

CHAPTER - 3

PLAN AND PROCEDURE

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3.0.0 Introduction

The present chapter deals with the methodology of the study. The present study is experimental study, wherein an intervention programme was developed and tried out to improve the instruction in environmental science for standard IV students in real classroom setting.

An experimental research increases the applicability of educational practice in specific situations. It also helps in generating better insight into the instructional process. Quite a number of researchers have highlighted the importance of experimental research in increasing the applicability of practical models of educational interventions as well as generating better insight. Melton (1959) mentioned that tryout in reality as a basis for product improvement is likely to be useful. Clifford (1973) emphasises the need for intervention studies in real situations.

The main objective of the present study was to teach the children through the intervention programme developed by the investigator. The performance was studied before and after the implementation of the intervention programmes. This chapter presents the details about the various aspects of methodology adopted for the present study.

3.1.0 Statement of the problem

'An Intervention to Improve the Quality of Instruction in Environmental Science for Primary Level School Children.'

3.2.0 Objectives of the study:

1. To prepare intervention programme for seven units in the subject of Environmental Science for standard IV.
2. To implement the intervention programme to study its effectiveness on standard IV students in terms of their academic achievement.
3. To study teacher's opinion about the intervention programme implemented by the investigator.
4. To study the opinion of the students of standard IV about the intervention programme.

3.3.0 Operational Definition of the terms.

1. Intervention

Any action on the part of an organism that serves to change the relative position of the objects or forces of the environment and of the organism itself, thus bringing new stimuli to bear upon the organism. In this study it refers to the activity oriented instructional material which would change the relative position of pupils achievement .

2. Quality of Instruction

According to Random House Dictionary "Quality is a Characteristic innate or acquired which, in some particular, determines the nature and behaviour of a

person or thing” For this study it has been defined as follows. The quality of instruction means a process of curriculum transaction through various strategies (i.e. using different methods and media), to enhance the attainment of pupils not only in cognitive abilities but also meta cognitive abilities.

The quality instruction will enhance enquiry skills, psychomotor skills, active understanding, high participation in the process of teaching and learning.

The quality instruction would nurture personal responsibility among children, integrity, citizenship, human understanding and collaborative work amongst learners.

Thus, quality of instruction, would mean strategies to bring desirable changes in pupils behaviour.

3. Environmental Science

Environmental Science is an integrated process which deals with man's inter-relationship with his natural and man-made surroundings including the relation of population growth, pollution, resource allocation and depletion, conservation technology and urban and rural planning of total human environment. Environment Science is a study of the factors influencing ecosystems, mental and physical health, living and working conditions and population pressures. Environmental Science is intended to promote among citizens, the awareness and understanding of the environment, our relationship to it and the concern and responsible action necessary to assure our survival and to improve quality of life. In this study it refers to the syllabus that is the textbook taught at the lower primary level.

4. Primary Level

Primary level is a stage of education which comes before secondary level and after kindergarten. It includes students from grade I to grade VII. The Primary level is divided into two phases, lower primary and upper primary. From grade I to IV it is lower primary level. Whereas from V to VII it is upper primary level.

3.4.0 Delimitation's of the Study

1. The study was limited to one school of Baroda city.
2. For this study, only standard IV has been selected.
3. In standard IV, study was confined to only one subject that is Environmental Science and ten chapters of subject text book published by Gujarat State Textbook Board.

3.5.0 Hypothesis of the study

In order to study the effectiveness of implemented intervention programme, eight null hypotheses were formulated. Seven hypotheses were to study the effectiveness of every unit individually whereas the eighth hypotheses was formulated to study the comprehensive performance of pupils in all the units. The null hypothesis relates to a statistical method of interpreting the conclusions about population characteristics that are inferred from the variable relationships merely result from chance errors inherent in the sampling process. Best and Kahn (1995). The null Hypothesis for the present study are as follows.

1. There will be no significant difference in the mean achievement scores of the students in written, oral and activity test of unit I after receiving the instruction through the intervention programme.

