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CHAPTER IV
METHODOLOGY

INTRODUCTION

Educational research refers to a systematic attempt to gain a better understanding of the educational process, generally with a view to improving its efficiency. It is an application of scientific method to the study of educational problems. According to Travers (1958), "Educational research represents an activity directed towards the development of an organized body of scientific knowledge about the events with which educators are concerned of central importance of the behaviour patterns of pupils, and particularly those to be learned through the educational process. A scientific body of knowledge about education should enable the educators to determine just what teaching and other learning conditions to provide in order to produce desired aspects of learned behaviour among young people who attend school". Since education is a behavioural science, the major concern of educational research is to understand, explain, and to some degree predict and control human behaviour. It is an activity directed towards the development of organized and useful body of scientific knowledge about the events with which educators are concerned.

In this chapter an attempt is made to describe the media materials availed in the study and their validation, the development of the interview schedule which was used to collect individual information from the sample the Criterion Referenced Test in AIDS awareness used as pre, post and retention tests, the development of attitude scale, the procedure for conducting the study, the instructional process adopted in the control and experimental groups and the establishment of reliability and validity of the different tools used for data collection.
MEDIA - MATERIALS AVAILED IN THE STUDY AND THEIR VALIDATION

As this study mainly aims at establishing the relative effectiveness among different instructional media in modifying the cognitive and affective behaviour among undergraduate students in prevention and control of AIDS epidemic, media materials viz., video, audio, slides and posters with regard to AIDS awareness were availed in the study. The details of the media materials availed in the study are given in Table 1.

TABLE 1. DESCRIPTION OF THE MEDIA MATERIALS AVAILED IN THE STUDY

<table>
<thead>
<tr>
<th>Sl.No.</th>
<th>MEDIA MATERIALS</th>
<th>TOPIC</th>
<th>DEVELOPER</th>
<th>TIME DURATION (in min.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Video (English)</td>
<td>AIDS</td>
<td>SBCS Australia and National AIDS Campaign Common Wealth Department of Housing and Community Services</td>
<td>35</td>
</tr>
<tr>
<td>2.</td>
<td>Video (Tamil)</td>
<td>Tamil</td>
<td>Tamil Nadu AIDS Control Society, Madras</td>
<td>30</td>
</tr>
<tr>
<td>3.</td>
<td>Audio (English)</td>
<td>Same audio version taken from video English</td>
<td>SBCS Australia and National AIDS Campaign Common Wealth Department of Housing and Community Services</td>
<td>35</td>
</tr>
<tr>
<td>4.</td>
<td>Audio (Tamil)</td>
<td>Tamil</td>
<td>Tamil Nadu AIDS Control Society, Madras</td>
<td>40</td>
</tr>
<tr>
<td>5.</td>
<td>Slides</td>
<td>Community Awareness (20 nos)</td>
<td>Tamil Nadu AIDS Control Society, Madras</td>
<td>40</td>
</tr>
<tr>
<td>6.</td>
<td>Posters</td>
<td>AIDS (50 nos)</td>
<td>Tamil Nadu AIDS Control Society, Madras</td>
<td>40</td>
</tr>
</tbody>
</table>
The content of the said media materials concentrates on prevention and control of AIDS epidemic. Almost all the said materials concentrate equally with regard to messages needed for prevention and control of AIDS epidemic among general public. An attempt was made to analyse the content of the said media materials in general, the details of which is given in the Appendix 1.

All the above said media materials were evaluated by experts, educational technologists, professors, students and volunteers of an AIDS awareness educational project using specially developed evaluation performa for each of the media materials, the details of which are discussed in the following pages.

DEVELOPMENT OF PROFORMA FOR EVALUATION OF MEDIA MATERIALS

Evaluation activities have always been an integral part of any programme. Evaluation as defined from a research point of view requires a formal evaluation design and procedures in order to collect and analyse data systematically for determining the value of a design / strategy or even an instructional medium.

Media play a vital role in imparting AIDS education among general public. Video, audio, slides and posters are some of the important media being used in achieving the instructional objectives in AIDS education. The researcher evaluated the media materials on AIDS education programmes before they were used for experimentation. It ensured the quality of the media materials, availed in the study. The researcher evaluated these materials with reference to the following aspects:

a. Content (subject matter)
b. Audio recording
c. Video recording
d. Graphics
e. Language
a. Content (subject matter)

If the content is complex then it should be explained and remain totally comprehensible. Content should not, due to ideological or dogmatic stand points, transmit distorted or incomplete knowledge or information. Objectivity can sometimes consist in presenting several interpretations of the same fact or event or several possible explanations of the phenomenon.

The media programmes should have activities which the learner can carry out, either under the guidance of the instructor or his own, which should be presented in the form of practical applications, either of knowledge or theoretical concepts, or of rules to be learned or even in the form of problems to be solved, information to be sought or experimented.

Content - interest of participants

Learning is facilitated if the learners' interest is enhanced by the content of the programme not only personal interests, but also as a member of the group. A clear and precise presentation of text and evocative attractive examples can play an important part in stimulating the interest of the learners. The presentation of content to the learners should be able to find situations which are familiar to him or examples drawn from the environment of the learners.

Organization

A progression should appear in the content of the software, starting from the basic abilities considered as elementary, in order to attain the most complex ones, thus enabling the fulfilment of the objectives of intellectual development fixed by the subject. Each concept should be explained in the developed software in one hand and on the other
progression of content and learning activities should lead the learners towards knowing how to use simple concepts, and then more complex ones, inorder to master application to a variety of situations or facts.

Presentation

The problem consists in presenting the required min\text{\em}imum of contents for the acquisition phase and establishing liaison with the integration of new content, without lengthening the programme much. A comprise has to be reached between contribution of information and graphics which is sufficient to permit learning of new content and length of programme which, if excessive, might discourage the learners. Learners who have already known more than other might lose interest and motivation if information is repeated to excess.

