

# **CHAPTER - 6**

## **SUMMARY**

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### **6.0.0 Introduction**

According to Indian constitution (Article.45) primary education refers to “Free and Compulsory education for all children until they complete the age of fourteen years.” Elementary education constitutes a very important part of the entire growth, development and enrichment of mental as well as physical potentialities of the child .

### **6.1.0 Background and Rationale of the Study**

Strength and progress of a country rests on the educational foundations of her people. Rightly organised primary education is the very first front and the most important one, from which our educationists should launch the attack, in order to solve the obstinate educational problem of the country.

In India, there are basic problems such as abysmally poor condition of schools, absentism among teachers may cloud the problem of curriculum load. The high rate of dropouts has its origin in the curriculum. It takes away the element of joy and inquiry from learning, which obviously contributes to the rate at which children leave school in the early years, undoubtedly, under the force of economic and social circumstances.

The commissions and committees have emphasised measures to improve the quality of elementary education which includes reform in the content and process of education. So, the emphasis will now shift from sheer enrolment to retention and quality of education. Primary Education in Gujarat is the state responsibility. The schools are managed by municipal corporation, District Education Committees and private trust. The schools belonging to first two categories are fully funded by

Government. Whereas private schools are self financed. All the schools are inspected by the officials of state department of education. The subjects taught at primary level are (Mother tongue) Language, Mathematics, Environmental science (Combination of science and social studies) Art and Physical Education. Language is an important tool which increases self expression in day-to-day interactions. Mathematics develops logic and reasoning which is helpful in day-to-day life activities. Art develops psychomotor skills along with appreciation and aesthetic sense development, whereas physical education helps towards healthy development of body. Environment science prepares well informed and responsible citizens. It aims at developing an understanding of physical and social environment.

Environment has been defined as the sum total of all conditions and influences that affect the development and life of organism. (Ambasht 88). The conditions and influences can be biotic or abiotic that is living or non living.

All living beings are directly or indirectly dependent on nature. So, it becomes a pre-requisite that, we should be aware about the extent to which homeostasis of nature works. Beyond equilibrium, there are back lashes, which certainly are undesirable. Our main goal is sustainable development. For sustainable development, we will have to train our young minds in their early years through environmental science. The objective of environmental science is to acquire awareness and knowledge, to develop attitudes, skills and abilities to participate in solving real life environmental problems. Study of Environmental Science is important for sustainable development. Whatever exists today on planet earth, has to be used very judiciously, so that it can also persist in future.

Environmental Science at the primary stage is a subject from class I to IV which lays a basic foundation for science and social environment. Whatever instances or incidences are taking place around us directly or indirectly influence child's growth and development. So, pupil must know about the environment. Students should be able to observe flora and fauna around them, should be able to recognise and protect them from being harmed or destroyed. They should be able to know about the importance of air, water and food as well as how to stop air, water and food from getting more polluted. They should be able to develop the habit of cleanliness. They should be able to see and observe the gradually expanding components of human life. Environmental Science has to be taught through the environment itself where environment is used as a material of teaching.

Looking at the present scenario of primary education, though textbook based on minimum levels of learning has been implemented from class I to IV, teaching continues with teacher centred activity of reading textbook aloud with occasional noting of salient points on the black board. Even the subject of Environmental Science is taught orally without the support of Environment. It is necessary that the teaching at elementary stage is concrete. The students of primary school belong to the concrete operational stage according to Jean Piaget's theory. Thus there is a need to teach the children through concrete activities.

Hence there was a need to develop an instructional program in this subject through different methods, media and activities. But looking at the quantum of research work in this area there is hardly any such effort in this subject and more so in Gujarat state. Therefore investigator conducted a study where she developed and implemented instructional package for seven units of standard IV in the subject of

Environmental Science. The purpose of the study was not to just bring improvement in results alone but also to achieve objectives related to affective and psychomotor domain.

#### **6.2.0 Statement of the problem**

'An intervention to improve the quality of Instruction in Environmental Science for Primary level School Children.'

#### **6.3.0 Objectives of the Study**

1. To prepare intervention programme for seven units in the subject of Environmental Science for standard IV in a school.
2. To implement the intervention programme to study its effectiveness on standard IV students in terms of their academic achievement in a school.
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.

#### **6.4.0 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.

## **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 Education is a study of the factors influencing ecosystems, mental and physical health, living and working conditions and population pressures. Environmental Education 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.

#### **6.5.0 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.

#### **6.6.0 Methodology**

In the following paragraphs the methodology of the study is given in order to achieve the set objectives. Hypotheses were framed they are as follows.

##### **6.6.1 Hypotheses of the study**

In order to study the effectiveness of implemented intervention programme, eight null hypotheses were formulated. The null Hypothesis for the present study are as follows.

