

**CHAPATER – III**

**RESEARCH METHODOLOGY**

**PLAN AND PROCEDURE.**

**INDEX**

<b>CHAPTER NO.</b>	<b>DESCRIPTION</b>	<b>PAGE NO.</b>
3.	<b>RESEARCH METHODOLOGY PLAN AND PROCEDURE.</b>	
	3.1 METHODOLOGY OF STUDY	41
	3.2 DESIGN OF THE STUDY EXPERIMENTAL DESIGN THE PARALLEL/EQUIVALENT GROUP DESIGN	43
	3.3 METHOD AND PROCEDURE OF STUDY NATURE OF SAMPLE SAMPLE AND SUBJECT. VARIABLES CONTROLLING OF VARIABLES	46
	3.4 EXPERIMENTAL VALIDITY INTERNAL VALIDITY EXPERNAL VALIDITY	51
	3.5 PROCEDURAL DESIGN OF THE STUDY TIME TABLE OF EXPERIMENT METHOD OF I-POD LISTENING/LEARNING APPROACH TREATMENT.	52
	3.6 RESEARCH TOOLS.	53

**CHAPTER – III**  
**RESEARCH METHODOLOGY**  
**PLAN AND PROCEDURE.**

The purpose of research is for progress and for better life. Good planning and calculation has been recognized as the basis of individual and social development. Education research refers to a systematic attempt to gain better understanding of the educational process, generally with a view of improving its efficiency. So, the blue print of research report needs to explain the design of the study. The plan and procedure is important because we know the size and selection of sample, source of data and the tools and method of generating data. Also due to this we come to notice the reliability of instruments selected and the statistical procedures used in the analysis. This is essential especially for a new researcher because of the following:

- a. It gives proper direction for particular study.
- b. It helps in organizing the activity or ideas for the study.
- c. It provides an answer to:
  1. How it should be done?
  2. What must be done?
  3. Which materials have to use?
  4. Which data will be needed?
  5. What data-gathering tool or device will be used?
- d. It is a document that can be given to other for comment.

Research methodology not only consists of research method but all the procedures of the research study including design, collection, analysis and interpretation of data, verification of hypothesis, etc.

The research design is essential because it promotes the smooth sailing of the various research operations. Therefore, making research possible yielding maximum information with minimum expenditure of efforts, time and money. In framing question paper, or in constructing house we need a blue print, well prepared by an expertise. Similarly, we need research design or a plan in advance of data collection and for analysis of our research project.

Mainly there are two categories of research:

- a. Qualitative Research.
- b. Quantitative Research.

Qualitative Research can describe events, persons and so forth scientifically without the use of numerical data.

e.g. Phenomenological or ethnographical researches.

Quantitative Research consists of those aspects, events, persons in which the data can be analyzed in terms of numbers.

### **3.1 METHODOLOGY OF STUDY**

Methodology consists all over the nature of study. There are various methods of manipulating research.

1. THE HISTORICAL METHOD.
2. THE SURVEY METHOD.
3. THE EXPERIMENTAL METHOD.

Experimentation is the most scientifically sophisticated research method. It is defined as observation under control condition. Experimental Research provides a systematic and logical method for answering the question. This is done under carefully controlled conditions. Experimenters manipulate certain stimuli, treatments or environmental conditions and observe how the condition or behaviour of the subject is affected or changed. Their manipulation is deliberate and systematic.

Experimentation provides a method of hypothesis testing, after experimenters define a problem, they propose a tentative answer or hypothesis. They test the hypotheses and confirm or disconfirm it in the light of the controlled variable relationship that they have observed. It is important to note that the emphasis should be given on testing rather than providing hypothesis. Hypothesis is stated in terms of probability rather than certainty.

Experimentation is the classic method finds its greatest utility in the laboratory; it has been effectively applied with classroom situations, where significant factors or variables can be controlled to some degree. 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. Experimentation is to generalize the variable relationships so that they may be applied outside the laboratory to a wider population of interest. Experimentation is therefore the name given to the type of educational research in which the investigator controls the educative factor to which a child or group of children is subjected.

During the period of inquiry and observation for the resulting achievement he must start the experiment with some measurement of initial or previous attainment of children in the trait ability to be influenced. He then subjects the group to the experimental factor, such as the particular type of method, drill material in arithmetic for duration of the experiment. At the end, he applies a final test for the purpose of determining the gain or achievement that has resulted from the application of the experimental factors.

The main objective of this study is to see the effect of i-Pod technology on student's interest in study of Marathi medium B.Ed. college.