Clarity and accuracy of content

Examples should faithfully depict and explain what is shown visually. They should be clear and accurate and not give rise to ambiguities. The introduction of fantasy can hamper comprehension, as an excessive search for aesthetic quality which might direct the attention of the learner from the real aim of the illustration. Decorative illustrations are justified to stimulate and develop a learner's artistic sensibility.

Suitability of the target population

Selecting of contents and elaboration should take into account the fact that the interests of learners are varied and like abilities differ according to age, environment, psycho-affective traits. The programmes should be related with regard to the learners' needs, previous knowledge and comprehensibility. Familiar, short and simply constructed phrases are generally better memorized and understood than long, intricate phrases with complexity.
Audio

Avoid making phrases too long or complex and adapt the length to the age and cultural level of the learners in the spoken aspects.

Short, over simplified phrases are not, however, understood as well as phrases which are little and better articulated.

Sufficient pause and stress should be given in the appropriate place and the speed of delivery should also be at optimum level.

Video

Visualization is an important factor, because if words and concepts are related to mental images they will be easier for the learners to understand and memorize. Visuals should be relevant to the instructional content. They should support the instructional points. The visuals should be presented in a sequential order. Still pictures, simulation and live activity may adopt to the suitability of the presentation option. The synchronization of audio and video is also an important aspect in video programme.

Graphics

The density of the text and the speed at which the text is displayed should be at optimum level. Grouping of similar concepts together is an important aspect in graphic presentation. Mix of colours and consistency in the use of colour should be taken into account very carefully. Suitable graphics should be in supporting and illustrating the instructional points due to its clarity.

Language

Language used in the programmes should be suitable to the target population. Words used in the video programmes should be those commonly used, recognized and accepted by the system, and usually familiar to the learners. Learners basic vocabulary
varies with age, socio-cultural environment and in some cases the ethnic milieu. Vocabulary also contains long, abstract, infrequently used words, the meaning of which must be reinforced and fixed in his mind. This is a problem of measuring the degrees of facility of reading texts, by choosing and adopting vocabulary according to the subject matter and topic under consideration. The producer of the programme should take into account the use of continuous links in order to arouse and sustain the interests of the learners.

Keeping all the above said principles in mind, the researcher developed evaluation proforma for each of the media materials availed in the study so as to assess the quality as well as the suitability of the same. A copy of these evaluation proformas are given in the Appendix 2.

VALIDATION OF MEDIA MATERIALS ON AIDS EDUCATION

As already stated, all the media materials viz., video (English), video (Tamil), audio (English), audio (Tamil), slides and posters were evaluated by experts, educational technologists, professors, students and volunteers of an AIDS awareness educational project. The media materials played were witnessed by the above said people. As soon as the programme concerned was over, the evaluators were requested to respond to the specially developed evaluation proforma. Accordingly the evaluators evaluated the media materials from different angles viz., content, audio, video, graphics and language. The responses made by the evaluators to different aspects of the media materials were given in Appendix 3. From the appendix 3, it is seen that most of the evaluators rated the different aspects of the media materials moderately or more. It is heartening to see only a few evaluators are not satisfied with the quality of the different aspects of media materials. Hence it is evident that all the above said media materials are worthy of instruction.
DEVELOPMENT OF INTERVIEW SCHEDULE

Interview may be used as a tool for gathering data required by the researcher to test hypothesis or solve his problems. The interview is a process of communication or interaction in which the subject or interviewee gives needed information verbally in a face-to-face situation. The interview as a research tool can be modified according to the needs of the research situation.

It is necessary to plan for the interview carefully if it is to be effective in obtaining the required information. The major steps in constructing an interview schedule are justification, defining objectives, writing questions, deciding general and item format and pretesting. The interview technique is flexible and adaptable. It can be used with many different problems and types of persons, such as those who are illiterate or too young to read and write, and responses can be probed, followed up, clarified and elaborated to achieve specific, accurate responses.

If the researcher makes the decision to use an interview to collect data, he constructs an interview schedule. The schedule lists all the questions that will be asked, giving room for all interviewer to write answers. The questions are related directly to the objectives of the study and follow a given sequence that is adhered to in each interview. The written questions are exactly what will be asked orally, with appropriate probing questions. The questions are usually in one of the three forms: structured or semistructural or unstructured. Structured questions are followed by a set of choices and the respondents select one of the answer. Semistructured questions have no choices from which the respondent selects an answer. Rather, the question is phrased to allow for individual response. It is an open-ended question but it is fairly specific in its intent. Unstructured questions allow the interviewer great latitude in asking broad questions in whatever order seems appropriate.
The questions should be pre-tested. The pre-test is necessary as a check for bias in the procedures, the interviewer, or the questions. The procedures adopted during pre-test should be identical to those that will be implemented in the final study. The interviewer should take special note of any one suggesting that the respondent is uncomfortable or does not fully understand the questions. After the interview is over, the respondent can evaluate the questions for intent, clarity and so on. The pre-test provides a means of assessing the length of the interview and will give the researcher some idea of the ease with which the data can be summarized. One problem that must be addressed before the actual study is conducted is the removal or rephrasing of leading questions. A leading question is so worded that the respondent is more aware of one answer than another, or contains information that may bias the response.

All the above said principles were strictly observed while developing the interview schedule used in the study. The interview schedule includes questions with regard to the samples' demographical variables, socio-economic status, mass media exposure with respect to AIDS awareness and participants in AIDS awareness camps. The draft interview schedule was discussed with experts for improvement of the same. This interview schedule was pre-tested with 25 college students in the experimental area. The pre-test helped the investigator to understand to what extent a question influenced the respondents themselves in a right sense. It also helped the investigator to what extent a question asked for information about respondents that they might not know about themselves. A copy of the interview schedule is given in the Appendix 4.
In order to assess the entry and terminal behaviour of the students in AIDS awareness before and after the experimental intervention, it was decided to develop a Criterion Referenced Test in AIDS Awareness.

