CHAPTER - III

DESIGN OF THE STUDY

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CHAPTER- III

DESIGN OF THE STUDY

The first chapter dealt with introduction of various aspects of primary education and innovativeness in primary education DPEP intervention, need for the study, objectives of the study and terms used in the study. The investigator defined the problem according to the objectives kept for the study. The second chapter dealt with necessary review of related literature in which he explained the need for review and the basis for such studies in the form of related studies. It was found that, very few studies have been reported.

The important aspect of the present study is to develop and validate an Audio-Visual package in the form of video clips or computer video compact disks. Where in the units of EVS for standard III and IV are involved. As already noted the curriculum and the syllabus of EVS for standard III and IV are purely primary in nature. But, informative to the children for the future life. In such a case one has to keep in mind the needs and desires of young children who are highly aspirant and emotional to the situation.

3.1 Statement of the Problem

"DEVELOPMENT AND VALIDATION OF AUDIO-VISUAL PACKAGE TO TEACH ENVIRONMENTAL STUDIES FOR III AND IV STANDARD STUDENTS OF ELEMENTARY SCHOOLS OF KARNATAKA STATE"
3.2 **Defining of the Problem**

Now a days teaching of Science has become inevitable for the beginners of education. The environmental awareness and proper use of resources is urgent need for the survival of mankind. Hence, the Environmental Studies have occupied important place at the primary stage or elementary stage. The Karnataka State has recommended compulsory introduction of Environmental Studies subject. But, at the same time it has not suggested proper methodology for the beginners to teach. Many attempts have been made to teach the EVS with the help of project method and activity based method which, failed utterly because of lack of resource material. Hence, the educationists started thinking with the new method through audio channel which is nothing but radio lessons. Thereby, a programme emerged like Keli-Kali. But, Keli-Kali did not arouse the interest of the children because of its monotonous hearing. Hence, the researcher planned to evolve an audio-video package to teach the III and IV standard children.

The present study intends to develop an audio-video package, which is supplementary and enriching to the classroom teaching of III and IV class students and teachers. The investigator also intends to know the effectiveness of the package so developed with that of traditional and Keli-Kali methods of teaching method. Another important aspect of the study is to validate the packages so developed.
3.3 **Design of the Study**

The present study is a true experimental design involving control, Experimental-I and Experimental-II groups. Effects of different treatments are being estimated by pre and post criterion test.

3.4 **Definition of the Terms**

i. **Development**

Development of audio-video package is nothing but to prepare a programme suitable for teaching-learning process.

ii. **Validation**

Validation of the audio-video package is the standardisation of the tool and finding its effectiveness.

iii. **Traditional Method:**

It is a teaching method adopted by classroom teacher with limited interaction and using textbooks and teachers handbooks only. The use of teaching aids and demonstrations are limited.

iv. **Keli-Kali:**

It is the content based audio programme designed for classroom instruction purpose, which is supplementary to the classroom teaching.

v. **Nodi-Keli-Kali**

It is the content based audio-video programme designed for classroom instruction purpose, which is supplementary to the classroom teaching.
vi. Selected units in EVS for III and IV Standard:

These are the units, selected for developing of audio-video package. The investigator had to identify only those units, which suited to the audio-video nature among existing Keli-Kali programmes.

vii. Control of Intelligence:

It is evident that the intelligence of students is key factor in determining the achievement of the students. Hence, to control the effect of this factor the investigator controlled the intelligence by selecting the students having same or similar intelligence.

viii. Opinionnaire for teachers and students:

An opinionnaire is a design which seeks the opinion of teachers and students regarding the effectiveness of Nodi-Keli-Kali audio-visual material developed for the study with respect to content quantum, quality and usability of the package.

3.5 Mechanism of three groups formed for the Study

Control Group:

In this group the teacher was asked to teach the unit in his or her usual manner using minimum teaching aids. This mode of teaching mainly relied upon ‘teaching by chalk and talk method’ utilising textbooks as supplementary aids. The students activities were curtailed, their emotions, creative thinking was also controlled. In all this method meant very less participation of the students, less
usage of teaching aids and there was no scope for students to react. The units selected for this type of teaching were same as that of the other two methods.

Experimental Group-I

In this type of treatment the teacher was allowed to use pre-recorded cassettes of standardized Radio Programme known as Keli-Kali (listen and learn) developed by the investigator, who was the then State Co-ordinator for Distance Education Programme of DPEP/SSA. This programme was being broadcast from various AIR stations in Karnataka. The investigator had collected the programmes by tape recording. The intended topics in EVS which were to be used in the classes along with audiocassettes and cassette player were supplied to the teachers after due training. The teacher was asked to perform pre-listening and post-listening activities as described in the programme. These activities lead to active participation of the teachers and the students. The programmes had music, sound, drama and songs inbuilt into it, which helped in holding the interest of the students. Here the teacher was required to have skill of utilisation of audio aids like cassettes and cassette players and hence, the teacher was given this training.

Experimental - II

In this method the investigator designed audio-video package on selected units of III and IV standards of EVS, which were same as that of audio programmes, and traditional teaching units. This tool was named as Nodi-Keli-Kali (observe listen and learn) as it uses audio-video media and involves senses of listening and sight. Its naming viz., Nodi-Keli-Kali was done in
continuation of the Keli-Kali (listen and learn) package. Here the teacher’s role was limited. He had to seek the needs of the students as and when it was necessary other wise with little introduction and pre-viewing activities he had to put on the DVD or VCR with the AV aid prepared by the investigator. The viewing was to be followed by the activities, which were suggested in the scheduled programme. In this mode of teaching the teacher was supposed to make use of video cassette player and television. Further the teachers were given training to handle these equipments along with the conduct of pre-viewing and post-viewing activities specified in the concerned programme.

3.6 Overview of the Treatments

From the above three types of groups investigator expected the following outcome;

1. Control Group

   Teacher dominated traditional method of teaching.

2. Experimental I – Group I

   Students exposed to the innovative and interesting Audio-Radio programme Keli-Kali with certain amount of activities.

3. Experimental II – Group II

   Students exposed to innovative, interesting Audio-Video package for learning EVS with little bit of teacher’s interventions involving certain activities.

3.7 Variables involved in the Study

   Three types of variables were involved in the study.
1. **Controlled Variables** – Intelligence and Treatment or the method of teaching – Traditional, Audio (Radio) and Audio-Video (Video) method.

2. **Dependent variable** – Achievement of the students.

3. **Independent variable** – Age of the students, sex of the students.

**Discussion of the variables**

1. **Controlled Variables** –
   
   a. **Intelligence**: This is one of the important factors directly related to the achievement of the students. The present study involved the effect of three types of treatment on the achievement of the students. Since intelligence factor plays key role in the achievement whatever may be the treatment. Hence, the investigator decided to control the intelligence of the students, choosing a group of students having same or similar intelligence in each case. This was done by administering intelligence test (SPM), to all the students of three schools. IQ of each student was calculated and the students with common group average IQ range were selected (average of 100 IQ ranging from 105-110).

   b. **Treatment or method of teaching**: The main objective of the study is to know the effectiveness of the three methods of teaching for the selected units in EVS for III and IV standard for selected sample of students.