For this it requires actual experiment on particular class. Through experiment researcher may identify does i-Pod approach effects on students interest in study or not? Hence, researcher applied this experimental method of research.

### **3.2 DESIGN OF THE STUDY**

After the selection of problem and formulation of hypothesis preparing a research design is very important. it includes objectives, sampling research strategy , tools and technique for collecting the data analyzing the data and reporting the findings. It beings from the statements of the problem, objectives of the inquiry and now a satisfactory culmination is to be achieved. It is the planning stage of research usually made logically visualizes its practicability. The quality of good design of research is judged by the degree of accuracy on level of relevant evidence sought. It is a plan of action.

There are various forms of research designs.

1. Classical design.
2. Experimental design.
3. Comparison of two groups.
4. Before and after measurement.

The design used for the present study was experimental design.

### **EXPERIMENTAL DESIGN**

The experimental research provides the researcher an opportunity for the comparison of variables required by the hypothesis of the experiment. It enable as the researcher to make a meaningful interpretation of the results of the study with the statistical analysis of data. It is a blue print of the procedures that enables the researcher to test hypothesis by valid conclusion about relationships between independent and dependent variables. It varies in complexity and adequacy depending on factors such as the nature of the problem under investigation, the nature of data, the facilities for carrying out the study and especially the research sophistication and competence of the investigator there are many experimental designs.

The adequacy of experimental designs is judged by the degree to which they eliminate or minimize threats to experimental validity.

Five categories are presented here.

- a. **Pre-experimental design:** The least effective or it provides either no control group or no way of equating the groups that are used.
- b. **True experimental design:** Employs randomization to provide for control of the equivalence of groups and exposure to treatment.
- c. **Quasi-experimental design:** Provides a less satisfactory degree of control used only when randomization is not feasible.

- d. **Functional design:** It requires the manipulation of one independent variable on dependent variables.
1. Single group design.
  2. Parallel/equivalent group design.
  3. Rotation group design.
  4. Factorial/ Multi group design.

### THE PARALLEL/EQUIVALENT GROUP DESIGN

It is designed to overcome certain difficulties encountered in the one-group design. Here, relative effects of two treatments are compared on the basis of two groups, which are equated in all relevant aspects. The second group, which is called control group, serves as reference from which comparisons are made according to educational experiment.

The groups being compared generally are equated achievement, age, motivation, sex, scholarship, general background, classroom situation and any other factors relevant to problem undertaken.

In a true experiment the equivalence of the experimental and control group is provided by random assignment of subjects to experimental and control treatments.

#### Equivalent – Groups Design

R	X	O <sub>1</sub>
R	C	O <sub>2</sub>

R = Random assignment of subjects to groups or treatments

X = Exposure of a group to an experimental (treatment) variable

C = Exposure of a group to the control or placebo condition

O = Observation or test administration.

<b>Experimental group</b> 25 students (with experimental treatment)	i-Pod treatment in Learning	i-Pod & testing of interest in study. Study of i-Pod technology, i-Pod effect on students interest in study.
<b>Control Group</b> 25 students (without experimental treatment)	Conventional Method of Learning.	Effect on students interest in study.

### 3.3 METHOD AND PROCEDURE OF STUDY

This study is experimental in nature. An experiment involves the comparison of the effect of a particular treatment, with that of different treatment or of no treatment between the samples of experimental group and controlled group.

These groups are equated as nearly as possible on the basis of achievement i.e. unit test score. The experimental group is exposed to the influence of the factor under consideration and the controlled group is not exposed experimentation. Their teacher gives treatment of i-Pod approach to experimental group. Observations and recordings are then made to determine what differences appear as modification occurs in the experimental group as compared with the controlled group.



### NATURE OF SAMPLE

The students admitted to this institution are meritorious students and they have good teaching learning facilities in the college.

Sample I and sample II consisted 30 students in each group.

