

CHAPTER III

PLAN AND PROCEDURE

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- 3.1. Introduction .
- 3.2. Educational research.
- 3.3. Sample procedure.
- 3.4. Tools of research.
- 3.5. Data collection .
- 3.6. Analysis of data.

CHAPTER III

PLAN AND PROCEDURE

3.1 INTRODUCTION

The methodologies utilized in the conduct of educational research are based, in most instances, on research methods used in the behavioral & social sciences, relying most heavily on psychology, sociology. Since research in these fields of study emphasizes logical-positivism, which uses experimental and quantitative research methods, most educational research also utilizes these methodologies. Still some research concerns may be addressed more appropriately with a phenomenological or qualitative research approach derived from the humanities, particularly history and philosophy, or with qualitative methods from the social sciences (e.g. Ethnography from anthropology).

Research can be divided into two broad categories quantitative research and qualitative research. Quantitative research consists of those in which the data concerned can be analyzed in terms of numbers. Research can also be qualitative; i.e., it can describe events, person, and so forth scientifically without the use of numerical data.

Meaning of Research:

Research = Re + Search

“Systematic, controlled, empirical and critical investigation of hypothetical proposition about the presumed relations among natural phenomenon”

“The manipulation of generalizing, extending, correcting or verifying the knowledge.”

(Encyclopedia of social sciences)

“The research may be defined as the systematic method of discovering new facts or verifying old facts, their sequences, interrelationships, casual explanation and the natural laws which govern them.”

Young P V

It is systematic and objective analysis and recording of controlled observation that may lead to the development of generalization, principles and theories, resulting in the prediction and possible control of events.

3.2 EDUCATIONAL RESEARCH

In day today life much more problems comes in the area of science and education. In order to achieve the target or fulfill the objectives, problem should be analyzed and it is necessary to choose a solution. The aim of educational research is related to the laws, methods and principles.

“Educational research aims to made contribution towards the solution of problems in the field of education scientific, philosophical method.”

These characteristics are what make descriptive research similar to other kind of research. Descriptive research methods are non experimental, for they deal with the relationship among non manipulated variables. Since the event or conditions have already occurred or exists, the researcher merely selects the relevant variables for an analysis of their relationship.

Survey Method

The survey method gathers data from a relatively large number of cases at particular time. It is not concerned with characteristics of individual is individual. It is concerned with the generalized statistics that result when data are abstracted from a number of individual cases .It is essentially cross-sectional.

Survey is an important type of study. It must not be confused with the mere clerical routine of gathering and tabulating figures .It involves a clearly defined problems and definite objective. It requires expert and imaginative planning , careful analysis and interpretation of the data gathered ,and logical and skillful reporting of the findings.

In present research survey method was used to collect data in the form of self-concept & adjustment from science mathematics methodology student teacher of B.Ed. colleges .

Research methodology

There are different research methods for educational research. Educational research methods are divided on the basis of research objective and data collection.

Educational research methods are divided into following three types:

1. Historical research .
2. Descriptive research.
3. Experimental research.

The main objective of historical research is to know the solution of present problems or issues with reference to past issues. The objective of experimental research is related with future and to check the relation between variables.

The objective of descriptive research is to know the current situation.

Descriptive research

Descriptive research has following characteristics

1. They involve hypothesis formulation and testing.
2. They use the logical methods to arrive at generalization.
3. They often employ methods of randomization so that error may be estimated when population characteristics are inferred from observations of samples.
4. The variable and procedures are described as accurately and completely as possible so that the study can be replicated by other researcher.