   Group I Control Group – Traditional Teaching

   Group II Experimental-1 – Keli-Kali audio programme

   Group III Experimental-2 – Nodi–Keli-Kali audio-video programme
2. Dependent variable –

Achievement of the students: The achievement of the students was estimated by administering pre and post achievement test. The gain scores were also calculated. The investigator constructed achievement test for each unit.

3. Independent variable –

Age of the students, sex of the students, socio-economic and educational status of the students are independent factors.

3.8 Tools used for the Study

Following tools were used for the study:

1. SPMs- Coloured Matrices
2. Text Book
3. Keli-Kali
4. Nodi-Keli-Kali
5. Achievement test (Pre and Post test)
6. Opinionnaire for teachers and Students

1. SPMs- Coloured Matrices

It is a ratio of mental age, as measured by intelligence test, to the mental age that is normal for a particular chronological age. The ratio is multiplied by 100. Thus, giving an average IQ for 100.

To measure IQ of the children, Raven’s Standard Progressive Matrices (SPM) was used. It is a tool to assess a child’s maximum capacity to form comparison and reason by analogy without being unduly exhausting or
unwisely. SPM was designed to cover the widest possible range of mental ability and to be equally useful with people of all ages. It is a culture free, non-verbal, frequently used test by many researchers.

SPM contains 5 sets of problems namely A, B, C, D and E. Each set contains 12 problems. Totally there are 60 problems. All the problems are graded and are arranged according to difficulty level. Each of the problems is boldly presented in geometric design and each problem has 6-8 choices, which are given below the problem.

The test-retest reliability of the test varies from 0.83 to 0.93 for different age groups. Validity coefficient reported in studies with English and non-English speaking children and adolescents generally range up to +0.70. The content validity of SPM for different test items, correlations ranged from 0.2-0.8.

The investigator decided to use the SPM for the following reasons. First, Standard Progressive Matrices is a culture free, non-verbal and self motivating test, which measures the mental development of an individual. Second, an acceptable verbal standardized intelligent test in Kannada was not available. The same is given in Appendix -A

One of the objectives of present study is to know the achievement of the students. Hence, it was important to know about their intelligence. In this study, the intelligence is controlled variable. Hence, the investigator controlled the intelligence statistically which, means he had chosen similar intelligence students sample. There were more than 75 students in each chosen class. The investigator administered coloured RPM to all the 75 students and calculated
the intelligence and chosen only 50 such students who had similar intelligence in all the three sets of schools.

2. Text Books

III Standard Environmental study textbook:

There are 30 chapters in this book. The textbook is newly written and published. Every chapter starts with a small activity/exercise. There are coloured pictures and diagrams for each chapter. At the end of each chapter simple exercises have been given with different coloured printings. These books also gave provision to the students for working on specified area. Hence, these books also acted as workbooks too. The investigator chosen four units from the textbooks. (Annexure-B) They are;

1. Namma Hallugal – Our Teeth
2. Namma Aahara – Our Food
3. Namma Jnyanendriyagal – Our Sense Organs
4. Surya Mattu Jeevigalu – Sun and Living beings

IV Standard Environmental Study Text book

Similarly, the EVS textbook for IV standard contained 29 chapters with similar features as seen in III standard EVS text books. There were number of self guided activities in each chapter. At the end of each chapter objective type of questions and creative activities were given (Appendix-C). The investigator has chosen four units, viz.:

1. Namma Aahara-Aarogya – Our Food and Health
2. Namma Nammallli – Among Ourselves
3. Hawamana Mattu Vayuguna – Whether and Climate
4. Samparka Sadanagalu – Means of Communication

3. Keli-Kali Radio Lessons:

Stages in Keli-Kali Broadcast:

Radio Project is not a one shot activity. This has got various stages involved in it. In its first leg the difficult content areas were identified from the classroom processes with the help of teacher. These were then converted into radio scripts with the help of teachers / script writers, content and media experts. The radio programmes were produced at AIR Station by involving teacher, students, media persons. These programmes were broadcasted during school working hours with proper instructions to schools for listening through programme schedule handbook. The listening of the programme was ensured by proper monitoring at cluster, block and district levels by the concerned offices. Feedback was obtained through radio phone-in programmes. Documentation, Impact Study, Feedback sessions were held by the state on different occasions for ensuring proper implementation. Further investigator has, found that the radio broadcast has led to motivate students to do better in academic activities inculcating study skills and listening skills.

Phalachandra B. (2003), has found that teachers have got benefited from the programmes, as it enriched their content and also helped in adopting new ways of teaching.
Cycle of Radio Project:-

These stages are depicted in the form of a cycle in the following page and each stage is described in detail of the following area.

Planning of the radio programme:

Need identification was done by a survey of schools and teachers. In this the planners identified various hardspots on which teachers wanted to have extra inputs in the classrooms. These were finally discussed in the core committee meeting to identify its suitability to audio media. After this, the committee decided upon number of programmes to be prepared. This helped in identification of number of script writing workshops required, work distribution to various AIR stations (production), teachers' training etc. Also, this step was
utilised for survey of schools for availability of radio sets and availability of electric current, battery sets. This helped the department in issuing necessary circulars regarding arrangement of the radio sets. This step also helped in deciding upon cost involvement.

Radio Script Development Workshop:

Selected school teachers, script writers, media experts were called for various workshops and sat together in different workshops each of 5 days duration and prepared the scripts. These scripts were examined for language, content, media suitability and finally approved for production stage. The contents of these were converted into DTP format and handed over to concerned AIR stations.

Production and Broadcast of the programme:

The AIR stations were actively engaged in this activity. They selected schools for recording of the programme and identified children and adults. Finally recording was held in respective AIR stations. In this session emphasis was given on the language usage, clarity of content, sound, music, songs etc. This required expertise in media as the programme was to be broadcast throughout the state. Gradually, these programmes got momentum and hence, gradually these were extended to Gulbarga, Raichur, Dharwad, Bangalore, Mysore, AIR station.

Training of Teachers:

The school teachers were given training in two major areas i.e. maintenance of hardware and utilisation of this programme in the schools.
first required the teacher to tune radio properly, make the voice of the radio audible to all, look in to power connection and recording of programmes based on the requirement. The latter part involved important aspect of dealing with students. Teachers were asked to perform various activities (prior and latter to the hearing of the programme) and list of these activities was supplied in the form of handbook. Utilisation of the programme was dependent on careful listening and hence, teachers were asked to take necessary measure in this regard and ensure proper listening.

**Evaluation:**

These programmes were subjected to evaluation and feedback at larger scale. The feedback was obtained by post, from the school in the form of their opinions on postcards. Such postcards were received high in number. The department assigned activity of documentation of these programmes to a non-Governmental organisation. Research teams have also conducted investigations. Further local newspapers also gave feedback pertaining to this programme. All these helped in future planning of the programme.

**Handbooks for teachers on Keli-Kali**

Proper conduct of various activities was ensured by supplying handbook to the schools. This contained necessary departmental circulars, instructions for teachers to utilise the programme, programme schedule and activities to be performed in connection with each of the programme. Handbooks for programmes were supplied each year. It gives duration, class, broadcast station, brief overview of the programme, instructions to the teachers about the
programme. This was prepared by the state project office (SPO DPEP, Karnataka, Bangalore).

