly given in the 5th and 6th periods. This school is located at Press Road, Khambhat.

Total 36 hours were allotted for the execution of the treatment. Though the experimental group were from different schools, on the same day treatment was given at both places. Out of 36 hours 1(one) hour, the investigator took for orientation and introduction of the students, which helped in later part of the treatment (teaching process) in building up the lively atmosphere in the class-room.

So, 35 hours being left, 7 hours were allotted for teaching each unit. There were five units taken for teaching. In this way there were $7 \times 5 = 35$ hours for the execution of the treatment. She had three months time span i.e. 12 weeks total time for the exposure of the treatment. This means working for three hours a week approximately $(12 \times 3 = 36)$. 

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4.15 DATA COLLECTION:

A sample of 200 students was taken up following the purposive sampling. First of all the investigator administered I.Q. test on those sample of 200 students of Std. IX.
After the I.Q. test, scoring was done of the test and then on the basis of the scoring levels were determined.

The investigator included only those students in the experimental and controlled group whose class wise mean scores on the test were almost equal. Similarly, achievement scores in the subject of English at the last year annual examination were also collected by the investigator from the teachers, as it was also taken up as the second controlling variable.

Then after the test of retention and the test of use were administered and scoring was done, the same is discussed in the analysis and interpretation of data.

4.16 DATA ANALYSIS AND INTERPRETATION:

Francis Rummel (quoted in Sidhu Kulpirsing : 1992 : 274) has said "The analysis and interpretation of data involve the objective material in the possession of the researcher and his subjective reactions and desires to derive from the data the inherent meanings in their relation to the problem. To avoid making conclusions or interpretations from insufficient or invalid data, the final analysis must be anticipated in detail when plans are being made for collecting information. The problem should be analyzed in
detail to see what data are necessary in its solution and to be assured that the methods used will provide for definite answers. The researcher must determine whether or not the factors chosen for study will satisfy all the conditions of the problem and if the sources to be used will provide the requisite data.

The data may be adequate, valid and reliable to any extent, yet it does not serve any worthwhile purpose unless it is carefully edited, systematically classified and tabulated, scientifically analyzed, intelligently interpreted and rationally concluded.

After the test, scoring was done. In the test of retention all the three times to mark the words as known and to mark the words as easy, each word was allotted one mark (target words), then according to the four techniques, words were separated and a table was prepared for further analysis and interpretation of data.

In the marking of the test of 'Use-I' (one), the scoring was out of 50 marks. In the test of Use-II (two), students were asked to write a paragraph, using the target words and on the basis of using the target word correctly, marks were allotted. Each target carried one mark. Secondly, it was marked that how many sample (target) words were used correctly and how many sample (target) words were only mentioned.
4.16.1 Interpretation of Data

After giving the test in the class, the scoring was done. Tables sharing the scores according to all four strategies were prepared. Each and every word included in the treatment according to each strategy was calculated in both the group i.e. experimental group and controlled group.

Boys and girls in the experimented group and controlled group were allotted pair nos. according to their I.Q. level and achievement scores. Then tables were made, and scoring was written after each no. that how much a particular student has scored in retention test (i.e. in \( T_1, T_2 \)). There are twenty-nine (29) words taught through 'Explanation Translation method', then how many words no.1 has marked as known, as easy both in experimental and controlled group. In the same way, the scoring of all the four techniques was done.

Table No. 4.6:

A Sample Of Scoring On Post Test & Delayed Test

<table>
<thead>
<tr>
<th></th>
<th>EXPERIMENTAL GROUP</th>
<th></th>
<th>CONTROLLED GROUP</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOYS</td>
<td>( T_1 )</td>
<td>( T_2 )</td>
<td>BOYS</td>
</tr>
<tr>
<td>1</td>
<td>29</td>
<td>28</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>27</td>
<td>26</td>
<td>2</td>
</tr>
<tr>
<td>3</td>
<td>28</td>
<td>26</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>29</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>29</td>
<td>27</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>25</td>
<td>22</td>
<td>6</td>
</tr>
</tbody>
</table>
Secondly, the table showing the achievement score, I.Q. score and scores of test Use-I and Use-II of both experimental and controlled group was prepared. Here, also individually the student’s data was calculated. Group 1, 2, 3,... were prepared of both the experimental and controlled group, taking into consideration their achievement and I.Q. scores.

