CHAPTER – IV

RESEARCH DESIGN
CHAPTER IV
Research Design

4.0. Introduction

This chapter deals with the methodology followed in this study. In the methodology, the researcher describes the design of the research, the subjects of the study, the place of the study, the procedures followed by the researcher, the instruments used, and the manner of administration of the instruments for investigation.

4.1. Title of the Study

"Enhancement of Reading Comprehension in Selected Plays of Shakespeare through Multimedia CD Assisted Instructional Package" is the topic taken for study by the researcher.

4.2. Defining Variables

The researcher is defining the variables available in the title of the research.

Enhancement: to increase or further improve the good quality, value or status of a concept.

Reading: is a complex cognitive skill, a transaction between the reader and the text, and an event during which meaning evolves.
**Comprehension:** is the result of the reader’s linguistic information, knowledge about specific and general topics, and the ability to recognize graphic symbols that represent the language.

**Multimedia:** The term ‘multimedia’ describes the presentation of information using a combination of communicative elements such as text, sound, graphics, animation and video.

**CD Assisted Instructional Package:** Educational software that delivers course material and instruction with the help of a CD.

**Shakespeare:** William Shakespeare, a renowned English dramatist and poet of the 16th century.

### 4.3. Assumptions of the Study

The following are the assumptions of the study:

- Multimedia CD Assisted Instructional Package helps the learners to fulfil their learning process.

- It is assumed that the Multimedia CD Assisted Instructional Package would enhance the comprehension of the related text.

- The attitude of the learners towards the Multimedia CD assisted instructional package may be studied.
4.4. Statement of the Problem

In recent years, computer technology has become a popular tool to improve the education of the learners in many countries. Learners’ use of programmes in the computers as intelligent tutors, for drills, and simulations is increasing in schools and colleges across the nation.

Multimedia, which utilises text, image, graphic, sound, and animation simultaneously can be used as a presentation tool by teachers to ensure better teaching-learning process. It has been described by Liaw (2001) as one of the most recent tools for education that supports interactive communication. He has also explained the ideas of Skinner (1961) a behavioural psychologist, whose programmed instruction, an early precursor to current hypermedia ideas, is more effective than traditional instructional approaches because it allows for immediate feedback, individual pacing, and expert instruction.

Multimedia has brought a new approach to teaching full length plays directed by renowned dramatists. Scenes from well known plays or one act play novels, short stories, and poems are directed, and enacted by professionally trained men, and also filmed and made available through video cassettes. These enable the viewers to have an understanding about life, its meaning and its subtleties. Learners’ understanding is enriched by their grasp of valuable ideas found in the literary texts. As literature is read for pleasure, the learners’ attention could be focused on the artistic, and imaginative qualities of literary works by means of the visuals.

Further to this ‘enjoyment’, one can add ‘understanding’ as one of the aims of instruction as the social and cultural assumptions have to be shared for the proper
understanding of a text. Lexical shortage presents learners with a two fold problem: a) on the reception side the learners fail to understand any word which falls slightly outside the ordinary language and b) on the production side the learners produce very plain and simple utterances which fail to convey different emotional loads. Part of the problem stems from the fact that the learner’s active vocabulary is limited, and consists of simple words that are frequently used in a language.

In the present context, the plays of Shakespeare are prescribed in the syllabus at the college level. A specialty of Shakespeare’s play is that it is written in the language of the 16th century, which is quite different from the contemporary English language. Viewing the language ability of the learners, one’s inability to comprehend Shakespeare’s play demonstrates that reading comprehension is a function of cultural background knowledge as well as the language displayed in the play. If learners possess the schemata assumed by the writer, it is understood effortlessly, and the intended inferences are achieved. If the learners do not possess the relevant schemata, the meaning of even explicitly stated propositions can be distorted. Hence, comprehension depends on denotative value of words, and the propositional context, at the sentence and text level. As video tapes are getting more and more common in one’s life, it is possible to avail materials useful for the teaching of literature at the college level. MacKnight (1983) considers video as potentially capable of developing a wide range of linguistic and semi-linguistic skills for highlighting language functions, as pinpointing non verbal signals, showing the relationship between linguistic and paralinguistic features. Realizing the importance and availability of multimedia, and the inability of the learners to comprehend fully the plays of Shakespeare, the present study has planned to use the multimedia
instruction to compensate for the student's deficiencies of the linguistic code. Thus, the
title of the study chosen by the researcher is “Enhancement of Reading Comprehension in
Selected Plays of Shakespeare through Multimedia CD Assisted Instructional Package”.

4.5. Objectives of the Study

The present study has both the general objective and the specific objectives.

General Objective of the Study

To develop Multimedia CD Assisted Instructional Package in a Selected Play of
Shakespeare to enhance the reading comprehension of the III year learners of ‘B.A.B.Ed.’
English, Integrated Course, Pondicherry.