During the year 2002-03 the broadcast was extended to entire state and fifth standard too. Simultaneously programmes were initiated for Urdu Medium schools too. Based on the previous experience and requirement of the programme schedules were modified, improved and became self-instructional in nature. The handbook contained instructions on the budget allocation for buying Radio sets, Schedule guidelines for teachers in conducting pre and post broadcast activities.

Thus, these booklets acted as SIM material for teachers, officers, community members and gave detailed information regarding the programme vis-à-vis their roles and functions. The booklet have been prepared in collaboration with DSERT and supplied to all the stakeholder.

Major Achievements of Keli-Kali Interactive Programme (2000-01 and 2001-02):

Among various activities carried out by DPEP Keli-Kali, emerged as major intervention from November, 2000. The examination, evaluation and research carried out for this programme during first year shows various important and observable impacts.

Students' educational achievement:

The achievement of radio school students was better than the non-radio listening school students. There is improvement in achievement of SC/ST students. The difference between achievements of rural and urban school
children is reduced. Scientific and mathematical concepts are cleared to students.

**Changes among Students:**

Attendance has improved on broadcast days and which is consolidated in due course. Students repeat songs broadcast and heard in radio programme. Much enthusiasm is seen among students when folk songs, drama and local language used. Questioning, discussion and debate skills are developed among students. This has developed letter-writing habits. Changes observed among teachers: Radio lessons have cleared each and every lesson's objectives, subject matter, and basic concept. Different lessons are taught using different techniques activities there by teachers are able to use new methodology. Pre and Post broadcast activities given in the handbook help in systematic and planned teaching. This has developed among teachers habit of using electronic equipment's in school.

**Changes observed in content transaction in class:**

Keli-Kali Schedule has helped in completing syllabus in schedule time. This has helped in teaching of all lessons based on objectives. It has brought in educational discussions among teachers (of all categories and sexes) and teacher and community and become an instrument to bring about co-operation.

**Interschool Level Changes:**

- Different phone-in programmes have helped in creating understanding of different educational topics of the syllabus and bringing one-ness among schools.
The Radio Scripts were developed in district level workshop. In these different activities, easy songs, interesting activities are given. In this way the programme helped in identifying talented and creative teachers.

DPEP's this educational programme has become an example to other state too. Andhra Pradesh and other states are following this project.

Supervisors and SDMC members have not only listened to this programme, but they have participated in various educational activities.

This programme is extended to all districts in Karnataka during 2002-03. These programmes have become integrated part of school teaching / pedagogy. Specifically this programme has become an important part for providing education to village and backward students.

Validity of the programme:

The Keli-Kali programme is designed by experts with the contents of III and IV standards EVS. Hence, it has content validity. Similarly, the EVS portion for III and IV standard students are currently involved in the syllabus. Hence, it has concurrent validity. This tool is also having face validity. This was determined by the opinion of 10-15 expert educationists (audio experts), practicing teachers and investigators.

Reliability of the Programme

The Reliability of Keli-Kali test was calculated with the help of test-retest method which, was found to be 0.8963. Hence, the tool is valid and reliable.
Adoptability:

This tool was also easily adopted for the teachers as well as students. Simply they were informed to listen the Radio programmes. So this tool was easily adoptable. Hence, the tool was used for the data collection.

Selection of Programmes for the study:

Although huge number of radio programmes were available in Keli-Kali series. But, the investigator had to restrict himself in selection of only those programmes which were based on EVS of III and IV standard only. Hence, list of programmes, which were finally selected, are

III Standard

1. Namma Hallugalu – Our Teeth
2. Namma Aahara – Our Food
3. Namma Jnyanendriyagalu – Our Sense Organs

IV Standard

1. Namma Aahara-Aarogya – Our Food and Health.
2. Namma Nammalli – Among Ourselves
3. Hawamana Mattu Vayuguna – Whether and Climate
4. Samparka Sadanagalu – Means of Communication


This is the main tool of the study, which was developed by the investigator with the following objectives.
1) All the students should learn the EVS systematically, scientifically and effectively.

2) The environmental subject should be taught with modern AV aids.

3) All most all sense organs should be involved in the learning process.

4) The students belonging to rural areas should also learn the EVS effectively.

Keeping in view the above objectives, the investigator utilized the following primary sources for construction of such tool.

1) Text book of III and IV standard EVS.

2) Teachers hand book for teaching III and IV standard EVS

3) Keli-Kali Radio Programme on III and IV standard EVS.

4) Encyclopaedia of Science and Technology.

5) Animation Films and Video Clips.
Stages in Preparation of Nodi-Keli-Kali audio-video package:

Fig 3.2. representation of the Nodi-Keli-Kali Audio-Video project cycle

Planning (Choosing of the Units and Budgeting etc.):

As already mentioned for the Keli-Kali Radio programme, the investigator had chosen four chapters each from III standard and IV standard EVS randomly.

III Standard
1. Namma Hallugalu – Our Teeth
2. Namma Aahara – Our Food
3. Namma Jnyanendriyagalu – Our Sense Organs
4. Surya Mattu Jeevigalu – Sun and living beings

IV Standard

5. Namma Aahara - Aarogya -- Our Food- Health
6. Namma Nammalli – Among Ourselves
7. Hawamana Mattu Vayuguna – Whether and Climate
8. Samparka Sadanagalu – Means of Communication

Script Writing

After choosing the units for developing an Audio-Visual package for III and IV standard EVS the investigator approached scriptwriters and director of AIR. He also met some of the programmes executives in AIR, Hospet and showed them the chapters along with Keli-Kali Radio programme. Under the guidance of the above persons script writing was done. The detailed procedure adopted is given as under, and Excerpts of the scripts are given in the Appendix-C.

Script being the basic framework of an educational programme, utmost care was taken to make it suitable for reflecting the concepts and principles. In this context the guidelines developed by British Council Media Department, London, were found to be quite concise as well as comprehensive, very meaningful and relevant.

Audio writing “Writing to be Heard”:

1. The script is the most important part of an audio programme. Unless it is excellent, every other aspects of production is useless.
To be successful it must be written in the right language for the audience that is, in the language of the listener. So it must be taken into account the listener’s background, education and interest. The writer must therefore, think carefully about the structure he is going to use and the vocabulary.

The words the scriptwriter uses are not read by the listener—they are listened to. So the words must appeal to EAR, not to the EYE.

Writing for the EYE relies on the conventions of writing punctuation, paragraphs, type, size, columns and headlines. The reader can go on his own pace. He can stop reading, put the writing on one side and return to it later. Writing for EAR is quite different. The listener cannot be given too many facts and figures. It is essential to keep holding his interest, therefore, the script must be presented in an interesting way. It must be developed logically. The audio script writer may have to repeat, expand and reinforce. He must use the Poems of language which is simple and informal. It must be SPOKEN LANGUAGE. The listener’s attention must be held, otherwise he switches off mentally or physically.

How is the listener held? The radio writer must think of the listener as his personal friend......

He must talk with the listener, not at him.

He must hear in his mind all the tones of voice that will communicate the script. (The variables are important)

He must visualise the listener.

He must read the script aloud to himself and ask:
How do I Sound like

"What do I Mean?"

The excerpts of the programme are presented in the form of CD Annendix-I.

**Video Programme Preparation Shooting**

The investigator approached technical persons for Video shooting and gave them the scripts. So that, they were able to shoot the events according to the scripts and content matter. Sri G.R.Bhat and Sri A.R. Desai guided Sri Shakeel to take up the Video shooting for the above Eight chapters of III and IV standard EVS. The shooting of events took about two months.

