



CHAPTER - III

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3.1.0 INTRODUCTION

In the first chapter, the introduction, significance of the study, objectives, hypothesis and rationale of the study have been discussed. In the second chapter, works done by the other researchers in this field and studies related to various variables had been included. In the third chapter, the sample design of the study, tools, and their description, types of variables, procedure of data are dealt. Descriptions of these are presented, below, under different captions.

3.2.0 METHOD

Experimental method was employed for the present study. There were two groups, i.e., experimental group and the control group. The experimental group was exposed to the material developed for alternative assessment techniques and the control group was taught through the traditional method of teaching and evaluated through the traditional practices of evaluation.

3.3.0 DESIGN OF THE STUDY

Post-test control group design was employed for the study.

This can be symbolically represented as follows:

R X O

R X O

3.4.0 SAMPLE FOR THE STUDY

Random sampling technique was employed for the study. DMS, RIE, Bhopal was selected, randomly. The class VII has two sections, i.e., A and B. Again, A and B section was selected randomly for the assignment of the treatment. The students of B section was designated as experimental group and the students of A section was designated as control group. The experimental group was exposed to the material developed for alternative assessment techniques and the control group was taught through the traditional method of teaching and evaluated through the traditional practices of evaluation. There were 35 students in each section. In total there were 70 students in both the groups.

Table- 3.1: Group-wise and Gender-wise Distribution of Sample

Sl. No.	Group	Boys	Girls	Total
1.	Experimental	19	16	35
2.	Control	18	17	35
Total		37	33	70

3.5.0 TOOLS

Following tools were used for the study:

3.5.1 Achievement

The achievement test comprised of the different techniques of alternative assessment was developed by the investigator for the purpose of measuring the achievement in science of the students. These techniques are like, portfolio, e-portfolio, rubrics, e-rubrics, self-assessment, peer-assessment and drawing of concept-mapping, etc.. The assessment was done both during the treatment and after the treatment. Even oral assessment was also formed the part of the assessment in the achievement testing. The teacher recorded the performance of the individual learner and marks

were awarded on the basis of the teacher observation also. The total marks for the achievement was 50.

3.5.2 Intelligence Test

The Verbal Intelligence test developed by Ojha and Ray Chaudhri (1971) was considered the most appropriate for measuring intelligence of the students, in this study. This test is meant for the age group of 13-20 years. Thus, on the basis of age, nature of the subject taught, and language, Verbal Intelligence Test developed by Ojha and Ray Chaudhari was preferred to assess the intelligence of students. Thus, intelligence of both the experimental group and control group was measured with the help of verbal intelligence test developed by Ojha and Ray Chaudhari (1971).

Table – 3.5: Reliability Coefficient for whole test and Sub-Tests

Test	Reliability by Split-Half- Method	Reliability by K.R.Formula
Whole Test	0.87	0.91
Classification	0.81	0.89
Analogies	0.86	0.88
Synonyms	0.71	0.73
Number Test	0.74	0.88
Completion Test	0.64	0.68
Paragraph	0.68	0.79
Best Reasons	0.79	0.81
Simple Reasons	0.75	0.83

The verbal intelligence test by Ojha and Ray Chaudhari (1971) is given in *Appendix-III*.

a. Reliability

This test reliability was checked by two ways:

- (i) Split half method, and

- (ii) Kuder-Richardson formula which is shown below in the table – 3.5.

(a) Table-3.6:No. of Items & Scoring Sub-test-wise Distribution of Items and Duration

S. No.	Sub-tests	No. of items	Duration
1.	Classification	15	3 minutes
2.	Analogies	15	4 minutes
3.	Synonyms	20	4 minutes
4.	Number Test	12	5 minutes
5.	Completion Test	13	4 minutes
6.	Paragraph Test	10	3minutes
7.	Best Reasons	10	4 minutes
8.	Simple Reasons	17	12 minutes

The test consisted of 112 items which are classified into eight sub-tests. The sub-test wise distribution of items along with duration is given in table above.

(b) Validity

The validity of the test was established by computing the correlation coefficient between the different the different parts of the test itself, and with standardized tests. The correlation coefficient with Vernon's 'g' Block Design, and Raven's matrices were found to be 0.307, 0.599, and 0.397, respectively.

3.5.3 Personality Test

The personality of the students was measured with the help of the standardised Adolescent Personality Test (4-PF) developed by Pandey (1999). It has 80 items which is divided in to four factors of 20 items each. Each item has three options of 'Yes' undecided and 'No'. The maximum score of the test is 160 and the minimum

score is 80. The personality was categorised as extroversion and introversion.

3.6.0 PROCEDURE OF DATA COLLECTION

Material was developed by the investigator by consulting with the experts in the field of Science and, also, in education. Two workshops were organised for the development of the material. The teaching was delivered with the help of the developed material. On-line facilities were provided to the students. The classes were arranged in the computer laboratory of the school. The teacher introduced the lesson by following the 5-E model of constructivism, i.e., engage, explore, explain, elaborate and evaluate. Individual as well as group activities related to the contents were organised. As evaluation/assessment is the integral part of the teaching-learning process, so in the lesson plan/ material the assessment techniques were fitted. The required clarifications were also provided to the students on the spot. Ample time was provided to the students in order to clarify their difficulties. As already stated in the introduction, the concept of assessment is an integral part of the teaching-learning process. Therefore, assessment is regarded as the continuous process in the teaching-learning. So, the investigator considered assessment as learning. Therefore, the procedure of assessment is integrated in the teaching learning process. The students were taught, the lessons related to the concept through the constructivist approach of teaching, i.e., 5-E model. After the teaching of only one unit/topic, an achievement test comprised of questions of different types was administer to the students. The test was developing by taking in to consideration the alternative techniques, such as, rubrics, portfolio, peer-evaluation,

self-evaluation, presentation with the help of the computer, etc. Some part of the evaluation was done through the computers and some through oral. Oral assessment was done at the time of teaching the lesson through the material. The teacher recorded the responses and marks were awarded to the learners.

As one of the objectives of the present research was to study the effectiveness of the alternative techniques in terms of the students' participation in the classroom activities, so, the teacher recorded the frequency and the involvement of the student in the classroom activities.

3.7.0 STATISTICAL TECHNIQUES USED FOR THE ANALYSIS OF DATA

For the analysis of the data the statistical techniques like, mean, SD, CV, correlation, One-way ANOVA and 2 X 2 Factorial Design ANOVA of Unequal Cell Size were used.