Table No. : 4.7

<table>
<thead>
<tr>
<th>Pair no.</th>
<th>Achievement score</th>
<th>I.Q. level</th>
<th>Use-I score</th>
<th>Sample words used correctly</th>
<th>Sample words mentioned</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Boys</td>
<td>Girls</td>
<td>Boys</td>
<td>Girls</td>
<td>Boys</td>
</tr>
<tr>
<td>Exp:1</td>
<td>91</td>
<td>71</td>
<td>95</td>
<td>98</td>
<td>41</td>
</tr>
<tr>
<td>Cont:1</td>
<td>91</td>
<td>71</td>
<td>91</td>
<td>96</td>
<td>11</td>
</tr>
</tbody>
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4.17 USE OF STATISTICAL TECHNIQUES:

In order, to test the significance of difference of marks obtained by both the group i.e. experimental and controlled group, the ‘t’ test was done, which is based on null hypothesis.

Null hypothesis was taken because it suit statistical techniques which determine whether an observed relationship or is probably a chance relationship or probably a true relationship.

The ‘t’ test was selected as it is used to determine whether two events are significantly different at a selected probability level. In
other words, for a given sample size the 't' indicates how often a
difference ( $x_1 - x_2$) as large or larger would be found when there is
no true population difference. The 't' test makes adjustments for the
fact that the distribution of scores for small samples becomes
increasingly different from a normal distribution as sample sizes
become increasingly smaller.

The strategy of the 't' test is to compare the actual mean
difference observed ( $x_1 - x_2$) with the difference expected by
chance. The 't' test involves forming the ratio of these two values.

In order words, the numerator for a 't' test is the difference
between the sample means $\bar{X}_1$ and $\bar{X}_2$ and the denominator is the
chance difference which would be expected if the null hypotheses
were true-the standard error of the difference between the means.
The denominator, or error term, is a function of both sample size and
group variance. Smaller sample sizes and greater variation within
group are associated with an expectation of greater random
differences between group. The 't' ratio determines whether the
observed differences is sufficiently larger than a difference which
would be expected by chance. After the numerator is divided by the
denominator, the resulting 't' value is compared to the appropriate
't' table value (depending upon the probability level and the degrees
may conceal the observer identity and attempt to become a ‘normal’
member of the community, organization, group, tribe, or club being
studied. The goal of this participation is to produce an understanding
of the group or culture being studied. Such an understanding of the
group or culture is to know. ‘Whatever it is one has to know or
believe in order to operate in a manner acceptable to its members
and to do so in any role that they accept for any one of themselves’ (Goodenough, quoted in Norman, K:1989 : 157). The ethno graphers
attempt to discover the practices and meanings that the members of
the group take for granted, in doing so, the culture of the group is
grasped. Culture, which “explains how people act in concert when
they do share understandings” (Becker, Ibid), becomes a resource
for building an interpretation of the group. Some cognitive
anthropologists (including Goodenough, Basso, Frake, Bloor,
Silverman, Ibid) and conversational analysts (including Sacks,
Shegloff, Jefferson, Atkinson, Silverman, Ibid) have attempted to
write the formal cognitive rules that group members use when they
put culture into practice. Such strategies often fail to produce in-
depth understandings of the group in question. Some argue,
however, that it is neither desirable nor possible to attempt to
understand another person's situation. Such critics seek to build formal, cognitive models of culture and action.

In participant observation, interviews are typically open-ended, as opposed to close-ended. Census data, when analyzed, are usually not a central portion of the research process, but are used only to describe the characteristics of the population under study; and observation of ongoing events is typically less concerned with recording the frequency and distribution of events than it is with linking interaction patterns with the symbols and meanings believed to underlie that behavior. "It is the thesis being proved (Norman K. Denzin, "The Research Act", "A Theoretical Introduction to Sociological Methods", 1989, p 158) that participant observation may be most profitably treated as method of qualitative analysis which requires submersion of the observer in the data and the use of analytic induction and theoretical sampling as the main strategies of analysis and discovery". As such the method, when appropriately employed, entails a continuous movement between emerging conceptualizations of reality and empirical observations. Theory and method combine to allow the simultaneous generation and grounding of interpretations. Participant observation is one of the few methods currently available to the sociologist that is well suited
to an analysis of complex forms of symbolic interaction. In contrast to the survey which may be best suited to the analysis of stable forms of interaction, participant observation can better handle forms of interaction that are in change.

