CHAPTER 3

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3.1. Introduction

Research has been defined as the systematic and objective analysis and recording of controlled observations that may lead to the development of generalizations, principles or theories resulting in prediction and possibly ultimate control of events.

Planned efforts in education would mean identifying educational activities, ensuring their potential and evolving effective ways of their organization. Science and technology have influenced the every aspect of human life. Educational process does not remain untouched with the Science and technology. Educational technology implies a behavioural Science approach to teaching and learning in that, it makes use of pertinent scientific and technological methods and concepts developed in psychology, sociology, communication, linguistics and other related fields. It also attempts to incorporate the management principles of cost effectiveness and the efficient deployment and use of available resources in men and materials. It involves media, methods, equipments and resources.

In the present century when the extension of education to children and adults has lot of importance, many educational programmes are being established at various levels through various modes and channels. These channels include mass media like T.V., radio, video cassette recorder etc. Mass media consists of these channels. It is these media that speed up the

process of education by providing mass guidance at both urban and rural level and educationally over come the barriers of time, distance and illiteracy.

The scope of mass media in the development of human resources through distance education is unlimited and unparalleled not only in the situation where no other means of dissemination of knowledge is available, but as a supplement to the more formal means of instruction.

Television is one of the major media through which mass communication is carried out, and it can play an important role in imparting recent knowledge even to the people living in remote areas. Educational T.V. programme can play an important role in the instruction of students.

There is an urgent need to create awareness in primary school level students through a well planned educational activities with the help of video technology. The use of video instructional package in primary school level classrooms must be employed to enrich learning experiences of the students. Hence investigator developed and tried out video instructional package to compare the effectiveness in terms of the students achievement.

3.2. Rationale of the Study

The basic understanding about food and nutrition is one of the important parts of science education. Knowledge of food and nutrition must be started at an early age. Cultural patterns of human being also influence nutrition. We must change our faulty food habits and the rigid cultural

patterns. The simple and the best solution is to educate students in nutrition. Nutrition education is the area with regard to train the students from the point of view of communication methods related to the teaching of basic concepts of nutrition to primary and secondary level school children as well as the people in the community. Video technology offers considerable potential for improvement of the quality of education.

In the field of educational technology, various studies have been carried out in India and abroad to compare effectiveness of the different instructional package. Krishnan (1983), Vardhini (1983), Menon (1984) developed multi-media instructional strategies including audio-visual aids to teach different subjects at different level. They found that audio-visual aids were effective than other inputs such as lecture methods, team teaching, demonstration by teacher, non-projected aids etc. Sonar (1975) studied the use of film strips in teaching science. It was found that almost all topics in General Science syllabus at primary and secondary school level can be taught effectively with the help of film strips. Levy (1977), Kollof (1983), Sadam (1983) Hiryur (1986). Peterson (1987) developed video instructional packages for tryout and comparison with traditional method of teaching and found that teaching through video instructional package at various levels found effective and students in video assisted instruction group made significant long term positive gain in their attitude concerning relevant subjects.

Samples of the reported studies were related to post-graduate, secondary and primary level. Content of the above-mentioned studies were concerning audio-visual education, educational technology, educational television programmes for post-graduate students, physics-chemistry,

consumer education for secondary level school students and mathematics, environmental education for primary level school students.

Studies reviewed indicate that focus was on development of PLM and multi-media, studied pertaining to development of video instructional package were less in numbers. Even there is no study on development of instructional package on important topic like balanced diet.

For the present study, researcher had selected Junior Index of Motivation (J.I.M.) scale of measure the pupils motivation towards school. Socio-Economic Status (S.E.S.) scale to study the socio-economic status of the students and anxiety scale to measure the level of anxiety of the students. According to the researcher these variables influence the scholastic achievement of students. Though the researcher included these variables in his study, the studies which are presented below have considered only the relationship between S.E.S. and academic achievement as their foci. Satyanandam (1969) highlighted two sub-aspects of S.E.S. namely educational level of parents and economic status of parents. It was found that the children of graduate parents performed better than the children of matriculate parents. Chatterji (1971) investigated the effect of parents' income, parents' education, family size and general condition of the home upon scholastic achievements controlling the level of intelligence. The study demonstrated parents education was related to scholastic achievement. Salunke (1979) found that educational facilities and emotional happiness in the home were contributed positively to the pupils performance. Studying the relationship between socio-economic background and academic achievement of students of classes vi, vii and viii, Khanna (1980) established a

significant and positive relationship between S.E.S. and academic achievement.

Parent study purports to develop the software based on content points, concerning nutrition education, researcher found that there is lack of software in this field of primary education in our country. No doubt, television has great potential in instruction, but still it is not utilized to its optimum. This is because though there is a large television network in our country, there is a lack of indigenously developed software. Moreover the time allotted for the use of television for educational purpose is less. According to researcher video technology has high potential for imparting education effectively.

This study is in the direction to provide awareness regarding nutrition education through video instructional package and study its effectiveness in terms of achieving pre-decided instructional objectives.

The present study is essentially aimed at producing a video instructional package on balanced diet, meant for the Std. VII students and validating its effectiveness through consultation with experts and a tryout on a sample of students to study the comparison between the effectiveness of video instructional package over traditional method of teaching and to study the achievement of the students. For this the correlates of achievement like S.E.S., J.I.M., Anxiety and sex have also been studied.

3.3. Statement of the Problem

Evolving a video instructional package to teach balanced diet to the students of Std. VII and studying its effectiveness in terms of the students' achievement.

