CHAPTER III

PLAN & PROCEDURE OF THE STUDY

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3.0 INTRODUCTION

The main objective of the study is to develop a Computer-Assisted English Language Teaching Programme for Std.VIII students, and to find out its effectiveness. The details of the plan and procedure of the study have been presented in this chapter. As the study has been conducted in two phases, the plan and procedure of the study has been presented in two sections. Phase I includes the procedure of selection of the course content for developing the package, systematization of the course content, method of developing the package, Pilot study to see the suitability of the package. Phase II covers the method of conducting the final experiment; selection of sample, selection and construction of tools for data collection, method of data collection and data analysis.

PHASE - 1 DEVELOPMENT OF THE PACKAGE

3.1 SELECTION OF THE LESSONS FOR DEVELOPING THE SOFTWARE PACKAGE.

To develop the software package, the following criteria were considered in selecting the lessons.

1. New words to be learned:

In order to select the lessons from the English textbook of std. viii, one of the criteria was the number of new words to be learned. It was found from the syllabus that Lessons 10, 11, 12 and 13 contain the largest number of vocabularies i.e., 27, 24, 26, 19 respectively. Therefore, these four lessons were selected.

2. Difficulty of teaching and learning:

It was found from five English teachers and fifteen students of std.Viii in informal interviews that, the four lessons contain difficult words, and difficult parts of speech which the students find most difficult to learn and the teachers also find it difficult to teach.

3. Scope of teaching Grammar:

The four lessons contain the following four parts of speech viz., Noun, Pronoun, Adjective and Preposition which the students are supposed to learn. In informal interviews with the teachers and the students, it was found that teaching grammar in the traditional way is very difficult and for the students it is difficult to learn. Some of the teachers revealed that they faced difficulty in teaching preposition to the students, and they felt that more demonstrations are required in

teaching prepositions. It was suggested that, may be with the help of computer and through proper utilization of its potentials, the students will be able to learn and understand the functions of prepositions in a better way than the usual lecture method of teaching.

4. Suitability of these lessons for developing the Computer-Assisted English Language Teaching Programme:

Taking into consideration the opinion of the teachers and the students regarding the lessons, the researcher approached two experts in computer software to see the suitability of the lessons in developing the Computer Assisted English Language Teaching Programme. The experts were asked to suggest the computer language in which the package can be developed. After examining the contents of the lessons, the experts' opinion was that, these lessons can be easily programmed by using BASIC computer programming language. BASIC language was suggested by the experts because it fulfills the requirement of the lessons i.e.,

1. amount of information to be handled at a time,

2. easy in programming,

3. type of graphics to be used,

4. students' knowledge of the language to be used, and

5. availability of the language on schools' computers.

So suitability of the lessons and the computer language in which they can be developed were taken into consideration in developing the package. Looking into the above criteria, the following four lessons were selected from the English textbook of Std.viii lower level published by the Gujarat State Board of School Textbooks Gandhinagar, 1992. These lessons are: (See Appendix (I)).

1. Lesson 10 : Mr. Nair's Circus,

2. Lesson 11 : A Railway Station,

3. Lesson 12 : Dr. Jadeja's Hospital, and

4. Lesson 13 : In The Kitchen.

Selection of the above four lessons was based upon the criteria as discussed in the preceding paragraph.

3.2 DEVELOPING THE FIRST DRAFT OF THE PACKAGE

The first draft of the package was prepared by following the steps mentioned below.

3.2.1 CONTENT ANALYSIS

This is the first step for developing the package. In this step the content analysis of the four lessons was done and the lessons were divided into three sections viz., Vocabulary, Grammar and Comprehension according to their relations with each others. Each section was analyzed and presented in a systematic way.

3.2.2 SYSTEMATIZATION OF THE PACKAGE

After the content analysis of the four lessons was done, the materials for the package were arranged systematically by taking into consideration adequacy, logical sequence of the materials and language used as per the objective of teaching English.

Each section was developed separately with different files and followed by a test file as follows.