A domain reference test is one that draws a random or stratified sample of items from a very precisely defined content area or domain for which the content limits are clearly specified. Broadly defined domains lead to heterogeneous content and should be avoided since the resulting tests is likely to show that the learner has mastered some aspects of domain but not others. Such tests estimate the learners level of performance and specific deficiency in the domain concern. These test are expected to make criterion referenced decision also. Hence once a domain has been defined and items developed a performance criterion should also be established. Accordingly scores are interpreted in reference to this criterion, hence it is evident that domain reference tests that are interpreted in terms of students reaching or not reaching an established criterion are called Criterion Referenced Tests.

Steps involved in the construction of criterion reference test

Keeping in view the basic tenents of Criterion-Referenced Tests, the following steps can be suggested for the development of the same. Some of these steps may be combined while others can be split up into two or more steps. (Fig. 1)

a) Identification of subject area: The first step in development of Criterion-Referenced Test is the decision about the subject matter area to be worked out.

b) Selection of Unit/Topic: After the decision is taken about area, the next step is to select the unit on which test is to be developed. This unit may have more than one modules/sections/domains which comprise the total unit. Depending upon the need, one or more than one sections or chunks of content may be taken up for test construction.
FIGURE 1

STEPS IN THE DEVELOPMENT OF CRITERION-REFERENCED TEST

(a) Identification of subject area  
(b) Selection of Unit or Topic  
(c) Delineation of Domain and its description  
(d) Specification of Domain Objectives  
(e) External review of step (c) and (d)  
(f) Internal review of step (e)  
(g) Framing test items for step (g)  
(h) Internal review of step (g)  
(i) External review of step (g)  
(j) Field try out of Test  
(k) Internal review of step (j)  
(l) Final Test  
(m) Using test in the classroom  
(n) Finding reliability and validity  

(FRITAM SINGH, 1983)
c) **Delineation and Description of Domain of Testing:** Since domain refers to a particular segment of the content, one may examine the topic and delineate it into various segments which can be developed into a well defined separate domains. Each domain can then be analysed in terms of facts, concepts, principles, process etc., that may be arranged in order of their increasing complexity. Description of domain is very important as it provides the basis for item writing. It should reflect clearly the nature and scope of the content specification in sequential, hierarchical or developmental order.

d) **Specification of Domain Objectives:** Having decided about content elements of a domain selected, the next task is to formulate the instructional objectives or expected learning outcomes which may be categorized in terms of knowledge, understanding, application, skills, attitudes etc. These objectives should be stated so precisely that the performance of students could be clearly interpretable in terms of adequacies or inadequacies in terms of intended learning outcomes.

e) **External Review of Steps (c & d):** The tasks identified in steps (c & d) should be reviewed by those who are not involved in identifying the domain and its descriptions in terms of content elements and the specific objectives. However, a teacher who teaches that particular subject may also be involved in this task so that he may be able to clarify doubts, if any, raised by the external reviewers. Major purpose of this review is to sharpen domain description and the specific objectives in order to make them more realistic and functional. For this sample items accompanying the specific objectives are checked for their congruence with each objective and content elements.

f) **Internal Review:** After step 'e' the internal reviewer i.e., the constructor himself will examine all specific objectives along with one or more sample items which accompany each specific objective. The focus of this review is one, sharpening further the specific objectives if necessary.
g) **Construction of Test Forms A & B:** It is desirable to develop two forms of the test, A & B, so that one of the two could be used after post-instructional remedial measures. Moreover, it would be easier to compute reliability of one of the two forms. A copy of the key or the correct answers should accompany the test and may be retained by the developer. As far as the construction of items is concerned, these items are to be developed in accordance with the domain description.

h) **Internal Review of Step (g):** An internal review by the teacher is essential after the two forms of the test are ready, i.e., after step 'g'. The purpose of this review is to see whether all questions in the two forms of the test are congruent with the specific objectives besides having a cursory check for any glaring deficiencies in the test.

i) **External Review of the Test Forms A & B:** Prior to the field trial, the test may be re-examined. The main purpose is to detect any content flaws, if any, and check for congruence of items with the domain description.

j) **Field Trial of the Test Forms A & B:** At this stage, Forms A & B of the test may be tried out on a limited number of learners, say five to ten, to get a fix on the elements in the instruction which might be proved drastically wrong. It is better that the subject experts other than those involved in the development of the test administer these tests. However, one team member of the developers may accompany them in order to meet queries if any, relating to the content or procedure that might arise during tryout of the test.

k) **Internal Review:** After step (j), internal review would provide a last look at the test which would depend on the changes, if any, that have been made as a result of the review or the field tryout. The purpose of this review is to certify the final format of the test and pass it for use.

l) **Final Form of the Test A & B:** Now the final form of the A & B is ready for use and may be administered after having it cyclostyled. A sign-off sheet may be used to accompany the various tests as they move from step 'a' to 'l'. Each test may be kept in a
folder to which the signed sheet may be attached. This enables the developer to keep
track of the given test. To monitor the progress of the test as it goes through the various
stages of development, a master progress sheet can be used.

m) Using the Test in the Field: Test copies can now be used in the field. The test
can be administered to test the domains which are covered by the test. The domains being
tested can be arranged according to the needs of the teacher and administered one after
the other in sequential order. Where time is stipulated to complete the task, the test may
be administered accordingly. Learners' responses may be recorded and tabulated in
accordance with the scheme of analysis which has to be mostly in terms of specified
domain objective.

n) Finding Validity and Reliability of the Test: Since the data are now available
on the test we may find out the reliability and validity of the test using various
techniques.

