COMPARATIVE STUDY OF MULTIMEDIA APPROACH AND TRADITIONAL APPROACH ON THE ACHIEVEMENT IN SCIENCE OF GRADE VIII STUDENTS WITH DIFFERENT LEARNING STYLES

A

DISSERTATION

Submitted to

BARKATULLAH UNIVERSITY, BHOPAL

In Partial fulfilment of the requirement for the degree of

MASTER OF EDUCATION

SESSION: 2011-2012

GUIDE

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REGIONAL INSTITUTE OF EDUCATION
(NATIONAL COUNCIL OF EDUCATIONAL RESEARCH AND TRAINING)
SHYAMLA HILLS, BHOPAL - 462013, (M.P.)

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NCERT

REGIONAL INSTITUTE OF EDUCATION
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SHYAMLA HILLS, BHOPAL - 462013, (M.P.)

DECLARATION

I do hereby declare that the dissertation entitled "*Comparative Study of Multimedia Approach and Traditional Approach on the Achievement in Science of Grade VIII Students with different Learning Style*" has been carried out by me during the academic year 2011-2012 in partial fulfilment of the requirement for the degree of Maters of Education of Barkatullah University , Bhopal.

This study has been conducted under the guidance and supervision of Mr. Sanjay Kumar Pandagale, Assistant Professor, Regional Institute of Education Bhopal.

I also declare that the research work done by me is original and natural. This dissertation has not been submitted before either by me or by any other, for the award of any degree or diploma in any University.

Place: Bhopal

AJAY GAUDE

Date: 10.04.2012

C[illegible]TIFICATE

This is to certify that Mr. Ajay Gaude, student of Master Of Education (R.I.E.) course of Regional Institute of Education (N.C.E.R.T.) Bhopal, for the academic year 2011-2012 has conducted a research work entitled "*Comparative Study of Multimedia Approach and Traditional Approach on the Achievement in Science of Grade VIII Students with different Learning Style*" under my guidance.

This work done by him is original and worthy of presentation in partial fulfilment of the requirement of degree of Master of Education (R.I.E) of Barkatullah University, Bhopal (M.P.). The present study is outcome of his sincere efforts.

Guide

Pandagale 10.4.12

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AC WL T

It is matter of pride to be a student of Regional Institute of Education (NCERT), Bhopal and to have an intellectual and inspiring personality **Mr. Sanjay Kumar Pandagale**, Assistant Professor in Education of this institute as my Guide for conducting present research work. So I express my deep sense of gratitude to my guide Mr. Sanjay Kumar Pandagale for his constant inspiration, encouragement, guidance and supervision during the course of study which leads to the present work in complete form.

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INTRODUCTION

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

There is of course ,one thing about which we feel no doubt or hesitation : education is science based and in coherence with Indian cultures and values can alone provide the foundation as also the instrument for the nations progress , security and welfare.-**Indian education Commission.**

Science is one of those human activities that man has created to gratify certain human needs and desires. Disinterested curiosity has been the greatest motive power of scientific research the search for the truth became the dominant motive in the prosecution of science.

Teacher's main job is to teach, there is not a method or methods of teaching science which could suit all conditions. Children differ from family to family and from locality to locality even in respect of their mental and physical development. Thus a teaching method is largely governed by this three factors- environment, teacher and pupil.

In the present study the researcher has tried to compare two Approaches of teaching science i.e. Traditional Approach and Multimedia Approach of Teaching science.

Traditional method is one of the most popular methods of teaching in our schools. This is a teacher structured method and the students are just passive listeners most of the times very few teachers allow questioning during teaching, though some of them give some time to their students to ask question after the lecture.

Scientific knowledge is said to be double itself every decade. Simultaneously part of the old knowledge becomes obsolete. This

phenomenon has a direct effect on syllabi, curricula, text book etc in the formal education system.

Teaching method in order to be scientific have to be supplemented with scientifically innovated teaching aids utilized in a scientific manner to ensure objectivity in the pedagogy. Thus any type of teaching practice not practiced, and not programmed by teaching programmatically is far away from becoming scientific because such methods utterly held to serve objectivity which is the need of the day.

In earlier days calculator was a magic and that magic was not allowed in the classroom, the apprehension of those orthodox teachers was that it may turn the Childs creativity for learning mathematics and which may hamper his power of imagination and computational skills in long run.

The first computers being cautiously accepted, in fact some new curriculum began to appear centred around programming. Programming was going to be used to teach logic and logic was something that everyone needed, programming shifted from being on obscure college class to the state of art in elementary schools but for some reasons mainstream teachers were slow to adopt it.