3.3 SAMPLE PROCEDURE

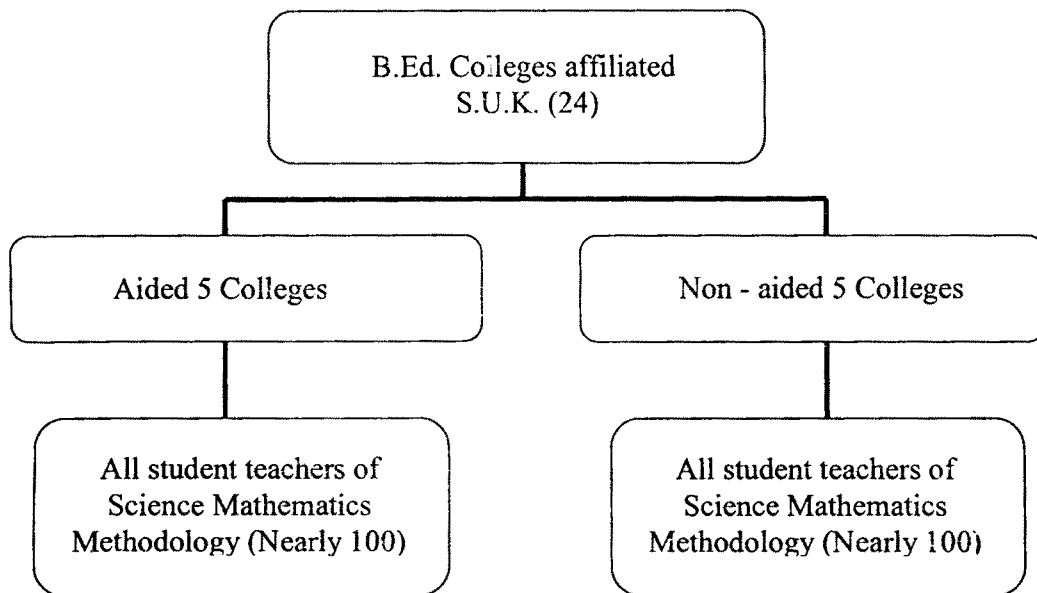


Fig.3. Sample for present research:

There are 24 B. Ed. colleges affiliated to Shivaji University, Kolhapur in 2008-09 from which 2 are integrated B.A. B.Ed. colleges, for purpose of this study out of 22 colleges 5 are aided (1 Govt. & 4 aided.) Remaining 17 colleges are unaided , out of 17 unaided, 5 colleges were selected by random sampling method (Lottery method) and 5 aided colleges selected by purposive sampling method. In this study nearly 200 of science & mathematics student teachers were considered as sample.

3.4 TOOLS OF RESEARCH

There are so many tools which are used to research to carry out any type of research investigation data must be gathered with which to test the hypothesis and different methods & tools were developed to aid in the acquisition of data each is particularly appropriate for certain sources of data, yielding information of the kind & in the form of that can be most effectively used .

Following are some data gathering tools used in research.

1. Questionnaire.
2. Interview.
3. Check list .
4. Observation.
5. Rating scale.
6. Psychological tests& inventories .
7. Opinionnair.

Tools used in present research

In present research, researcher used checklist cum rating scale to measures self-concept& adjustment inventory to measures adjustment of student teacher of Science & Mathematics Methodology.

Checklist:

Checklist is simplest devices ,is prepared list of behaviors or items .The presence or absence of the behavior may be indicated by checking yes or no ,or the type of number of item may be indicating by inserting the appropriate number or word .This simple device systematizes and facilitates the recording of observations and help to ensures the consideration of important aspect of or act observed.

Checklist also can be used to count the number of behavior occurring in a given time period .

Rating scale.

The rating scale involves qualitative description of a limited numbers of aspect of things or trait of a person .The classification may be set up in five or seven categories in such terms as,

1. Excellent good average below average poor
2. Always frequently occasionally rarely never

Another procedure establishing position in terms of behavior or situational description. These statement may be much more specific and may enable the judge to identify more clearly the characteristic to be rated

1. SELF-CONCEPT

Description of Self-concept checklist cum rating scale. (Dr.R.K.Saraswat)

The checklist contain 58 personality traits based on dimension such as physical, power social, psychological characteristics .The response are to be given on three points rating scale i.e. high, average ,low for each trait & under each self-concept for i.e. real, ideal, social.