TABLE-3.1

COURSE CONTENT AND THEIR FILE NAMES ALONG WITH THEIR TEST NAMES

Content/Section	File Name	Test Name
Vocabularies:		
Lesson 10	CIRCUS	Test1
Lesson 11	TRAIN	Test2
Lesson 12	HOSPITAL	Test3
Lesson 13	KITCHEN	Test4
Grammar :Parts of Speech		
Noun	NOUN1	Test5
Pronoun	PRON	Test6
Adjective	ADJ	Test7
Preposition	PREPO	Test8
Comprehension:		
Lesson 10	COMP	Test9
Lesson 11	RAIL	Test10
Lesson 12	HOSP	Test11
Lesson 13	KIT.	Test12

Each part of speech was analyzed and presented under different sections viz., Definition, Kinds, Number and Uses. The Comprehension section was analyzed and the text of each lesson was divided into short paragraphs followed by questions. Each lesson was developed under a separate file. Each file was followed by a test as mentioned in the last column of the Table 3.1

3.3 DEVELOPMENT OF THE FIRST DRAFT FOR THE PACKAGE LESSONWISE.

For developing the package, BASIC programming language was selected on the basis of the experts' suggestions and the requirement of the lessons i.e.

1. amount of information to be handled at a time,

2. easy in programming,

3. type of graphics to be used,

4. students knowledge of the language to be used, and

5. availability of the language on schools' computers.

BASIC which stands for Beginners' All-Purpose Symbolic Instruction Code was developed in 1964 at Dartmouth College, U.S.A. by professors John Kemeny and Thomas Kurtz, as a means of teaching students a simple language for programming a computer. Because BASIC language has been designed for ease of use and is readily available on most computers, programme development can be achieved in the minimum time, with minimum effort and often with the

minimum cost. BASIC is known as a high-level language since it consists of statements written using English words and mathematical notation. Some advantages of BASIC.

1- BASIC is "friendly", i.e., it is "people-oriented". It is easy to learn and fun to use. Any-well organized person can learn to programme in BASIC. An extensive background in mathematics is not necessary.

2- BASIC is very flexible, allowing the programmer to develop new programmes and to alter existing programmes with relatively little effort.

3- BASIC is well suited for use in an interactive environment. This includes dedicated microcomputer application as well as large-computer time-sharing applications.

4- BASIC is universally available, on both large and small computers. It has become the standard programming language for most microcomputer applications.

5- The commonly used features of BASIC are relatively standard, though there are some differences between one version of BASIC and another. Many BASIC programmes can be run on a variety of different computers with little or no modification.

Every line in a BASIC programme begins with a line number, and the GOTOs and GOSUBs in the programme must refer to these line numbers. These line numbers help the programmer to locate errors in the programme. BASIC also has a rather simple branching structure composed of the GOTO, GOSUB, and IF commands. For the language teacher BASIC has several advantages,

1- It uses actual English words which are easier to learn and remember than apparently meaningless combinations of characters.

2- It has good string handling (i.e. alphabetic) facilities.

3- It is primarily an interactive language.

4- It enables a novice programmer to write interesting programmes almost from the start.

5- It is powerful enough to permit a wide range of application.

6- It is widely available and is widely used by those engaged in CALL.

The package was developed on the basis of the concepts of linear programming, in which a word or a concept is presented followed by the multiple-choice questions. Students were given three chances for responding in the vocabulary section to enable them to master the word meaning and get more exposure to the materials, and two

chances in both the grammar and comprehension sections because in the grammar section the students were getting more illustration and examples before they go to the test and therefore there was no need for the third chance, and in the comprehension the paragraph was there in front of the students so they have to read the paragraph thoroughly before answering the questions, and one chance in the evaluation tests because the item which the student fail to answer correctly will be shown to him again. If students failed to give a correct answer, the computer will give the correct answer to the students after their chances were over. With this principle in mind the software package was developed for four lessons as mentioned above in a linear type programming. After developing the software package, editing was done by four language experts, five English teachers, and two computer experts.