The investigator selected the locations and contacted concerned heads and personnel for their co-operation in the shooting process. They were briefed about importance of the programme vis-à-vis classroom utilization. The primary shooting was done in a (digital handicam) video camera. The output videocassettes were converted into CDs from a private editing firm from Bangalore. These CDs were then subjected for editing, mixing and sound recording at the computer centre by the investigator. For Example the investigator had shot all the scenes pertaining to medicine, doctors, and hospital from one institutions in one cassette. These were cut and distributed into different programmes according to its utility. These programmes were given necessary titling, graphs and transition from one clip to another. The product was given voice –over according to set script.

The final product had a set pattern. This described the type of the programme, subject, class, topic of study, its objectives, video programme's
objectives, previewing activities. These programmes were given necessary clips, graphs, pictures and transitions, which was finally filled with voice-over. To sustain the interest of the students' songs were also introduced in these programmes. The investigator did the editing of the programme in Windows Moviemaker Software and Showbiz. He also made use of services of few experts from education field to record voice. The songs, which were used in the programme were same as that of Keli-Kali radio lessons. The detailed procedure of preparation of the video planning, video script development, production etc., is given in the following paragraphs.

**Video Scriptwriting:**

Script is one of the factors responsible success or failure of video programmes. Besides, electronic motion pictures unit attendant sound effects and script provide the basic edifice of the whole programmes. It is a kind of map, a blue print of what is going to be in the video programmes.

Although writing a script on a given topic differs form one to another and treatment of the topic varies from person to person, but with one certain common basic features in all the scripts. The TV script write should keep these points in his mind. These are as follows.

**1. Kind of Audience:**

The script write considered the age group socio-cultural background and psychological profile of audience to whom the programme was to be addressed. The interests, attends and inclinations were taken into account. Homogeneity or
heterogeneity, rural or urban nature, industrial or agricultural culture of audience were considered for writing script

2. Objectives of the Programme:

Besides general objectives like instruction or education or entertainment expected of a programme, specific objective, were to be determined first. For example, a video programme was spelt out in term of learning outcomes in EVS – II, which was expected to achieve awareness of physical surrounding objective.

3. Genuineness Information or Facts

The script writer made use of various resources like books, charts, graphs, pictures, film clips in order to prepare scripts of different topics. He collected data from many sources arranged them systematically. Thus, different resources were entirely made use of.

4. Treatment of Topics

After collecting and arranging data the script writer made all attempts for presentation of the topic in an attractive and effective manner. At this stage he thought of such audio–visual aids which were available and suitable for the jobs.

5. Format of the Programme

A programme may be proposed in various formats – dramas, features etc., with graphics, animation, and so on. Limitations are imposed by the needs of the TV studios, funds available for making the programmes, availability of facilities of the studio time and persona. Suppose there is no dearth of any facilities, money time, personnel, one can use dramatic form which would need several rehearsals, use stimulated situations and utilise clever devices like
animations. But, when resources are very limited then an imaginative scriptwriter is required to use available resources in the most effective way. For example, in order to deal with 'volcano' in a programme effectively, the scriptwriter may suggest to use a film clip of a volcano actually erupting with the lava flowing down and accompanying sound track of the rumble of the volcano. This film clip would be able to give a better idea about the phenomenon than thousand words can give. The investigator planned his resources and used simple format.

6. Feasibility and Practicability

Many things thus were thought of theoretically to make a good programme but in actual practice the scriptwriter had to think in terms of what was feasible and what was practicable under the circumstances. He worked under certain constraints, and at the same time he had to think of a possible way to communicate the relevant concepts in order to ensure the learning outcomes that he had in his mind as objectives.

Under present programmes the audience were small students who are exposed to Doctors, fruits, and their text books. Hence, the programmers have tried to make use of these situations in topics like Namma Aahara and others.

7. Specialities of the Medium

The scriptwriter also considered the specialities of the video programme, particularly its feeling nature or temporaries and its one-way communication. The images succeed one another very quickly and can not be caught hold of at any point for the minute observation. It was therefore necessary that the point to be emphasised was to be repeated or explained in detail and any abstract idea
to be communicated was explained in terms of the audience’s experiences or by using suitable visuals or through demonstration.

8. Utilising as a Visual Medium

The scriptwriter did not forget that video programmes were mostly visual medium; its importance held in visuals but not in words only. Vision and sound went together and in a very balanced manner, complementing each other. It was not only necessary to use words when a picture would do. The writer of video script thought of this topic in terms of talking. A story board is a must in video programming.

9. Pre- and Post-Viewing Preparation:

It is thought that the video scriptwriter is concerned only with the content of the programme. But he should keep in mind what need be told to the audience prior to and after the programme, so that they can be properly motivated and enlightened and many of the new concepts and ideas would be made clear and meaningful. Therefore, the Nodi-Keli-Kali scriptwriters or producers had prepared support materials and notes on their specific programme prepared with clear-cut objectives for pre- and post-viewing activities.

Draft TV Script

The writer keeping in mind his audience with their background, his objectives and peculiarities of the medium arranged his content along with visuals in order to make the programme effective as well as interesting. He visualised the sequences of the entire programme with the help of a story-board
As the process is very complex, it took a long time for repeated modification and finalisation of the script before the final camera script was completed.

The following are the aspects which were borne in mind for writing a video script.

1. The script was simple, direct and personal.
2. It was written with a full knowledge and involvement of programme of visual.
3. The presenter's style of personality was taken into account.
4. It stressed and recapitulated its (content's) salient features.
5. It involved and addressed the audience directly.
6. It had variety of pace and rhythm and occasional "breathing space", was given especially in the middle of the programme.
7. It did not attempt to say too much in the time available.
8. It suggested the suitable visuals, sound effects, etc, along with the commentary.
9. It noted the demands of the electronic studio with its facilities as well as limitations.
10. It necked with a simple resume of programmes main points possible with a sufficient visuals presentation.

The video writer had prepared his script taking all these points into account. He was in a position to visualise the sequence of the programme and modified his craft repeatedly to suit the audience and put across his ideas clearly and
meaningfully. He kept in mind the objectives, clientele, its profile, content etc., on the other hand and limitations of time, space, and resources of the studio and personnel on the other. Hence, overall the scriptwriter was required therefore to be skilful, creative, imaginative and resourceful.

Video Procedures Techniques

After preparation of final script producer had to carry out and co-ordinate few essential production activities and tasks in collaboration with other specialists and functionaries which are depicted in the figure below.
In an educational production like Nodi-Keli-Kali the academic or content experts remained associated with the production process till the end, whereas for simple production the producers take charge after finalisation of the script.

Fig. presents a general overview of video production planning and organisation. Each of the areas and activities indicated in it involves managing...
and co-ordinating a large number of people and tasks, doing and getting many
different things done, often at the same time and without losing the continuity
and rhythm of the whole process. In fact, the essence of video production was
teamwork and the producer dealt with a variety of people and acquired
sufficient skill and proficiency in managing men and matters. The investigator
did advance planning, thorough preparation, consistent team work and skill full
execution of all activities and tasks within a fixed time frame which, were
essential part of production of video programme.