Specific Objectives of the Study

The following are the specific objectives of this research study:

1. To develop a suitable Multimedia CD assisted instructional package to improve reading
comprehension of the text.

2. To develop a Learner’s Attitude Assessment Scale (LAAS) towards Multimedia CD
assisted instructional package.

3. To find out the effectiveness of the Multimedia CD assisted instructional package in
developing the comprehension.

4. To study the attitude of the experimental group towards the Multimedia CD assisted
instructional package which aims at improving the reading comprehension of the text.
4.6. Hypotheses of the Study

The present study has both the general hypothesis and the specific hypotheses.

General Hypothesis

The Multimedia CD assisted instructional package developed for the purpose of enhancing the reading comprehension of the play for the III year learners of ‘B.A.B.Ed.’ Integrated Course is effective.

Specific Hypotheses

The following are the specific hypotheses:

1. There exist no significant difference between the pre-test means of the control group and the experimental group.

2. The difference between the means of the pre-test and post-test of the control group is significant.

3. There exist significant difference between the means of the pre-test and post-test of the experimental group.

4. The difference between the post-test means of the control group and the experimental group is significant.

5. There is a significant difference between the pre-test mean attitude score and post-test mean attitude score of the experimental group.

4.7. Stages of the Study

The present study has undergone the following stages:

- Identifying the topic and conceptualising the variables involved in the study.
- Reviewing the pertinent literature.
• Selecting the topic from the III 'B.A.B.Ed.' English to be taught through the CD assisted instructional package.

• Developing the Multimedia CD assisted instructional package for the learners of III year 'B.A.B.Ed.' English.

• Standardizing the CD assisted instructional package through a questionnaire.

• Finding the efficacy of the CD assisted instructional package through experimentation.

• Constructing the pre-test to measure the entry behaviour of the learners.

• Developing the Learner’s Attitude Assessment Scale (LAAS) for studying the attitude of the learners towards the CD assisted instructional package.

• Selecting appropriate experimental design.

• Administering the pre-test and Learner’s Attitude Assessment Scale (LAAS).

• Applying the newly developed CD assisted instructional package to the experimental group.

• Applying the oral approach of teaching to the control group.

• Assessing the terminal behaviour of both the groups by administering the post-test.

• Applying the Learner’s Attitude Assessment Scale (LAAS) to the experimental group at the end of the treatment.

• Analyzing the data collected through the tools.

• Studying the attitude of the experimental group.

• Finding out the effectiveness of the newly developed CD assisted instructional package.
4.8. Design of the Study

4.8.1. The Subjects

The researcher has chosen the experimental method for the present investigation. The subjects chosen for the study by the researcher were the learners of III 'B.A.B.Ed.' English of Pope John Paul II College of Education, Pondicherry. Thirty eight learners based on the academic performance in the weekly tests were selected as sample for the study. These thirty eight learners were divided equally into groups of nineteen each to from the control group and the experimental group based on the random sampling method. Thus the researcher formed the parallel design group.

4.8.2. The Material

The material selected was the play 'Othello', one of the tragedies of Shakespeare that is included in the syllabus of the academic year of III 'B.A.B.Ed.' English. The play was prepared into a CD assisted instructional package. The play is action oriented. The individual episodes in the play follow a fixed format allowing the learners to gain familiarity with a predictable programme structure. Each episode was structured for 14 to 17 minutes approximately. The structure ensured that the teacher as well as the learners could interact with the text with interest and no mental fatigue sets in.

The language used in the play is the spoken language of the 16th Century, used by the native speakers in their day to day activities. The focus in this play is on language. The learners would need to have some background knowledge of the European culture to comprehend the linguistic play on words. Each part has the visuals and the script of the play with text scrollable below for easy comprehension of the play as well as the text. The non-linguistic cues such as emphasis, pause, gestures and employment of facial
expressions, tone etc. all aid comprehension. Therefore, the visual element effectively employs all the linguistic and non-linguistic resources to ensure comprehension. It is then followed by a quiz programme to evaluate the learner's comprehension of that experience.

4.8.3. The Classes

Each session had nineteen learners. The researcher conducted the experiment with duration of two months. The video text to be shown to the learners was divided into two main parts: the first part consisted of ten sessions, in which the whole play was shown in ten different parts according to the content. The researcher in each session would play the CD for 14 to 17 minutes according to each part of the play. It was then followed by an explanation by the researcher for fifteen minutes. During the explanation the researcher could review certain parts of the play for explanation or at the request from the learners. Once the instruction was over the learners were asked to answer a quiz programme that followed after each part. The answers were stored in the computer for evaluation. The learners were provided with immediate feedback for the wrong answers and also the marks obtained at the end of each session. The second part consisted of the description of the characters. Hence, each day a character was explained, and it concluded with discussion on general questions.