3.3.1 REACTIONS AND SUGGESTIONS OF THE TEACHERS AND THE EXPERTS TO THE FIRST DRAFT OF THE PACKAGE

The reactions and suggestions of the teachers and the experts to the first draft of the package is presented below sectionwise. The package consists of four sections i.e. Vocabulary section, Grammar section, Comprehension section and the Evaluation tests section.

1-VOCABULARY SECTION

The Vocabulary section consists of the vocabulary of the four lessons. The task of the teachers and the experts was to evaluate the vocabulary of these lessons in terms of content, logical sequences of the words and the legibility of the language. This section also includes graphics to help the students understand the meaning of the words. While evaluating this section the teachers and the experts suggested some modification in word arrangement and the graphics of some of the vocabulary. They have suggested that in teaching the vocabulary of lesson 10 i.e. Mr. Nair's Circus, the first word to teach is circus then the parts which constitute the circus in a systematic way, they have also suggested the same for the other three lessons. The graphics which the teachers and the experts suggested to be modified were the graphics which belong to words like TALL, SHORT, THIN, THICK, TUSK AND TAIL. Their suggestions were that, while teaching those words with the help of graphics one should include two pictures for each word. For example if you are teaching the word tall, then two pictures should be presented, one which show a tall thing and the other which show a short thing, so that the students can differentiate between them. The same is true for the words short, thin and thick. Regarding the words tusk and tail, the teachers and the

experts suggested that, the part which represents the word should be indicated by an arrow so that the students can understand the meaning of the word. They felt that without indicating the part, the students may mistake a trunk for a tusk. As per the suggestions of the teachers and the experts the researcher modified the vocabulary section.

2-GRAMMAR SECTION

After the vocabulary section was over the teachers and the experts evaluated the Grammar section, which consists of four parts of speech i.e. Noun, Pronoun, Adjective and Preposition. The teachers' and the experts' suggestions for this section were that, more examples and illustrations should be given to illustrate the meaning, kinds and numbers of those parts of speech. They also suggested that, some of the sentences and examples used should be changed because they felt that the students may not be able to comprehend. According to the suggestions received from the teachers and the experts the researcher modified the content of this section by adding more examples to illustrate the meaning, kinds and numbers of the four parts of speech.

3-COMPREHENSION SECTION

After the evaluation of the grammar section was over

the teachers and the experts evaluated the Comprehension section which consists of the texts of the four lessons i.e. Mr. Nair's Circus, A Railway Station, Dr. Jadeja's Hospital, and In The Kitchen. In this section the teachers and the experts evaluated the content, the sequence of materials and the questions asked. Their suggestions were that, some of the questions asked after each paragraph should be asked directly and in a simple language. As per the suggestions of the teachers and the experts for this section the researcher changed the pattern of the questions and sequenced the materials accordingly.

4-EVALUATION TESTS

Finally, the teachers and the experts evaluated the Evaluation tests. This section remained the same without any modification because it was based on the same vocabularies, grammar and comprehension of the four lessons. After editing and finalizing the software package as per the observations and suggestions of the experts and the teachers for the four lessons, a pilot study was carried out.

3.4 PILOT STUDY

After developing the first draft of the package, it was put into a field try out to find out its

effectiveness. The pilot study was carried out with the following objectives.

1. To find out the difficulties faced by students if any in understanding vocabulary, grammar, comprehension of the four lessons and the legibility of the language used.

2. To find out the effect of the package on the students' achievement level with respect to their IQ and Motivation.

3.4.1 SAMPLE OF THE PILOT STUDY.

The sample for the pilot study consisted of 48 students taken randomly from a group of 75 students of Std.viii, Gujarati medium of Zenith school, Baroda. The selected 48 students were divided into two groups viz., Experimental group and Control group. The Experimental group consisted of 20 students because there were only 20 computers available in the school. So that each student will use one computer and learn at his own pace. The rest of the students formed the Control group which consisted of 28 students.