2. There will be no significant difference in the mean achievement scores of the students in written, oral and activity test of unit II after receiving the instruction through the intervention programme.
3. There will be no significant difference in the mean achievement scores of the students in written, oral and activity test of unit III after receiving the instruction through the intervention programme.
4. There will be no significant difference in the mean achievement scores of the students in written, oral and activity test of unit IV after receiving the instruction through the intervention programme.
5. There will be no significant difference in the mean achievement scores of the students in written, oral and activity test of unit V after receiving the instruction through the intervention programme.
6. There will be no significant difference in the mean achievement scores of the students in written, oral and activity test of unit VI after receiving the instruction through the intervention programme.
7. There will be no significant difference in the mean achievement scores of the students in written, oral and activity test of unit VII after receiving the instruction through the intervention programme.
8. There will be no significant difference in the mean achievement scores of the students in written, oral and activity test of comprehensive examination after receiving the instruction through the intervention programme.

Depending on the hypothesis to be tested methodology has been discussed in the following paragraphs.

3.6.0 Methodology

In order to study the effectiveness of the intervention programme experiment was carried out. The methodology of the study has been indicated in the following table.

Table 3.1 Methodology of the Study

Sr.	Objective	Sample	Tool	Analysis
1.	Preparation of Intervention Programme	Standard IV pupils	Intervention Programme activity based	
2.	To study the effectiveness of the intervention programme	Pupils of standard IV	Tests; Written , oral and activity	Achievement scores, mean, standard deviation and corelated t-test.
3.	To study opinion of teachers	Subject teacher of Standard IV	Semistructured interview schedule	Frequency and Percentage
4.	To study opinion of the Students	Standard IV students	Semistructured interview schedule	Frequency and percentage

In order to attain the objectives of the study a research design was selected .

3.6.1 Research Design

The research design for the present study was single group pretest and posttest design.

O1 X O2

O1 = Pretest O2 = Posttest

According to the objectives of the study and the research design nature of data required is discussed in the following paragraphs.

3.6.2 Nature of the Data Required for the Study

Following types of data were required for this study. For the second objective that is in order to study effectiveness of the intervention programme, the data required was in the form of a post test score for all the units taught. The data here was again quantitative in nature. For the third objective, the opinion of the teachers was required and for the fourth and the final objective, opinion of the standard IV students was required. The data for the third and fourth was quantitative as well as qualitative in nature.

3.6.3 Sources of data

The data regarding the second objective to study the effectiveness of the intervention programme was collected from the students. These were the post test scores, achieved after the implementation of the intervention programme. The data regarding the opinion of the teachers (third objective) was collected from the teachers. Where questions were asked regarding the intervention programme. Finally, for the opinion of the students (fourth objective) the data required was in the form of opinion of the students, regarding the intervention programme and it was collected from the students. Thus, students and teachers constituted the sources of data.

3.6.4 Population and sample of study

Population of the sample was comprising of all the students studying Environmental Science in class IV in all schools of Baroda city. All the schools, teachers teaching Environmental Science in class IV in Baroda city. Sample of this

study was selected randomly, a list of primary schools in Baroda city was availed from the primary education office. After getting the complete list the schools where majority of children were coming from lower socio economic strata and belonged to gujarati medium were sorted out. These included private as well as corporation schools. The list given by the primary education office had 352 schools. Sixty one schools were english medium, whereas two hundred and ninety one are gujarati medium schools. Out of these in twenty four schools students came from middle class families or upper class families . There were two hundred and sixty seven schools in which children belonging to lower socio economic class were enrolled. Once the sorting of schools was over the numbers of all the schools where majority of students came from lower socio economic class were written on chits. The chits of papers were kept in a polythene bag. These chits were mixed very well. After mixing the chits five chits were selected these chits were opened and the permission was sought for the study also readiness was checked based on these factors out of the five schools one school was finalised for the study. This was an intervention study where the aim was not just development of the package and studying effectiveness in terms of their academic achievement alone. The aim was also to see the changes in behaviour of students. For this study a school consisting of large number of students from the lower socio economic background was selected. The teachers of this school were of the opinion that whatever efforts are done, the children would not improve. All the students of that particular class and their Environmental Science teacher were selected as sample of the study. The design selected for the study was a single group pre test post test design. This design was selected in order to measure the difference between pre test and post

test scores of standard IV pupils in all the three types of tests. The tools were developed in order to achieve the objectives of the study.

3.6.5 Tools used in the study

For the present study, following tools were prepared by the researcher in order to collect the data.

