

CHAPTER III

METHODOLOGY



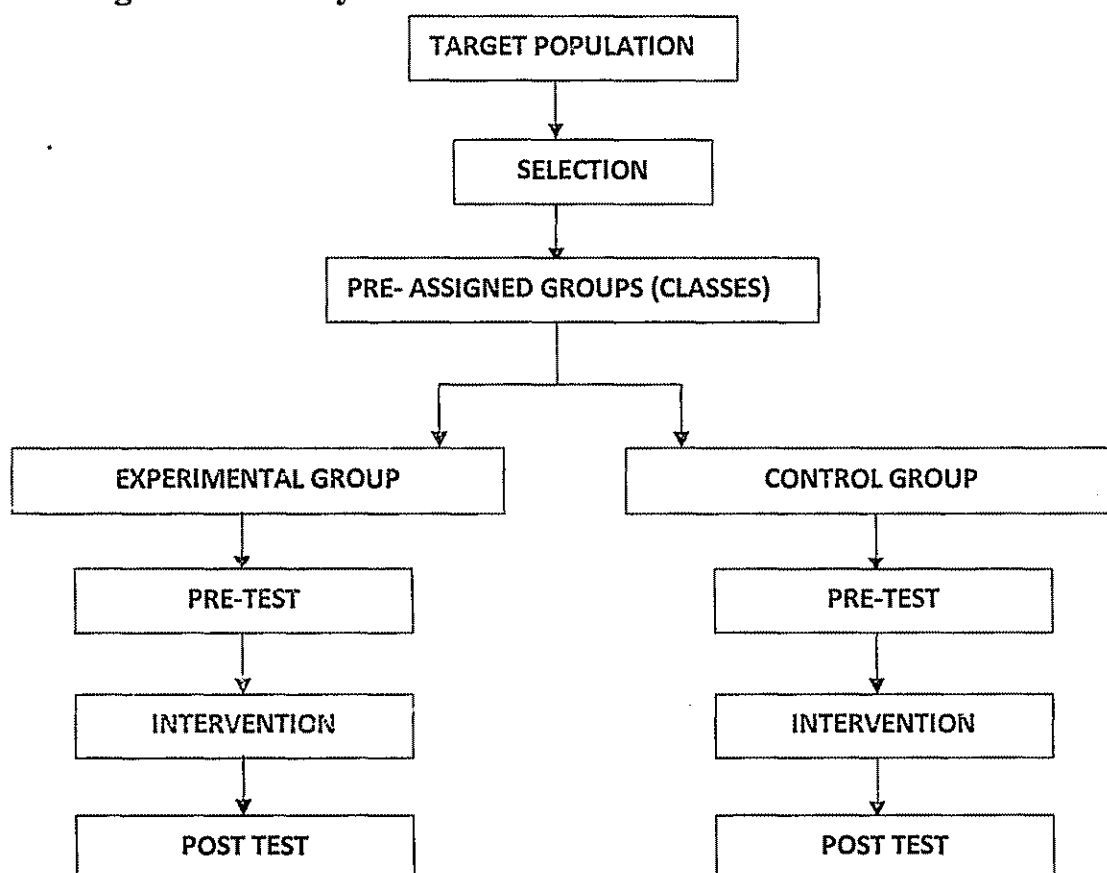
CHAPTER III

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3.0 INTRODUCTION

This section deals with the presentation of all the methods implemented to gather data and how the actual research work has been done. In this chapter, the methodology steps such as selection of the sample, variables of the study, design of the study, administration of the tool, and statistical techniques used for analysis have been discussed. On the basis of research findings, certain generalisation can be made which will provide insights towards the study EFFECTIVENESS OF TEACHING THROUGH WEB 2.0 ON PHYSICS ACHIEVEMENT IN STUDENTS OF CLASS IX. This chapter deals with the methodology to achieve the objectives of the study mentioned in the previous chapter.

3.1 Design of the Study



The present study is Quasi Experimental in nature, wherein a control and an experimental group are employed. A non-randomised pre-test post-test design was used. Intact classes of IX standard as a whole were considered as experimental and control group

for the study. The treatment in the study had two levels, namely teaching through Web 2.0 tools and the traditional method. The group which received the treatment through traditional method was designated as the Control Group. The group which received treatment through Web 2.0 tools was designated the Experimental Group. Traditional means reading the textbook and communicating with the class through lecture method in which the pedagogy is behaviouristic.

3.2 Variables of the study

3.2.1 Independent variable

The independent variables in the present study are the two teaching approaches, that is, Traditional Approach and the Constructivist Approach using Web 2.0 Tools. The Experimental Group was taught using the Constructivist Approach and the Control Group was taught using Traditional Approach.

3.2.2 Dependent variable

In the present study, the dependent variable is Achievement in Physics.