1.1.1 GUIDELINES OF NCF 2005 REGARDING USE OF TECHNOLOGY

According to the guidelines of NCF 2005 generally technology has been used as a medium to disseminate and as a way of addressing the scarcity of good teachers, usually the consequence of poor recruitment and defective recruitment policies at the state level. Educational Technology (ET) which is used to redress the quality of teaching can only experience the disillusionment of the teachers with teaching. If the ET is to become means of enhancing curriculum reforms it must treat the majority at

teachers and children's not merely as consumers but also as an active producers. There must be widespread consultation regarding use of technology during development and implementation.

ET facilities needs to be used at all levels of schools , cluster and block resource centres, district, State and National level institution in order to provide hands on experience if using educational software along with hardware. Such experience provided to the children, teachers and teacher educators which could include something as simple as the audio recording of all interview with a village elder, to make a video film or video game for providing children more direct access to multimedia.

Practical knowledge and skills of using Information and Communication Technology (ICT) along with various hardware's allowing them to mix and make their own production and present their own experiences which could provide them with new opportunities to explore their own creative imaginations.

Such an experience of ET production rather than only watching and listening to programme in a passive way can lay foundation for far better utilization of the countries existing enormous ET facilities. Interactive Internet enabled computers rather than only CD based computers usage would facilitate meaningful integration of computers and remote areas by increasing connectivity and enhancing access to ideas and information. Such two way interactivity rather than one way reception through T.V. programmes minimizes the broad and potential use of ICT for its effective utilization in the classroom.

Rather than trying to reproduce and mimic classroom situations by teaching the textbooks or teaching the textbook or animating the lab experiments. ET could realize the far better potential if topics are taken

up but developed into a non did active explorations leaving learners free to relate to the knowledge web progressively and learn at their own level of interest. Such access to knowledge in regional languages is still very limited as is one of the main reason for the persistent and growing divide between learners from urban and rural schools and learners from regional language and English medium schools. The potentials of such encyclopaedias and documentaries for children's are still underdeveloped. Materials such as textbook, workbooks and handbooks for teachers can be designed with the awareness of the existing stocks of the good quality audio or video material and sites were extra resources are available on the Internet. Classics of cinema need to be made available through such measures. For instance a child is studying about village life should have access to Satyajit Rays Classics.

Integration of knowledge and experiences along these lines would take away the sense of burden and boredom that our present day education induces. In Science and Mathematics and in teaching children's with disability, the potential of ET is widely appreciated. It is important to realize this potential in achieving curriculum goals with more age specific planning on the use of ET.

So in today's context the Multimedia plays a very important role in providing better education which will help the students to enhance their learning.

1.1.2 MULTIMEDIA: MEANING AND DEFINITIONS

Multimedia (Lat. Multum + Medium) is the media that uses multiple forms of information content and information processing (e.g. text audio, graphic, animation, video interactivity) to inform or entertain the audience (user). Multimedia also refers to the use of electronic media to

store and experience multimedia content. Multimedia is similar to traditional mixed media in the fine art craft, puppets, role play but with a broader scope. The term rich media is synonymous for interactive multimedia.

1.1.3 TYPES OF MULTIMEDIA

Multimedia has been broadly classified into two types:

1. Linear
2. Non-linear

Multimedia may be broadly divided into linear and non-linear categories. Linear active content progresses without any navigation control for the viewer such as a cinema presentation. Non-linear content offers user interactivity to control progress as use with computer game or used in self paced computer based training. Non- linear content is also known as hypermedia content.

Multimedia presentation can be live or recorded. A recorded presentation may allow interactivity via a navigation system. A live multimedia presentation may allow interactivity via interaction with the presenter or the performer.

1.1.4 HISTORY OF THE TERM

In 1965 the term multimedia was used to describe the exploring plastic inevitable, a performance that combined live rock music, cinema, experimental lightning and performance art.

In the intervening forty years the world has taken on a different meaning. In the late 1970's the term was used to describe the

presentations consisting of multiprojector slide shows timed to an audio track. In the 1990's it took on its current meaning. In common usage the term multimedia refers to an electronically delivered combination of media including video, still images audio text in such a way that it can be accessed interactively. Much of the content on web today falls within this definition as understood by millions.

It is well observed that within the lifetime of today's students it will be common place for almost all educated people to create multimedia as well as the to use multimedia information that others prepare. This multimedia will either be for standalone playback as in CD on a PC or for distribution over the web. The advantage of learning or acquiring information for knowledge or entertainment by employing multiple sensory modalities hardly needs restating. However it is important to emphasize the advantages of actively creating multimedia in addition to passively using others creations. This means that student prepared book reports become multimedia book report, lab reports include video observation and audio and notion and the traditionally written homework become not just text but also includes audio, graphics and even video. It means that business people routinely add media to their memos, E-mail, and reports. Creating and making effective use of multimedia will substantially enrich people's personal lives. Few can doubt the enjoyment that multimedia E-mail delivers to grandparents that live remotely to their grand children. Many of today's students will work effectively in sue capacity with interactive, digital information in jobs that promise excitement similar to the present excitement.