1. There will be no 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 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 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 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 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 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 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 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.

### **6.6.2 Nature of the Data Required for the Study**

Following types of data were required for this study. For the second objective 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. 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.

### **6.6.3 Sources of Data**

The data regarding second objective was collected from the students, this was regarding the pre test and post test scores, achieved after the implementation of the intervention programme. The data regarding third objective was collected from the teachers, regarding the intervention programme. Finally, for the 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 collection.

### **6.6.4 Design of the study**

A experimental approach with single group pretest - post-test design was adopted.

### **6.6.5 Population and sample of study**

Population of the sample was comprising of all the students studying Environmental Science in class IV in a school of Baroda city and the teachers teaching Environmental Science in class IV in Baroda city. Sample of the study was selected randomly. It was an intervention study where the aim of the study was not just development of the package or implementation of the package, or just

to see the effectiveness of the package but, the aim was to see the qualitative improvement in the achievement of the students. For this purpose, a school consisting of large number of students from the lower socio economic background were taken randomly . The teachers of this school were of the opinion that whatever efforts are done, the children will not improve. All the students of that particular class and their teachers were selected as the sample of the study. The design selected for the study was a single group pre-test post test design wherein the achievement was studied prior to the implementation of the intervention programme and after the implementation of the intervention programme.

#### **6.6.6 Tools used in the study**

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

##### **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. He duration of the test was one and a half hour. 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 1.

## **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 in 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. The tools were modified on the basis of the suggestions made by the experts.

### **6.6.7 Process of data collection**

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 of 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 test at the end tests were of three different types that is written oral and activity type. Their 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 education (two), language, (one) and environment (two) 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 as the fourth chapter of the study. 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.

#### **6.6.8 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.

Before, the developed intervention programme was implemented the students were given pre-tests - written, oral and activity type. 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**

The was the implementation of the revised version of the intervention programme for the study. First, the comprehensive test and all the unit test were 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 teacher. 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.

### **6.6.9 Analysis of data**

Analysis of data means studying the organised material in order to discover inherent facts. It refers to study data from as many angles as possible to explore the new facts. The data collected was analysed, objective wise, using appropriate techniques. The data was analysed both qualitatively and quantitatively. For objective two, effectiveness of the intervention programme was measured by using t- test of significance, wherein the difference between the pre-test scores and post-test scores was found and then mean was calculated. After calculating mean,

standard deviation and standard error of mean was found, from it, t-test was applied - first individually to written, oral, activity test and then to the total of the three. For the third objective, the opinion of teachers regarding the intervention programme was collected which was analysed qualitatively. Finally for the fourth objective interviews were conducted to find students' opinion about the intervention programme. The data collected was analysed qualitatively with frequency and percentage.

#### **6.7.0 Major Finding of the Study**

##### **6.7.1 Effectiveness of Intervention Programme**

It was found that the difference between pre-test and post-test scores for all the units and all types of tests was significant. All the null hypothesis framed at the beginning of the study were rejected. This clearly indicates the overall effectiveness of intervention programme. The probable reasons for this could be scope of creativity, independence, more interaction between researcher and students, activity oriented teaching, use of different methods and medias by the researcher for implementing the intervention programme. All these led to more active participation and involvement of students in classroom instructional process which was not there earlier. The implementation of programme was successful in arousing the level of interest, curiosity and various types of inquiries on part of students. Learning through intervention programme also enabled the students to get acquainted with self learning process. This also developed analytical abilities among them. Thus, on the whole the intervention programme helped the learner not only to improve upon their previous academic performance, but also helped them to develop higher cognitive abilities, metacognitive abilities, psychomotor skills and some aspects related to

affective domain. All these ultimately help students for their all round development. If there is change in the infrastructural facilities, school ecology is good and if the facilities provided at the school level are good and utilized properly the achievement of the students was found to improve. ( Dave 1988, Bhattacharya 1991, Govinda and Verghese 1991 and Gupta and Gupta 1992.) It was found that if environment was taught with environmental approach the achievement of students have improved. (Joshi 1981, Deopuria 1984, Kaushal 1997, Lalitha 1997, Mahopatra 1997).

#### **6.7.2 Opinion of the Students**

All the students favoured learning through such intervention programme as it makes use of different teaching strategies which does not lead to monotony of one single method of teaching. Combination of different methods has helped them to feel interested in learning. The methods they liked the most were role playing, team teaching, puppet and story telling as these were the methods through which learning was enjoyable experience and they felt involved. Regarding medias for learning, they opined that learning through video and tape recorder was most effective for them as they were audio visual aids. Further they also liked learning through charts and models. Regarding evaluation pattern adopted by the researcher they liked the activity type test most where they had a scope to exhibit their creativity and psychomotor skills. The most important thing that they mentioned was that they would also like to learn other subjects through such intervention programme.