1. Information Schedule

The information schedule was constructed to study the family background of the students. The information schedule was constructed by the investigator. It consisted of nine items. First was the name, followed by sex of the students, than address , occupation of father, occupation of mother, education of father, education of mother, number of sibling finally whether they stayed in a rented house or they owned one. The information schedule is enclosed in Appendix II.

1. Achievement Tests

In order to study the pre test scores in seven units of the subject environment science of class IV . Achievement test was constructed by the investigator. The test were of three different types written , oral and activity. The total marks carried by the test were fifty. The tests were constructed for all the seven units separately and a comprehensive test covering all the seven units was also constructed to study the comprehensive achievement and carried a total of fifty marks. The tests had different types of items fill in the blanks, match the following, answer in one line, true or false, answer in more than one line. Same test was administered after implementing the intervention programme in the form of post test . The tests are enclosed along with the answer keys in Appendix I.

2. Semistructured interview schedule for the teachers

In order to study the opinion of the teachers the investigator constructed a semistructured interview schedule. The semistructured interview schedule contained ten items pertaining to their opinion regarding the intervention programme and change the pupils behaviour. The interview schedule is enclosed in Appendix IV.

3. Semistructured interview schedule for pupils

In order to study the opinion of the pupils a semistructured interview schedule was constructed by the investigator. The semistructured interview schedule contained fifteen items. The items were pertaining to their liking, understanding, enjoyment, retention, the media liked most by them and their opinion regarding the various types of tests. The semistructured interview schedule is enclosed in Appendix III.

Thus in order to measure the academic performance of students, achievement tests were prepared by the investigator. Two separate interview schedules were prepared for teacher and students. The tools were developed by the investigator. These tools were finalised through validation by five experts in the field of education and language to judge the. The tools were modified on the basis of the suggestions made by the experts.

3.7.0 Process of data collection

The data was collected in two different phases i) Development Phase ii) Implementation Phase . The development phase was divided into two phases a) Studying the current status and reviewing some of the strategies in the area of

environmental science. b) Development of the intervention Programme for ten chapters.

3.7.1 Development of the Intervention Programme

In Phase I observation were done in five different schools in Baroda city. These observation took five weeks, investigator visited the schools where students from lower socio economic background were enrolled. The investigator also enquired about the hard spots in teaching and learning of environmental science. The teachers in these schools read the chapter and explained the concept by occasionally writing salient points on the blackboard. The teaching did not have the activity element though the schools had teaching aids. These teaching aids were supplied to them during the various government schemes. Some teachers used charts occasionally. All these activities were insufficient to teach the subject like environment to the primary school children. Environment science is not a subject which would need a sophisticated laboratory the content of the subject was spread around the child which a teacher could use with a little effort. So the investigator thought of making use of immediate environment of the children and bring awareness about it. Looking at the pattern of teaching the investigator decided to make the teaching and learning a more enjoyable process by making it activity based. So, the intervention programme was prepared for ten chapters. The whole programme was in the form of dialogues so that the teaching learning process could become more interactive. The teachers teaching environmental science in school seldom gave a chance to students to speak. The ten chapters were pertaining to science they were The living world, Plants and animals, Earth and sky, Our directions, Moon view, Weather, Soil, Our food, Forms of matter and Forms of

water. These ten chapters were rearranged in the form seven units. The seven units are Living and Nonliving, Plants and animals, Earth and sky, Weather, Soil, Our food, and Matter. These seven units were related to students environment. Content analysis was done for each chapter and than appropriate media was selected. The content was enriched wherever necessary and written in dialogue form. The dialogue form made the programme interactive. Each unit had a tests at the end. The tests were of three different types that is written oral and activity. These were activities for the teachers as well as the students. At the end of all the units a comprehensive test was constructed. Simultaneously the information schedule , semistructured interview schedule for teachers and Semistructured interview schedule for the Students was also constructed. After writing the intervention programme and the tools for the study the whole package was send to five experts in the field of two education, one language, and two environment for validation of the content and the selection of various methods and tests. After getting the suggestions from the various experts the intervention programme was modified. After the modification a pilot study was carried out. The intervention programme is presented in the Appendix 1. In order to study the effectiveness of the study the experiment was carried out.

