

CHAPTER- III

PLAN AND PROCEDURE

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3.0.0 INTRODUCTION

Plan and procedure denotes the sequencing of points which help the researcher to proceed step by step in the research work. Planning is made in advance or in the beginning of the research work. It describes the nature, plan and procedure of the research work. It is regarded as the blue print of the research work. It is desirable to have proper methodologically designed research plan and procedure to achieve the objectives of the research study. An appropriate planning and procedure can help in getting proper and valid research outcomes. This chapter presents the plan and procedure adopted by the investigator to realize the objectives of the present study. The present investigation has been undertaken with a view to study the effectiveness of cartoon and comics based multimedia package in environment subject for standard III using experimental research design. A detail about the design, population, sample, tools, development of cartoon and comics based multimedia package, experimentation, data collection, and data analysis is presented in the present chapter.

3.1.0 DESIGN OF THE STUDY

The present study was experimental in nature where Quasi-experimental design was used for the present study. The Pretest-Posttest Nonequivalent-Controlled Group Design was followed in this research. Best and Kahn (1996) describes this design, *'this design is often used in classroom experiments when experimental and control groups are such naturally assembled groups as intact classes, which may be similar'*. The design of the study is presented as follow.

O ₁	X	O ₂	O ₃
O ₄	C	O ₅	O ₆

Where, O₁ and O₄ are pretests

O₂ and O₅ are posttests

O₃ and O₆ are delayed posttests

X stands for Experimental Group and

C stands for Control Group

Following this experimental design, the achievement of students of the experimental group in Environment was measured just before and after the experimentation. The same post achievement test in environment was administered to the experimental group again after one month of the post testing and was called as the delayed post testing. The delayed post testing was done to see the delayed effect of the cartoon and comics based multimedia package on the achievement of the students in Environment. The similar procedure i.e. testing with similar intervals was followed for control group without the experimentation and the group was taught the same chapters during same period of time in traditional method with the help of their teacher. This data were analyzed quantitatively. The reaction of the students of the experimental group due to exposure to cartoon and comics based multimedia package was studied in during experimentation with the help of observation and discussion with the students at the end of the experimentation. These data were analyzed qualitatively.

3.2.0 POPULATION OF THE STUDY

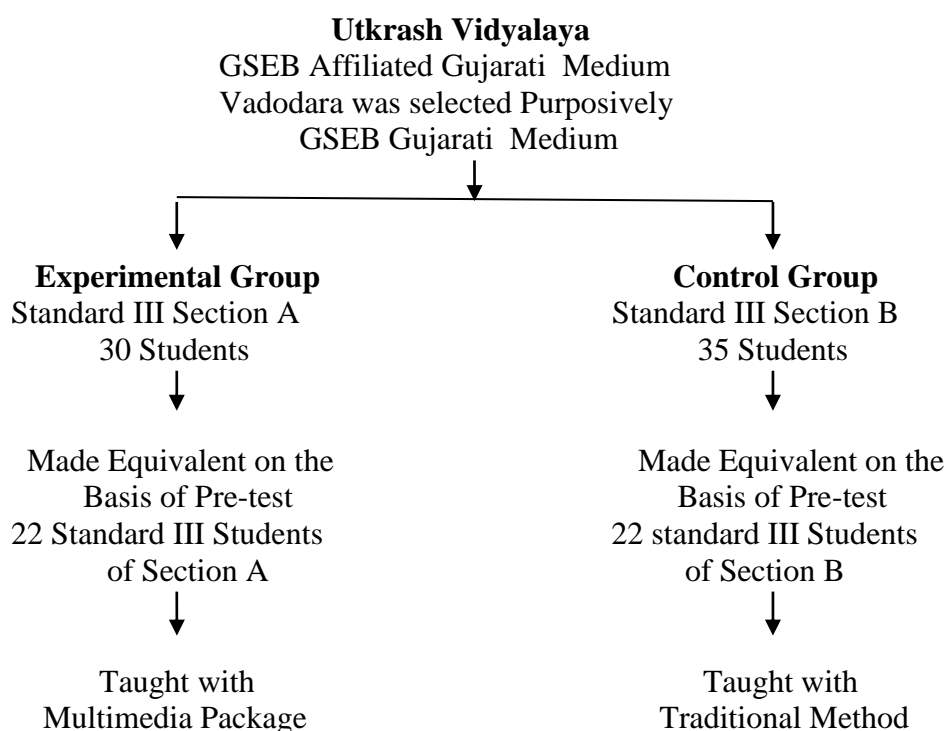
All the Gujarati medium standard III primary school students of Gujarat State following the curriculum of Gujarat State Education Board, Gandhinagar constituted as the population for the present study.