Script analysis:

The producer was engaged from the beginning with the planning of the
programme and he was familiarised with the theme and objectives of the
programme resources such as social, aural, technical, personal, financial and
other miscellaneous pre-requisites. Keeping in view the constraints of
resources, time, manpower and budget, the producer committed himself to what
is called a treatment breakdown of different segments of the programme. He
visualised the systematic arrangement of visual and aural inputs, camera shots,
movements and effects. Thus, he attempted to evolve a logical, coherent and
continuous video show. This exercise eventually lead to the development of a
detailed production camera script (Appendix-D).

The camera script was a blueprint for executing the production of a video
programme in the studio or an outside location. It provided a meticulous
blueprint of necessary guidance and technical instruction for floor staff, artists,
performers, camera person, engineers, technical assistants and all other
associated with the production including the director or the producer. The most common layout of script consisted of two vertical columns the left hand column for vision and the right column for sound. The vision column was devoted to treatment giving that numbers and description and nature of shots, camera postures, movements switching instructions etc. The sound column was used for recording dialogue, sound, music, noise, special effects and lighting and stage instruction for floor staff, technicians and performers.

**Budgeting**

Media programme production, being a highly expensive proportion, required the investigator to plan it at a level which suited his research requirement. This is why such locations were not selected which involved travel and outdoor shooting. However, the investigator made best use of equipments and machines whose costs were estimated by hour and studio costs were measured in hours, minutes and seconds.

**Resources planning and scheduling:**

Media production is a combination of several inputs and resources. By its very nature it requires not only much advance planning but also the management of several things at a time. In rating, the investigator planned programme resources and scheduled various production events which began in the earliest stages and continued parallel to script designing, budgeting and other activities.
Viewing of the Programme at the Schools and Training of Teachers:

The Video Schools were given special instruction regarding the programmes, which, were largely based on the objectives of the programme. Further the teacher were instructed to perform few activities prior to the viewing of the programme and consolidate the learning after viewing the programme with post viewing activities as per the instructions. The students were made to sit properly so that they can view the video package properly and hear the sound. The students were trained to ask various doubts regarding the programme after its completion.

Teachers using this technology were trained in hardware and software aspects of the programme. The teachers were asked to keep the television in ready to use condition. They were trained about use of television, remote control, playing of CDs etc. The teachers were told to give proper instructions to the students, give suitable seating arrangement and make them debate after the programme viewing.

These programme were subjected to different Try-outs.

Try-out

The Nodi-Keli-Kali AV package was shown to experts and necessary corrections were made with respect to the level of language, picture quality, objectives vis-à-vis the content present and logical presentation of the subject matter etc. This tool was then subjected to Try-out-l.
Try-out-I

The tool was administered to a group of III and IV standard students who belongs to model primary school, Hosa Yallapur near Dharwad. The opinions of the teachers as well as the children were noted down. Both the teachers and the children enjoyed the programme and learnt the EVS effectively which, was estimated by an achievement test constructed by the investigator. The mean was found to be 85.5 and the SD 2.13.

Try-Out-II

The same test was administered to another set of students studying in III and IV standard in Kamalapur village near Dharwad city. The opinion of the teachers and the students were noted down. They were highly satisfied with the tool. The achievement test prepared by the investigator was administered and the mean calculated was 84.8 and the Standard Deviation 2.1.

Validity of the Video Programme

The two tryouts clearly indicates opinion of the teachers and the children who expressed high degree of satisfaction which, means the test has content validity and concurrent validity.

Reliability of the Video Programme

The reliability of the test was established by test-retest method. The coefficient of correlation between the two tests calculated was 0.813, which means the test is reliable.

Hence, the audio video package was retained for final data collection and validation on large sample.
Details of Software

1. **Name:** Nodi-Keli-Kali
2. **Subject:** Environmental Science
3. **Level:** Elementary Classes
4. **Hardware requirement:** Television, Video CD Player, remote or computer etc.,
5. **Monitor (VDU):** Television
6. **User Interface:** Remote control, keys on the monitor and CD player
7. **Special Features:** Contains audio-video package

**Name of the Programme:** Nodi-Keli-Kali Video Programme

**Purpose:**

Undoubtedly, the largest use of Video programmes in education is for giving information to student in an interesting format by using various modes like audio, video, graphics, animation, slides, songs in different subject matters.(Appendix-I)

Multi-media use in the classroom has been emphasised by many in this country. Students require variety in classroom, which should be away from routine. An Audio-Visual package puts an effort in this direction. However, lot of cost is involved in this endeavour. However, a well-designed programme can fulfil curriculum needs and satisfy students' instinct. These programmes can keep one class busy and learning. Such programmes are of utmost important as this country faces lack of teachers and these programmes suits multigrade schools.
5. Opinionnaire for teachers and students:

The investigator designed an opinionnaire for students and teacher separately to seek their opinion regarding the Nodi-Keli-Kali Video package. In this questions were selected on different aspects, which include the content selected, relevancy of objectives with content, example, appropriateness of clips / narration, quality of audio / video, aptness of songs, texts, titles, graphics etc. The opinionnaire contain open ended questions in the form of positive opinions with respect to various aspects of the audio-video programme developed for the study. This opinionnaire was prepared under the guidance of the guide and shown to different educationists. Based on the opinions and suggestions necessary modifications were incorporated and opinionnaire was finalised. A copy of these opinionnaires are (of teachers and students) is given in Appendix-G&H) respectively.

6. Achievement test (Pre and Post test)

The investigator selected all 4 topics from each of the class

Choosing of the Units

As already mentioned for the Keli-Kali Radio programme, the investigator chose four chapters each from III standard and IV standard EVS randomly.
Unit and Sub Units:

III Standard
1. Namma Hallugalu — Our Teeth
2. Namma Aahara — Our Food
3. Namma Jnyanendriyagalagu — Our Sense Organs
4. Surya Mattu Jeevigalu — Sun and Living beings

IV Standard
1. Namma Aahara-Aarogya — Our Food-Health
2. Namma Nammalli — Among Ourselves
3. Hawamana Mattu Vayuguna — Weather and Climate
4. Samparka Sadanagalu — Means of Communication

Construction of Achievement test:

The investigator constructed an achievement test based on the selected topics for each class. The types of questions used in the test were of Multiple Choice, Completion Type, True False, and Matching. The investigator restricted himself to these objective type of questions because the target was of smaller age where writing skill was not fully developed at this level.

Previous Knowledge:

- Students aware of different body parts like teeth, skin, tongue, eyes, ear etc.
- Students aware of different heavenly bodies such as sun, moon.
- Students are aware of different food items available in their locality.
- Students know the relationship and social contacts among different human beings.
• Students know the climatic changes like rain.
• Students know different modes of communications like post cards, television, radio etc.

Defining of Educational Objectives:

An important step in the construction of an achievement test is to make a survey of the aims and objectives of instructions of the particular subject chosen. The guidelines for these are given by nodal agencies such as NCERT / DSERT etc.

A test, constructed must match the teaching objectives of the course. It is designated by various educationists who have attempted to provide classification. Different investigators list various objectives of teaching any subjects in general and Environmental science in particular. But, the investigator restricted himself to four categories of objectives in the cognitive and conative or psychomotor domain. These include knowledge, understanding, application and skill.