3.4.2 CONSTRUCTION AND SELECTION OF TOOLS FOR THE PILOT STUDY

Following tools were constructed and implemented for the pilot study. Investigator had prepared two

achievement tests, one was Pre-test Achievement in English and the other was Post-test Achievement in English. Along with these two tests the following tools were selected and used.

1. Raven Progressive Matrices (developed by Raven, 1960)

2. JIM Scale (Junior Index of Motivation developed by Frymier, 1970) Translated into Gujarati Language by Dr. Desai (1970).

3.4.2.1 PRE-TEST ACHIEVEMENT IN ENGLISH

This test was constructed to find out if any differences exist between the students of the experimental group and the control group in their previous knowledge of Vocabulary, Grammar and Comprehension. The test was prepared from the previous lessons already taught to the students. The first draft of the test consisted of five questions, one question on vocabulary with ten items, where the students were asked to give the meaning of ten words in English, three questions on grammar with ten items each, in which the students have to fill in the blanks, give the plural form of the singular noun and to find out Nouns, Pronouns, Adjectives and Prepositions from a list of words. And one question was on comprehension with five items, in which

the students have to read a small paragraph and then to answer five questions given below the paragraph. The first draft was given to five experts to judge the adequacy of the language and the sequence of presentation. They were also told to add and delete items which they think proper. The experts suggested that the first question on vocabulary should be changed. They felt that instead of asking the students to write the meaning of the words the question should ask the students to match the words in Column-A with their meaning in Column-B. Therefore, the first question of the test was changed as per the suggestions of the experts. The rest of the questions remained the same. The purpose of the test was to find out what the students know in terms of vocabulary, grammar and comprehension and to get guidelines from the students' entry behavior to prepare the Package. The test carries 50 marks and it takes 40 minutes for administration. The final draft of the Pretest Achievement in English is presented in Appendix (II).

3.4.2.2 POST-TEST ACHIEVEMENT IN ENGLISH

To measure the achievement of both the groups i.e. Experimental group, and the Control group, the investigator developed a post-test achievement in English from the content of materials taught to the

Experimental group through the package, and the content taught to the control group by the teacher. The first draft of the Post-test consisted of six questions. Question- 1 was on vocabulary with twenty items. The students were required to give the meaning of the twenty words in English. The next four questions were on grammar. Each of these questions had two parts i.e., A and B. In these questions the students were asked to give the meaning of the four parts of speech with examples and to fill in the blanks. The last question was on comprehension, which was divided into four parts as A, B, C and D. In each part a short paragraph was presented to the students followed by five questions. The first draft was given to five experts to judge the adequacy of the language and the sequence of presentation. They were also told to add, delete and modify what they thought was suitable for the test. The suggestions received from the experts were that, the first question on vocabulary should be changed, and it should ask the students to match the words in Column- A with their meaning in Column- B instead of asking the students to give the meaning. They also suggested that second question which ask the students to give the meaning of the four parts of speech should be changed and should ask the students to match the four parts of speech in Column-A with their meaning in Column-B. They also suggested that a question

which ask the students to give the plural form of a singular noun and a singular form of a plural noun should be added. As per the suggestions received from the experts, the researcher changed the first and second questions and added the question which ask the students to give the plural form of the singular noun and a singular form of a plural noun. The rest of the questions remained the same. The test carries 100 marks, and it was administered for 3 hours. The final draft of the Post-test Achievement in English is presented in Appendix (III).

3.4.2.3 RAVEN'S PROGRESSIVE MATRICES (1960)

The measure of students' intelligence was obtained by administering to them the Raven's Standard Progressive Matrices. The Raven's Standard Progressive Matrices was developed in Great Britain by Raven (1960). It consists of 60 matrices, or designs, from which a part has been removed. The subject chooses the missing one from six or eight given alternatives. The items are grouped into five series A, B, C, D, and E, each containing 12 matrices of increasing difficulty but similar in principle. The initial series of items require accuracy of discrimination; the latter items are more difficult and involve analogies, figures permutation and alteration of pattern, and other logical relations. The test requires