3.4. Objectives

The problem of the present study can be stated more specifically in terms of the following objectives:

1. To compare the achievement of students of high S.E.S. and low S.E.S. groups from urban area studied through video instructional package on immediate retention test and delayed retention test.
2. To compare the achievement of students of high S.E.S. and low S.E.S. groups from rural area studied through video instructional package on immediate retention test and delayed retention test.
3. To compare the achievement of students of high J.I.M. and low J.I.M. groups from urban area studied through video instructional package on immediate retention test and delayed retention test.
4. To compare the achievement of students of high J.I.M. and low J.I.M. groups from rural area studied through video instructional package on immediate retention test and delayed retention test.
5. To compare the achievement of students of high anxiety and low anxiety group from urban area studied through video instructional package on immediate retention test and delayed retention test.
6. To compare the achievement of students of high anxiety and low anxiety groups from rural area studied through video instructional package on immediate retention test and delayed retention test.

7. To compare the achievement of male and female students from urban area studied through video instructional package on immediate retention test and delayed retention test.
8. To compare the achievement of male and female students from rural area studied through video instructional package on immediate retention test and delayed retention test.
9. To compare the achievement of urban and rural students on immediate retention test and delayed retention test.
10. To compare the achievement of students studied through video instructional package and traditional method of teaching on immediate retention test and delayed retention test.
11. To compare the achievement of students of high S.E.S. and low S.E.S. on immediate retention test and delayed retention test.
12. To compare the achievement of students of high J.I.M. and low J.I.M. on immediate retention test and delayed retention test.
13. To compare the achievement of students of high anxiety and low anxiety on immediate retention test and delayed retention test.
14. To compare the achievement of male students and female students on immediate retention test and delayed retention test.
15. To study the interaction between area and methods of teaching on immediate retention test and delayed retention test.
16. To study the interaction between area and S.E.S. on immediate retention test and delayed retention test.
17. To study the interaction between methods of teaching and S.E.S. on immediate retention test and delayed retention test.
18. To study the interaction between area and J.I.M. on immediate retention test and delayed retention test.

19. To study the interaction between methods of teaching and J.I.M. on immediate retention test and delayed retention test.
20. To study the interaction between area and anxiety on immediate retention test and delayed retention test.
21. To study the interaction between methods of teaching and anxiety on immediate retention test and delayed retention test.
22. To study the interaction between area and sex of students on immediate retention test and delayed retention test.
23. To study the interaction between methods of teaching and sex of students on immediate retention test and delayed retention test.
24. To study the interaction between area, methods of teaching and S.E.S. on immediate retention test and delayed retention test.
25. To study the interaction between area, methods of teaching and J.I.M. on immediate retention test and delayed retention test.
26. To study the interaction between area, methods of teaching and anxiety on immediate retention test and delayed retention test.
27. To study the interaction between area, methods of teaching and sex of the students on immediate retention test and delayed retention test.

3.5. The Hypotheses

In order to make the study more scientific it is essential to formulate the hypotheses with care and caution. Investigator has found the null hypothesis as useful tool in testing the significance of differences. Hence the following null hypotheses were formulated:

1. There will not be significant difference between mean achievement of high S.E.S. and low S.E.S. group of students studied through video

instructional package in urban area on immediate retention test scores.

2. There will not be significant difference between mean achievement of high S.E.S. and low S.E.S. group of students studied through video instructional package in urban area on delayed retention test scores.
3. There will not be significant difference between mean achievement of high S.E.S. and low S.E.S. group of students studied through video instructional package in rural area on immediate retention test scores.
4. There will not be significant difference between mean achievement of high S.E.S. and low S.E.S. group of students studied through video instructional package in rural area on delayed retention test scores.
5. There will not be significant difference between mean achievement of high J.I.M. and low J.I.M. group of students studied through video instructional package in urban area on immediate retention test scores.
6. There will not be significant difference between mean achievement of high J.I.M. and low J.I.M. group of students studied through video instructional package in urban area on delayed retention test scores.
7. There will not be significant difference between mean achievement of high J.I.M. and low J.I.M. group of students studied through video instructional package in rural area on immediate retention test scores.
8. There will not be significant difference between mean achievement of high J.I.M. and low J.I.M. group of students studied through video instructional package in rural area on delayed retention test scores.
9. There will not be significant difference between mean achievement of high anxiety and low anxiety group of students studied through video

instructional package in urban area on immediate retention test scores.

10. There will not be significant difference between mean achievement of high anxiety and low anxiety group of students studied through video instructional package in urban area on delayed retention test scores.
11. There will not be significant difference between mean achievement of high anxiety and low anxiety group of students studied through video instructional package in rural area on immediate retention test scores.
12. There will not be significant difference between mean achievement of high anxiety and low anxiety group of students studied through video instructional package in rural area on delayed retention test scores.
13. There will not be significant difference between mean achievement of male and female students studied through video instructional package in urban area on immediate retention test scores.
14. There will not be significant difference between mean achievement of male and female students studied through video instructional package in urban area on delayed retention test scores.
15. There will not be significant difference between mean achievement of male and female students studied through video instructional package in rural area on immediate retention test scores.
16. There will not be significant difference between mean achievement of male and female students studied through video instructional package in rural area on delayed retention test scores.
17. There will not be significant difference in mean achievement on immediate retention test between urban and rural students.

