

CHAPTER - III

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METHODOLOGY OF THE STUDY

3.0 INTRODUCTION

Keeping in view the nature, objectives of the study, appropriate sample and tools were selected. This chapter deals with the sample, tools, data collection and statistics used.

3.1 THE SAMPLE

The investigation required study of scientific creativity of students studying in a particular age group and grade, it was decided to have a comparatively small sample. Scoring procedure of any creativity test is an elaborate one, keeping in view all these factors one intact class was selected. The sample consisted of 40 students, 25 boys and 15 girls of Demonstration Multipurpose school, Bhopal. The age group of children ranged from 13 to 14 years.

3.2 TOOLS USED

Following tools were used to study interest and achievement of students in science, achievement and scientific creativity.

- (i) Adolescent Interest Test.
- (ii) Achievement In Science (Mean Marks obtained in previous two classes in science).
- (iii) Verbal Test of Scientific Creativity.

3.2.1 Adolescent Interest Test

Adolescent Interest Test was developed by Smt. Alka Devid to measure the interests of boys and girls in order to provide them suitable opportunity to develop their particular field in which he or she is interested. The following fields of interest are included in the inventory.

- (i) Games and sports
- (ii) Fine arts and music
- (iii) Literary work
- (iv) Social and household affairs
- (v) Science and technical

Reliability

Reliability of test was evaluated using Half Split and Test – Retest. Coefficient of correlation by Half Split and Test – Retest are 0.83 and 0.79 respectively at 0.01 level.

Validity

Validity of test obtained by calculating the coefficient of correlation which is 0.37 at 0.01 level.

Administration of the Interest Test:

Firstly the investigator gave general information about the test to be attempted by the students. A total of 40 questions are there in the test. Each question have five choices related to games and sports, fine arts and music, literary work, social and household affairs, science and technical. Students were required to give their choices as per their interest. They were told that no time limit was there but they must complete as soon as possible.

Scoring of the Interest Test

For each choice allot one mark. But the study is confined to interest in science, only the items related to science and technical were allotted one mark for each choice. Then the marks were added. A total of 40 items related to science and technical were there.

3.2.2 Achievement In Science : Mean of student's marks obtained by them in classes VI and VII in science subjects were computed.

3.2.3 Verbal Test Of Scientific Creativity (VTSC) 1985

The Verbal Test of Scientific Creativity by Dr. V.P. Sharma and Dr. J.P. Shukla has been designed for assessing scientific creativity. Scientific creativity may be considered from the following points of view :

- (i) Scientific creativity deals with the unusual and original excellence in the field of science or scientific productivity.
- (ii) Scientific creativity can also be thought as scientific method or scientific process primarily involved in production of unusual and original scientific contribution.
- (iii) The unusual scientific thinking abilities characterized by systematic approach for all contents whether from science or humanities or otherwise could be considered as the basic attribute of scientific creativity.

Though the content need not be restricted to the fields of science; however it is effective in measuring such a dimension of scientific creativity if they touch the fundamental or general elementary contents of science.

The test has been developed on the concept as specified in the third alternative of the concepts of scientific creativity as presented above.

Description of Test :

The test of scientific creativity consists of 12 items which have been classified into four sub tests namely

- (1) The Consequences Test ;
- (2) Unusual Uses Test ;
- (3) New Relationships Test
- (4) Just Think Why Test.

Reliability

The co-efficient of stability as an index of reliability on various components of scientific creativity as well as on the whole test has been estimated by test – retest method.

Validity

Validity of test was examined by Inter-factor correlation.

Administration of the Verbal Test of Scientific Creativity

Firstly, the investigator acquainted herself with the test booklet which contained general instructions as well as instructions for each activity.

Then the students were given following general instructions, it took 20 minutes to explain the test to the students.

- 1) Today we will assess your creativity. For this students were required to answer certain questions given in the test.
- 2) All the questions, are related to daily life situation. No answers are right or wrong. Students were to write, new, interesting answer to the questions asked.
- 3) In the test, four activities are there. They are very interesting and you will like to answer them.
- 4) Each activity is to be done within a time limit of 15 minutes.
- 5) Firstly you will be provided with practice questions which are similar to questions in the test.
- 6) You have to write answers in the space given in the answer sheet.
- 7) For each activity, instructions are given, read them before answering the questions.
- 8) Do not go to the next activity unless the preceding one is completed
Then students were given the practice questions for 5 minutes. Then answer sheets were distributed. Student completed the test in 1 hour which were then collected by the investigator.

Scoring of Verbal Test of Scientific Creativity

Each item was scored for fluency, flexibility and originality.

- (i) Fluency : has been scored in terms of total number of responses related to the object.
- (ii) Flexibility : has been scored in terms of total number of categories. Each category has been assigned one mark.
- (iii) Originality : has been scored in terms of their unusualness. The unusual responses has been defined as that response which has a

probability of occurrence to the extent of 5%. Response which occurred beyond 5% have been considered as common response and hence have not been scored for originality. The scoring procedure of originality is as follows :-

Table 3.1 Scoring Procedure of Originality

Percentage of response	Weight assigned
0.1 % to 1.0 %	5
1.1 % to 2.0 %	4
2.1 % to 3.0 %	3
3.1 % to 4.0 %	2
4.1 % to 5.0 %	1
Beyond 5%	0

If there are cases which are not included in the scoring guide, the test user can work out the originality weight for these new responses according to scoring scheme. Composite scientific creativity scores were obtained by converting fluency, flexibility and originality scores into T-scores and then adding the T scores.

3.3 DATA COLLECTION

Data was collected with the help of various research tools described in the chapters. These tools were administered personally by the investigator. The data collection was done by the investigator over a period of 6 days

Table 3.2 Schedule of the data collection

Session	Tools	Duration
First day	Adolescent Interest test	30 minutes
Second and third day	Verbal Test of Scientific Creativity	2 hours 50 minutes
Fourth, fifth, sixth day	Achievement in Science	1 hour

3.4 **STATISTICS USED** : Keeping in view the objectives and hypotheses of the study following statistics was used.

- (1) Coefficient of Correlation, r .
- (2) t -values for mean differences.

3.5 **SUMMARY** : In this chapter description of the sample, tools used, data collection and the statistics used have been given.