3.3 Sample of the Study

The method followed for the present study was experimental two group pre-test post test design. For conducting the present study, purposive sampling technique was used for selection of the schools.

There were two sections of the class namely, IX A and B. A total of 57 students were taken for the experimentation. Since it was not possible to employ randomisation which would upset class schedule, the class as a whole in its natural setting was considered as one group. One section was taken as the control group and the other was taken as the experimental group.

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

GROUP	BOYS	GIRLS	TOTAL
Experimental Group	16	14	30
Control group	10	17	27

3.4 Tools for the Study

In the present study, self constructed achievement test in the Physics and Awareness Test was used to find out the usage of common Web 2.0 tools by students.

3.4.1 Awareness questionnaire

A Questionnaire was prepared to find out the awareness of units about the common Web 2.0 tools. It consisted of instructions directing the students to tick the box in option Yes/No for the Web 2.0 tools that they were generally using from a list of ten website considered to be most famous among adolescents over the world. They were also given a column to fill in with the response as to how they were using a particular tool, if at all they were using it.

3.4.2 Achievement test

In the present study, the researcher has prepared an Achievement Test taking a chapter from the prescribed NCERT textbook, 'Work, Power and Energy'. The test consisted of three forms of questions-very short answer type (one mark), short answer type (two marks) and long answer type (five marks). The test paper consisted of questions only and the students were asked to answer the questions in the plain sheets provided by the researcher separately. There are four questions in total in the achievement test. First two questions are of very short answer type, consisting of five sub-questions each. The third question is of short answer type, consisting of five sub-questions. The fourth question is of long answer type. The achievement test carried a total of 25 marks. The time allotted was 35 minutes. All the students were able to attend to the questions in the allotted time

The same achievement test was used to measure the achievement in Physics for pre- test as well as post test.

Table 3.2 Tool Description (Achievement Test of Work and Energy)

Sl No.	Name of the section	No. of questions	Marks allotted
1	Choose the correct answer (VSA)	5	5
2	Answer Briefly (VSA)	5	5
3	Short Answer	5	10
4	Long Answer	1	5
Total		16	25

Table 3.3 Weightage to the Objective of Achievement Test (Work and Energy)

Sl No.	Objectives	No. of questions	Marks	Percentage of marks
1	Knowledge	3	3	12
2	Understanding	8	13	52
3	Application	3	5	20
4	Skill	2	4	16
Total		16	25	100

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3.5 Procedure for Data Collection

The researcher personally met with the headmaster of the school to seek permission for conducting the study, acquainted with teachers and established rapport with the students.

The present study was conducted in three stages: firstly, an Awareness test was administered on both the groups to get a previous knowledge of students' familiarity of web 2.0 tools. In the next stage, the instructional material and tools were prepared and the final stage implemented on the two groups of 57 students of class IX.

All the students were administered the achievement test, both experimental and control group, on the same day.

After completing the pre-test, the first lesson was taught to the experimental group along the lines of constructivist pedagogy using Web 2.0 tools, emphasizing on team work, and a spirit of healthy competition among the sub groups. The strategy consisted of asking exploratory questions to the students and then allowing them to find out the answers using tools as Wikipedia, YouTube, SlideShare and TeacherTube.

The students were asked to make a page on Facebook which had all the students of the experimental groups as its members, and they were asked to discuss their findings in the forum pages of Facebook and come up with interesting presentations the next day. Before starting teaching, the students of the experimental group were told that they would be taught using a new approach, i.e. by making use of Web 2.0 tools. On the other hand, the same lesson was taught to the control group through traditional method on the same day.

This procedure continues till all the lesson plans had been delivered. After completion of the unit, post test was administered to both the groups immediately. The Achievement test and the Awareness Test have been provided in the appendix.

3.6 Administration of the tool

- **Awareness Questionnaire**

This tool was delivered in the very beginning of data collection so as to know the extent of knowledge regarding Web 2.0 tools, so that the teaching technique could be modified suitably. The questionnaire was also used to find the different uses of these websites by the units in the sample.

- **Achievement Test**

Prior to the administration of the test, the students were explained about both the tests which they were supposed to attempt.

The significance of the test and the necessary instructions were made clear to them. After this, the researcher administered the test on the students. A time of 35 minutes was allotted to the students to complete the task.

3.7 Statistical Techniques Used

The statistical Technique used in the study analysing the data are given as follows:

- In order to study the effectiveness of teaching Physics through Web 2.0 to students of class IX, one-way ANCOVA (ANalysis of COVariance) with pre-test scores as covariate was used.
- For studying the usage of Web 2.0 tools by the students of Std IX, the method of percentages was used. An inspection of the questionnaire was done to find out the uses and the most popular, least popular etc Web 2.0 tools.