establishment of relation among abstract items. It is a non-verbal test and has been claimed to be a language-free, education-free and culture-free test. The test is administered with no time limit, and can be given individually or in groups. Percentile norms are provided for each half-year interval between 8 and 14 years, and for each five-year interval between 20 and 65 years. The number of items correctly solved is the score which is then translated into a percentile rank. The Progressive Matrices have been subjected to extensive research in several countries and with a wide variety of groups. Numerous reliability coefficients quoted by Raven vary from 0.80 to 0.90. Reliability reported by other investigators using the split-half method ranged from 0.70 to 0.90. with older children and adults. The test-retest reliability also varied within approximately the same range as that found by the split-half method. The copy of the manual is given in Appendix (IV).

3.4.2.4 JIM SCALE (1970)

Academic motivation of the students was measured using the Junior Index of Motivation (JIM) scale developed by Jack Frymier (1970). Scores obtained by the students on this scale were taken to represent their academic motivation. The characteristic being measured through the JIM scale has also been referred to by the scale

constructor, sometimes, as "motivation to learn" or "motivation towards school". The scale was first adapted in the Gujarati language by Desai (1970) after proper try-out. The researcher used the Gujarati version of Dr. D. B. Desai.(See Appendix (V)). The scale consisted of 80 items in the form of statements. Although there are 80 items, only 50 items are to be scored. The others are filler items, but should be used for administration. For each statement the student responds by marking one of A, B, C, and D which represent, agreement, strong agreement, disagreement, strong disagreement with the content of the statement. Although the questionnaire is not timed, it takes about 30 minutes for students to complete the items. The purpose of the questionnaire is not to be explained to the students. They are to be instructed to respond to how they feel about each statement.

For scoring, responses A, B, C, and D are taken to represent 1, 2, -1, and -2 respectively. Student's score for the 50 items are added algebraically. This sum with sign reversed is the raw score value. This raw score value is then added to +100 algebraically. This score is the student's converted motivation score. Lower scores indicate lower motivation level of the students, and higher scores indicate higher motivation level of the students. Frymier has reported a split-half reliability

coefficient of 0.67. The English version of the scale is presented in Appendix (VI).

3.5 PROCEDURE OF CONDUCTING THE PILOT STUDY AND COLLECTION OF DATA

After finalization of the package as per the suggestions of the teachers, the experts, and selection of the sample, the package was put into a field try out. But before starting the experiment, the investigator administered three tests on the 48 students i.e. Experimental group and Control group selected as the sample for the pilot study. The three tests were Pre-test Achievement in English developed by the investigator, Raven's progressive Matrices (1960) and JIM SCALE (1970). After the administration of the three tests, the investigator took the Experimental group of 20 students for the experiment. These students who formed the Experimental group were exposed to the package for a period of one month, three days a week i.e. Monday, Tuesday and Wednesday, for a period of two hours every day (24 hours). The investigator explained to the students the purpose of the package and how to use it. Each student was given a computer and instructed to work individually and at his own pace. The students were also told to feel free and ask the investigator and the teacher if they faced any difficulty either in reading the materials or in running the package. After explaining the

purpose of the package to the students and how to use it the students in the Experimental group went through the package sectionwise viz., Vocabulary section, Grammar section, Comprehension section and the Evaluation tests section. The Experimental group was directly under the supervision of the investigator and the computer teacher. The remaining 28 students formed the Control group. The Control group was taught by their English teacher through the traditional method. This group was totally left to the English teacher and the investigator did not interfere in it. After the Experimental group students completed the package and the teacher in the Control group completed the lessons, the investigator administered a Post-test Achievement in English to measure the students' achievement in both the groups, and also to find out if the package had any effect on their achievement with respect to their IQ and Motivation.

3.6 ANALYSIS OF THE PILOT STUDY DATA

The analysis of the data was carried out objectivewise as under.

To fulfill the first objective of the pilot study i.e. "to find out the difficulties faced by students if any in understanding the vocabularies, grammar and comprehension of the four lessons, and the legibility of the language used", the investigator conducted informal interviews

with the students by asking them what kind of difficulties they have faced in understanding the vocabulary, grammar and comprehension of the four lessons. The investigator also asked the students whether the language used throughout the package was legible to them or not. The data collected through these informal interviews were analyzed qualitatively.