Self-concept dimension along with items

- | | | |
|--|---|---|
| 1. Power self-concept (10 items) | - | 1,10,14,16,18,28,30,35,47,53. |
| 2. Social self-concept(10 items) | - | 7,9,20,24,25,33,41,44,52,54. |
| 3. Ability self-concept(10 items) | - | 5,8,11,17,22,29,46,55,56,57. |
| 4. Physical self-concept(10 items) | - | 2,3,6,7,23,27,34,37,50,58. |
| 5. Psychological self-concept(25items) - | | 4,6,12,13,15,19,21,26,31,32,
36,29,40,42,43,44,45,46,47,
48,49, 51, 54,56,57, |

Under Psychological self-concept some items are over lapping, which pertain to other dimension also.

The operational definition of self-concept dimensions includes in the checklist are :

1. Power self-concept
Individuals perception of their physical strength ,health vitality.
2. Physical self-concept
Individuals view of their physical appearance .
3. Social self-concept
Individuals view of their sociability & interaction with others .
4. Ability self-concept
Individuals view of their intelligence & confidence .

5. Psychological self-concept

Individuals perception towards his/her traits ,feelings, values .

Table 1.

Categorization of raw score

Dimensions	Range of score	Categories	Remark
Power self-concept	Above 24	High self-concept	Range of score and
Social self-concept	Between 16-25	Average self-concept	Their categories are
Ability self-concept	Below 15	Low self-concept	Common for all the
Physical self-concept	-	-	Four dimension

Table .2.

Psychological self-concept

Psychological self-concept	High self-concept	Above 64
	Average self-concept	39-63
	Low self-concept	Below 38

Table 3.**Total self-concept score**

High self-concept	Above 146
Average self-concept	88-145
Low self-concept	Below 87

Standardization of checklist

The checklist is validated on the student of class XI and onwards .The checklist can be used on adolescent as well as on adult.

Validity

Content & construct validity checklist has been established on the basis of judgment by the experts in the area of psychology, guidance & counseling

Reliability

Test retest reliability of checklist was found to be 0.83

Administration & Instruction

The checklist rating scale can be used either in group or individual situation There is no limit but generally if it completed 30 minutes. Test administrator is expected to explain the direction & example the student before administrating the test.

Scoring

The scoring of the checklist is very simple .The 3 digit i.e.3, 2. &1 are assigned to high , average ,low self-concept respectively . As all the trait selected in the checklist are positive in nature the fore the sum of total the 58 items will give the total self-concept on the three dimension i.e. real, ideal, Social.

Discrepancy between real and ideal self-concept

The discrepancy (if any)between a person's real & ideal self-concepts can be worked out by subtracting ideal self-concept rated scores from the real self-concept rated score separately for each trait & then summing up of the discrepancy score .

Discrepancy between real and social self-concept

The discrepancy (if any)between a person's real & social self-concepts can be worked out by subtracting social self-concept rated scores from the real self-concept rated score separately for each trait & then summing up of the discrepancy score .

Discussions

The larger difference between the individual's rating what they should be, & what they indicates between a person's real self-concept & ideal self-concept.

The larger discrepancy may lead to personal & social poor adjustment. If the discrepancy between real & ideal persists for too long, it may be personality disturbance, frustration humiliation, because individuals sees themselves far short of own ideals an inability to do anything about it . This may develop

feeling of inadequacy & inferiority which may lead him/her towards poor personal & social adjustment.

The larger difference between real & social self-concept indicates discrepancy between the perception of him/her & the concepts others have of him/her. If the discrepancy is larger it leads to tensions, difficulties in self-acceptance & poor personal & social adjustment. This tension especially greater when unfavorable evaluations are made by people in authority, such as teacher, parents, supervisor & boss or those who have high prestige in society.

To avoid frustration & adjustment problems, guidance workers can be helpful to the student in choosing their goals & aspirations within the reach of individuals. Individuals should be encouraged to develop realistic ideal self-concepts, which will motivate self-improvement & develop favorable social self-concepts, & also encouraged to see themselves realistically to make themselves self-accepted & self-satisfied.