The specifications of each objectives are reported in Table – 3.10

Table – 3.1 Showing Specification of objectives used in construction of achievement test.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Objectives</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Knowledge</td>
<td>The pupils –</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1. recalls</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. recognises</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. repeats</td>
</tr>
<tr>
<td></td>
<td>Understanding</td>
<td>Application</td>
</tr>
<tr>
<td>---</td>
<td>---------------</td>
<td>-------------</td>
</tr>
<tr>
<td>2.</td>
<td>The pupils-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. gives examples and illustrations</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. defines</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. detects the errors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. rectifies the errors</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. observes the relationship</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. explains</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. classifies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. compares and contrasts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9. finds similarities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10. discriminates</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>The pupils-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. analyses</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. verifies the results</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. interpret</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. gives reason</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. establishes the relation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. finds cause and effect relationships</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. suggests appropriate procedures</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. selects appropriate tools</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9. draws inferences</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10. accepts the mistakes without any hesitation</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>The pupils-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1. selects appropriate instruments</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. draws the diagram accurately, neatly and quickly</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. handles the instruments properly.</td>
<td></td>
</tr>
</tbody>
</table>

**Preparation of blue print**

The investigator consulted his Guide and other expert Environmental Education teachers for the weightage and final weightage is listed in the table.
## Table 3.2 Showing Content Weightage (III)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Content</th>
<th>Marks</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Namma Hallugalu</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>Namma Aahara</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>Namma Jnyanendriyagalu</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>Surya Mattu Jeevigalu</td>
<td>7</td>
<td>28</td>
</tr>
</tbody>
</table>

## Table 3.3 Showing Content Weightage (IV)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Content</th>
<th>Marks</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Namma Aahara</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>2</td>
<td>Namma Nammaili</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>3</td>
<td>Hawamana Mattu Vayuguna</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>Samparka Sadanagalu</td>
<td>7</td>
<td>28</td>
</tr>
</tbody>
</table>

## Table 3.4 Showing Objectives Weightage (III)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Type of Objective</th>
<th>Marks</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Knowledge</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>2</td>
<td>Understanding</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>3</td>
<td>Application</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>4</td>
<td>Skill</td>
<td>5</td>
<td>20</td>
</tr>
</tbody>
</table>
### Table – 3.5 Showing Objectives Weightage (IV)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Type of Objective</th>
<th>Marks</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Knowledge</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>2.</td>
<td>Understanding</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>5.</td>
<td>Application</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>6.</td>
<td>Skill</td>
<td>5</td>
<td>20</td>
</tr>
</tbody>
</table>

### Table – 3.6: Showing Question wise Weightage (III)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Type of Question</th>
<th>Marks</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Multiple Choice</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>2.</td>
<td>Completion</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>3.</td>
<td>True False</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>4.</td>
<td>Matching</td>
<td>5</td>
<td>20</td>
</tr>
</tbody>
</table>

### Table – 3.7: Showing Questionwise Weightage (IV)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Type of Question</th>
<th>Marks</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Multiple Choice</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>2.</td>
<td>Completion</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>3.</td>
<td>True False</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>4.</td>
<td>Matching</td>
<td>5</td>
<td>20</td>
</tr>
</tbody>
</table>
Blue-Print:

**Table – 3.8: Showing Blue-print of the achievement test (III)**

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Knowledge</th>
<th>Understanding</th>
<th>Application</th>
<th>Skill</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forms of items Content</td>
<td>MC</td>
<td>C</td>
<td>TF</td>
<td>M</td>
<td>MC</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>25</td>
</tr>
</tbody>
</table>

MC- Multiple Choice; C – Completion; TF- True False, M-Matching

**Table – 3.9: Showing Blue-print of the achievement test (IV)**

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Knowledge</th>
<th>Understanding</th>
<th>Application</th>
<th>Skill</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forms of items Content</td>
<td>MC</td>
<td>C</td>
<td>TF</td>
<td>M</td>
<td>MC</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>5</td>
<td>25</td>
</tr>
</tbody>
</table>

MC- Multiple Choice; C – Completion; TF- True False, M-Matching
The investigator planned to construct 25 items in each test (III and IV standard) with Multiple Choice, Completion, True False, Matching type of items. Each of these item carries one mark.

Writing of test items

The investigator keeping in view the objectives, the specifications and plan of constructing different types of items, write down the items in identical form (test re-test form) of tests. He constructed 25 items from in each unit by consulting experts and other experienced teachers in Environmental Science for their comments and suggestions. Based on the comments and suggestions suitable modifications were done. The test items are given in Appendix.

Sample Items:

I. There are four alternative answers for each questions. Choose the proper answer and fill the box provided.

1. The total number of teeth present in a grown-up man
   a. 18          b. 20          c. 32          d. 26

2. Few food nutrients protect our body from
   a. rain        b. air         c. sun rays    d. illness

3. Total number of sense organs
   a. 3           b. 5           c. 4           d. 2

4. We receive our food from
   a. plants and animals   b. stones   c. wood    d. iron

II. Fill in the blanks

1. Carbohydrates give us .................
2. Instrument used to measure heat .......... 
3. ............... will be more at the central part of earth.

III. Read the statement carefully and find out whether it is true or false.
1. The paper published once a week is called daily newspaper.
2. Teeth are red in colour.
3. Food is required for getting strength.

IV. Different options are given in the second column for one answer. Choose the right option and indicate your answer against the question number.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Milk</td>
<td>a. Water becomes ice</td>
</tr>
<tr>
<td>2. Tongue is useful for</td>
<td>b. Akashvani</td>
</tr>
<tr>
<td>3. Proteins are useful for</td>
<td>c. Sweet, sour</td>
</tr>
<tr>
<td>4. 0°C Centigrade</td>
<td>d. A complete food</td>
</tr>
<tr>
<td>5. Name of the radio stations are</td>
<td>e. Growth of body</td>
</tr>
</tbody>
</table>

Try out:

Tryout is a vital stage in the construction of a good test. Only careful analysis can show that a test is soundly constructed. The following four principles should govern the tryout.

a. Every reasonable precaution should be taken to ensure normal condition for the test,

b. The time allowance for the test should be generous,

c. The scoring procedure adopted should be fairly simple and
d. Before the actual scoring begins, answer keys and scoring keys should be prepared.

**Sample for tryout:**

Tryout of a test means trying it out under test conditions on representative cross-section of the pupils for whom the test is intended. In order to that the data collected in tryout should be helpful in determining the quality and nature of the test items with respect to the population on which norms have to be established later on, the sample use for tryout should obviously reflect the population.

From Bijapur and Belgaum Districts 4 schools were selected randomly.

**Table- 3.10 Showing Students Strength in different schools for III and IV Standards for Tryout-I**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the School</th>
<th>Classes chosen</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Government Higher Primary School, Vishweshwrayya Nagar, Belgaum</td>
<td>III and IV</td>
<td>25</td>
</tr>
<tr>
<td>2.</td>
<td>Government Primary School, Headquarters, Belgaum</td>
<td>III and IV</td>
<td>25</td>
</tr>
<tr>
<td>3.</td>
<td>Government Higher Primary School, Station, Bijapur</td>
<td>III and IV</td>
<td>25</td>
</tr>
<tr>
<td>4.</td>
<td>Government Higher Primary School, Tikota</td>
<td>III and IV</td>
<td>25</td>
</tr>
</tbody>
</table>

Four teachers of respective schools were also involved.