Both the groups were given a pre-test consisting of objective type test items to assess the entry behaviour of the learners. The Learner's Attitude Assessment Scale (LAAS) was given to the experimental group to know their attitude towards the CD assisted instructional package before the treatment. After the pre-test, the control group was taught through oral approach with the text, while the experimental group was taught through CD assisted instructional package. A post-test was administered both to the
control as well as the experimental group. The attitude scale was administered again to the experimental group to know their attitude towards the CD assisted instructional package after the treatment.

4.9. Experimental Method

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. Experimentation is therefore the name given to the type of educational research in which the researcher controls the educative factors to which a group of learners is subjected to during the period of inquiry, and observes the resulting achievement. The experimentation denotes in the deliberate and controlled modification - the conditions determining an event and in the observation and interpretation - the changes that occur in the event itself. The experimental method involves two groups namely the experimental group and the control group.

According to McMillan and Schumacher (1984) experimental research has the following characteristics:

1. **Statistical Equivalents of Subjects in Different Groups**

Statistical equivalents of subjects in different groups can be achieved by random assignment of subjects. It is necessary to achieve statistical equivalence of subjects in different groups so that the internal validity threat will not affect the study. To achieve the statistical equivalence of subjects in different groups the simple random assignment of the subject is a common method. Hence, in this study also, the researcher applied the simple random technique.
2. **Comparison of Two or More Groups or Sets of Conditions**

The intent of an experiment is to compare the effect of one condition on one group with the effect of different condition on a second group. In these two groups, one is the experimental group while the other is the control group. The control group is crucially important in all experimental research, for it serves the purpose of determining whether the treatment has had an effect, whether one treatment is more effective than another (Frankel and Wallen, 1993). In the present study also, the researcher formed a control group in order to find out the relative effectiveness of the experimental variable.

3. **Manipulation of Independent Variable**

Manipulation of independent variable is the most distinctive feature of an experimental research. Here, 'manipulation' means that the researcher decides upon or controls the group of subjects that will receive a particular treatment. Conventional experimentation usually has two groups namely the experimental and the control groups. The researcher equated these groups as closely as possible.

4. **Measures of Dependent Variables**

Measures of dependent variables mean the experimental research is concerned with things that can be assigned a numerical value. The outcome of the study should be measured and quantified. The researcher measured and quantified that result, which is the dependent variable of the study.

5. **Use of Inferential Statistics**

Inferential statistics are meant for making probability statements about the results. Inferential statistics are important in educational experimentation, because measurement is imperfect in education. Moreover, one can often want to generalise the results to similar
groups or to the population of subjects. Inferential statistics permits such generalisation. In this study, inferential statistics are employed to generalise the findings.

6. Control of Extraneous Variables

Best (1977) defines that extraneous variables are those uncontrolled variables (i.e. variables not manipulated by the experimenter) that may have a significant influence upon the dependent variable. These variables influence the results of the experiment in ways that are difficult to evaluate. One can control extraneous variables by making sure that these variables either have no effect on the dependent variable, or by keeping the effect of the extraneous variable the same for all the groups. In the present study, utmost care was taken to control the extraneous variable in an effective way. For instance, the researcher selected the randomisation technique, which is the most effective method of eliminating systematic bias and of minimising the effect of extraneous variables.

4.10. Research Tools

For the present study, the following research tools were used.

- Multimedia CD.
- Reading Comprehension Test.
- Learner’s Attitude Assessment Scale.

4.11. Development of the CD Assisted Instructional Package

The major objective of this study is to develop CD assisted instructional package for teaching one of the tragedies of Shakespeare to III 'B.A.B.Ed.' English learners at the
The researcher has selected the play 'Othello'. This play is divided into many meaningful parts according to the content. The parts selected for the study are furnished in the Table No: 4.1.

**Table 4.1. Lessons of Multimedia CD Assisted Instructional Package**

<table>
<thead>
<tr>
<th>Play</th>
<th>S.No</th>
<th>Lessons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Othello</td>
<td>1</td>
<td>Part-I</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Part-II</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Part-III</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>Part-IV</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>Part-V</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Part-VI</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>Part-VII</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Part-VIII</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>Part-IX</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>Part-X</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>Character of Desdemona</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>Character of Othello</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>Character of Emilia</td>
</tr>
<tr>
<td></td>
<td>14</td>
<td>Character of Cassio</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>Character of Iago</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>Character of Roderigo</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>General discussion on questions</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td></td>
</tr>
<tr>
<td></td>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>
The steps followed during the development of the Multimedia CD Assisted Instructional Package are as follows:

i) Framing Objectives.

ii) Planning.

iii) Production.

iv) Programming.

v) Evaluation.

The steps are illustrated in the Figure 4.1
Fig 4.1 Development of Multimedia CD Assisted Instructional Package

Start → Framing Objectives → Planning

Target Analysis → Content Analysis and Presentation

References → Type of Computer

Flow Charting → Content Accuracy

Scripting

Technical Support → Finance → Software Analysis

Production → Programming → Evaluation

Text → Audio and Video

Stop
1. Framing Objectives

Framing the objectives of the Multimedia CD Assisted Instructional Package is an important step. All the objectives should be in behavioural and measurable terms.