ADJUSTMENT INVENTORY

Purpose

This inventory is useful for persons of high school & college ages. It is suitable for both sexes. It helps in counseling students with adjustment problems in different areas like home & family adjustment, personal & emotional adjustment, social adjustment, educational adjustment, health adjustment. To make the individual understand & solve his problems. It is essential to measure his adjustment level & to find out his maladjustment in different areas. This

inventory also helpful for the purpose of routine student assessment ,research investigation laboratory demonstration & so on.

There are five areas in this inventory

1. Home adjustment.
2. Personal & emotion adjustment.
3. Social adjustment.
4. Educational adjustment.
5. Health adjustment.

Administration & Instruction of inventory

The inventory can be Administered individual as well as in group of 25 to 50. The subject should be seated comfortably & as far as possible should not have chance to talk. There should be good ventilation & proper light in the room. By explaining the purpose of the test, the supervisor should try to get full co-operation to student.

The inventory is self administered All the instruction are printed on the front cover page of the inventory. The supervisor should read these out to the student & explain to them whatever is necessary .The following points are emphasized.

1. The results are useful only if the subject give honest answer.
2. Answer sheet is separate & all the answer be marked in it as per instruction .No mark be made in the booklet.
3. There is no time limit , but student should work as fast as possible.
4. Answer of the individual will be kept confidential .

5. The answer categories of (?) or undecided be used very sparingly.

After the test is over answer sheet & test –booklet of every subject be collected .the subject should not be allowed to walk away with materials.

Scoring

There are five scoring stencils for the five scale. By placing each one on the answer sheet in such a way that item no1 to 375 can be seen through the punched holes of stencils & count the cross mark through the remaining punched holes a score on specific scale can be seen.

Reliability

With the sample of 200 pre-university student (both sexes) the test-retest (with an interval of four week) reliability of various scale was under.

Scale	rtt
1. Home/ Family.	0.83
2. Personal/ Emotional.	0.89
3. Social.	0.85
4. Educational .	0.93
5. Health .	0.79

Validity

Independent validity study is yet to be carried out in case of entire scale .However the content validity has been ensured by reference to the other scale of adjustment as well as the concept of the adjustment in the different areas chosen for assessment .item analysis carried out the scale wise on the basis of statistical index of item total consistency (chi square) this is an index of item

validity .it can be therefore said the different scale of inventory are internally consistent & homogenous .

Norms

For the norms study the inventory was administered to the student of the S.S.C, pre-university student, F.Y, S.Y, & T.Y of the various faculty. They included boys & girls rural & urban student .Thus it was attempted to obtain a representatives & adequate sample for the norm study .The sex wise mean were calculated & tested for significance of the sex difference .As three out of five scale showed significant mean different.

The table given below should be used for interpreting the obtained raw score
Norms for Male Student (N=762)

Table 4.

Classification of Score into Categories (Male)

Area	Catego ry	Description	Percentile Rank		Rage of Score
Home	A	Excellent	Above	P90	Below 3
	B	Good	P70	P90	3 to 8
	C	Average	P30	P70	9 to 15
	D	Unsatisfactory	P10	P30	16 to 21
	E	Very unsatisfactory	Below	P10	Above 21
Personal & Emotional	A	Excellent	Above	P90	Below 18
	B	Good	P70	P90	18 to 34
	C	Average	P30	P70	35 to 57

Area	Category	Description	Percentile Rank		Range of Score
	D	Unsatisfactory	P10	P30	58 to 73
	E	Very unsatisfactory	Below	P10	Above 73
Social	A	Excellent	Above	P90	Below 5
	B	Good	P70	P90	5 to 11
	C	Average	P30	P70	12 to 20
	D	Unsatisfactory	P10	P30	21 to 26
	E	Very unsatisfactory	Below	P10	Above 26
Educational	A	Excellent	Above	P90	Below 11
	B	Good	P70	P90	11 to 18
	C	Average	P30	P70	19 to 29
	D	Unsatisfactory	P10	P30	30 to 37
	E	Very unsatisfactory	Below	P10	Above 37
Health	A	Excellent	Above	P90	Below 2
	B	Good	P70	P90	2 to 6
	C	Average	P30	P70	7 to 12
	D	Unsatisfactory	P10	P30	13 to 16
	E	Very unsatisfactory	Below	P10	Above 16

Norms for Female Student (N=349)

Table 5.

