CHAPTER-III

RESEARCH METHODOLOGY

“A careful investigation or inquiry especially through search for new facts in any branch of knowledge”.

- The Advanced Learner’s Dictionary of Current English

Research in common parlance refers to a search for new knowledge. Research could be defined as a scientific and systematic search for pertinent information on a specific topic.

This chapter titled, “Research Methodology,” presents the design of the study, sampling, the procedure of data collection, tools, and statically techniques of analysis used to test the hypotheses.

For the clarity of problem entitled “EFFECT OF BLENDED LEARNING MODULES IN SCIENCE ON STUDENT ENGAGEMENT, LEARNING EFFECTIVENESS AND SELF-EFFICACY IN RELATION TO CREATIVITY OF IX GRADERS.”

3.1 DESIGN OF THE STUDY

"If we could first know where we are and where we are tending, we could better judge what to do and how to do."

- (Abraham Lincoln)

The research design is the plan of the investigation. The research design may be defined as the sequence of those steps taken ahead of time to ensure that the relevant data will be collected in a way that permits objective analysis of the different hypotheses formulated with respect to the research problem. It is also the blueprint of the detailed procedures for testing the hypotheses and analyzing the obtained data.
Two main stages were adopted as the procedure of the experiment. These stages were:

Stage I: Selecting the sample

Stage II: Procedure of the study

Stage I: Selecting the sample

Sampling

Sampling is the process by which a relatively small number of individuals or subjects are selected in order to find out something about the entire population from which it is selected. Sampling procedures provide generalization on the basis of the relatively small proportion of the population. A random sampling technique was used to select the secondary school students. The geographical location of the schools is shown in the picture.
Figure 3.2: Showing the geographical location of the schools in this picture.

Prior permission of the District Education Officer Ropar and Headmasters of the Government Secondary School Kalitran and Government Secondary Dasgrain was taken. After taking permission from the school headmaster, IX class Science subject teachers were approached and strength of each class was considered. Among different sections of IX class, the students were approached and the sample was selected randomly. The study was conducted on the sample of 200 students. School-wise distribution of the sample selected for the present study is shown in Figure 3.3.

Figure 3.3: Showing the breakup of sample
Stage II: Procedure of the study

The experiment was conducted in five phases as stated below:

**Phase I:** Administration of Creativity Test: Group was equated on the basis of the creativity test. 200 Students were divided into two groups each having 100 students with high creativity and 100 students with average creativity. The investigator continued with the test of creativity on students until he got 100 students with high and average creativity each. Each group of 100 students was again randomly divided into 50 students for four groups i.e. control and experimental.

**Phase II:** Administration of Pre-Test: Self-prepared Student Engagement Test, Learning Effectiveness Test and Self-Efficacy Scale were administered personally by the investigator to 200 students in this study. This was conducted to assess the previous knowledge possessed by students.
Phase III: Implementing the instructional programme: Two instructional strategies were used for the instructional programme. The total sample of 200 students of the ninth class in the subject of Science was divided into equal groups consisting of 100 students each. These groups were named as the control group and experimental. The experimental group was taught 50 lessons with Blended Learning Modules (BLM) including Face-to-Face Interaction, EduSat Learning, Web Based Instructions and Outdoor Experiences as strategies and peer group, one to one interaction and collaborative learning as approaches and the Control Group (CG) was taught by the investigator himself with traditional strategies in a conventional way.
Phase IV: Administration of the Post-Test: At the end of the session again the Student Engagement Test, Learning Effectiveness Test and Self-Efficacy Scale were administered as post-test to the students of both the groups. All possible efforts were made to make the students feel at ease and respond to the various tests with full concentration. All their queries were answered to satisfy their curiosity and motivate them to answer the questionnaire carefully. All efforts were made to get maximum cooperation of the students and that their cooperation was essential as the significant contribution towards the enhancement to school education. After completion of the test, the students and teachers who involved were thanked for their cooperation and help.
Phase V: Scoring: All the tools were scored according to their prescribed scoring keys. Gain scores are the difference in the scores obtained by all the students in the post-test and pre-test. The gain scores of each test were arranged in tabular form according to the objectives and hypotheses of the study for statistical analysis and treatment for results, discussion and to draw out the conclusion.

3.2 VARIABLES

I. Independent Variables

Blended Learning Modules were independent variable.

II Dependent variables:

a. Student Engagement

b. Learning Effectiveness

c. Self-Efficacy

III Classifying Variable

Divergent Production Ability Test.

3.3 TOOLS USED

The investigator used the following tools for collecting data:

1) Blended Learning Modules were prepared by the investigator. (See Appendix-II)

2) Test on student engagement was prepared by the investigator. (See Appendix-IV)

3) Test on learning effectiveness was prepared by the investigator. (See Appendix-V)

4) Self-Efficacy Scale by Mathur and Bhatnagar (2012) was used. (See Appendix-VI)

5) Divergent Production Ability Test by Sharma (2006) was used. (See Appendix-III)
3.4 STATISTICAL TECHNIQUES USED

Following statistical techniques were employed to analyse the data to test the hypotheses:

1. Descriptive statistics: Mean, median, mode, standard deviation, skewness and kurtosis were worked out to study the nature and distribution of scores.

2. Pie, Bar and line graphs were drawn.

3. Inferential Statistics: The t-test was employed to find out the significant difference between means related to different groups and different variables and two-way analysis of variance was used to test the hypotheses concerning with the effect and interaction between two instructional treatments and creativity on student engagement, learning effectiveness and self-efficacy.

****