The other vital areas where use of such multimedia programmes can further find their importance are:

- Qualitative response to the sensory perception of the pupils by fully or partially substituting the traditional practice of verbal teaching.
- Liberation of pupils from the compulsion of utilizing minimum time for curricular activities.
- Elimination of psychological alienation of pupils from the subjects of matters of school curriculum because of baring pedagogy like verbal teaching.
- Minimization of difference among high, medium and low achievers in particular areas.
- This is why it is worth noting a popular saying that.

"If I listen, I forgot
If I see, I remember
If I do I understand"

This saying signifies that pupils excel in an opportunity of doing things for themselves because of proper sense of perception. While only exhibition or display of things to them during teaching is still productive, the so called chalk and talk method alone proves to be of no use at all this is the importance of multimedia and more particularly the multimedia programmes.

1.1.5 EDUCATIONAL MULTIMEDIA PROGRAMMES AND TEACHING

Strictly speaking multimedia programmes are the essentials components of all methods of teaching. They are must in methods like demonstration, observation, project, experimentation, dramatization, discussion etc. While in method like lecture and problem solving they are felt optional.

So far as the conventional method like lecture and problem solving techniques are concerned use of multimedia programmes should not be optional at primary level and secondary level. Because the verbal delivery of lecture by the teacher often becomes like a constant hammering on the students and fails to respond or convince the sensory manipulative capacity of children.

Today children are compelled to invest maximum time for better understanding of different subject matters which would have been easier and less time consuming if they had been taught with the help of multimedia. Because of this the children are bound up to give many extracurricular and recreational activities which are essential for the total growth of their body and brain.

Absence of no use of multimedia in conventional methods of teaching over the time also separates the children psychologically from the subject matter of the curriculum, because without the multimedia the pedagogy becomes boring and burdensome to them.

Again teaching without multimedia programmes often produces differential impact on the children even in the same class. It may be beneficial to the high achievers while it is to the medium and low achievers. Thus the students of the same class are divided into groups according to their mental potential. There cannot be good sharing among themselves under such circumstances. Use of multimedia programmes not only solves the problem up to 90% but it can certainly minimize the difference to a great extent.

Today institutions where the use of multimedia programmes is an official culture of study, the children's are found to excel over others in all curricular and extracurricular aspects. The demand of such school among the parents is very high.

Extensive use of multimedia programmes in schools strictly speaking is not a matter of costs as much as it is not a matter of keen efforts by the teacher community , the school administration and after all government policy for this.

1.1.6 IMPORTANCE OF EDUCATIONAL MULTIMEDIA PROGRAMMES

Rapid change in the sphere of the society, economy, politics, science and technology are the characteristics feature of the modern world. This first change is mostly likely to catch teachers in its sweep for which it is hardly possible to retain all up-to-date information minutely. Therefore a teacher cannot be expected to become the fountain of all relevant knowledge in a given matter always.

The other factors which contain a teacher in becoming perfect substitute of treasure of information that can be effectively shared with all his pupils are:

- Explosion of knowledge, ideas and approaches in always all fields and emergence of newer subjects and concepts of teaching following researches on effective teaching.
- Overcrowded classrooms which are a characteristic feature of today's Indian schools.
- Vastness in the diversities related to the particular topic at global level.
- Lack of scope and opportunities to include all new developments in the textbook which are considered to be primary instructional materials in our country.

- Develop self confidence, creativity among the student at all levels of elementary schools.

In order to overcome the above said obstacles a teacher must be equipped with proper communication aids widely selected and carefully divided to cater the challenges of teaching in modern era. Multimedia programmes can provide the best answers to such problems.

1.1.7 CLASSIFICATION OF EDUCATIONAL MULTIMEDIA PROGRAMMES

All multimedia programmes can be clubbed into six groups i.e. they are: theoretical part, animation, graphical representation, activities related to the subject matter, quizzes dealing with the exercise, model question paper etc. All these multimedia components are in audio visual form. These six categories can be further explained as:

- The theoretical part in multimedia include all the subject matter related to the topic and this matter process through activity, for example: matter based activity, animation in audio visual form.
- The animation part in multimedia includes all activities in movable form.
- The graphical representation includes all diagrammatic part in graphical form to develop specific creativity among the students.
- In multimedia programmes special activities are given to make subject matter more meaningful and skilful.
- In multimedia programmes quizzes are also given based on the subject matter. These quizzes are interesting for the students to solve the problems related to classroom problems.

- In classroom students are more interested to see different types of questions. For this purpose model question paper is also give in Multimedia programme.