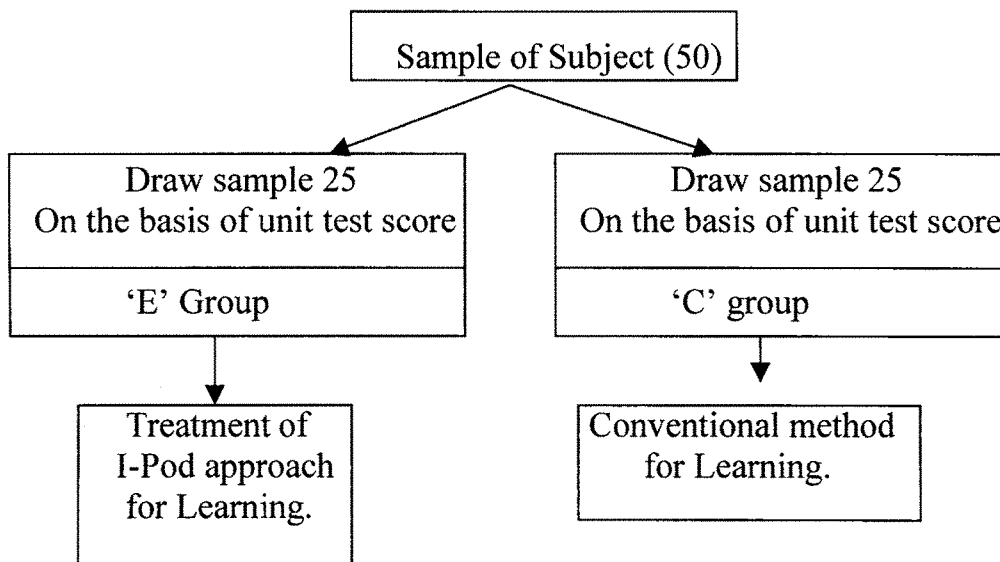
First with purpose of marking two equal groups for experimentation the researcher gives the pre test to all 80 students in the class. Based on their marks obtained in pre test two almost equal groups were formed. Randomly one group was chosen as experimental group and the other remained as control group. The sample design used is of all parallel group design.

### SAMPLE AND SUBJECT

The sample was drawn on B. Ed. Class in affiliated to Shivaji University, Kolhpur, College of education, Phaltan .

<b>'Experimental' Group</b>		<b>'Controlled' Group</b>	
	<b>Roll Nos.</b>		<b>Roll Nos.</b>
	1, 8, 9, 12, 13, 17, 18, 23, 26, 31, 35, 36, 44, 48, 55, 59, 60, 61, 67, 68, 70, 71, 73, 74, 77.		5, 6, 7, 11, 20, 22, 24, 25, 27, 37, 38, 39, 41, 42, 45, 46, 52, 53, 57, 62, 63, 69, 75, 79, 80.

In this way two groups were equalized as nearly as possible. Randomly one group was selected for experiment and other group is remained as controlled group. Thus, 50 students formed the sample with 25 experimental group and 25 in controlled group as shown in figure.

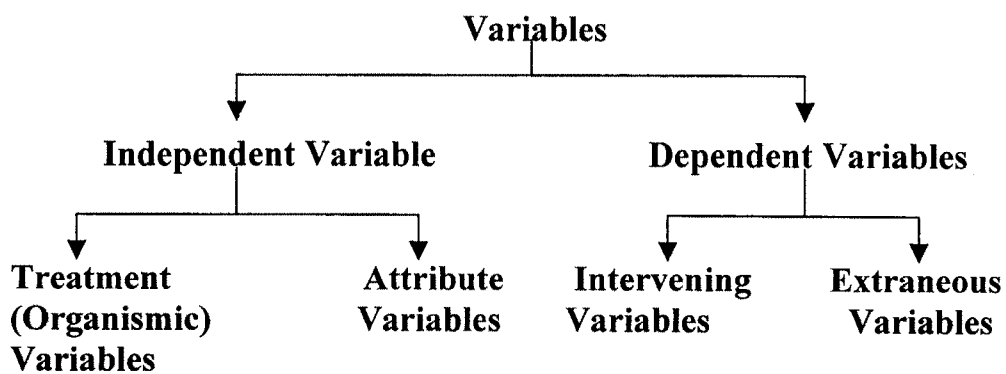


### OUTLINE OF PROCEDURE

Fig. No. 3.1

### VARIABLES

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



### TYPES OF VARIABLES

Fig. No. 3.2

The independent variables are the conditions or characteristics that the experimenter manipulates or controls in his or her attempt to ascertain their relationship to observed phenomenon.

Treatment variables are those factors that the experimenter manipulates and to which he or she assign subjects. In the present study, I-Pod approach is the treatment variable of 'E' group of 5 College periods.

Attribute variables are those characteristics that cannot be altered by the experimenter such as age, sex, race, intelligence and achievement level, etc. In present study, achievement level in unit test of Psychology is attribute variable.

The dependent variables are the conditions or characteristics that appear, disappear or change as the experimenter introduces, removes or changes independent variables. Confounding variables are those aspects of a study or sample that might influence the dependent variable (outcome measure) and whose effect may be confused with the effects of the independent variable.