To fulfill the second objective of the pilot study i.e. "to see if the package has any effect on the students' achievement level",the investigator used "t" tests to find out if there was any significant difference exists between the mean scores of the Experimental group and the Control group in their Pre-test and Post-test achievement scores and to see the effect of the package on high IQ, low IQ, high motivation and low motivation students in both the groups. The investigator also used 2x2 Analysis of Variance (2x2 ANOVA) to find out if there was any difference which exists between the high IQ and low IQ, high motivation and low motivation among the members of the Experimental group. Also to find out if there was any interaction exists between students' IQ and Motivation on their Post-test achievement scores.

PHASE -2 EXPERIMENTATION

The second phase of the study is the experimentation

of the package to find out its effectiveness on the students' achievement level.

3.7 FINAL EXPERIMENT

The pilot study which was carried out helped in finding out the difficulties faced by students in understanding the language used, and validating the package as per the suggestions of the teachers and experts. The methodology followed for the final experimentation is presented below. It includes the details description of the design of the study, selection of sample, construction of tools, preparation for the experiment, implementation of the CAELT for the final experiment and the statistical technique used for the data analysis.

3.7.1 DESIGN OF THE EXPERIMENT

The study followed a Pre test - Post test, control group design. In this design the Pre-test was administered to the students of both the groups before giving any treatment. Post-test was conducted after the treatment period. Gained mean score was compared by "t" tests i.e. the significant of the difference between Means. Pre-test scores were also used in Analysis of Covariance to provide a statistical control for finding if any difference exists between the groups. The Pre-

test, Raven's Progressive Matrices, and JIM Scale were administered before the application of the experimental and control treatments. The Post-test was conducted at the end of the treatment period. At the end of the experiment the Pre-test scores and the IQ scores were used as covariate and Analysis of Covariance (ANCOVA) was used for data analysis. ANCOVA helps to statistically control for differences on the pre-test so that post-test differences would not be due to initial differences prior to training (Best and Kahn 1992).

3.7.2 SAMPLE

Students studying in standard VIII Gujarati medium were taken from two schools to serve as the sample for this study. Students of one school i.e. Rosary school, Baroda formed the Experimental group, and students of the other school i.e. G.E.B school, Baroda formed the Control group. These two schools were selected because they agreed to co-operate and provide the help needed by the researcher to conduct the study. The other reason for selecting these schools was that they follow the same syllabus. The reason for selecting Rosary school as the Experimental group was that, the school has a full fledged computer lab consisting of 20 PCs connected with LAN, i.e., Local Area Network which was suitable for the researcher to conduct his study in that school. The class

which formed the Experimental group consisted of 75 students, but the data of 66 students were used in this study, for the reason that not all the students attended all the tests conducted by the researcher and therefore, the Experimental group consisted of 66 students only. The Control group consisted of 75 students also, but the data of 46 students were used in this study for the reason that not all the 75 students attended all the tests conducted by the researcher. Therefore, the Control group consisted of 46 students only.

3.7.3 TOOLS FOR THE FINAL EXPERIMENT

The tools used in the pilot study were also used in the final experiment viz., Pre-test, Raven's Progressive Matrices sets A, B, C, D and E (Raven 1960), JIM Scale (Junior Index of Motivation by Frymier (1970) and translated into Gujarati by Dr. Desai (1970) and the Post-test. The above mentioned tests were administered on both the groups. To study the Attitude of the students towards the package the researcher developed and administered an Attitude scale on the Experimental group only after the final experiment.