3.3.0 SAMPLE OF THE STUDY

Sample for the present study was selected purposively with the help of convenient sampling considering the convenience criteria i.e. availability of the schools as per the reach of the researcher and the availability of the gadgets to use the cartoon and comics based multimedia package in the class. One school i.e. Utkrash Vidyalaya, a Gujarati medium schools of Baroda city was selected purposively. Students of one section i.e. section A of standard III was considered as experimental group and the students of another section i.e. section B of standard III from the same school was

considered as the control group. Initially, there were 30 and 35 students in experimental and control group respectively. On the basis of their pre-test achievement score in Environment, the experimental and control group were made equivalent. In these equivalent groups, 22 students from each group were considered as the sample for the present study. The sampling design can be presented diagrammatically as follow.

Figure 3.1: Representation of Sample Design Diagrammatically



3.4.0 TOOLS FOR DATA COLLECTION

The following tool was constructed by the researcher for the purpose of data collection for the present study.

Achievement test: An achievement test was prepared by the investigator to collect data i.e. pre-test, post-test and delayed post-test on ten chapters of the Environment subject of standard III. The achievement test was prepared on the basis of the competencies prepared by the Gujarat State Board of School Textbooks, Gandhinagar. Ten chapters out of 15 chapters were taken for the experimentation. These chapters

were, પ્રકરણ-૧ શિસ્ત અને સલામતી, પ્રકરણ-૨ આપણી સંસ્થાઓ, પ્રકરણ-૩ બાદગિત્તાદક, પ્રકરણ-૪ નાનું કુટુંબ-સુખી કુટુંબ, પ્રકરણ-૫ પદાર્થના ગુણધર્મો, પ્રકરણ-૬ સજીવ સૃષ્ટિ, પ્રકરણ-૭ વનસ્પતિ જગત, પ્રકરણ-૮ પ્રાણી જગત, પ્રકરણ-૯ આપણું શરીર, પ્રકરણ-૧૦ ફલ. The achievement test was prepared on these taken ten chapters. Weightage of Ten marks was given to each chapter in the achievement test in Environment. While preparing the achievement test following points were considered.

1. Items in the achievement were prepared according to the competencies specified by Gujarat State Board of School Textbooks, Gandhinagar.
2. One or more than one items were prepared for each competency.
3. The language of the items was simple and clear.

The researcher outlined a blue print for the construction of the achievement test in Environment taking into consideration the type and level of questions. The blue print was of 100 marks with all types of questions i.e. objective type, short answer type and essay type questions based on appropriate exposure of the content from all ten chapters and with coverage to knowledge, understanding, skill and application levels questions. Adapting the prepared blue print, the achievement test in Environment was constructed by the researcher. The constructed achievement test was shown to the ten teachers (experts) teaching environment in primary classes in Vadodara city for the purpose of its validation. Experts had examined the coherence between test items and respective competencies along with their language aspect and instructions. The suggestions of the experts were duly incorporated in the Environment achievement test. Hence the content validity of the achievement test was ensured. Determining the content validity of the Environment achievement test, the test was administered to 80 standard III students of M .S. Mistry Primary School at Vallabh Vidya Nagar and Mogar Prathmik Kumar Shala at Mogar twice with an interval of one month for pilot testing and finding the reliability of the test. In the pilot testing, the test was found usable in terms of the language, clarity of terms, difficulty level and the time limit. The reliability coefficient of the test using test-retest method was found to be 0.93 showing a high level of reliability. This test was given in two parts covering five units in each part. One hour was allotted for completing each part of the test; hence a total of two hours was given to complete both parts of the test. As the students were of very tender age the whole test was designed to be administered in two days of time i.e. one

part of the test in a day taking one hour. The prepared achievement test was administered thrice i.e. pre-test, post- test and delayed post-test on both control group as well as experimental group.

3.5.0 PHASES OF THE RESEARCH STUDY

The present study was conducted in three phases viz. phase I: development of cartoon and comics based multimedia package, phase II: experimentation or the implementation of the developed cartoon and comics based multimedia package and phase III: to see the effectiveness of the developed cartoon and comics based multimedia package, details of which is given as follow.

3.5.1 Phase I: Development of Cartoon and Comic Based Multimedia Package

The researcher with the help of eSense Learning Private Limited (Navneet Publication), Ahmedabad developed cartoon and comics based multimedia package to teach the selected sample of experimental group in the subject of Environment. In order to develop a multimedia package, the following stages of its development were followed.

