

CHAPTER V

METHOD OF STUDY

Introduction

The experimental study or method is the problem solving approach that attempts to follow most closely some of the canons of research in the physical and biological sciences. Experimentation, whether conducted in the laboratory, class-room or other field situation, was formerly or is historically an attempt to control all essential factors except a variable, which is manipulated or changed with a view to determining and measuring the effect of its operation.⁽¹⁾

(1) Carter V. Good and Douglas E. Scates, Method of research, Appleton-Century Crofts, New York. p.689.

Meaning of an experiment

The experiment is expected to reveal causal relations. In other words, it deals with dynamics, with forces, with interaction; it is not intended to give simply a descriptive picture of status or a chronicle of normal growth or change. It is anticipated, therefore, that this purpose will be preserved by whatever form of experiment is set up. (2)

In the broad sense of the term, to experiment means simply to try - to try something in order to see what happens. This procedure in somewhat informal, uncontrolled type of trial or experimentation is of little interest to the more formal writers, who seem to feel that you cannot "prove" a thing by doing it. Even so, the informal approach has considerable favour among a number of persons who feel that the formal requirements cannot be met, or that they interfere with the development of insights, or that they are so difficult as to be restricted to the most mature research workers.(3) Even here, however, the experimenter is the one who is manipulating atleast some of the conditions.

Beveridge includes a great deal in a few words when he says, " An experiment usually consists in making an event occur under known conditions where as many extraneous influences as

(2) Ibid.

(3) W.A.Brownell, " Critique of Research on learning and on instruction in the school." National Society for the study of Education, University of Chicago, 1951.p.52

possible are eliminated and close observation is possible so that relationships between phenomena can be revealed. " (4)

Group techniques

Group experimentation in education is ordinarily conducted in classroom for the purpose of evaluating instructional methods or learning procedures. Educational, psychological and social experiments in the classroom and in the field are generally conducted with groups rather than with individuals. A working classification of group methods of experimentation is :

1. One - group technique.
2. Equivalent or parallel group techniques
3. Rotation group technique.

Parallel - group technique

In the parallel - group procedure two or more groups, as nearly equivalent as possible, are employed at the same time. Under conditions controlled as carefully as possible, only a single factor or variable is manipulated or changed; the experimental factor is varied for one group (the experimental group), while the parallel group serves as the control for comparative purposes, undergoing usual or non - experimental conditions. (5)

(4) William I.B. Beveridge, The art of scientific investigation. New York:W.M.Norton & Co.,1950 p.13

(5) Carter V.Good and Douglas E.Scates, Op.cit.p.705

For example, a group of eighth grade students is instructed by an experimental method, say Basic system of education, for school year of nine to ten months, the results at the end of the year can be interpreted only in comparison with the normal or expected performance for a group of similar intelligence, similar physical environment and similar socio - economic background while following the customary or usual teaching procedure, say traditional system of education.

Experimental Design

A particular method of education is not the only factor that determines the achievements of school children. There are several factors as well.

As the object of my experiment or enquiry was to delimit the specific role of the method of Basic education as a factor in the comparative achievements in Basic and traditional schools, I had to select one of the group techniques of experimentation viz. parallel-group technique.

For the selection of two equivalent groups from the eighth forms of senior basic schools and the traditional schools or high schools in and around Bhavnagar and for the comparative assessment of achievements of these groups it was essential in this technique to exercise control over the following factors:

1. Physical environment of the children.
- 2, Socio-economic level of the family.
3. The potentiality or educability of the children as determined by their level of intelligence.

49

The above factors influence the achievements as well as personality development of a child to a measurable degree. The enquiry was so planned as to control these factors before administering any one of the analytical tools for making the assessment of the final outcomes and thus bring out the differential effect of the two methods of education viz. basic and traditional.

Nature of the sample

(a) From the list given at the end of Chapter IV and other traditional schools in and around Bhavnagar, comparable groups of children were selected so far as their physical environment was concerned. The two types of schools were matching with respect to their occurring in the same locality of Bhavnagar district.

(b) Socio-economic level:

A Five - point scale for socio - economic level was decided. One M.A., B.Ed. teacher and two experienced teachers helped me in this programme. While rating and having an open - end interview of each child for 5 to 10 minutes we had in our mind the following area of information relating to income, property, mode and standard of living, occupational status, level of education, the social position of the family etc., and various sources of information were tapped in a free and friendly atmosphere.

(c) Intelligence:

A group Intelligence Test, recently prepared by the Research Unit of the Faculty of

Education and Psychology, M.S. University of Baroda, was administered to 300 children in the basic schools and to 600 children in the traditional schools to get two comparable groups of adequate size.

After matching individual to individual in the two kinds of schools, 90 pairs were retained in the final sample.

The final sample was as follows:

<u>Class</u>	<u>Basic</u>	<u>Traditional</u>	<u>Total</u>
VIII	90	90	180

Tools of evaluation

After finalising the sample, the following tools of evaluation were used :

1. Standardised Achievement Tests for form VIII.
2. Personality Rating.
3. Social Adjustment Inventory.
4. Standardised Physical Education Tests.
5. Minnesota Manual Dexterity Test (Placing and Turning).

Results :

Means of scores in Socio-economic rating and Intelligence Test were calculated for the two groups and were tested for the significance of difference by the 't' test.

Test of significance for difference of means
by means of t - test (paired)

When two samples are of equal size and means of paired samples are not independent but correlated, the best formula to use for deriving t directly from sums of squares is

$$t = \frac{| \bar{M}_d |}{\sqrt{\frac{\sum x_d^2}{N(N-1)}}} \quad (t \text{ for difference between correlated pairs of means})$$

where \bar{M}_d = mean of the N differences of paired observations and x_d = deviation of a difference from the mean of differences.⁽⁶⁾

6. Guilford, J.P. : Fundamental Statistics in Psychology & Education, McGraw Hill Book Co., Inc. New York, 1956, p.220