#### **6.7.3 Opinion of the Teachers**

The teachers opined that the intervention programme, on the whole, was effective in terms of the achievement of students and improvement in frequency and

quality of interaction with the teacher. It has helped them in self learning and has also enabled them to involve themselves in learning process with lot more interest and curiosity.

Regarding the quality of intervention programme, the teacher expressed happiness over the comprehensiveness in covering the content matter and for the language used for instruction. The combination of different methods and medias used for clarifying important concepts of the subject was also liked by them. All this helped to improve academic achievement of the students.

Regarding the change in students' classroom behaviour, the teacher admitted that she could see significant changes in students' behaviour with regard to their involvement in the classroom instructional process as they became more active, dynamic, curious and interesting lot of learners. Thus the package has not only helped students but even teachers opinion has become more positive.

#### **6.8.0 Implications of the Study**

The present study was conducted in the primary school for the subject of environmental science in a school of Baroda city, wherein majority of students population belonged to lower economic and social background. The purpose for carrying out this study was to develop and evaluate the effectiveness of intervention programme through its implementation. Although researcher came across many studies in the area of primary education most of the studies were either survey or correlation in nature. But these studies have not helped to improve quality of classroom instructional process. Even if there were some experimental studies, there was hardly any study in the subject of Environmental Science. Researcher was not interested merely in conducting an experimental study in this subject but she

was interested in carrying out a study in actual classroom setting without having control and experimental groups. Therefore, keeping in mind this, the researcher has undertaken intervention study in this subject, where researcher made use of combination of various methods and media's and strategies for classroom instruction. The intervention programme was developed for seven units and was implemented in the standard IV classroom for sixty periods. The data collected was analysed and interpreted with the help of appropriate techniques which has been discussed in the previous chapter. In the earlier portion of this chapter, major findings have been discussed. But when this type of study is conducted it is very important to mention about implications of findings as they have far reaching impact in improving quality of teaching learning process. Some of the educational implications are enlisted here.

Primary education is a foundation for development of every individual and therefore the quality of teaching learning had to be taken care of at this stage. The findings of this study shows that in majority of actual classroom situations, we hardly practise any other method other than lecture method. This leads to a situation where whole instructional process becomes one-way and students are not actively involved even the teacher also felt that the situation cannot be improved. Especially in a school majority of students from lower economic strata. But the findings of this study clearly indicate that the family background of students is not at all a barrier for implementing the various types of teaching strategies, methods and media's to improve the academic performance. And bringing positive changes in the behaviour of students. Such type of intervention programme has helped the students, in present study, to improve their academic achievement and enhance their interest

and curiosity. This clearly shows that this type of intervention programmes can help the students to achieve the objectives not only related to lower level of cognitive abilities but even higher abilities; related to metacognitive, psychomotor skills as well as abilities related to metacognitive and affective domain. Because, such programme helps students in self-learning independent thinking and arousing curiosity amongst them. Thus, it is necessary to see that such programme should be developed in the same subject for other units as well as in other subjects also. So that we can achieve desired improvement in quality of teaching learning process moreover developing and implementing such programmes provides ample scope for creativity and innovativeness of the teacher. Management of school also should motivate such innovative practises on a large scale so that slowly and gradually a day would come when such programmes become inseparable part of classroom instructional process and we will not only be achieving the goal of " Education For All" but "Better education for all".

#### **6.9.0 Suggestions for Future Studies**

1. A similar type of intervention programme needs to be developed and implemented for those units of Environmental Science which were not covered in the present study.
2. Similar type of study can be conducted by developing and implementing intervention programme for other subjects like Mathematics and Languages.
3. The similar type of programme developed can be tried out in a school in rural area.
4. A training programme could be developed for training teachers to prepare and implement such intervention programmes.

Similar programmes can be developed at different levels to bring environmental awareness and sensitivity among people. Such a programme at secondary, higher secondary, university or adult education level can bring sensitivity towards environmental problems.

#### **6.10.0 Conclusion**

The students of standard IV find the Intervention Programme in the subject of Environmental Science more interesting and joyful. As the intervention programme was found effective in improving the achievement of the children, it could be used for developing sensitivity towards environment. It could also be used to train teachers for developing and implementing such program for different standards in different subjects. Such a programme could be developed for secondary, higher secondary, university, adult education and non formal education level.

Presently the work in the field of environment is either done by the NGO's or the topics are discussed in the courses of study. There is some representation in the media also but the laymen are still away from the protection and prevention of the environment. So, they sometimes become culprit and sometimes the victim of environment. Schools, colleges and media must make optimum efforts to sensitise people with environmental issues. Habits need to be inculcated at the early age towards a healthy and beautiful environment . It is our basic duty to protect and prevent the Environment from further degradation.