2. Planning

Planning is the most important phase, which includes the following items:

a) **Target Analysis:** It is essential to consider the level of the learners, the entry behaviour required, age, computer literacy, disabilities, cultural background and the knowledge of using CD. During the target analysis the suggestions given by Usha and Saujaya (2003) are followed in the present study.

b) **Content Analysis and Presentation:** The researcher has chosen the play 'Othello' from the curriculum of the III 'B.A.B.Ed.' English, Integrated Course. It has been realised that the language used in the plays of Shakespeare is quite different from the contemporary English. The learners find it difficult to follow as well as understand the language of the 16th Century. Further, the context and the cultural background are also different in the play. These hinder the appreciation and interest of the play by the learners, resulting in lot of difficulties to comprehend the play. The researcher also identified the needs of the learners, and presented the play in an interesting manner to enable the learners to comprehend the play, and to retain the message conveyed in the play. Hence, the researcher prepared the play with audio and video presentation, along with the text below the video display for ease in comprehension.

c) **Reference:** The difficulty of the language in the play is complemented by the text below the video display.
d) **Type of Computer:** The type of computer utilised for the newly developed multimedia CD assisted instructional package should be identified. It may be with the help of Macintosh or IBM etc. The researcher has used IBM computer for the present study.

e) **Technical Support:** For the development of multimedia CD assisted instructional package, the support of expert persons in the field of computer science with knowledge in Quick Time Player and Visual Basic is essential. Hence, the multimedia CD assisted instructional package was developed with the help of the technical persons. The researcher is the instructional designer.

f) **Finance:** Investment is one of the basic criteria to develop any kind of CD lesson. From the personal fund, the researcher has developed this multimedia CD assisted instructional package.

g) **Software Analysis:** Based on the consultation with the software engineers and technical assistants, the most suitable software should be chosen to develop a CD package. In the present investigation, the researcher selected the following software as per the suggestions given by the experts:

i) Visual Basic.

ii) Quick Time Player.

iii) M S Access.

3. **Production**

   Based on the above meticulous planning, the instructional package had to be developed through the following phases:
i) Flow Charting

It is a guide to any learner who operates the multimedia CD assisted instructional package. Before starting production, a well established flow chart is essential. It shows a product which starts with the title screen, then moves to the main menu screen. For the newly developed multimedia CD assisted instructional package, a well established flow chart is developed. The newly developed CD starts with the opening programme - an introduction, then by using the mouse it moves to the menu list. From there by clicking the mouse the learner as well as the teacher can choose the Parts I to X. By choosing Part-I, the learner can view the play with the text scrollable below. Later the learner is directed to a quiz programme, and can evaluate the comprehension in the lesson. In the following way, Part-II can be viewed and the same procedure followed for all the ten parts. Then, by clicking the mouse on characters, the learner can choose the respective characters.

ii) Content Accuracy

Content accuracy is indispensable for the development of multimedia CD assisted instructional package. The script writing and narration are based on content accuracy. The play is taken from the tragedies of Shakespeare prescribed by the syllabus of Pondicherry University for III ‘B.A.B.Ed.’ English. The content selected for the newly developed instructional package is accurate based on the text book.

iii) Scripting

A meaningful lesson is developed by good scripting. It is possible with the help of English experts and software technical assistants. This script was written by the researcher according to the requirements.
iv) Text

In the newly developed multimedia CD assisted instructional package, text is kept in accordance with the play, and the dialogue based on the textbook.

v) Audio and Video

Among the five senses, hearing plays a vital role in the field of teaching and learning. So it is important to incorporate an audio track for all the textual messages. Video is a powerful communication tool. The video files containing both the sound and the moving pictures have been incorporated.

4. Programming

During the programming stage, the researcher has to evaluate the manner, the flow chart and interface design work. The screen design is assisted by a technical supporter. This input gives the instructional package a professional look. The ‘on screen’ buttons for movements through the programme can be easily identified and found on the same screen. The method of application is similar throughout the package. As it is user friendly, the screen supplies the user with all the information needed to navigate through and interact with the programme.

5. Evaluation

Evaluation of the multimedia CD assisted instructional package can be done at two levels. One is at the level of content, and the other is at the level of technology employed. In the present investigation, once the entire content of the programme was developed, a test CD was created. This CD was given to various content specialists for feedback and evaluation. The CD was tested and standardised for content accuracy, ease of use and appeal.
The lessons thus developed were done with reference to accuracy, and relevance of the material, style, vocabulary, and content interest. This eliminates ambiguities, obscurities, and other inadequacies and brings technical accuracy to the content presentation. For proper editing of the lessons, the services of the colleagues and subject experts in the respective disciplines were utilised.