All the steps discussed here for construction and finalization of Criterion-
Referenced Tests are depicted in the Figure I given in the next page.

Almost all the above said principles were strictly observed while developing the
CRT in the area of prevention and control of AIDS epidemic. Only one form of the CRT
was developed. The same was administered as pre, post and retention tests to control and
experimental groups. A copy of the CRT is given in the Appendix 5 along with the
answer key.

DEVELOPMENT OF ATTITUDE SCALE

An attitude represents an individual's feeling for or against something. It is also
found as the degree of acceptance given by an individual for something. An attitude is
one's mental disposition or degree of acceptance directed towards an object which may
either concrete or abstract.
Psychological researches help us to understand the major characteristics of attitude. They are (1) predispositions to behaviour in the attitudinal concept, (2) mostly learned behaviours and hence not inherited or innate dispositions, (3) more or less permanent and persistent for a reasonable period of time, (4) directed towards a goal or an object, and hence it may manifest in a positive or negative way towards the attitudinal concept, (5) can be indirectly inferred from one's covert or overt behaviour, (6) essential components of one's personality and are organized within the personality system of the person.

**Measurement of attitudes**

The following methods are used to measure the attitudes

1. Asking an individual directly to find out how he feels about a subject.
2. Asking the individuals to check in a lot of prepared statements with which he is in agreement. The degree of agreement can also be indicated
3. Inferring attitudes from a person's reactions to projective tests.

Attitude questionnaires (also called opinionnaires) and rating scales are generally used for measurement of attitudes. Specialised techniques like scalogram analysis, situational test etc. are also used for this purpose. Scaling procedure is commonly used to assess attitude. In this study the investigator followed Likert's technique in developing the attitude scale towards AIDS epidemic.

**The Likert scale**

The Likert method of attitude scale is popular and simple. This method is consisted of multiple choice type statements.
Construction

Step I

Collecting a large set of items relating to the social or psychological object in question.

The statements should be such that they represent different degrees of acceptance of the object.

The statements can be collected from a wide variety of sources like authoritative books dealing with them, research literature, newspaper statements, etc. A very large pool of items will be adequate for developing a good attitude scale.

Step II Editing of items

The collected statements will have to be edited or modified in order to
i) avoid double statements
ii) avoid abstract or complex ideas or terminology
iii) cover all statements expressing all degrees of acceptance (rejection)
iv) cover aspects and dimensions relating to the object
v) include approximately equal number of positive and negative items.

Step III

Preliminary administration and item analysis.

The preliminary pool of items is printed in the form of an attitude questionnaire with a five point responses given against each statement as shown below:

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>strongly agree</td>
<td>agree</td>
<td>undecided</td>
<td>disagree</td>
<td>strongly disagree</td>
</tr>
</tbody>
</table>

Each item in the scale is scored as described. In scoring, we distinguish between positive and negative items.
An opinion unfavourable to the purpose is taken as -ve item and other is taken as +ve item. The scoring is as shown below:

<table>
<thead>
<tr>
<th>Item</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Negative</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

The draft is administered on a representative sample.

The answer sheets are arranged in the decreasing order, of the total scores. From the total answer sheets, top 27% answer sheets and the bottom 27% answer sheets are used for item analysis. The 't' value can be calculated using the following formula.

\[
t = \frac{MH - ML}{\sqrt{\frac{\delta(XH-MH)^2 + \delta(XL-ML)^2}{n(n-1)}}}
\]

- \(MH\) = Mean score in the item of the high group
- \(ML\) = Mean score in the item of the low group
- \(XH\) = Any representative score of the high group
- \(XL\) = Any representative score of the low group
- \(n\) = Sample size in either the high or low group

The symbol "\(\delta\)" is used to show that the difference is to be obtained for each score separately, then squares should be added up. Items showing high 't' values are considered to be better as compared with items of low 't' values. This is so because a good items is one which produces a higher mean score in the high group and lower mean score in the low group. Statements showing high 't' values are selected. Approximately half the chosen items must be positive.
Step IV : Final scale

The selected items will be arranged in such a way that positive and negative items alternate. This arrangement will help us to cover the real intention of a measuring tool. The final scale is administered on a large sample.

Almost all the above said principles were strictly followed in the development of attitude scale towards AIDS epidemic. Sixty statements representing different degrees of acceptance with regard to different aspects of AIDS epidemic viz., HIV infection, AIDS affected people, services to be offered to AIDS patients, blood donation, social and political rights of the HIV infected people, safety to be provided to their children, counselling to AIDS patients etc. were collected from variety of sources. The collected statements were edited and modified. The collected statements were administrated to 100 undergraduates students studying in two Arts and Science Colleges in the city of Coimbatore. The responses made by the students surveyed are subjected to item analysis. Items showing higher 't' values were selected for the final study. Care was taken to see that positive and negative statements were 50:50. Accordingly, totally thirty five items were selected for the final study. This final scale was administered to the control and experimental groups as pre, post and retention tests. A copy of the attitude scale towards AIDS epidemic is given in the Appendix 6. The maximum possible score of the scale is 175 and the minimum score is 35. Each statement is followed by five responses representing five levels of acceptance.

PROCEDURE

Experimental Research

Experiment research is used to determine and evaluate the adequacy and effectiveness of the educational and instructional objectives through the measurement of their outcomes. Campbell and Stanley (1963) are of the opinion that, "The experiment is
the only means for setting disputes regarding educational practice, the only way of verifying educational improvements, and the only way of establishing a cumulative tradition in which improvements can be introduced without the danger of a faddish discard of old wisdom in favour of inferior novelties”.