Classification of Score into Categories (Female)

Area	Category	Description	Percentile Rank		Range of Score
Home	A	Excellent	Above	P90	Below 4
	B	Good			
	C	Average	P30	P70	4 to 12
	D	Unsatisfactory	P10	P30	13 to 17
	E	Very unsatisfactory	Below	P10	Above 17
Personal & Emotional	A	Excellent	Above	P90	Below 17
	B	Good	P70	P90	18 to 34
	C	Average	P30	P70	35 to 56
	D	Unsatisfactory	P10	P30	57 to 73
	E	Very unsatisfactory	Below	P10	Above 73
Social	A	Excellent	Above	P90	Below 6
	B	Good	P70	P90	6 to 12
	C	Average	P30	P70	13 to 21
	D	Unsatisfactory	P10	P30	22 to 27
	E	Very unsatisfactory	Below	P10	Above 27
Educational	A	Excellent	Above	P90	Below 6
	B	Good	P70	P90	6 to 14
	C	Average	P30	P70	15 to 25
	D	Unsatisfactory	P10	P30	26 to 33
	E	Very unsatisfactory	Below	P10	Above 33

Area	Category	Description	Percentile Rank		Range of Score
Health	A	Excellent	Above	P90	Below 4
	B	Good			
	C	Average	P30	P70	4 to 10
	D	Unsatisfactory	P10	P30	11 to 14
	E	Very unsatisfactory	Below	P10	Above 14

Large SD value and small range or number of item in the scale has necessitated combining categories at higher end.

Achievement test

In present research researcher used achievement test. Shivaji University Kolhapur conducted the annual exam year 2008-09. in that exam the question paper of Science & math's methodology was considered as achievement test by researcher. This test is carrying 100 marks; test was based on B.Ed. syllabus of 2008-09. test score was taken from university result (leisure) of that exam.

3.5 DATA COLLECTION

Data collection is another important phase in research. In this phase the information required for research is collected. Researcher has taken total 10 B.Ed. colleges (5 aided+5 unaided) .affiliated to Shivaji University Kolhapur.

The researcher administered the adjustment inventory & Self-concept checklist cum rating scale, according to their rules respectively in all selected college.

Statistics' techniques used

Descriptive statistical method : means, percentage graphs
 Inferential statistical method : chi-square, correlation

Formula uses for present research

Multiple correlation coefficients.

Formula for two independent variables, X_1 and X_2 and y as dependent variable.

$$R = \frac{\sqrt{r_{yx_1}^2 + r_{yx_2}^2 - 2r_{yx_1}(r_{yx_2})(r_{x_1x_2})}}{\sqrt{1 - r_{x_1x_2}^2}}$$

Where,

r_{yx_2} = correlation coefficient between y and x_2
r_{yx_1} = correlation coefficient between y and x_1
$r_{x_1x_2}$ = correlation coefficient between x_1 and x_2

Simple Correlation coefficient.

The most familiar measure of dependence between two quantities is the Pearson product-moment correlation coefficient, or "Pearson's correlation." It is obtained by dividing the covariance of the two variables by the product of their standard

deviations. Karl Pearson developed the coefficient from a similar but slightly different idea by Francis Galton.