18. There will not be significant difference in mean achievement on immediate retention test of students belonging to experimental group and control group.
19. There will not be significant difference between mean achievement on immediate retention test of high S.E.S. group and low S.E.S. group.
20. There will not be interaction between area and methods of teaching on immediate retention test scores.
21. There will not be interaction between area and S.E.S. on immediate retention test scores.
22. There will not be interaction between methods of teaching and S.E.S. on immediate retention test scores.
23. There will not be interaction between area, methods of teaching and S.E.S. on immediate retention test scores.
24. There will not be significant difference in mean achievement on delayed retention test between urban and rural students.
25. There will not be significant difference in mean achievement on delayed retention test of students belonging to experimental group and control group.
26. There will not be significant difference between mean achievement on delayed retention test between high S.E.S. group and low S.E.S. group.
27. There will not be interaction between area and methods of teaching on delayed retention test scores.
28. There will not be interaction between area and S.E.S. on delayed retention test scores.
29. There will not be interaction between methods of teaching and S.E.S. on the performance of delayed retention test scores.
30. There will not be interaction between area, methods of teaching and S.E.S. on delayed retention test scores.

31. There will not be significant difference in mean achievement on immediate retention test between high J.I.M. group and low J.I.M. group.
32. There will not be interaction between area and J.I.M. on immediate retention test scores.
33. There will not be interaction between methods of teaching and J.I.M. on immediate retention test scores.
34. There will not be interaction between area methods of teaching and J.I.M. on immediate retention test scores.
35. There will not be significant difference between mean achievement on delayed retention test of high J.I.M. group and low J.I.M. group.
36. There will not be interaction between area and J.I.M. on delayed retention test scores.
37. There will not be interaction between methods of teaching and J.I.M. on delayed retention test scores.
38. There will not be interaction between area, methods of teaching and J.I.M. on delayed retention test scores.
39. There will not be significant difference between mean achievement on immediate retention test between high anxiety group and low anxiety group.
40. There will not be interaction between area and anxiety on immediate retention test scores.
41. There will not be interaction between methods of teaching and anxiety on immediate retention test scores.
42. There will not be interaction between area, methods of teaching and anxiety on immediate retention test scores.

43. There will not be significant difference between mean achievement on delayed retention test of high anxiety group and low anxiety group.
44. There will not be interaction between area and anxiety on delayed retention test scores.
45. There will not be interaction between methods of teaching and anxiety on delayed retention test scores.
46. There will not be interaction between area, methods of teaching and anxiety on delayed retention test scores.
47. There will not be significant difference in mean achievement of male and female students on immediate retention test scores.
48. There will not be interaction between area and sex on immediate retention test scores.
49. There will not be interaction between methods of teaching and sex on immediate retention test scores.
50. There will not be interaction between area, methods of teaching and sex on immediate retention test scores.
51. There will not be significant difference in mean achievement on delayed retention test between male and female students.
52. There will not be interaction between area and sex on delayed retention test scores.
53. There will not be interaction between methods of teaching and sex on delayed retention test scores.
54. There will not be interaction between area, methods of teaching and sex on delayed retention test scores.

3.6. Explanation of the Terms

The following terms involved in the study have been explained with a view to making the work more meaningful.

1. Video Instructional Package: means an instructional material recorded on a video cassette containing the topic Balanced diet in Gujarati language for the students of Std. VII and which can be presented through a television.
2. Traditional Teaching: is a teaching method to teach relevant topic through chalk and talk method including presentation, explanation, questioning-feedback, exercise, and assignment.
3. Immediate Retention Test: An achievement test that was administered immediately after the treatment was called immediate retention test.
4. Delayed Retention Test: An achievement test that was administered after an interval of ten days following the treatment was called delayed retention test.
5. Effectiveness: is the amount of learning that is purported to have been produced in students by the implementation of particular instructional media. Here effectiveness is measured in terms of students performance on achievement test administered after the treatment.
6. Achievement: The word achievement was used to denote the performance of the students on achievement, expressed in terms of marks. In the present study the students' obtained terms of marks were considered as their achievement.
7. Area: means a region related to the sample students i.e. urban area, rural area.

8. Methods of Teaching: It means type of methods through which traditional teaching and teaching through video instructional package take place.

9. Socio-Economic Status (S.E.S.): The socio-economic status is defined to include the level of educational-cum-occupational and economic status of parents. For the present study S.E.S. was measured with the help of socio-economic status standardized scale that was constructed by A. S. Patel (1990).

10. Junior Index of Motivation (J.I.M.): It is related to the pupils' motivation towards success. In order to study the level motivation the investigator administered standardized tool namely junior index of motivation scale by Jack L. Frymier (1970). The scale was translated into Gujarati by Dr. D. B. Desai and it was revised by Jyotiben Christian (1990).

11. Anxiety: An anxiety is an intensely unpleasant state of tension rising from experiencing disapproval in interpersonal relations. It is a complex of many emotions as distinguished from a passing experience of anger, fear or grief. It is one of the reactions to a frustrating situation. For the present study investigator used standardized anxiety tool that was constructed by A. S. Patel (1990).

12. Sex: Being male or female related to the sample of the students.

3.7. Selection of the Sample

For the present study, in order to select a representative sample, investigator prepared a list of schools of urban and rural areas of

Vadodara district. There were 337 schools in urban and rural areas of Vadodara. Out of them 212 schools were from urban area of Vadodara and 125 schools were from rural area of Vadodara. The criteria for the selection of the schools were as follows:

1. School must be co-education.
2. School must have Gujarati medium.
3. School must have VIIth Standard.

Out of 337 schools in urban and rural areas of Vadodara, only 300 schools (out of them 190 schools were from urban area of Vadodara and 110 schools were from rural area of Vadodara) have satisfied the above-mentioned criteria for the selection of the schools. Only 10 schools (out of them 7 schools were from urban area of Vadodara and 3 schools were from rural area of Vadodara) had video provision.

Investigator selected 4 school randomly. Out of them, One school from urban area of Vadodara and one school from rural area of vadodara had facility to administer Video instructional package. The school having facility of Video was considered as Experimental Group. While remaining schools one from urban area of vadodara had no facility to administer Video instructional package. Out of these schools such each school was considered as Control Group. Both the schools were equal facilities so far as physical facilities are concerned. Students studying in both the schools having almost similar background. This investigator tried to control extraneous variables.