Planning and Analysis of Content

The researcher along with the software experts of eSense Learning Private Limited (Navneet Publication), Ahmedabad made the planning and analysis for the development of cartoon and comics based multimedia package. A team of multimedia designers (animators) were involved in the project of developing the package. The researcher shared goal of creating the package and laid down the major objectives of the project with multimedia designers. The researcher, for the development of package took Standard III Environment textbook of Gujarati Medium, which was prescribed, by Gujarat Education Board, Gandhinagar. The researcher took the beginning ten Units from the text book. These Units were: પ્રકરણ-૧ શિસ્ત અને સલામતી, પ્રકરણ-૨ આપણી સંસ્થાઓ, પ્રકરણ-૩ ખાદ્યઉત્પાદક, પ્રકરણ-૪ નાનું કુટુંબ-સુખી કુટુંબ, પ્રકરણ-૫ પદાર્થના ગુણધર્મો, પ્રકરણ-૬ સજીવ સૃષ્ટિ, પ્રકરણ-૭ વનસ્પતિ જગત, પ્રકરણ-૮ પ્રાણી જગત, પ્રકરણ-૯ આપણું શરીર, પ્રકરણ-૧૦. The researcher did thorough

analysis of the text book content through content analysis, to acquire the content matter for the development of multimedia package and made the syllabus planning for the year on the basis of same. The draft of the syllabus plan along with the textbook was given to multimedia designers for them to go through its content for the initial phase and also for throughout the phase of development of package. Throughout the developmental phase there was continuous coordination between the researcher, and the technocrats of eSense Pvt.Ltd, Ahmedabad.

Drafting Script and Voice Recording

After initial planning and analysis of the content, the script for the multimedia package was drafted by the researcher by outlining the content by the usage of language that appeals the target audience. The text drafted for all these ten chapters was converted into voice recording by the people having good voice appropriate for the content.

Development of Video Features (Cartoons, Story Boarding and Animation)

The help of animation software like Page Maker, New indo, sound recorder, Flash and Photoshop etc. were used to prepare the multimedia package in digital form. It is usually a collaborative output of varied aspects in the form of audio, video, imagery, text for voiceovers and on-screen titles which were supposed to be bound everything together for each scene. For every scene the sketch of visual elements, the voiceover and the core content notes (mater of the text content) were created. Further visual aspects were developed, graphics were created, navigations were designed, information design was created, and photographers were directed regarding the correct shots, photography and images to be collected. Along with this the process of creation of animation video was carried on with the usage of different packages.

Assembling the Features

The text, sound and graphic materials those were prepared separately were assembled at this stage and assimilated in a multimedia package. The software used for development of multimedia package were Page Maker, New indo, sound recorder, flash and Photoshop. Presentation incorporated detail explanation of each topic with

an adequate amount of instances, illustrations and example with the help of cartoon features. Explanation incorporated in itself examples related to each topic with theoretical and structural aspects. Researcher with the support of technical team tried to take care of the principles of developing multimedia package while building up the multimedia package.

Attempt was made to avoid and exclude the usage of irrelevant extraneous material, sound, words in order to remove the negative effect of the same on learning by incorporating the use of proper words, sound and material in the package itself. The researcher tried to make best use of visual and auditory channels by explaining graphics with audio so that students will be interested and that would help in improving their learning. The researcher with the help of the support of technical team of eSense Pvt. Ltd. edited it many a times especially each and every chapter. Each chapter was edited separately. In fact, this was more a complex stage and most time consuming. After rounds of corrections and reviews and final edits, the package was developed. The developed package was shown to the experts in the field of environment, education, and technology. The suggestions from these subject experts were duly incorporated and the final version of the multimedia package was developed.

Tryout of the Multimedia Package

Pilot Study is a kind of user testing phase to ensure the validity and usability of the multimedia package. The pilot study of the multimedia package was done for a week on a group of standard III students of D.N. High School at Anand. The researcher observed students reaction, asked them few questions to see usability of the package and noted down the problems and errors on the basis of the reaction of the students. On the basis of the feedback and reaction of the students, the package was modified under the guidance of eSense Pvt. Ltd.. The soft copy of multimedia package is provided with the thesis.