The population correlation coefficient $\rho_{X,Y}$ between two random variables X and Y with expected values μ_X and μ_Y and standard deviations σ_X and σ_Y is defined as:

$$\rho_{X,Y} = \text{corr}(X, Y) = \frac{\text{cov}(X, Y)}{\sigma_X \sigma_Y} = \frac{E[(X - \mu_X)(Y - \mu_Y)]}{\sigma_X \sigma_Y},$$

where E is the expected value operator, *cov* means covariance, and, *corr* a widely used alternative notation for Pearson's correlation.

Pearson's Chi-square test:

The value of the test-statistic is

$$\chi^2 = \sum_{i=1}^r \sum_{j=1}^c \frac{(O_{i,j} - E_{i,j})^2}{E_{i,j}}.$$

Where, r is number of rows

c is number of columns.

It follows chi-square test with $(r-1)(c-1)$ degrees of freedom.

The Spearman correlation coefficient is often thought of as being the Pearson correlation coefficient between the ranked variables. In practice, however, a simpler procedure is normally used to calculate ρ . The n raw scores X_i, Y_i are converted to ranks x_i, y_i , and the differences $d_i = x_i - y_i$ between the ranks of each observation on the two variables are calculated.

If there are no tied ranks, then ρ is given by

$$\rho = 1 - \frac{6 \sum d_i^2}{n(n^2 - 1)}$$

3.6 PROCEDURE OF THE STUDY

Research Method

Researcher used descriptive method for this study, in which survey method used to collection of data.

Variables

Dependant: Academic achievement & adjustment

Independent: Self-concept.

SAMPLING

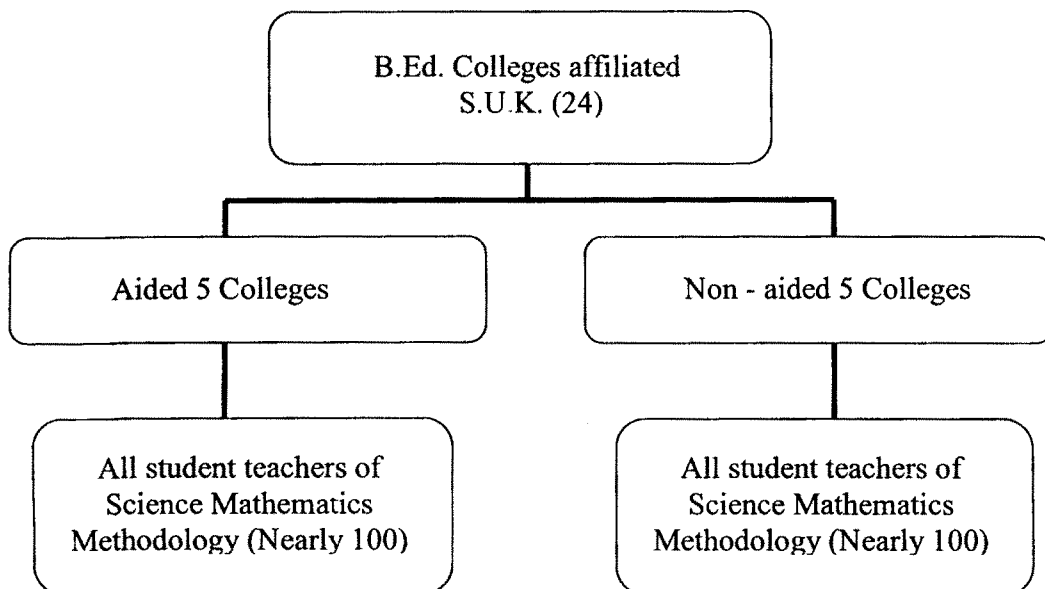


Fig.4. Sampling For present research

There are 24 B. Ed. colleges affiliated to Shivaji University, Kolhapur from which 2 are integrated B.A. B.Ed. colleges, for purpose of this study out of 22 colleges 5 are aided (1 Govt. & 4 aided.) Remaining 17 colleges are unaided out of 17 unaided, 5 colleges were selected by random sampling method. In this study nearly 200 of science & mathematics student teachers were considered as sample.