All the students belonging to each Experimental Group and Control Group in Urban area of Vadodara were considered for the study.

In the present study it was difficult to undertake all the schools belonging to urban and rural area of Vadodara. It was very expensive undertaking to study a sample that was scattered all around. It was convenient to study in naturally occurring clusters. That is the researcher selected a number of schools randomly from a list of schools of urban and rural area of vadodara and included all the students in these schools in the sample. Thus, the investigator selected kind of sampling it was referred to as Cluster Sampling. First of all, from each school all students if Std.VII were included .Out of them 10 students were absent in other tests. So the investigator was able to collect the exact data of only65 students of each school. Out of 65 students. 40 boys and 25 girls remained in the whole programme and able to provide data. Total number of boys from 4 different schools were 160 and total number of girls were 100. Thus total sample consisted of 260 students from 4 different schools. Out of 2 urban schools, students studying in Std.VII in one urban school namely Vasant Vidyalaya formed Experimental group and students studying in another urban school namely Swami Vivekanand Vidyalaya formed Control Group. Similarly students studying Std.VII in one rural school namely K.T. Patel Sarvajaneek Prathmik Vidyalaya formed Experimental group and students studying in Std.VII in another rural school viz. Shree Seva Samaj Sharda Mandir were Control Group. Following table represent the number of students in different groups.

Table 3.1

Distribution of Sample Students.[1s1]

	Experimental Group		Control Group		
	Urban Area	Rural Area	Urban Area	Rural Area	Total
Boys	40	40	40	40	160
Girls	25	25	25	25	100
Total	65	65	65	65	260

3.8 Research Tools

In order to test the above-mentioned hypotheses following standardized tools were used for the present study:

3.8.1. Junior index of motivation (J.I.M.) scale

3.8.2. Socio-Economic Status (S.E.S.) scale

3.8.3. Anxiety Scale

3.8.4. Achievement Test

3.8.1. Description of JIM (Junior Index of Motivation)

To measure the variable undertaken for the study, readymade standardized tool namely "Junior Index of Motivation Scale" was selected. Pupils' motivation towards success was measured by Junior index of

motivation scale prepared by Jack L. Frymier (1970) and it was translated by Dr. D.B. Desai and revised by Jyotiben Christain in (1990). This scale was tried on a large sample of secondary school pupils of U.S.A. and exploratory studies were also done to find out the behavioural characterstics of pupils with high motivation towards school. It was found that the pupils with low motivation towards school leave the school early, are pessimistic have negative attitude towards life are a gray on the school system. This establishes the utility of the tool to a large extent. The junior index of motivation scale is a reliable tool. It has been made use of in many of the Indian Studies. This scale was adopted for Indian conditions by Desai (1972) sand further used by Mubayi (1975) in her doctoral study. This tool consisted of eighty items. The initial area of concern were (i) attitude towards school, (ii) Values for education, (iii) feeling for other persons, (iv) concern for material things, (v) Sense of personal determination and (vi) attitude towards self.

Administration of the Junior Index of Motivation Scale

Investigator administered junior index of motivation scale from four different schools. Before administration of the junior index of motivation the investigator oriented the students in order to develop rapport. Investigator got complete junior index of motivation data of 260 students, out of 280 students.

Each student was asked to fillup the preliminary information. following instructions were given to the students, "you will be provided a test which consisted of 80 items. Against each item four point scale is

given viz. (i) agree (ii) strongly agree (iii) disagree (iv) strongly disagree. It is an instrument for showing your attitudes and values. It is an attempt to find out how you think and feel about a number of important topics. This is not an intelligence test nor an information test. There is no 'right' or 'wrong' answers. The best and only correct answer is your personal opinion.

Read each statement carefully and then indicate your agreement or disagreement by making it (✓) against each statement, in the appropriate space provided in the scale. You may have as much time as you need."

Scoring of Junior Index of Motivation

Junior index of motivation consisted of 80 items but the scoring was done only for 50 items. According to manual the scoring was as follows:

+ 1 Agree

+ 2 Strongly agree

- 1 Disagree

- 2 Strongly disagree.

First point out the filler items from the answers sheet. Remaining fifty items are scored accordingly to the key. This will be the raw scores. Raw scores were transferred to the true score by addition of 100 to each raw score.

This score is the students motivation score. Higher scores indicate higher motivation level and lower scores indicate lower motivation level. Junior index of motivation is shown in Appendix No. 1.

3.8.2. Description of Socio-Economic Status Scale

To study the socio-economic status of students socio-economic status scale constructed was used for the present study. The socio-economic status scale was standardized in Gujarati language by Patel (1988). This is used to measure the socio-economic status of the individual. It consisted of eight aspects like education, status in the society, influence of surrounding environment, nature, income, facilities at home, opinion of individual about socio-economic status and occupation. It was a reliable and valid tool.

Administration of Socio-Economic Status Scale

Investigator administer socio-economic status scale to four different schools. Before administration of socio-economic status scale the investigator oriented the students, "you will be provided a scale which consisted of number of items. It is an instrument for studying your socio-economic status. The information asked is related to your heads of the family, facilities at home etc. Read each item carefully and then indicate your response by putting tick mark (✓) in the space provided for it. You give your response honestly and frankly. Your response will be kept confidential."

In case if you have any difficulty, you are free to ask the question before you start responding.

Scoring of Socio-Economic Status Scale

Each response was given one mark. Each student's total score was found out. According to the scoring method highest score was 105. S.E.S. score is presented in Appendix No. 2. Investigator got complete socio-economic status data of 260 students.