The total sample consists of 100 III and IV standard students each (50 boys and 50 girls). The sample of students chosen for tryout I were well versed
with the chosen units of the study. The investigator took help for the teachers from respective schools and administered the test.

**Tryout-II**

The investigator carried out II tryout selecting three schools one each from Dharwad, Bijapur and Belgaum.

**Table-3.11: Showing Students Strength in different schools for III and IV Standards for Tryout-II**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the School</th>
<th>Classes chosen</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Government Higher Primary School, Police Headquarters Dharwad</td>
<td>III and IV</td>
<td>25</td>
</tr>
<tr>
<td>2</td>
<td>Government Primary School, Gandhichowk, Bijapur</td>
<td>III and IV</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>Government Higher Primary, Ganapat Galli, Market, Belgaum</td>
<td>III and IV</td>
<td>25</td>
</tr>
</tbody>
</table>

Four teachers each of respective schools were also involved.

The total sample consisted of 75 III and IV standard students each (40 boys and 35 girls). The sample of students chosen for tryout II were well versed with the units chosen for the study. The investigator took help of the teachers from respective schools and administered the test with the help of teachers.

**Item analysis**

The duly scored answer sheets were arranged in the descending order of scores.

The answer sheets of 27% of the students scoring highest and the answer sheets of 27% of the students scoring lowest were selected for item analysis. They formed the upper and the lower group respectively.

174
The procedure of calculating the facility value (f-value) and discriminative index used in the case of group intelligence test was employed here.

Table 3.12 showing results of item analysis (III)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Type of Question</th>
<th>No. of items</th>
<th>No. of items retained Tryout I</th>
<th>Tryout II</th>
<th>Tryout I</th>
<th>Tryout II</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Multiple Choice</td>
<td>27</td>
<td>15</td>
<td>14</td>
<td>12</td>
<td>13</td>
</tr>
<tr>
<td>2.0</td>
<td>Completion</td>
<td>25</td>
<td>18</td>
<td>16</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>3.0</td>
<td>True False</td>
<td>27</td>
<td>16</td>
<td>15</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>4.0</td>
<td>Matching</td>
<td>20</td>
<td>17</td>
<td>17</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>66</strong></td>
<td><strong>62</strong></td>
<td><strong>33</strong></td>
<td><strong>37</strong></td>
<td></td>
</tr>
</tbody>
</table>

Table 3.13 showing results of item analysis (IV)

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Type of Question</th>
<th>No. of items</th>
<th>No. of items retained Tryout I</th>
<th>Tryout II</th>
<th>Tryout I</th>
<th>Tryout II</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>Multiple Choice</td>
<td>27</td>
<td>17</td>
<td>18</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>2.0</td>
<td>Completion</td>
<td>25</td>
<td>15</td>
<td>14</td>
<td>10</td>
<td>11</td>
</tr>
<tr>
<td>3.0</td>
<td>True False</td>
<td>27</td>
<td>16</td>
<td>15</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>4.0</td>
<td>Matching</td>
<td>20</td>
<td>16</td>
<td>15</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td><strong>64</strong></td>
<td><strong>64</strong></td>
<td><strong>35</strong></td>
<td><strong>35</strong></td>
<td></td>
</tr>
</tbody>
</table>

From the results of the item analysis of III standard, it is clear that 66 items of the first test and 62 items of the second test could be retained and some of the sub test items could be rejected.

From the above results of item analysis of IV standard, it is clear that 64 items for the first test and the same number of items for the second test could be retained and few items could be rejected.
The investigator wanted to prepare two sets of test papers in equivalent form which meant that in both the forms equal number of items testing particular specification were required. Further, he had sufficient number of items hence there was no difficulty in preparation of the second set of papers. However, the investigator consulted his guide and experts in Environmental Science and with their help retained selected items. So the total number of items and corresponding marks of the paper is shown as under,

**Table-3.14: Showing Details of the final form of achievement test.**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Type of Question</th>
<th>Marks</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Multiple Choice</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>2.</td>
<td>Completion</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>3.</td>
<td>True False</td>
<td>6</td>
<td>24</td>
</tr>
<tr>
<td>4.</td>
<td>Matching</td>
<td>5</td>
<td>20</td>
</tr>
</tbody>
</table>

The final form of the test consists of 25 items distributed in six sub-tests are as reported in Table. The scoring key was prepared.

**3.9 Standardisation Procedure**

The scores of the sample of 100 students were tabulated in a frequency distribution table. The maximum and minimum scores were noted. The Mean, Median, Standard Deviation and Quartile Deviation were calculated.
Table-3.15: Showing Measures of Central Tendency of Variability of the two achievement test (III Standard)

<table>
<thead>
<tr>
<th>Index</th>
<th>Test-I</th>
<th>Test-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>40.82</td>
<td>41.14</td>
</tr>
<tr>
<td>Median</td>
<td>39.12</td>
<td>39.25</td>
</tr>
<tr>
<td>SD</td>
<td>10.5</td>
<td>12.13</td>
</tr>
</tbody>
</table>

Table-16: Showing Measures of Central Tendency of Variability of the two achievement test (IV Standard)

<table>
<thead>
<tr>
<th>Index</th>
<th>Test-I</th>
<th>Test-II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>42.87</td>
<td>43.13</td>
</tr>
<tr>
<td>Median</td>
<td>40.15</td>
<td>39.84</td>
</tr>
<tr>
<td>SD</td>
<td>10.68</td>
<td>12.41</td>
</tr>
</tbody>
</table>

The mean and median of the two tests for both the classes are similar whereas SD of the second test appear to be slightly higher.

Validity of the test

1. **Content Validity:**

   Since the tests were constructed specifically for III and IV standard students and the content was taken from III and IV standard Environmental Science, so the test has content validity.

2. **ConcurrentValidity**

   In this method about 50 students out of a sample of 100 students were selected randomly from III and IV each. The Environmental Studies marks of annual examination of the above students were correlated with test scores. The coefficient of correlation of 0.59 and 0.57 for respective classes was found to be significant. This shows that the test is valid. The two forms of content
achievement tests (Test re-test forms) were reliable and valid. So they could be used with confidence in the final data collection.

3. Construct Validity

The test was constructed for calculating the achievement of III and IV standard students in Environmental Science. So it had construct validity.

Reliability of the test

The reliability of the test was calculated by the split-half method. The odd numbered items formed one group and the even numbered items formed the other group. When both the groups were correlated by Spearman-Brown Prophecy formula the ‘r’ was calculated and found to be 0.72 in case of III standard and 0.68 in case of IV standard, which means the test is reliable.

3.10 Selection of Sample for the Study

The present study is an experimental study involving three groups, namely traditional learning group, audio based learning group and audio-video based learning group. These groups should also contain equal number of students from both sexes i.e. boys and girls and be from III and IV standards.

Sample should be true representative of the population. Hence, following points were considered for choosing the sample of the present study.

1. Common units were selected for three types of teaching modes for both III and IV standards.
2. The students were matched based on their scores in intelligence test.
3. Teachers having zeal to use new technology and willing to adopt it in the classroom which were selected for the study. They have taught using the required technology and evaluated the students accordingly.

4. The sample schools were all run by the state Government and had Kannada as the medium of instruction thereby the investigator also took care of their SES and medium of instruction.