After editing, the lessons were ready for preliminary tryouts. Tryout is an essential process of validation, and it helps in refining the lesson, and makes it relevant to the target population. In the preliminary tryout the researcher had face to face interaction with twenty randomly selected individuals of the target learners one at a time. This gave the researcher an opportunity to study the feedback of the learners with reference to the content presented. So, on the basis of the preliminary tryout, necessary corrections, modifications, additions, deletions, and refinements were made. Then the CD package was given to the subject experts for their opinion and comments. On the basis of the expert’s opinion the final draft of the multimedia CD assisted instructional package, was applied to the experimental group. A copy of the newly developed multimedia CD assisted instructional package is enclosed in the thesis, and some of the clippings of the package are also enclosed in the Appendix.

4.12. Requirements of the System to Log On

The following are the required things to start and execute the programme:

- Microsoft Windows 2000 or Microsoft Windows XP.
- 256 MB RAM or high.
- Pentium III or Pentium IV recommended.
- 800X600 Pixels Resolution.
- Quick Time Player.

These details are also given in the newly developed Multimedia CD Assisted Instructional Package.

4.13. Installation

For the installation of the multimedia CD assisted instructional package, the following procedures have to be considered.

- Insert Disc in the CD-ROM drive.
- Install Quick Time Player.
- Transfer the database to the Hard disk.

4.14. Development of Reading Comprehension Test

The reading comprehension test was developed as per the instructions of Stanley and Hopkins (1972). The instructions are as follows:

i) Provision should be made for evaluating all important outcomes of instruction.

ii) Nature of test must reflect its purpose.

iii) The nature of test must reflect its conditions under which it would be administered.

The three steps involved in the development of the reading comprehension test are:

- Item selection.
- Item difficulty.
- Item Validity.
**Item selection** In the reading comprehension test, 80% of the items were of multiple choice and 20% were of short answer type. The multiple choice items include an item stem in the form of a complete or incomplete question or statement with three alternatives.

**Item difficulty** After the items were selected, it was quite necessary to find out the difficulty level of each item. The items were presented to thirty eight learners in the form of a test, and the scores were computed. The scores were arranged in decreasing order. The top 27% and the bottom 27% of the scores were considered for the computation of the item difficulty level. In the present study, the item difficulty level ranges from thirty percentage to eighty percentage.

**Item Validity** The validity index of an item i.e. its discriminative power is determined by the extent to which the given item discriminates among the learners who differ sharply in the function measured by the test as a whole. In the present study, the item discrimination index ranging from 0.3 - 0.8 was selected. Those items which have not come within the purview of the stated indices were modified till the computation of the stated values. (Ebel, 1963).

### 4.15. Reliability of the Reading Comprehension Test

'Reliability is the consistency with which a tool measures what it measures' (Garrett, 1966). A test is reliable to the extent that it measures accurately, and consistently from one time to another.
4.15.1. Internal Consistency Method

It measures the inter correlations of the items in the test, and the correlations of the items with the test as a whole. The researcher used the Kuder-Richardson method for identifying the internal consistency of the reading comprehension test.

In the present study, the reliability was established by the Kuder-Richardson (KR) formula. Here reliability is found out from a single administration of an instrument but without splitting the test item into equal halves. The reliability of both pre and post items was calculated by using KR_{21} formula.

\[
KR_{21} = \frac{n}{(n-1)} \left[ 1 - \frac{M(n-m)}{nS^2} \right]
\]

Where \( M \) = Mean test Score.

\( S^2 \) = Variance.

\( n \) = Number of items.

The calculated ‘r’ value, 0.850 shows, the high reliability of the reading comprehension test.

4.16. Validation of Reading Comprehension Test

Validity of a test refers to the extent to which a test is a precise measure to whatever the test intends to measure (Garrett, 1966). The above definition of validity suggests that validity of a test is indispensable in order to reach valid conclusions. Thus
validity means truthfulness of the test. In this test, the researcher tried three types to establish the validity of the reading comprehension test. They are:

i) **Face Validity**

This means that the given test appears (or) seems to measure what it is to measure. If the relevant content appeared in the particular area, then the test has face validity. In this regard, the present reading comprehension test has covered the relevant content. Hence face validity was established.

ii) **Concurrent Validity**

It is used to indicate the validity of the new test by correlating it with some present source of information. This source of information might have been obtained shortly before (or) very shortly after the new test was given. The reading comprehension test scores were correlated with the III year English weekly test scores in the paper ‘Shakespeare’. The calculated co-efficient was 0.81 and thus, the concurrent validity was established.