After evaluating the efficacy of objectives, the suggestions are made for the formulation, execution and modification of educational programmes and classroom practices. The classroom teacher has experimentation to evaluate the effectiveness of certain learning experiences, planned and organized to achieve some desired objectives. Effectiveness of teaching method and innovations in the evaluation techniques is also ascertained through experimental research. The immediate purpose of experimentation is to predict events in the experimental setting. The ultimate purpose is to generalize the variable relationships so that they may be applied outside the laboratory to a wider population of interest of all the experimental designs. Pre-test, post-test, non-equivalent groups design was found to be the most appropriate design for testing the formulated hypotheses in the study.

**Pre-test, Post-test, Non-equivalent Groups Design**

True experimental designs provide the strongest, most convincing arguments of causal effect of the independent variable because they control for most sources of internal invalidity. There are, however, many circumstances in educational research for which, while causal inference is desired, it is unfeasible to design true experiments, or in which the need for strong external validity is greater. The most common reasons that experimental designs cannot be employed are that randomization of subjects to experimental and control groups is impossible and that a control or comparison group is unavailable, inconvenient, or too expensive. Fortunately, there are a number of good designs that can be used under either of these circumstances. These designs are termed
quasi-experimental because, while not true experiments, they provide reasonable control over most sources of invalidity and they are usually stronger than the pre-experimental designs.

Suppose a researcher is interested in studying the effect of three different methods in changing the cognitive behaviour in a school subject. The researcher has three classes of students to work with, and it is impossible to assign students randomly within each class to each of the three methods. The researcher therefore uses each class intact and gives each class a different treatment. The design would be as follows:

<table>
<thead>
<tr>
<th>Groups</th>
<th>Pre-test</th>
<th>Method</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>&gt; 0</td>
<td>X1</td>
<td>&gt; 0</td>
</tr>
<tr>
<td>B</td>
<td>&gt; 0</td>
<td>X2</td>
<td>&gt; 0</td>
</tr>
<tr>
<td>C</td>
<td>&gt; 0</td>
<td>X3</td>
<td>&gt; 0</td>
</tr>
</tbody>
</table>

The interpretation of the results will depend largely on whether the groups differed on some characteristic that might reasonably be related to the independent variable. This decision is made by comparing the three groups on such characteristics as gender, time the groups meet, size of groups, achievement, aptitude, socio-economic status, major and pretest scores. If, for instance, group A comprises all elementary majors and groups B and C secondary majors, and the results showed that group A gained more than B and C, the gain may be attributable to the values and backgrounds of elementary majors as compared to those of secondary majors. On the other hand, if the groups are about the same in most characteristics, then it would be reasonable to assume that selection differences probably would not account for the results. Consequently, if the researcher knows in advance that randomization is impossible, the groups should be selected to be as similar as possible. The pretest scores and other measures on the groups are then used to adjust the groups statistically on the factor that is measured. Another
approach to controlling selection when intact groups, such as classrooms, must be used is
to use a large number of groups and then randomly assign entire groups to either control
or treatment conditions. This procedure then changes the study to a true experimental
design. This is, in fact, the preferred approach when diffusion of treatment or local history
threats are viable.

It is difficult to reconcile the objectives of the instructional programmes with
cultural and community concerns, especially in countries with a variety of cultures or
marked differences between urban and rural areas. It is important to create such an
instructional programme that takes account of the language, customs and culture of the
community and to base it on a realistic assessment of risk behaviours and situations that
arise in the community in the context of prevention and control of AIDS epidemic. For
example, in a community where there is a significant amount of sexual intercourse among
unmarried young people, it is unrealistic to promote monogamy and celibacy as the only
options for prevention. Cultural mores and religious principles may either be in conflict
with or supportive of preventive options. Hence, it is imperative to find out whether the
linguistic and cultural background of the instructional media materials on AIDS epidemic
have any significant influence in modifying the cognitive and affective behaviour among
undergraduate students with regard to AIDS epidemic. With this intention, video and
audio instructional materials on AIDS epidemic prepared by International Organizations
and Local Organizations in English and Tamil respectively were availed in the present
study as different experimental interventions.

Experimentation

The samples for the study were selected from among undergraduate students of
seven Arts and Science Colleges situated in the city of Coimbatore, Tamil Nadu. An
interview schedule was administered to all the participants of control group and
experimental groups before experimentation in order to study the demographical variables, socio-economic status and mass media exposure with regard to AIDS awareness. The distribution of samples for the control and experimental groups is given in Table 2.

**TABLE 2. DISTRIBUTION OF SAMPLES FOR THE CONTROL AND EXPERIMENTAL GROUPS**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Group</th>
<th>Name of the College</th>
<th>No. of students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Control group</td>
<td>Bishop Appasamy College, Coimbatore</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>(Lecture method)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Experimental group I</td>
<td>S.N.R Arts &amp; Science College, Coimbatore</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>(Video English)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Experimental group II</td>
<td>Pl.V.S. Arts &amp; Science College, Coimbatore</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>(Video Tamil)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Experimental group III</td>
<td>G.R.D College of Arts and Science, Coimbatore</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td>(Audio English)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Experimental group IV</td>
<td>Kongunadu Arts and Science College, Coimbatore</td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>(Audio Tamil)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Experimental group V</td>
<td>Sri Narayana Guru Arts and Science College, Coimbatore</td>
<td>35</td>
</tr>
<tr>
<td></td>
<td>(Slides)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Experimental group VI</td>
<td>Sri Ramakrishna Vidyodaya Arts and Science College, Coimbatore</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>(Posters)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pre tests assessing the achievement in AIDS awareness and attitude towards AIDS epidemic were administered to all the seven groups before experimentation. The homogeneity of the seven groups with respect to their scores on achievement in AIDS awareness and attitude towards AIDS epidemic by means of analysis of variance with respect to the said scores. Lecture method was adopted in the control group while video
(English), video (Tamil), audio (English), audio (Tamil), slides and posters were adopted as experimental treatments in the experimental groups I, II, III, IV, V and VI respectively for instruction in prevention and control of AIDS epidemic.