Keeping the above factors in mind, the investigator consulted some of the Headmasters of such schools and finally decided upon the sample likewise.

1. Selection of the Schools:

The investigator selected following schools on random basis.

1) Kannada Model Primary School, Sadankeri, Dharwad
2) Government Primary School, Navalur
3) Government Primary School, Nigadi

2. Selection of Class and Students

As discussed above the investigator had developed audio-video package for III and IV standards. Hence, the students were selected from these two classes from each of the sample school. Equal number of boys and girls were selected for the study who were matched for intelligence.

Table 3.17 Showing the Class wise Number of Boys and Girls chosen for the study.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Schools</th>
<th>III Standard</th>
<th>IV Standard</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Boys</td>
<td>Girls</td>
<td>Boys</td>
</tr>
<tr>
<td>1</td>
<td>GPS, Nigadi</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>2</td>
<td>KMPS, Dharwad</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>GPS, Navalur</td>
<td>25</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>
3. Teachers involved in the Group

The investigator approached the Head Masters of the respective schools to request for the assistance teachers for the study and accordingly finalised list of teachers.

Table 3.18 Showing teachers involved in the conduct of the study for different groups.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the School</th>
<th>Name of the Teacher</th>
<th>Qualification</th>
<th>Experience</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Government Primary School, Nigadi</td>
<td>Sri Adargunchi</td>
<td>M.A., B.A., B.Ed., T.C.H.,</td>
<td>10 Years</td>
<td>Control Group</td>
</tr>
<tr>
<td>2</td>
<td>Kannada Modal Primary School, Sadankeri, Dharwad</td>
<td>Smt. Sajjan B.V.</td>
<td>B.A., B.Ed., T.C.H.,</td>
<td>15 Years</td>
<td>Exptl-I Group</td>
</tr>
</tbody>
</table>

The above teachers readily accepted the offer of teaching in a desired method for each of the group.

Description of Schools

a) The Nigadi Primary School is having III and IV standard students in which the investigator formulated as control group. He selected 50 (25 Boys, 25 Girls) students in each classes having similar intelligence (Coloured RPM). This formed control group where in a teacher was requested to teach the EVS by traditional method for III and IV standard respectively.
b) Kannada Model Primary School, Sadankeri, Dharwad

This school is at the outside of Dharwad city. Most of the students belong to both urban and rural areas. Here also the investigator chose III and IV standard students after administering the intelligent test he chose 50 students from each classes (50 III Standard, 50 IV Standard). In this school the students learnt the EVS with the help of Keli-Kali Radio programme.

c) Government Primary School, Navalur

This school is situated in the Navalur village. Where in students from rural area are studying. After the administration intelligence test the investigator chose 50 students (Both Boys-2 and Girls-25) from each classes. The investigator chose III and IV standard children 50 each. These two classes formed experimental Group-2 in which they have to study the EVS with the help of constructed Audio-Video package by the investigator.

Selection of students

Formation of Groups

Group – I: Control Group

1) Government Primary School, Nigadi.

In Nigadi Primary School the investigator identified III and IV standard for his study and the investigator formulated Control group. He selected 50 (25 Boys, 25 Girls) students from each of the class III and IV having similar intelligence (Coloured RPM). Thus, the total number of students from Class III and IV each was 50. This formed Control group where in a teacher was asked to teach the EVS by traditional method for III and IV standard respectively.
Group II – Experimental

2) Kannada Model Primary School, Sadankeri, Dharwad

This school is at the outskirts of Dharwad City. Most of the students belong to both urban and rural areas. Here also the investigator chose 50 (Both Boys-25 and Girls-25) students from III and IV standard after administering the SPM intelligent test. Thus, he chose 50 students from each classes (50 III Standard, 50 IV Standard). In this school the students were taught EVS with the help of Keli-Kali Radio programme.

Group III – Experimental

Government Primary School, Navalur

This school is situated in the Navalur village. The students studying in this school are from rural localities. The investigator identified Class III and Class IV from this school. He administered a test of intelligence Coloured SPM and identified students having similar intelligence to that of other two groups. Thus, a total of 50 students were selected from class III and IV each (Both Boys-25 and Girls-25). These two classes formed experimental in which they were exposed to Audio-Video package in EVS constructed by the investigator for the study.

3.11 Data gathering procedure

First stage : Before the treatment

1. Pre-Pretest scores (PPT): These scores are nothing but the scores of the students at the annual examination of previous year in Environmental Science (Class II and Class III for III and IV standards respectively). These
marks indicate the status of the students, achievement at the entry level to the III and IV standard respectively in Environmental Science subjects. So the investigator noted down the marks scored by each student in III and IV standard annual examination.

2. **Standard Progressive Matrices -- Coloured**

   Administering the SPM test to know the IQ of the students.

3. **Training of the Teachers:**

   The teachers teaching III and IV standard classes of the sample were invited to University College of Education and were given training in particular treatment.

   Sri Adargunchi, a Primary School teacher teaching Environmental Science in Government Primary School, Nigadi was requested to handle III and IV standards with traditional method or usual teaching method with minimum teaching aids and minimum attention towards students.

   Smt Sajjan who was teaching Primary School children of Sadankeri, Dharwad was requested to teach III and IV through the audio package using the tape recorder and cassettes of the programme. She was also asked to follow the given instructions of the programme and follow the activities. The teachers were supplied audio cassettes and tape recorders.

   Sri Devarmani was teacher in Navalur School and teaches Environmental Science. He was requested to teach selected units of III and IV Environmental Science through audio-video package. A Television with remote control facility,
programme CD and CD player were supplied to the school. He was informed to perform the necessary activities as indicated in the test.

4. Administration of pre-test:

The III and IV standard students involved in the study were given pre-test (achievement test) on the units chosen to know the level of understanding. This test consisting of 25 marks was administered in period of 30 minute duration.

Second Stage

During the treatment

Once the preliminary arrangements were made, the investigator requested the teachers to teach their groups in respective method.

The Control group could complete the teaching in three weeks where as the Keli-Kali audio treatment group completed it within a month and so also the time taken by the Nodi-Keli-Kali audio-video package group.

Third Stage:

After the treatment

After completion of the treatment investigator requested all the three teachers to administer a post-test which was similar to pre-test but prepared parall with separate items. This test also had 25 items and was conducted for 30 minute duration.

The investigator also gather opinions of the stakeholders i.e. teachers as well as the students in the form of opinionnaire.
3.12 Opinionnaire

After the development and validation of the Audio-Visual programmes the investigator also wanted to know the post-viewing opinions of the students and teachers, which was in addition to find out comparative effect of this programmes to Traditional and Audio method. Hence, to separate opinion for the stake holders viz., teachers and students.

The investigator prepared few items pertaining to objectives of the programme, quality-content, sound, visuals, music, acuities etc., These items were discussed with the Guide and few educators. Finally, the investigator decided to use 20 items for teachers and 7 items for students of Nodi-Keli-Kali group that is, Experimental-2 group. The opinionnaire sought the respondents to reply in 'Yes' or 'No'.

3.13 Statistical Techniques used:

Following statistical techniques have been used in this study.

a. Mean, Median and SD,
b. F-ratio through ANOVA,
c. t-test

The data gathered is duly analysed and reported in the subsequent Chapter IV.