3.8.3. Description of the Anxiety Scale

Anxiety is one of the reactions to a frustrating situation. Among the various measures of anxiety, Tylor's Manifest Anxiety Scale (TMAS) has its uniqueness. Recently standardized this (TMAS) has gained wide popularity in researches and clinical practices. Tylor's Manifest scale was adopted in the Gujarati language by Patel (1988). In the present study the same scale was selected. Anxiety scale was standardized by Patel (1988). This was used in some researches. This scale measures the levels of anxiety of the students. This scale consists of 40 items. It was in Gujarati language.

Administration of the Anxiety Scale

As the purpose of the research was to study the effect of anxiety on the achievement score of the student. To measure the level of the anxiety of the students, the following instructions were given to the students: "Generally we find that every one differs in temperament. Some are of a worrying nature whereas some others are relayed. With an intention to understand these types of nature, the following statements were made

considering a number of situations. You have to think carefully about each statement to decide whether the statement applies to you or not, and give a sincere response.

Against each statement a bracket was given if you agree with a particular statement, put a tick mark (✓) against it. If you do not agree or if a statement does not apply to put a cross (X) against it. This way you have to respond to each statement. This scale was prepared in order to know a person and to help him. There was no other purpose behind it. You are requested to answer frankly and without hesitation. The information would be kept strictly confidential.

If you have any doubt, you can ask before you start your work."

Scoring of Anxiety Scale

There were some items which are positive and some are negative in the anxiety scale. If the item is positive and it is right marked (✓) then one score was given. If the same item (positive item) is kept blank then it was given zero score. If the item is negative and it is right marked (✓) the zero score was given. If the same item (negative item) kept blank then it was given one score. The maximum score was 40.

Each student's total score of anxiety scale was found out by this method. Anxiety scale is presented in Appendix No. 3.

Investigator administered anxiety scale to 287 students from four different schools. But at the end investigator got complete anxiety scale data of 260 students. So investigator was able to consider score of 260 students only.

3.8.4. Achievement Test

There was no relevant test available to measure the achievement of the pupils regarding balanced diet. The investigator constructed an achievement test. First of all, the test was tried out on a small sample of 50 students from Vasant Vidyalaya, Raopura, Vadodara. The test consisted of questions belonging to the relevant aspects of balanced diet like carbohydrate, fat, proteins, minerals, vitamins, water, values of proper energy and growth in human life, sources of food, importance of nourishing food, selection of food, importance of milk, egg, components of food, preservation of food and qualitative aspects of balanced diet. The test consisted of 8 short questions, 4 matching type item and 4 fill in the blank type item and 4 answer in one word type questions. The test consisted of questions with objectives like; to educate students in nutrition education, to provide important messages to the students and to provide awareness concerning nutrition education.

Rigorous item analysis was not carried out but the items which were found very easy i.e. the item which was responded by more than 80% of students were dropped for the final test. The item which were found most difficult were further modified. Finally 20 items in the test were taken into consideration. Experts were asked to examine the test items with

respect to language, content and instructions. It was opined that test has high content validity since test covered all the content points.

Details about same has been presented in following tables:

Table No. 3.2

Weightage According to Sub-Topics

Contents	Marks	Weightage %
1. Components of Food	5	25
2. Fat	1	5
3. Protein	3	15
4. Vitamin and Mineral	3	15
5. Water	1	5
6. Balanced Diet	3	15
7. Believes About Food	3	15
8. Our Duties	1	5
Total	20	100

Table No. 3.3

Weightage According to Objectives

Objectives	Marks	Weightage %
Knowledge	12	60
Comprehension	4	20
Application	4	20

Table 3.4

Weightage According to Types of Questions

Types of Questions	Marks	Weightage %
1. Matching	4	20
2. Fill in the Gaps (Supply Type)	4	20
3. Answer in one word	4	20
4. Short Answers	8	40
Total	20	100

Table 3.5

Three Dimensional Chart

Objective Types / Questions / Contents	Knowledge				Comprehension				Application				Total
	1	2	3	4	1	2	3	4	1	2	3	4	
1. Components of Food	1	2	-	1	-	-	1	-	-	-	-	-	5
2. Fat	-	-	-	-	-	-	-	1	-	-	-	-	1
3. Protein	1	1	-	1	-	-	-	-	-	-	-	-	3
4. Vitamins and Minerals	1	1	1	-	-	-	-	-	-	-	-	-	3
5. Water	1	-	-	-	-	-	-	-	-	-	-	-	1
6. Balanced Diet	-	-	-	1	-	-	-	2	-	-	-	-	3
7. Believes about Food	-	-	-	-	-	-	-	-	-	-	2	1	3
8. Our Duties	-	-	-	-	-	-	-	-	-	-	-	1	1
	4	4	1	3	-	-	1	3	-	-	2	2	20
Total	12				4				4				20

As the purpose of the investigation was to study the effect of the video instructional package on the students' achievement the achievement test was administered to the students of Std. VII to measure their achievement offer the treatment. The following instructions were given to the students:

1. The purpose of this test is to test your knowledge regarding the balanced diet. This test is not your examination. You must answer every question with your own efforts.
2. You have to write answers in the attached sheet only.
3. Do not waste your time. Answer those questions first which you know very well and then respond yourself.
4. These are four questions in the test and all questions are compulsory. The achievement test was consisted of 20 items. For each correct answer one score was given. Maximum score was 20 for this test.
5. Formation of Groups: For forming the group in high and low level. 50th percentile was computed. The students whose score was above the 50th percentile were considered as high level group, and those students whose score was below 50th percentile were considered as low level group. Same has been presented in following table:

Table 3.6.