Intervening variables which cannot be controlled or measured directly may have an important effect on the outcome, e.g. immediate reinforcement, interest, anxiety, fatigue, motivation etc.

In present study, the dependent variable is students interest in study.

Extraneous variables are those uncontrolled variable (i.e. variables not manipulated by the experimenter) that may have a significant influence upon the results of a study) e.g. Teacher competence, enthusiasm, age, socio-economic level, academic ability etc.)

## CONTROLLING OF VARIABLES

Building them into the study as independent variable can control variables that are of interest to the researcher. In present study, a researcher wants to compare the two different teaching methods having the effect in students' interest in study by making two equivalent groups according to unit test achievement. There are four techniques of control

- a. Elimination.
- b. Constancy of conditions.
- c. Balancing.
- d. Counter balancing.

The variables are controlled in this study by

1. **Randomization:** Is used for the selection of college and B.Ed. class.
2. **Matching Scores:**

The scores are matched with matched randomization e.f. 25-25.

Analysis of covariance permits the experimenter to use pretest mean scores. Hence, in this study, experimenter has used score of unit test as achievement level.

3. **Balance:**

Each group is equated with 25-25 students classroom situation was the same girls and boys are mixed on achievement level.

4. **Counter Balancing:**

While recording, experimenter made recording by interchanging like 'E' group – 'C' group – 'E' group-'C' group etc. This is done separately in separate classroom one by one.

## 5. **Elimination:**

The time table of experiment is done of 5 periods one period for one day for avoiding anxiety, fatigue, disinterestedness for two groups.

### 3.4 **EXPERIMENTAL VALIDITY**

Campbell and Stanley (1966) described two types of experimental validity:

- a. Internal Validity.
- b. External Validity.

#### a. **INTERNAL VALIDITY:**

An experiment has internal validity to the extent that the factors that have been manipulated (independent variables) actually have a genuine effect on the observed consequences (dependent variable) in the experimental setting. In present study, the researcher aimed at keeping internal validity by providing different methods of teaching with having same classroom situations and quantity of students.