### 4.17. Construction of the Learner’s Attitude Assessment Scale (LAAS)

An Attitude scale namely, Learner’s Attitude Assessment Scale (LAAS) was developed by the researcher in order to assess the attitude towards multimedia CD assisted instructional package in the pre-test and post-test of the experimental group. This tool was developed based on three phases:

- Pre-pilot phase.
- Pilot phase.
- Finalisation phase.
4.17.1. Pre-Pilot Phase

The Pre-pilot phase is concerned with item pooling. It consists of a) item coverage
b) sources of items, and c) criteria for item selection.

a) Item Coverage

The Learner’s Attitude Assessment Scale (LAAS) covered the following areas:

i) Computer anxiety.
ii) Confidence in CD assisted instructional package.
iii) Linking with CD assisted instructional package.
iv) Usefulness of CD assisted instructional package.

b) Sources of Items

The preliminary item pool was drawn from the following sources:

i) Discussion with experienced computer resource persons.
ii) Discussion with learners.
iii) Ideas from English teachers.
iv) Discussion with the teacher educators.
v) Researcher’s experience.

c) Criteria for Item Selection

The collected statements were not directly administered, but were subjected to
screening. The following criteria were considered while screening. Some of the statements
were deleted, added, revised etc.

i) The language of the statement should be simple, concise, and unambiguous.
ii) The rater should clearly know that one is rating on a three, four or five point scale.
iii) The direction should be clear for honest rating.
iv) Each and every statement should be short.

v) The statements that are likely to be endorsed by almost everyone or no one should be avoided.

vi) Items may be arranged in ascending or descending order form left to right.

4.17.2. Pilot Phase

The pilot study is concerned with screening the items selected during the pre-pilot study. The re-selection of the items was done on the basis of two levels: a) Judgement Analysis, and b) Item analysis.

Judgement Analysis

All the selected items are again given to the subject experts to determine the suitability and objectivity of the items pooled. It has been verified by five experienced teacher educators of Pope John Paul II College of Education, Pondicherry. On the basis of their judgment some items were deleted, and some were restructured.

Item analysis

Fifty items were collected for the assessment of Learner’s Attitude Assessment Scale. The researcher chose thirty eight learners from Pope John Paul II College of Education, Pondicherry for validating the Learner’s Attitude Assessment Scale. The scores of each respondent were computed for each item. Then the scores were arranged in ascending order. The top 27% of the responses were kept in one group (N=15) which was known as the high scorer group. The bottom 27% of the responses were kept in the other
group (N=15) which was known as the low scorer group. The significance of difference between the high scorer group, and the low scorer group was found out with the help of ‘t’ test for all the fifty items. The statements whose ‘t’ value are above 2.048 were taken for consideration. The selected statements are significant at 0.05 level (degrees of freedom-28). By using item analysis thirty seven items were found significant, and retained in the Learner’s Attitude Assessment Scale. The level of significance and items in the attitude scale is furnished in Appendix VI.

4.17.3. Finalisation Stage

By using item analysis, thirty seven items were finally retained in the Learner’s Attitude Assessment Scale.

4.18. Scoring Procedure

The Attitude Scale is a Likert type of scale with five anchoring points.

A score of 1 is assigned to the ‘Strongly Disagree’ response.

A score of 2 is assigned to the ‘Disagree’ response.

A score of 3 is assigned to the ‘Undecided’ response.

A score of 4 is assigned to the ‘Agree’ response.

A score of 5 is assigned to the ‘Strongly Agree’ response.
4.19. Reliability of the Learner's Attitude Assessment Scale (LAAS)

The Reliability of the Learner's Attitude Assessment Scale was found by Cronbach's Alpha. There are fifty items. The coefficient obtained for reliability through Cronbach's Alpha method is 0.94. This shows that the scale is highly reliable.

Cronbach's co-efficient formula:

$$\alpha = \frac{n}{n-1} \left(1 - \frac{\sum \sigma y^2}{\sigma x^2}\right)$$

Where

- \(n\) = number of items.
- \(\sigma y^2\) = the variance of each item of the test.
- \(\sigma x^2\) = the variance of the observed total test scores.

4.20. Validity of the Learner's Attitude Assessment Scale (LAAS)

The content validity of the Learner's Attitude Assessment Scale was established by the researcher. Content validity is a type of test validity in which the content of the test is judged to be representative of a large domain of the content. The content validity can be ensured by the systematic plan and procedures of the test construction. De Cecco and Crawford (1977) note that the content validity tells whether the items in a test are constructed around appropriate content. Nunnally (1972), maintains that rather than testing the validity of a test after construction, one should ensure validity by the plan and
procedure of the test construction. According to this author, there are two major standards for ensuring the content validity. They are i) a representative collection of items, and ii) a sensible method of test construction.

After the collection of the required items from the various sources, the study was conducted by the researcher. After a careful analysis, the attitude items were properly structured. Some ambiguous items were modified and some were omitted. Therefore, the Learner’s Attitude Assessment Scale (LAAS) fulfilled the standards suggested by Nunnally (1972). Hence, it is concluded that the Learner’s Attitude Assessment Scale (LAAS) possesses content validity.