The Percentiles and number of students with their S.E.S. Test Score

Value	Frequency	Percent	Valid Percent	Cum Percent
15	1	.4	.4	.4
16	1	.4	.4	.8
19	1	.4	.4	1.2
20	1	.4	.4	1.5
21	2	.8	.8	2.3
22	6	2.3	2.3	4.6
23	3	1.2	1.2	5.8
24	3	1.2	1.2	6.9
25	10	3.8	3.8	10.8
26	4	1.5	1.5	12.3
27	5	1.9	1.9	14.2
28	4	1.5	1.5	15.8
29	12	4.6	4.6	20.4
30	7	2.7	2.7	23.1
31	3	1.2	1.2	24.2
32	13	5.0	5.0	29.2
33	4	1.5	1.5	30.8
34	3	1.2	1.2	31.9
35	15	5.8	5.8	37.7
36	8	3.1	3.1	40.8
37	3	1.2	1.2	41.9
38	12	4.6	4.6	46.5
39	9	3.5	3.5	50.0
40	8	3.1	3.1	53.1
41	6	2.3	2.3	55.4
42	14	5.4	5.4	60.8
43	5	1.9	1.9	62.7
44	7	2.7	2.7	65.4
45	10	3.8	3.8	69.2
46	9	3.5	3.5	72.7
47	5	1.9	1.9	74.6
48	1	.4	.4	75.0
49	7	2.7	2.7	77.7
50	7	2.7	2.7	80.4
51	6	2.3	2.3	82.7
52	5	1.9	1.9	84.6
53	5	1.9	1.9	86.5
54	4	.4	.4	86.9
55	2	.8	.8	87.7
56	1	.4	.4	88.1
57	2	.8	.8	88.8
59	1	.4	.4	89.2
60	4	1.5	1.5	90.8
61	1	.4	.4	91.2
62	4	1.5	1.5	92.7
63	1	.4	.4	93.1
65	3	1.2	1.2	94.2
66	2	.8	.8	95.0
69	2	.8	.8	95.8
72	2	.8	.8	96.5
74	1	.4	.4	96.9
75	1	.4	.4	97.3
76	2	.8	.8	98.1
80	1	.4	.4	98.5
82	2	.8	.8	99.2
84	2	.8	.8	100.0
TOTAL	260	100.0	100.0	

SES Test Score

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Below 50th %tile	1	130	50.0	50.0	50.0
Above 50th %tile	2	130	50.0	50.0	100.0
	TOTAL	260	100.0	100.0	

Valid Cases 260 Missing Cases 0

Table 3.7

The Percentage and Number of Students with their J.I.M. Test Score

Value	Frequency	Percent	Valid Percent	Cum Percent
100	5	1.9	1.9	1.9
101	8	3.1	3.1	5.0
102	7	2.7	2.7	7.7
103	8	3.1	3.1	10.8
104	10	3.8	3.8	14.6
105	17	6.5	6.5	21.2
106	4	1.5	1.5	22.7
107	10	3.8	3.8	26.5
108	7	2.7	2.7	29.2
109	10	3.8	3.8	33.1
110	6	2.3	2.3	35.4
111	17	6.5	6.5	41.9
112	8	3.1	3.1	45.0
113	6	2.3	2.3	47.3
114	7	2.7	2.7	50.0
115	11	4.2	4.2	54.2
116	6	2.3	2.3	56.5
117	3	1.2	1.2	57.7
118	2	.8	.8	58.5
119	1	.4	.4	58.8
120	7	2.7	2.7	61.5
121	3	1.2	1.2	62.7
122	5	1.9	1.9	64.6
123	9	3.5	3.5	68.1
124	4	1.5	1.5	69.6
125	2	.8	.8	70.4
126	6	2.3	2.3	72.7
127	5	1.9	1.9	74.6
128	3	1.2	1.2	75.8
130	6	2.3	2.3	78.1
131	6	2.3	2.3	80.4
132	4	1.5	1.5	81.9
133	5	1.9	1.9	83.8
134	1	.4	.4	84.2
135	5	1.9	1.9	86.2
136	2	.8	.8	86.9
137	1	.4	.4	87.3
138	5	1.9	1.9	89.2
139	4	1.5	1.5	90.8
141	1	.4	.4	91.2
142	1	.4	.4	91.5
143	1	.4	.4	91.9
145	2	.8	.8	92.7
146	3	1.2	1.2	93.8
147	3	1.2	1.2	95.0
148	1	.4	.4	95.4
150	1	.4	.4	95.8
151	4	1.5	1.5	97.3
155	1	.4	.4	97.7
156	2	.8	.8	98.5
158	1	.4	.4	98.8
162	1	.4	.4	99.2
166	1	.4	.4	99.6
178	1	.4	.4	100.0
TOTAL	260	100.0	100.0	
Missing Cases	9			

JIM Test Score

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Below 50th %tile	1	130	50.0	50.0	50.0
Above 50th %tile	2	130	50.0	50.0	100.0
	TOTAL	260	100.0	100.0	