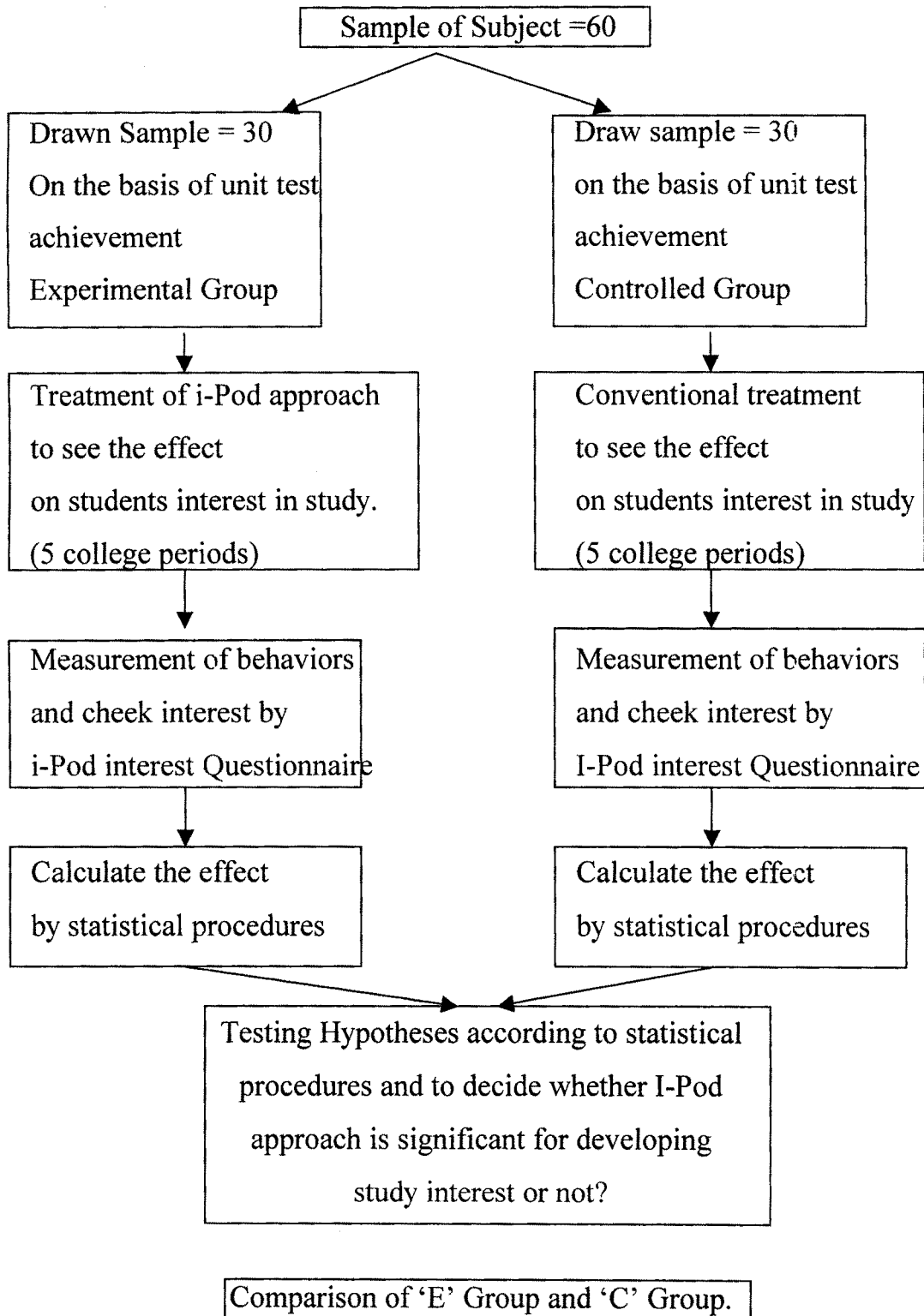
#### b. **EXTERNAL VALIDITY:**

External validity is the extent to which the variable relationships can be generalized to other settings, other treatment variables of the measurement variables and other populations.

For controlled group researcher has provided conventional method of teaching for seeing the effect on I-Pod interest. This study can be done by any method for any standard and for any population.

Hence, experimental validity is an ideal to aspire for it is necessary that a reasonable balance may be established between control and generalizability between internal and external validity.

### 3.5 PROCEDURAL DESIGN OF THE STUDY



### PROCEDURAL DESIGN OF THE STUDY

Fig. No. 3.3

To decide whether I-Pod, treatment is superior to traditional method compare x 1 and x 2

**The Timetable of experiment is shown in following table:**

<b>DAY &amp; DATE</b>	<b>TIME</b>	<b>'E' GROUP</b>	<b>'C' GROUP</b>
15/12/2008	12.00 to 12.50	Pre Test	
17/12/2008 to 23/12/2008	12.00 to 12.50	I pod treatment	Conventional study
28/12/2008	12.00 to 12.50	I Pod Interest Questionnaire	-
29/12/2008	12.00 to 12.50	Post Test	Post Test.

The particular chapter reveals (Shows) entire Methodology of Research concerned method, Design, Procedure, Research Tools, Plan for experiment etc. It gives clear-cut idea for the execution of the program relevant to the problem to be investigated.

### **3.6 RESEARCH TOOLS**

#### **1) PRE TEST**

Pre test was administered before teaching the topic and it was paper pencil in nature. It was administered for judging the previous knowledge of the students regarding subject educational psychology. Time given for solving the question was 40 min and the test was of 25 marks objectives type and short answer question were asked in the test. The nature of the pre test question paper was as follows:

- Q.1 Fill in the blanks.
- Q.2 Match the groups.

Q.3 Define the terms.

Q.4 Answer the following.

The pretest question paper was shown to the reduction psychology teachers of B. Ed. College's suggestions and options were taken in to consideration and then final pre test question paper was considered.

The investigator conducted the pre test with the assistance of the teacher in the college for both the groups at the same time.

## 2) QUESTIONNAIRE

Questionnaire is prepared for to Asses the interest in using i-Pod. It includes 15 questions on different aspects of i-Pod. Questionnaire is given to students and collected with their responses to analyses the data.

## 3) POST TEST

A control group was taught the topic in the regular classroom by traditional method where as the topic was taught to the experimental group by i-Pod used and then a post test was administered to both the groups. Time given for the post test was 40 minutes and it was of 25 marks. The nature of post test question paper was as follows:

Q. 1. Define following.

Q. 2. Match the groups.

Q. 3. Give the answer of following.

The post test was paper penciling nature post test was conducted by the investigator with the assistance of the teacher in the college.



**METHOD OF ANALYSIS OF DATA**

The comparison of both the groups was done before and after the treatment and then the statistical techniques such as mean, standard deviation and t test was used to analyze the data.