Profile of the Control Group (Lecture method)

All the samples belonged to the age group of 17-20 years. Fourteen per cent of the samples belonged to forward community, 76 per cent of them backward community, 7 per cent of them to most backward community and the remaining 3 per cent of them belonged to schedule caste. Ninety per cent of the sample belonged to the category of below Rs. 50,000/= per annum, 7 per cent of them to Rs. 50,001/= to Rs. 1,00,000 and 3 per cent of them belonged to above Rs. 1,00,001 category. It was found that 34 per cent of the samples were coming from rural areas and 66 per cent of them coming from urban areas. It was found that 84 per cent of the sample came to know about AIDS through TV, 10 per cent of them through radio and 6 per cent of them through newspapers. Again it was found that 3 per cent of them attended AIDS awareness camps and 97 per cent of them never participated in such programmes.

Profile of Experimental Group I (Video English)

The samples of the experimental group I, belonged to the age group of 17-20 years. Eighteen per cent of the samples belonged to forward community, 72 per cent of them backward community and 10 per cent of them belonged to most backward community. It is found that 45 per cent of them came from rural areas and the remaining 55 per cent of them were from urban areas. Again it is found that 65 per cent of them came to know about AIDS through TV, 9 per cent of them through radio and 26 per cent of them through newspapers.
Profile of Experimental Group II (Video Tamil)

All the subjects of the experimental group II belonged to the age group of 17-20 years. It is found that 26 per cent of them belonged to forward community, 69 per cent of them belonged to backward community and 5 per cent of them belonged to most backward community. Again it is found that 67 per cent of them belonged to the category of Rs. 25,000-50,000 income group, 23 per cent of them from Rs. 50,001 to 1,00,000 income group. It is also found that 76 per cent of them came from rural area and the remaining 24 per cent of them came from urban area. Again it is found that 67 per cent of them came to know about AIDS through TV, 23 per cent of them through radio and the remaining 10 per cent of them through newspapers. It is also found that 7 per cent of the samples attended AIDS awareness camps and the remaining 93 per cent never attended such camps.

Profile of Experimental Group III (Audio English)

The subjects of the experimental group III belonged to the age group of 17-20 years. It is found that 15 per cent, 75 per cent and 10 per cent of the samples belonged to forward community, backward community and most backward community respectively. Eighty two per cent of them belonged to the annual income group of below 50,000, 15 per cent of them belonged to Rs. 50,000/- 1,00,000 group and the remaining 3 per cent of them to above Rs. 1,00,000 group. Again it is found that 40 per cent of the samples came from rural areas and the remaining 60 per cent of them from urban areas. It is also found that 64 per cent of them came to know about AIDS through TV, 15 per cent of them through radio and the remaining 21 per cent of them through newspapers. Six per cent of them samples attended AIDS awareness camps and 94 per cent of them never attended such camps.
Profile of Experimental Group IV Audio (Tamil)

The samples of the experimental group IV belonged to the age group of 17-20 years. It is found that 17 per cent, 67 per cent, 9 per cent and 7 per cent of the samples belonged to forward community, backward community, most backward community, and schedule caste respectively. Again it is found that 71 per cent of the sample belonged to the annual income group of below Rs. 50,000/=, 19 per cent of them to Rs. 5,000 to 1,00,000/= group and 10 per cent of them belonged to above Rs. 1,00,000 group. It is also found that 71 per cent of the sample came from rural areas and the remaining 29 per cent of them came from urban areas. Again it is found that 67 per cent, 19 per cent and 14 per cent of them came to know about AIDS through TV, radio and newspaper respectively. It is also found that 5 per cent of the sample attended AIDS camps and the remaining 95 per cent of them never attended such camps.

Profile of Experimental Group V

The subjects of the experimental group V belonged to the age group of 17-20 years. It is found that 14 per cent, 77 per cent and 9 per cent of the subjects belonged to forward community, backward community and most backward community, respectively. It is found that 75 per cent of the sample belonged to the annual income group of below Rs. 50,000, 11 per cent of them to Rs. 5000 to 1,00,000/= and the remaining 14 per cent of them belonged to above Rs. 1,00,000/=. Forty eight per cent of the samples came from rural areas and 52 per cent of them came from urban area. Again it is found that 77 per cent, 9 per cent and 14 per cent of the samples came to know about AIDS through TV, radio and newspaper respectively. It is also found that 3 per cent of the samples attended AIDS camps and the remaining 97 per cent of them never attended such camps.
Profile of the Experimental Group VI (Posters)

The subjects of experimental group VI belonged to the age group of 17-20. It is found that 13 per cent, 49 per cent, 20 per cent and 18 per cent of them belonged to forward community, backward community, most backward community and schedule caste respectively. It is also found that 71 per cent of them belonged to below Rs. 50,000 annual income group, 22 per cent of them to Rs. 5000/ to 1,00,000/ group and the remaining 7 per cent of them belonged to above Rs. 1,00,000 group. Again it is found that 62 per cent of the samples came from rural areas and 18 per cent of them came from urban areas. It is also found that 56 per cent, 16 per cent and 28 per cent of the samples came to know AIDS through TV, radio and newspapers respectively. Again it is found that 4 per cent of the sample attended AIDS awareness camps and the remaining 96 per cent of them never attended such camps.

A comparative study of the profiles of the control and experimental groups highlights that the samples of the all the seven groups are almost identical so far as the demographical variable, socio economic status, exposure to AIDS awareness through mass media, attending AIDS awareness camps are concerned. Hence it is concluded that all the seven groups are almost homogeneous in terms of the above said variables.