Valid Cases 260 Missing Cases 0

Table 3.8

The Percentiles and Number of Students with their Anxiety Test Score

Value	Frequency	Percent	Valid Percent	Cum Percent
1	2	.8	.8	.8
4	1	.4	.4	1.2
5	2	.8	.8	1.9
6	10	3.8	3.8	5.8
7	9	3.5	3.5	9.2
8	16	6.2	6.2	15.4
9	23	8.8	8.8	24.2
10	14	5.4	5.4	29.6
11	17	6.5	6.5	36.2
12	29	11.2	11.2	47.3
13	20	7.7	7.7	55.0
14	23	8.8	8.8	63.8
15	13	5.0	5.0	68.8
16	16	6.2	6.2	75.0
17	13	5.0	5.0	80.0
18	9	3.5	3.5	83.5
19	9	3.5	3.5	86.9
20	9	3.5	3.5	90.4
21	6	2.3	2.3	92.7
22	5	1.9	1.9	94.6
23	2	.8	.8	95.4
24	4	1.5	1.5	96.9
25	2	.8	.8	97.7
26	1	.4	.4	98.1
27	1	.4	.4	98.5
28	1	.4	.4	98.8
30	2	.8	.8	99.6
38	1	.4	.4	100.0
TOTAL	260	100.0	100.0	
Missing Cases	0			

Anxiety Test Score

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
Below 50th %tile	1	143	55.0	55.0	55.0
Above 50th %tile	2	117	45.0	45.0	100.0
	TOTAL	260	100.0	100.0	
Valid Cases 260	Missing Cases	0			

Table No. 3.6 shows that the students whose score was 39 or less were considered as low S.E.S. group while students whose score was 40 or greater were considered as high S.E.S. group.

Table No. 3.7 shows that the students whose score was 114 or less were considered as low J.I.M. group while students whose score was 115 or greater were considered as high J.I.M. group.

Table No. 3.8 shows that the students whose score was 13 or less were considered as low anxiety group while students whose score was 14 or greater were considered as high anxiety group.

3.9. Development and Validation of Video Instructional Package

The present study is essentially aimed at producing a video instructional package in balanced diet for primary school students and validating through consultation with experts and tried out on a sample students. This study is in terms, to study the comparison between the effectiveness of video instructional package over traditional method of teaching and to study few correlates of achievement like J.I.M. anxiety sex and S.E.S.

Content aspects of the video instructional package included balanced diet with its relevant aspect like carbohydrate, fat, proteins, minerals, vitamines, water, values of proper energy and growth in human life, source of food, importance of nourishing food, selection of food, importance of milk, egg, components of food, preservation of food, interval between two

meals, important message to the students and quantitative aspects of balanced diet. On the basis of the relevant topics given in Std. VIIth Science textbook the content was organised for video shooting. Nutrition is one of the major aspects of the health of human beings. The primary school level students are not nutrition conscious. There was need to develop an awareness concerning nutrition education in them. Promotion of health and nutrition education encourages the students to alround development.

It was necessary to develop and tryout of video instructional package in the science subject at primary level. Hence investigator selected a unit 'Balanced diet,' for the present study.

In the present study the unit 'Balanced diet' was belonging to its instructional objectives.

In the present study the instructional objectives of the unit 'Balanced diet' were to create interest of the students in Science, to make students nutrition conscious, to educate students in nutrition, to promote their alround development.

Educational technology namely video instructional package was being developed with the aim of not only of making education more widely available but also of improving the quality of education which is readily available.

The first step in the development of the video instructional package was to prepare a script while preparation of script, visuals, narration, background music, content matter and the objectives of the present video instructional package were kept in mind.

The script was shown to the experts in the field of education, language and production of educational T.V. programmes, for validating purpose concerning its correspondence with the instructional objectives, logical sequence, language used in the narration, suitability of the visuals and sounds.

On the basis of the sources of data and the opinions of experts video instructional package was designed with the help of script, time factor, running explanation, material and background music, help of still photographs in colours was taken. Both indoor and outdoor shooting was done with the help of studio facility and professional video shooters.

In the present study, total cost for the development of the video instructional package containing the unit 'Balanced diet' was Rs. 11,500 that was expensed by the investigator. Total 8 hours per day, this way the indoor and outdoor shooting was taken for 5 days. Total 3 days were taken for the editing and sound procedure. Pre-development procedure of video instructional package is shown in Table 3.9 and Post-development procedure of video instructional package is shown in Table 3.10.

Table 3.9

Schedule for Pre-Development Procedure of Video Instructional Package

Sr. No.	Work Conducted	Days
1	Content Selection and Analysis Process	10
2	Content Preparation Process	20
3	Content Validation Process	30
4	Script Preparation Process	25
5	Script Validation Process	30
6	Preparation of Video Shooting	30
7	Video Shooting Process	05

Table 3.10

Schedule for Post-Development Procedure of Video Instructional Package

Sr. No.	Work Conducted	Days
1	Editing Process	25
2	Finalizing the Programme	05

3.10. Plan and Procedure of the Study

In the world and particularly in India, education is considered as an art, but since last century it is considered as social science. In the Report of Education Commission (1964-66) it is said that education should

be developed as social science. So it is better if education should develop as an art as well as a social science. Teaching is being scientific to meet the demands of the new age.

Science and technology have touch almost all the aspect of human life and teaching through video instructional package is an application of new age teaching method concerning the field of education. It is today's need that teacher made video instructional package is essential for effective teaching.

Evolving a video instructional package to teach balanced diet to the students of Std. VII and studying its effectiveness in terms of the students' achievement to study the problem, the experiment was conducted in four different primary schools from urban and rural area of Vadodara.

There are different methods of experimentation namely one group method, equivalent group method or parallel group and rotation group techniques and post-test only control group design. Out of these methods post-test only control group design has been decided for the present experiment. This method has been decided because study not only aims at producing a video instructional package but also aims at studying its effectiveness that is comparing the achievement of students learning by a video instructional package method with the achievement of students learning by traditional method.