4.18.2 Types Of Observer Identities :

Four participant – observer roles or strategies have been analyzed: the complete participant, the participant as observer, the observer as participant and the complete observer (Gold, 1958, pp 217-28)

(1) Complete participant :

In this identity, observers are wholly concealed, their scientific intents are not made known and they attempt to become fullfledged members of the group under investigation. As complete participants, sociologists find themselves confronted with contradictory roles or interactional demands – playing the disguised role and playing the role of sociologist. Role pretence, as Gold terms it, is the basic theme of their activities, they know they are pretending. In effect, complete participants find themselves simultaneously responding to demands of the hidden self, the pretended self, and the self as observer (Gold, 1958, p 219). If the disguise is successfully carried off, observers will achieve a sense of heightened self – awareness –
an introspective attitude toward their own activities – because they must continually indicate to themselves that their experiences are due to the pretended self, not to the real self.

(2) **Participant as observer:**

The participant as observer is the second type of identity that may be assumed. Unlike the complete participant, the participant as observer makes her presence as an investigator known and attempts to form a series of relationships with the subjects such that they serve as both respondents and informants. The role is frequently employed in community studies, where an observer develops relationships, not going native, finding informants, and maintaining the observer – observed relationship must still be contended with. During early stages of field-work the investigator may encounter hostility. This may arise simply from misunderstandings concerning the observer’s presence, or it may represent a resistance to divulging information to a complete stranger.

(3) **Observer as participant:**

The observer as participant is the third type of identity. Investigations in which the researcher takes this strategy typically include only one visit – or interview – with the respondent. The nature of the contact is brief and highly formalized through the use
of questionnaires, and there is no attempt to establish any sense of an enduring relationship with the respondent. This is the epitome of the encounter between strangers. It represents the fundamental thesis underlying the social survey.

(4) **Complete observer:**

The complete observer is the fourth identity. It removes the field worker entirely from interaction and is best seen in experiments where observations are recorded mechanically or conducted through one-way mirrors in the laboratory.

4.18.3 **Teachers As Observers Of The Present Study**:

English teachers and other language teachers and school principals were invited for observation. The teachers of English teaching in the school remained present as observers all through the experiment.

A feedback questionnaire was prepared and given to the teachers. The observers were asked to observe the class-room interactions and events focusing on the key-words in the questions.

On the other hand, it was kept in mind that the presence of the observer should not affect the response of the students.

The questionnaire was given only to the English teacher, who sat for all 36 hours when the treatment was being given to the
students. Principals and other language teachers observed at their convenient time.

The questionnaire consisted of the following questions:

1. Do you think that the execution of the experiment was effective in expanding and enriching the vocabulary of the learners to a considerable extent?

2. What do you think about motivation level of the students?

3. Do you feel the difference in students' learning in comparison to the traditional way of teaching vocabulary?

4. What is remarkable about the vocabulary taught through these four techniques?

5. Which strategy do you find more effective in learning vocabulary?

6. Do you think teaching vocabulary through these types of methods in routine teaching is time consuming?

7. What is your opinion regarding the relationship (developed through vocabulary games and communicative tasks) between the investigator (teacher) and the students?

8. Comment on the total observed classes.

Responses were collected by the investigator at the end of the treatment from all the English teachers and principals' opinions were
also noted down. Major points are derived from all the responses and they are mentioned in the findings and conclusions (Chapter-6)

4.19 SUMMING UP:

In this chapter the investigator had discussed the points like: the understanding the role of research, the case for a research approach, broad areas of language teaching research, research methodology in language research, experimental design, objectives of the study, variables, hypothesis related to the types of techniques, I.Q. and achievement population, sampling, group formation, preparation of the treatment, the four strategies with illustrations, the experiment, the preparation of tools and testing (tests) in which test of retention and test of use were explained in detail, data collection, data analysis and interpretation, use of statistical techniques and lastly collection and interpretation of descriptive data is also discussed. Thus, research methodology and procedure was discussed in detail.