INSTRUCTIONAL PROCESS CARRIED OUT IN CONTROL AND EXPERIMENTAL GROUPS

A Pre-test was administered to the subjects of control and experimental groups with regard to AIDS awareness and attitude towards AIDS epidemic using the specially developed Criterion Referenced Test in AIDS awareness and attitude scale towards AIDS epidemic. The scores obtained by the subjects of control and experimental groups were analysed using analysis of variance in order to establish the identify of the control and experimental groups with regard to AIDS awareness and attitude towards AIDS epidemic.
The process of carrying out the instruction through lecturer method and different instructional media viz., Video (English), Video (Tamil), Audio (English), Audio (Tamil), Slides and Posters is described as follows:

**Control Group (Lecture method)**

Lecture method was adopted in the control group for instruction in AIDS education. A Physician cum Professor of Social and Preventive Medicine working in the local medical college engaged in the instructional process using charts and other low technological audio-visual aids. He was able to create better interaction among the students during instructional process. His usage of language, mannerism, hummer, the way in which he drew attention of the students via presentation of the messages, manners caught the attention of the students very close to the him. It is obvious that the professor could adopt himself to the AIDS messages at the comprehension level of the students, time limit, etc. No doubt he was also reinforced by the students' in terms of their attention. The way in which the professor interacted with the students earned group feeling, social reinforcement and emotional security on the part of the students. The instructional process lasted for about 45 minutes.

**Experimental Group I (Video English)**

This group received instruction on AIDS epidemic through video as an experimental intervention. The subjects of this group were seated conveniently in the lecture hall of an arts college in the city of Coimbatore. The television was placed in such a way that all the students could observe the video presentation without any difficulty. Taking a convenient place in the lecture hall, the investigator clarified the doubts raised by the students immediately after the video presentation was over. The investigator maintained better rapport between himself and the student throughout the video.
presentation. As the students had already been mentally prepared before giving the video programme, they cooperated with the instructor in a better way.

Four video programmes in English with regard to prevention and control of AIDS epidemic prepared by Special Broadcasting Service, Australia, in association with the National AIDS Campaign and Commonwealth Department of Health Housing and Community Services (SBS. T.V. 1992) and Australian Broadcasting Corporation in Association with National AIDS Education Campaign, Department of Health Housing and Community Services (1991) were played one after the other. The contents of the video programmes almost covered the entire points given under content analysis of the video materials (vide Appendix 1). The video presentation followed by clarification of doubts raised by the subjects took about an hour.

Experimental Group II (Video Tamil)

The subjects of this group were given instruction through video (Tamil) as described in the experimental group 1. Four video programmes with regard to prevention and control AIDS epidemic prepared by Tamil Nadu State AIDS Cell, Madras were presented to the subjects one after other. The video programmes being in the local culture and vernacular languages viz., Tamil aroused better motivation and involvement on the part of the subjects. They got clarified of many a doubts with regard to AIDS epidemic. This instructional process lasted for an hour.

Experimental Groups III (Audio English)

The subjects of this group were given instruction on prevention and control of AIDS epidemic through audio cassettes. The audio version of the video (English) programmes presented in the experimental group I were recorded in an audio cassettes and played to the group. The subjects of this groups were sealed conveniently in the
lecture hall well equipped with public address system. The investigator himself played the audio cassettes one after the other. At the end of the presentation of instruction through audio medium, the doubts raised by the subjects were clarified by the investigator. The audio presentation followed by clarification of doubts lasted for an hour.

**Experimental Group IV (Audio Tamil)**

The subjects of this group were given instruction on AIDS epidemic through audio (Tamil) in a lecture hall of an Arts and Science College in the city of Coimbatore. The subjects were placed conveniently in the lecture hall with well equipped public address system. The audio programmes on prevention and control of AIDS epidemic developed by Tamil Nadu State AIDS Cell were played to the subjects by the investigator himself. The audio programmes provided variety by way of formats *viz.*, Drama, skit, straittalks and documentaries. The content of the audio programmes highlights the messages with regard to prevention and control of AIDS epidemic. As soon as the audio presentation was over, the doubts raised by the subjects were clarified by the investigator. This instructional process continued for about an hour.

**Experimental Group V (Slides)**

The subjects of this group were given instruction on AIDS epidemic through slides in a dark room of an arts college in the city of Coimbatore. The subjects were conventionally seated in a dark room well equipped with public address system accomplished by automatic slide projector. They were given instruction through the slides highlighting in the messages relating to prevention and control of AIDS epidemic prepared by Tamil Nadu State AIDS Cell. There were totally 24 slides highlighting the messages like general awareness about AIDS, how it spreads, how it will not spreads, how to prevent infection, blood tests to detect the infection, counselling, etc. This session was conducted by the coordinator of a privately sponsored AIDS awareness educational
The presenter discussed the prevention and control of AIDS epidemic supported by the slides. The possibility of retaining the picture on the screen projected by slide projector helped to get the attention of the subjects on programmes which made the subjects as active participants throughout the session. The doubts raised by the subjects were also clarified by the presenter. The instruction given through the slides lasted for about an hour.

**Experimental groups VI (Posters)**

The subjects of this group were given instruction on AIDS epidemic through posters in the auditorium of an Arts and Science College in the city of Coimbatore. About 25 posters highlighting the messages related to prevention and control of AIDS epidemic were exhibited in the auditorium. The posters were produced by Tamil Nadu State AIDS Cell, Madras. The subjects were requested to attend the exhibition. The subjects were given a bit notice highlighting very important points covering the prevention and control of AIDS epidemic. While the subjects passed the posters one after the other, they were given additional message relevant to what depicted in the poster on demand by the volunteers of a privately sponsored AIDS awareness educational project. With the dynamic and implying quality, posters caught the viewers' attention and thus the messages were transmitted clearly and quickly. It is quite obvious that the posters aroused the curiosity and interest among the subjects. On an average, an hour was spent by each of the subjects in the exhibition.