Post-test only control group design is one of the simplest, yet one of the most powerful of all experimental designs. It requires two groups of subjects, each assigned to a different controls for all possible extraneous

variables and assures that any initial differences between the groups are attributable only to chance and therefore will follow the laws of probability. Two samples were selected from the desired population using cluster sampling method. The main advantage of this design is randomization, which assures statistical equivalence of the groups prior to the introduction of the independent variable. This design is useful in studies in which a pretest is either not available or not appropriate. It is useful in studies with primary grades, where it is impossible to administer a pretest since the learning is not yet manifest. Another advantage of this design is that it can be extended to include more than two groups if necessary.

It was essential on the part of the investigator to make sure of requirements to be fulfilled by the group. Before starting the experiment, the investigator took prime permissions of respective schools in which the experiment was going on.

For pilot study 30 students from Std. VII were randomly selected to tryout the video instructional package and to focus on the practicability, concerning teaching the balanced diet through video instructional package. The same students were used for the tryout of the achievement test.

These students were asked to sit comfortably in the class. They were given orientation concerning the video instructional package. They were informed they were taught regarding the balanced diet through video instructional package. In this way the rapport was establish. When they were eager to learn teaching started through video instructional package. They watched the educational programme with concentration. At the end of

the programme an achievement test, S.E.S. test, J.I.M. test and anxiety test were administered.

After conducting the pilot study, the sample from four different schools belonging to urban and rural areas was drawn for the present study and these students were divided into experimental and control group.

The teacher asked the students of control group to sit comfortably in the classroom. The following instructions were given to students belonging to control group. "All of you are so excited as you are specially called for. Do you know why are you called here? Do you know anything about balanced diet? Today, I am going to teach all of you about balanced diet. it is very essential for health. Every student must know about it. I am sure you will like to learn about it. When I will teach you, you may write down some points if you like. At the end of learning period, if you have any query about it you may ask me questions."

The teacher oriented the students in order to develop rapport. The teacher has taught about the balanced diet to the students approximately the same time. The content of the teaching and time were same for the both groups, only difference was in the treatment. As soon as the teaching was completed to the control group. The students were given the same all the tests and the data were collected from them and analyzed according to the scoring method.

One and the same teacher was engaged to teach balanced diet to the students of control group of urban and rural area schools.

The students belonging to experimental group were asked to sit in the classroom. They were asked to bring notebooks and pencils with them. The investigator asked number of questions to the students before starting the programme in order to develop rapport. After establishment of the rapport, the following instructions were given to the students, "All of you are so excited. Do you know why you are called here? Everyday you are learning by chalk and talk method in the classroom. But today you are specially called here to learn through T.V. I am sure you are interested in watching T.V. and daily you must be watching T.V. at home. Today you will be shown an educational video programme on T.V. Have you learnt anything about balanced diet in the classroom? If not, today you will learn about the balanced diet. You watch video instructional package carefully and if you feel like jotting down the points you are free to do it. In case if you like to talk with your friends, you are allowed to do it. In case do you have any query, you can ask the questions immediately after the programme is over. Do you have any doubt before I start T.V.?

According to the instructions given, the programme was shown to the students. As soon as the programme was over, the students were given the achievement test and the data were collected.

In order to study the level of socio-economic background, socio-economic status scale was administered to the students of control and experimental group of urban and rural areas. In the same way to study the level of motivation and level of anxiety, junior index of motivation test and anxiety test were administered to the students of control and experimental group of urban and rural areas and data were analyzed according to the respective manual. The detail schedule for data collection is presented in Table No. 3.11.

Table 3.11

Experimentation Schedule

Area	Group	Work Conducted	Days
Urban	Pilot Study Group	Orientation	1
		Treatment	2
		Achievement Test	1
Urban	Experimental Group	Orientation	1
		S.E.S. Test	1
		J.I.M. Test	1
		Anxiety Test	1
		Treatment	3
		Achievement Test	1
Urban	Control Group	Orientation	1
		S.E.S. Test	1
		J.I.M. Test	1
		Anxiety Test	1
		Treatment	3
		Achievement Test	1
Rural	Experimental Group	Orientation	1
		S.E.S. Test	1
		J.I.M. Test	1
		Anxiety Test	1
		Treatment	3
		Achievement Test	1
Rural	Control Group	Orientation	1
		S.E.S. Test	1
		J.I.M. Test	1
		Anxiety Test	1
		Treatment	3
		Achievement Test	1

3.11. Data Collection

After the administration of the achievement test immediately after the treatment, the data of urban, rural experimental group were collected, similarly the same test was administered after an interval of 10 days to the same groups and delayed retention score was obtained.

In traditional teaching group i.e. urban rural control group were given the achievement test immediately teaching about the 'Balanced diet' and data were collected. After an interval of 10 days same test was administered to the same groups in order to collect delayed retention score.

3.12. Data Analysis

Analysis of data means studying the tabulated material in order to determine inherent facts or meanings. It involves breaking down existing complex factors into simpler parts and putting the parts together in new arrangements for purposes of interpretation.

Analysis as a process enters into research in one form or the other from the very beginning - in the selection of the problem, in the determination of methods and in interpreting and drawing conclusions from data gathered. Data should be studied from as many angles as possible to find out new and newer facts.

The general rationale of analysis of variance (ANOVA) is that the total variance of all subjects in an experiment can be analyzed into two sources, variance between groups and variance within groups, variance between groups is part of the numerator in the F-ratio. Variance within is part of the error term or denominator as it is in the t-test. In analysis of variance as in the t-test, a ratio of observed differences/error term is used to test hypotheses. This ratio, called the F-ratio, employs the variance of group means as a measure of observed differences among groups. This means that analysis of variance is a more versatile technique than the t-test. Analysis of variance can test the difference between two or more means.

For the present study the analysis of variance was used to study the effect of video instructional package to teach balanced diet to the students of Std. VII and its effectiveness in terms of students' achievement. Analysis of variance is useful to study the main effects as well as interaction effects.