The format of the Learners Attitude Assessment Scale is shown in Table No: 4.2

<table>
<thead>
<tr>
<th>S. No</th>
<th>Items</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Multimedia is interesting to me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>37</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The item analysis eliminated thirteen items from the fifty given to the learners. So at the end only thirty seven items were retained in the Learner's Attitude Assessment Scale. The final draft of the Learner's Attitude Assessment Scale is shown in Appendix VII.

4.21. Administration of the Reading Comprehension Test

The Reading comprehension test constructed for collecting data was administered as a pre-test to the learners of both the control group and the experimental group. This was to assess the entry behaviour. The duration of the test was one and a half hours. For the effective administration of the test, the following directions given by De Cecco and Crawford (1977) were carefully followed:

i) Careful organisation and efficient distribution of all the test materials.

ii) Brief directions and brief answers raised by the learners and a record of time on the blackboard to help the learners pace their efforts.

iii) Cheating is a major problem which affects the test results. Prevention of cheating is one of the major responsibilities in administering a test.

4.22. Controlling the Variables during the Pre-Test

The intervening variables have to be controlled. In this study all the subjects in the sample were treated equally. The time variable was controlled by giving equal time limit to all the participants.
4.23. Controlling the Variables during Instructional Package Administration

The most important activity in experimentation is to control the variables that threaten the validity of the experiment. Failure to keep within the limit of such variables will definitely affect the outcome of the results. Campbell and Stanley (1966) list two types of validity - internal validity and external validity. In the present study, all efforts were made in controlling the threats that would affect the internal and external validity of the experiment.

4.23.1. Controlling Threats to the Internal Validity

The following are the factors that cause threats to the internal validity of the experiment. They are a) Testing b) History, c) Statistical Regression, d) Experimental Mortality, e) Selection Bias, f) Instrumentation, g) Diffusion of Treatments, h) Experimenter Bias, and i) Statistical Conclusion.

a) Testing

With designs involving pre and post-tests, it is possible that the experience gained through taking the pre-test may result in an increase in the post-test score. In the present study, the researcher followed the pre-test, post-test control group design to prevent the testing threat. Also the experiment was over within a duration of two months.

b) History

History is one of the serious threats to single group pre-test and post-test design. It is maintained that one or more unanticipated and unplanned events may occur during the course of the study, which can affect the responses of subjects. Such events are referred to as History threat. In the present study, no untoward events occurred in the course of the
multimedia instructional treatment. Utmost care was taken to expose the subjects only to
the multimedia instructional package treatment.

c) Statistical Regression

Statistical regression is the tendency for extreme scores to become closer to the
mean score on a second testing. It occurs because there is less than perfect correlation
between the two measures. Best (1977) observes that the subjects who score the highest on
a pre-test are likely to score relatively lower on a retest, whereas the subjects who score
lowest on the pre-test are likely to score higher on a retest. In the pre-test-retest situations;
there is a normal regression towards the mean. In order to control this threat, the
researcher employed homogenous groups for the experimentation.

d) Experimental Mortality

Experimental mortality indicates the ‘loss’ of subjects during an experiment. Because of illness, family relocation or the requirement of other activities, some subjects
may dropout of the study. In the present study, experimental mortality was arrested to the
maximum possible way so that the subjects were not lost in any way.

e) Selection Bias

Selection bias is a threat to the internal validity in which differences between the
groups of subjects affect the results. Selection bias is represented by non-equivalence of
experimental and control groups, and its most effective deterrent is the random assignment
of treatments to the subjects (Best, 1977). The threat of selection exists whenever groups
of subjects cannot be randomly assigned. Selection is also related to the manner in which
the researcher chooses a sample which would affect the study.
In the present study, selection bias was controlled by selecting the subjects to groups by the randomisation process. In randomisation, each and every individual in the experiment has an equal chance of being assigned to the experimental or the control groups, which are compared. While equating the control and the experimental groups, age and marks obtained in the weekly tests were carefully considered.

f) Instrumentation

Instrumentation refers to the defects in the instrument arising from long time usage. Instrumentation includes i) Instrument decay ii) Data collector’s characteristic and iii) Data collector’s bias.

i) Instrument decay is a natural phenomena changed in some way or the other. This is a case which permits different types of interpretation of results. In the present study, the researcher excluded essay questions and produced objective type and short answer questions which would control instrument decay.

ii) Data collector’s characteristic is another threat to the internal validity. Factors such as gender, age, ethnicity, language influence might affect the nature of the data. The researcher personally collected the data, and this type of threat was controlled.

iii) Data collector’s bias arises when the data collectors and scorers distort the data in such a way as to make certain outcomes (such as support for hypothesis) more likely. In the present study, the researcher collected the data and no data collector was employed. No manipulation was made to support the formulated hypothesis. Objectivity was established in perfect terms.
g) Diffusion of Treatment