The Criterion Referenced Test on AIDS awareness and the attitude scale towards AIDS epidemic given as pre test were administered again to the control and experimental groups as post test. The same tests were once again administered to the control and experimental groups as retention test one month after the experimentation was over. The response sheets of the subjects of the control and experimental groups for all the three
tests *viz.*, pre, post and retention were scored and tabulated. The scores are given in the Appendix 7.

The mean and SD of the scores of the subjects of the control and experimental groups measured by pre, post and retention tests were also computed. The formulated hypothesis were tested using appropriate statistical techniques.

**ESTIMATION OF RELIABILITY AND VALIDITY OF THE TOOLS**

The reliability for a set of scores from a group of examiners is the coefficient of correlation between that set of scores and another set of scores on an equivalent test obtained independently from members of the same group. It helps to know the representativeness and the reliability of the measurement made through the test.

A test is valid if it measures what it purports to measure. The validity of measures and thereby of the tool is lowered if the measures are contaminated by assessment of some other feature or trait besides the target one. There are different types of validity depending both on what the scores measure and what for they do it that is on the matter and purpose of measurement.

(a) Interview Schedule

**Reliability**

Interview is classified as structured and unstructured. A structured interview is one in which the procedure to be followed is standardized and is determined in advance of the interview. The same type of questions are presented in the same order to each interviewee. The instructions to the interviewees is specified. Structured interviews impose a degree of formality which does not permit the interviewer to establish the kind
of relationship between himself and the interviewee which is necessary if the interview is to be conducted at some depth.

The researcher conducted the interviews with the samples using the interview schedule. He administered the interview schedule to 10% of the total sample each of the control and experimental groups twice with ten days of interval. By comparison of the first and second administration of the interview schedule, it was found that 92% of the responses made by these participants to both administration of the interview schedule were identical. Hence it is concluded that the tool has high reliability.

Validity

As stated by Nunnally (1978) the researcher may ensure the validity of the tool through systematic plan and procedure of the construction of the tool rather than testing validity of measure after they are constructed. According to him to ensure the content validity of any tool, two important standards are necessary viz., a representative collection of items and a sensible method of tool construction. By extensive analysis of the objectives of the study followed by consultation with experts in AIDS education, the items for the interview schedule were decided. After that a pilot study was conducted. Based on the pilot studies the investigator restructured the items for the final study. Hence the interview schedule possess high content validity also.

(b) Criterion Referenced Test in AIDS Awareness

Reliability

To establish the reliability of the tool, "split-half" method was adopted. The test was divided in two halves. The procedure is to separate the test into two, using the odd-numbered items for one and even numbered for the other. This can be done only when the numbering itself has not involved with a systematic principle. It is safer than comparing
the first half against the second half since differential informant fatigue or cumulative item effect may lower or raise the true correlation.

Each of the two sets of items is treated as a separate test and scored accordingly. The two subscales are then correlated and this is taken as a measure of reliability. A further step is to correct the correlation coefficient secured between the two halves by applying the Spearman Brown Prophecy formula \( r = n + 1 \left[ 1 + \left( \frac{n-1}{r} \right) \right] \). This correction assumes that a scale of \( 2n \) items long will be more reliable than a scale of \( n \) items long and since the length of the scale has been halved by dividing into odds and evens, the full scale will have a higher reliability than would either half.

This technique assumes that the test as a whole large together, so that either half may be taken as adequately representative as the whole.

The investigator adopted the same procedure taking ten per cent of the answer scripts from each of the control and experimental groups at random. The test was split into two equivalent halves by pooling the odd numbered items for one score and even numbered items for another score. This makes the two scores obtained from a single test reasonably equivalent. In this way the scores of each subject were obtained one on odd numbered items and the second on even numbered items. The correlation between the scores of the two halves was determined and from these the reliability of the whole test was computed by applying the spearman brown prophecy formula. The reliability of the whole test is found to be 0.925 and significant 0.01 level. Hence, it is evident that the CRT is highly reliable.
Validity

The researcher ensured the validity of the tool through systematic planning and procedure in constructing the said tool. In developing the criterion referenced test the items were collected after exhaustive analysis of the content meant for instruction through different instructional strategies, followed by consultation with experts in the area of AIDS education.

As suggested by the experts, some modifications were made with regard to the structure and content of the test items. A pilot study was also done taking a few samples in the study area. Thus a systematic methodology was undertaken in developing the criterion referenced test. Hence it is evident that this test has high content validity also.

(c) Attitude scale towards AIDS epidemic

Reliability

The investigator adopted test retest method for estimating the reliability of the attitude scale.

Once a test has been given to a group of students, then scores are noted. After some time the same test is given to the same group of students and scores are noted. Now, if the correlation between the results first obtained and those obtained second time is sufficiently high, the test is said to be reliable. A limitation of this method is that the students might have remembered more or grown matured or have learnt something during the time that elapsed between first trial and the second trial of the test.

To establish the reliability of the attitude scale, the investigator adopted the test-retest method. He readministered the same attitude scale to 5% of the total sample of 271 undergraduate students after one month from the date of the first administration of the
attitude scale. An attempt was made to find out the correlation coefficient between these two sets of attitude scores by scattergram method. The calculated 'r' value is found to be 0.930 and significant at 0.01 level. Hence it is concluded that the attitude scale towards AIDS epidemic is highly reliable.

Validity

The researcher ensured that the validity of the tool through systematic planning and procedure in constructing the said tool. In developing the scale the items were collected after exhaustive analysis of the content meant for instruction through different instructional strategies, followed by consultation with experts in the area of AIDS education. As suggested by the experts the modifications were to the structure and content of the items. A Pilot study was also done taking a few samples in the study area. Thus a systemic methodology was undertaken in developing the attitude scale. Hence it is evident that the scale has high content validity also.