Selecting a school was a problem in the beginning as in some of the schools though children could speak fluently, they had problem in writing any thing. The students would copy from the blackboard, each curve and line, just as someone copies a design from the blackboard. When they were asked to read from their own note books, they were not able to read. There were schools where the students of more than one class sat together, as other teachers were not available. There was

utter chaos in such classes though the teacher gave a feel of a highly authoritarian leader and practised corporal punishment. One of them said, " If I am not strict with these kids, they will sit on my head. They don't teach discipline at lower classes, Madam forgive me, I have also gone through the B.Ed. course but it does not equip you to manage a high teacher-pupil ratio classroom. Ask them to come and teach in our classrooms, I am sure they will change their theories and practises." Finally a Gujarati medium school was selected for the pilot study. This school held some challenges as the teachers said "However hard we try, these children show no improvement. If similar efforts were done in a private school, we could have achieved better results". Despite of such a remark from the school teacher and the principal of that primary school, the schools were selected randomly for the study.

3.7.2 Implementation Phase

The implementation phase was again divided into two phase i) Pilot study, ii) Implementation of the Intervention programme.

i. Pilot Study

Once the school was selected profile of each child studying in class IV was collected, and observation of class room instructional process was completed, proper rapport was build with the students taking proxy classes, telling them stories and playing with them. Gradually, the students began to interact. Initially, they were shy and didn't know what researcher was doing by sitting on the last bench. Researcher carefully started picking up their names as every time researcher posed a question in the story, they were asked their names and reinforced their

answers. Very soon, they accepted the researcher as their regular teacher, who would sit in their Environmental Science class and observe. In free period, she would come and tell them stories or play with them. This went on for three weeks. On one day the Principal formally introduced the researcher as their Environmental Science teacher, which had a mixed reactions. Some felt that the researcher was taking away the place of their class teacher. So, they were unhappy, while others were happy as their science teacher would not teach them now and the new teacher would tell them many more interesting stories.

The pilot study brought forward a few issues.

1. The activity set in the pilot study were for four pupils to function at a time, which was found inadequate, so the number of sets were increased.
2. The instructional process did not pose any significant problem for students as well as the researcher.
3. Later on when the post tests were given (which were identical to pre-tests) the motivation was found less, for which an incentive was announced like if one would score high in the test or will show better achievement over the previous test by more than double, would get a prize. This also had a mixed reaction: who will write to get a pen or pencil or eraser, or a cut out of a tree, whereas some children had a good feeling about it, that teacher has recognised their potential in the classroom. The pencil was not the source of motivation but the recognition by the teacher which was much more important for the students. The pilot study results showed significant improvement in pupils achievement. After modifying the intervention programme the final intervention programme was implemented

II. Implementation of the Intervention Programme

For the implementation of the revised version of the intervention programme. First, the comprehensive test of all the units was given as the pre-test. The intervention programme had seven units. Each unit was organised logically, in the dialogue form, along with suitable indoor and outdoor activities. Each unit was preceded by a pre-test and followed by a post-test. At the end of the intervention programme, a comprehensive test for all the seven units was given to the students. The implementation of the intervention programme went on for two and a half month a period was of thirty minutes each.

Finally , interviews were conducted with the students and the teachers. In case of students, semistructured interview schedule was used to get their opinion about the intervention programme. In case of teacher, a semistructured interview schedule was used to gather opinion about the intervention programme.

Thus, the data were collected in various phases. The data collected were analysed with the help of appropriate qualitative and quantitative techniques.

3.8.0 Analysis of data

Analysis of data means studying the organised material in order to discover inherent facts. It refers to studying data from as many angles as possible to explore the new facts and establish relationship among different variables. The data collected was analysed, objective wise, using appropriate techniques. The data was analysed both qualitatively and quantitatively (the details of the analysis are indicated in table 3.1). For objective Second, effectiveness of the intervention programme in terms of pupils academic achievement was measured by using t-

test . For the third and fourth i.e., to study the opinion of students and teachers regarding the intervention programme was collected which was analysed qualitatively.

3.9.0 Conclusion

Thus, the data were collected using various appropriate tools, keeping in mind, the objectives of the study. All the methodological details have been described in this chapter. Complete description regarding the development and implementation of the intervention programme has been presented in the next chapter.