It is also an internal validity threat to the study. It is possible in a study whenever there is an exchange of ideas between experimental and control group of learners among themselves during the study. In such cases, the treatments are diffused throughout all subjects which in turn affect the result. Usually when any two groups are treated differently there is always a possibility of inferiority or superiority complex development among the groups. As McMillan and Schumacher (1984) maintain, diffusion of treatment may result in resentment or rivalry of one group, especially of the group members who perceive that they have had inferior treatment or activity. But in this study, equal status was uniformly given in order to avoid the diffusion threats.

h) Experimenter Bias

This type of bias is reflected in differential treatments of subjects such as using a different voice tone, being more reassuring to one group than to another, reinforcing different behaviours, using different attitudes, and other influences such as either the subject’s behaviour or the evaluation by the researcher. Here, by giving equal status, this threat was avoided.

i) Statistical Conclusion

The regulations of the statistics should be strictly followed, whenever any statistical calculations are carried out. But sometimes there is a possibility of making mistakes in the statistical work. It comes as a statistical threat to the study. Hence, in this present study, with the aid of experts’ opinion, and careful ways of doing calculation, this threat was avoided to the maximum.
4.23.2. Controlling Threats of External Validity

The factors to be considered, which may affect the results of the study can be generalised to other situations, other populations, other tasks and other measures. The common threats to external validity are a) Location b) Representativeness c) Reactive effect of pre-testing d) Reactive effect of experimental procedures e) Multiple-treatment interference, and f) Interaction of selection and the experimental variable.

a) Location

The particular location in which data are collected may create alternative explanation for results. This is termed as ‘location threat’. The performance of the learners may be lower if tests are given in noisy or poorly lighted rooms. In this study, a well established college has been chosen to avoid all location threats.

b) Representativeness

The critical consideration in assessing external validity is the degree to which the sample is representative of the population to which the results of the study are to be applied. In this study, the population, and sample were randomly chosen from the III ‘B.A.B.Ed.’ English learners. Thus the selected group was the representative group of population.

c) Reactive Effect of Pre-testing

In an experiment, there is a danger that the pre-test may affect the responsiveness of the experimental group to the treatment. It is observed that a pre-test measuring knowledge about the study may sensitise the subjects and as a result, they may be more responsive to the information given during the treatment period. In order to avoid this kind
of sensitisation, the test was conducted as a regular class test to both the control and experimental groups.

d) Reactive Effect of Experimental Procedures

In experimental research, there is a possibility for the interaction experimental procedures, and the treatment may produce an effect. This is often alluded to as the ‘Hawthorne effect’. It takes its name because it was found out in the western electric Hawthorne plant in Chicago. In such conditions, people may react differently because of anxiousness. The researcher did not inform the subjects that an experiment was conducted and the groups were given equal treatment.

e) Multiple-Treatment Interference

Sometimes the same subjects are receiving many treatments and as a result, there may be interactions among the different treatments. The residual effect of a treatment may remain when another treatment is planned. The multiple treatment interference was totally controlled in the present investigation by effecting only one treatment, that is, the application of the newly developed multimedia CD assisted instructional package.

f) Interaction of Selection and the Experimental Variable.

There is always a chance for the results of the experiment to get affected on account of selection and experimental variable of the study. But by taking remedial measures, it has been controlled in the following ways:

- Since the learners are common in age and learning ability. There is less chance of interactive variable.

- The syllabus was also the same.
4.24. Administration of the Post Test

The researcher taught the control group through the oral approach with the text, and the experimental group with the Multimedia CD assisted instructional package. At the end of the instruction, a post-test was administered to both the groups. The main purpose of the post-test was to find out the terminal behaviour of the learners. While administering the post-test the researcher carefully followed the suggestions made by Ebel (1963) and De Cecco and Crawford (1977).

4.25. Administration of the Learner’s Attitude Assessment Scale during Post -Treatment

The Learner’s Attitude Assessment scale was administered to the experimental group during the post-treatment. It was intended to find out the attitudinal changes in the experimental group. The subjects were encouraged to give free and frank responses towards the CD assisted instructional package. A good rapport was maintained with the learners. No time limit was fixed. The queries, doubts and clarifications were cleared then and there.

4.26. Delimitations of the Study

The following are the delimitations of the study:

- The researcher has chosen a particular college in Pondicherry area for the study.
- This study was conducted on a part of the Pondicherry Syllabus of the Integrated Course only.
The study is concerned only with limited portion of III ‘B.A.B.Ed.’ English Paper dealing with the tragedies of Shakespeare.

- The experimental treatment was given with duration of two months.

4.27. Conclusion

In this chapter, the research design of the study is described with a description on the development of the Multimedia CD, the construction of the Learner’s Attitude Assessment scale, the pre-test and post-test. This is followed by the delimitations of the study. A description of the tools, and the manner of its administration in the study was presented to relate the nature of the data collection.

The results of this study as derived from the reading comprehension test and the Learner’s attitude towards multimedia are discussed in the next chapter.