3.7.3.1 ATTITUDE SCALE

To find out the Attitude of the students in the Experimental group towards the package ,the investigator

developed an Attitude scale. This Attitude scale was administered on the Experimental group only after they had completed the package in the final experiment. So the purpose of the Scale was to find out the Attitude of the students in the Experimental group towards the package. The Scale was developed with the following items,

1. Adequacy of the vocabulary and graphics.
2. Appropriateness of the materials and the language used throughout the package.
3. The adequacy of the evaluation tests and feedback provided in the package.
4. Presentation of the grammatical concepts.
5. Presentation of the comprehension

The first draft of the scale was developed by the investigator and then given to five experts to judge its adequacy, language and way of presentation. They were also told to add or delete what they think is suitable for the scale. The first draft of the scale consisted of 20 statements arranged aspectwise, and in a positive form. The suggestions received from the experts were that, the statements should be arranged randomly and not aspectwise, and also there should be nearly equal number of statements with positive and negative polarity. The scale was then revised and finalized as per the experts' suggestions. The scale consisted of 20 items with a five-

point scale format ranging from "strongly agree" ,
"disagree", "undecided", "agree" to "strongly disagree"
in likert type scale. The students were invited to tick
the spot on the scale which reflected their feelings
about the programme. The Attitude scale was translated
into Gujarati by experts in Gujarati language at the
Department of Gujarati M. S. University of Baroda. A copy
of the final draft of the Attitude scale in Gujarati and
English are given in Appendix (VII) and (VIII).

3.8 PREPARATION FOR THE EXPERIMENT

After finalizing the package as per the suggestions of
the teachers and the experts, and conducting of the pilot
study, the package was kept ready for the final
experiment. For implementing the package for the final
experiment the investigator approached two schools in
Baroda city. These two schools were Rosary school and G.
E. B school. The Experimental group was selected from
Rosary school and the Control group was selected from the
G. E. B school. After selecting these two schools the
investigator administered the following tests before
starting the experiment. The tests were:

1.	Pre-test Achievement in English developed by the
	investigator.

2.	Raven's Progressive Matrices Sets A, B, C, D and E
	(developed by Raven 1960).

3.   JIM SCALE (Junior Index of Motivation developed   by

      Frymier (1970) and translated by Dr.Desai   in

      Gujarati(1970).   ;

The above mentioned tests were administered on all the

students selected for the final study in both the schools

separately, before starting the experiment. After the

administration   of   the   above   mentioned   tests   the

investigator asked the English teacher in the school from

where the Control group was selected to teach the four

lessons selected for the study and the investigator did

not interfere in this group. In the school from where the

Experimental   group was selected,   the   investigator

oriented the students about the package, the purpose of

the package, and how to use it, students' manual is

presented in Appendix (IX). The orientation took one week

time. After the orientation, the package was installed in

the   computer.   The Computer laboratory consisted of 20

computers   connected   to each other by LAN   (Local Area

Network). After installing the Package, investigator ran

the package to ensure that every thing was alright. Then

the investigator divided the students into four groups of

20 students each. Each group used to come for half an

hour every day during the recess time. The experiment

took two and a half months. At the end of the experiment

the investigator administered a Post-test Achievement in

English on both the groups and an Attitude scale on the Experimental group only.

3.9 IMPLEMENTATION OF CAELT

After selecting the sample as has been mentioned previously in the sample selection process, the Experimental group consisted of 75 students who were provided the treatment. As stated earlier that, the school's computer lab consist of 20 PCs, it was difficult to accommodate all the students in one sitting because the very basis of individualised instruction is to provide necessary facilities to individual student, and therefore, one computer to one student. The researcher therefore, had to divide the class into four groups. Three groups consisted of 20 students each and one group consisted of 15 students. Each group was exposed to the package for half an hour every day at the recess time for two and a half months (38 Hours). Each file was presented four times, as the first group who started the file would come again after four days to start the second file or to continue from where they left off in the first period. The researcher attended all the computer periods and took the students log to see their regularity and to register where each student had left out to avoid unnecessary repetition of the same material to the students. The Experimental group was exposed to

the package whereas the Control group was taught by the teacher as usual in a traditional way. The teacher in the control group was asked to teach the same contents included in the package i.e. the four lessons. The researcher did not attend any of the Control group classes and it was left to the teacher only. The Experimental group students were instructed to go through the material at their own pace. Students who could not complete the material assigned for that day, used to complete it in the subsequent classes.