3.5.2 Phase II: Implementation of the Developed Cartoon and Comic Based Multimedia Package

Taking permission from the sample school, the researcher implemented the developed multimedia package on the experimental group for a period of more than half

academic year during the academic year 2011-12 during their usual environment periods in the timetable. 62 periods of 35 minutes each were taken by the researcher for teaching the taken ten chapters of Environment with the help of the developed cartoon and comics based multimedia package. The researcher had prepared lesson plans for each and every unit following the standard lesson plan format prescribed by Gujarat State Education Board, Gandhinagar. Following the prepared lesson plan and using the developed cartoon and comics based multimedia package, the researcher taught all the ten chapters of the environment to the standard III students. In the first class the researcher along with the Environment teacher of the standard III explained the students about the new method of teaching. The researcher explained about some basic things of the cartoon and comics based multimedia package like, cartoon characters are imaginary figures and not real live figures, full concentration is required while watching cartoons and listening to their dialogues as questions will be asked on these things etc. The researcher introduced the topics by using questioning, showing pictures on slides, puzzles, activity like making paper fans and flowers etc. to create interest among students. After this introduction, the researcher provides enough time to watch the cartoon and comic based multimedia package. While watching the cartoon and comics based multimedia package, the researcher stop/pause the video on particular sub topics whenever needed, to ask questions for classroom discussion. The researcher used white board to write teaching points or important points during the teaching. After the completion of each unit the researcher evaluated the students by using questioning and activity. Here, the researcher shows the cartoon and comics based multimedia package without sound or mute mode and ask questions for evaluation. Short discussions were also done during evaluation to make students competent in that particular competency. In the last stage the researcher gives home task as per the requirements of the units to achieve the mastery of the students over different competencies. In the similar pattern, all the ten units were taught by the researcher to the standard III students. During the same time, the students of the control group were taught all these ten units by their environment teacher following their as usual traditional method.

Figure 3.2: The Researcher While Teaching Environment with the help of Cartoon and Comics Based Multimedia Package



Figure 3.3: Presentation of Cartoon and Comics Based Multimedia Package while Teaching Environment



Figure 3.4: Students Watching the Presentation of Cartoon and Comics Based Multimedia Package while Teaching Environment



Figure 3.5: Students Watching the Presentation of Cartoon and Comics Based Multimedia Package while Teaching Environment



3.7.3 Phase-III: To Study the Effectiveness of the Cartoon and Comics Based Multimedia package

Before the implementation of the developed multimedia package, the researcher administered the achievement test of Environment as the pre-test, on both the experimental and control group students. Similarly, after the implementation of the multimedia package, the researcher administered the same achievement test of Environment as the post-test, on both the experimental and control group students to know the effectiveness of the developed cartoon and comics based multimedia package. The researcher again administered the same achievement of Environment as delayed post-test, on both the experimental and control group students after a delay of 30days after the post testing to know the effect of the developed cartoon and comics based multimedia package in long run. The reactions of the students towards the cartoon and comics based multimedia package were collected with the help of discussion with the students after the implementation of the package.

3.6.0 DATA COLLECTION

The required data were collected with the help of the prepared achievement test in Environment. The researcher herself administered these tests personally on control group and experimental group students as follow.

- Pre-test was conducted with the help of achievement test in Environment prepared by researcher in both the groups i.e. control group and experimental group before the experimentation. Pre-testing was done to make the experimental and control groups equivalent.
- Post-test was conducted with the help of the same achievement test in Environment after the completion of the selected ten units of the Environment on both the experimental and control groups. Post -testing was done to know the effectiveness of the developed cartoon and comics based multimedia package in terms of the achievement of students in Environment.
- Delayed post-test was conducted with the help of the same achievement test in Environment after 30 days of the post-testing on both the experimental and control groups. Delayed post -testing was done to know the delayed

effectiveness of the developed cartoon and comics based multimedia package in terms of the achievement of students in Environment.

- The reactions of the students towards the cartoon and comics based multimedia package were collected with the help of discussion with the students after the implementation of the package.

3.7.0 DATA ANALYSIS

The collected data obtained through pre-test, post-test and delayed post-test were analyzed by employing quantitative data analysis techniques. Pre-test achievement data related to Environment was used to make control and experimental group equivalent. Mean, Standard Deviation, Standard Error of Mean and Mann-Whitney U-test were used to analyze the quantitative data collected through post-tests and delayed post-tests. The non-parametric Mann Whitney U-test was used to analyze the data as the sample was taken purposively as it is considered as the most powerful non parametric equivalent of t-test of parametric family. Data collected through discussion were analysed qualitatively. The detailed analysis and interpretation of the data is given in chapter IV.