Fast learners used to complete the material faster than the slow learners, therefore, the researcher had kept the register of the students to provide all of them the same chance of completing the package. As mentioned earlier that all the computers in the lab were connected with LAN system, the researcher used to go fifteen minutes earlier and start the computers by loading the material to be taught so that the students could start the class immediately when they came to the lab. Immediately after the students arrival in the lab, they were asked to register their names on a register kept by the researcher to check their regularity. Those students who could not finish the material assigned to them in the previous class were called by the researcher and assigned to the computers where they could carry out what they left out in the previous class. Some of the students used

to finish the material before the period was over so they were asked by the researcher to load another file and start working. Before the computer class got over the researcher used to take note of the material they had completed. It helped him to note the progress made by an individual student and ask him to start working from that point in the next class. Those students who completed the whole package earlier than other students requested the researcher to allow them to go through the package or only some part of it which they felt would help them understand in more detail. They were given the opportunity to go through the package again. At the end of the experiment which continued for two and a half months, all the students got the chance of going through the package.

3.10 TECHNIQUE USED FOR THE ANALYSIS OF DATA

The present study is developmental cum experimental type. The data for the first objective has been analysed qualitatively as stated in Phase one. The data obtained from the final experiment of the package were analyzed objectivewise as under in the second phase.

1. The second objective of the study was to study the effectiveness of the package on students' achievement in terms of Vocabulary, Grammar, and

Comprehension taking IQ and Pre-test as covaraite. To do so the data on students achievement scores were analyzed with the help of ANCOVA.

"The Analysis of Covariance and partial correlation are those statistical techniques which can remove the effect of a confounding variables' influence from a study. Analysis of Covariance (ANCOVA) uses the principles of parial correlation with Analysis of Variance. Analysis of Covariance is particularly appropriate when the subjects in two or more groups are found to differ on a pre test or other initial variable. In this case, the effects of the pre test and/or other relevant variables are partialed out and the resulting adjusted means of the post test scores are compared. Analysis of Covariance is a method of analysis that enables the researcher to equate the pre experimental status of the groups in terms of relevant known variables. The initial status of the groups may be determined by pre test scores in a pretest-posttest study, or in a posttest-only study, by such measures as intelligence, reading scores, grade-point average, or previous knowledge of subject matter. Differences in the initial status of the groups can be removed statistically so that they can be compared as though their

initial status had been equated. The scores that have been corrected by this procedures are known as residuals, for they are what remain after the inequalities have been removed. Analysis of Covariance, used with one or more independent varaibles and one dependent variable, is an importent method of analyzing experiments carried on under conditions that otherwise would be unacceptable. In addition, as Glass and Hopkins (1984) point out, ANCOVA does not transform a quasi-experiment into a true (randomized) experiment. There is no substitute for randomization " (Best and Kahn 1989).

2. The third objective of the study was to study the effectiveness of the package on the Experimental group students' achievement in Vocabulary, Grammar, and Comprehension with respect to their Intelligence, Attitude and Motivation. To do so the students' achievement scores were subjected to "t" tests.

    "The mean is propably the most satisfactory measure for characterizing a group, researchers find it important to determine whether the difference between means of samples is significant. A mere quantitative superiority of the experimental

group mean score over the control group mean score is not conclusive proof of its superiority. Because we know that the means of two groups randomly drawn from the same population are not necessarily identical, any difference that appeared at the end of the experimental cycle could possibly be attributed to sampling error or chance. To be statistically significant, the difference must be greater than that reasonably attributed to sampling error. Determining whether a difference is significant always involves discrediting a sampling error explanation. The test of the significance of the difference between two means is known as a "t" test. It involves the computation of the ratio between experimental variance (observed difference between two sample means) and error variance (the sampling error factor)" (Best and Kahn 1992).

3. The fourth objective of the study was to study the Attitude and reaction of the students towards the usefulness of the package. To do so the reaction and opinion of the students toward the package collected through the attitude scale were analyzed qualitatively.