1.1.8 GENERAL ADVANTAGES OF EDUCATIONAL MULTIMEDIA PROGRAMMES

It should not be thought of that multimedia programmes occupy the place of teachers. Teacher's role is indispensible in teaching learning process. Hence the multimedia programmes are effective means for achieving desirable goals in teaching and learning. As an effective means their function is great and a teacher should be aware of their functions in order that he/she may use them as per need, purpose and situation. A few of them discussed here are as follows:

1. Educational multimedia motivate students and create interest

Multimedia programmes are motivators and it can be said that they are the energizer of teaching learning process. They stimulate the interest of the pupil to gain further knowledge. Interest is not on end in itself. Interest that has been created by means of audio-visual aids must act as a springboard for launching the students into a wide variety of learning activities. A teacher can use a variety of programmes. For making teaching interesting and dynamic, a multimedia programme not only classifies the concepts, ideas, points of topic but also bring home the perceptual panorama in a classroom.

2. Educational multimedia programmes modify attitude:

Attitude are said to be the learned dispositions to react to an environment in certain ways. Multimedia programmes create desirable environment in the classroom as to have student's attitude to react favourably to the lesson. Multimedia programmes modify

the attitude in various ways. The ways may be operant conditioning or information feeding of logical thinking or effective cosmological thinking or effective communication. Multimedia programmes do all functions effectively.

3. **Educational multimedia programmes provide variety of teaching:**

Traditional teaching creates drudgery in the classroom. It is monotonous. Change is the law of nature and thus everyone enjoys the variety. Teaching with different multimedia provides varieties to classroom activities. Students see, hear and experience varieties in teaching by which their readiness to learn is evoked.

4. **Educational Multimedia programmes provides integrated experiences varying from abstract to concrete:**

Multimedia programme materials supply a concrete basis for conceptual thinking giving rise to meaningful thoughts. Multimedia technology presents abstract information to the learners in various forms. On many occasions teachers had to prepare the students for experiences which are normally beyond the scope of their comprehension. Teachers in this complex age should be able to guide them to the vest reservoir of knowledge by making use of additional resources like animation, activities related to topic, graphical representation, charts in audio visual forms, globes in audio visual forms, maps quizzes dealing with exercise, model question paper etc. All these resources enhance the clarity of communication and increase the speed of comprehension.

5. **Educational multimedia programmes provides substitute for the direct contrast of the students with the environment.**

Multimedia programme materials enable to cut through the physical limit of time and space. A teacher may take his class by means of an appropriate motion picture or animation to any distant place and to meet the people who live there and to observe place and things. Search media may serve as a carpet for providing needed experiences. Motion pictures, computers and carefully prepared other activities sequences would be particularly valuable. These stimulate pupil's interest.

6. **Educational Multimedia programme material helps generalization.**

From study of the individual facts generalizations are made, text becomes one sided. But when textual facts are either accompanied activities through the multimedia or through direct experiences, generalizations takes place. Generalizations to help process of remembering and multimedia help in great deal.

7. **Educational multimedia programme materials results in greater acquisition of knowledge.**

The use of multimedia ensures greater acquisition knowledge of facts and ensures longer retention of information gained. Multimedia programme materials provide firsthand experience in a variety of ways and sometimes make the pupils actively participate. Multimedia technology provides pupil with meaningful source of experiences visual sources as well as many additional resources.

8. **Educational multimedia programmes provide opportunity to students in manipulative skills.**

Multimedia programmes can be handled by the students very easily if they have a small knowledge of computers. During the handling of computers student experience the fact in multimedia and manipulate the animation, activities, quizzes, pictures, and map in audio visual form. By this their natural desire and curiosity is satisfied.

9. Educational multimedia programmes bring in classroom atmosphere.

During the use of multimedia in the classrooms students are very often feel at ease. They talk, laugh, move about, question, comment upon and do mutually as they do outside. Besides student's activities, atmosphere of the classroom from the traditional is new one. Changed atmosphere bring change in attitudes of students towards learning and activity.

1.1.9 ROLE OF MULTIMEDIA IN SCIENCE EDUCATION

Children's in today's technological advanced society are growing in an educational environment that is struggling to overcome the teachers centred classroom in which students achievement is based on a system of memorization and recitation of the material contained in the single content area text book. In order for students to succeed in today's competitive society they must be given the opportunity and guidance to develop not only the knowledge skills but they should graduate from school with the ability to use that knowledge in the real world situations.

Teachers are slowly realising that traditional methods of teaching are no longer capable of providing students with an education foundation that is strong enough to withstand the pressure of such a technologically dependent society. Traditionally text books have been the focal point for most of the instructions that students incur during class lectures or others related educational activities. While listening to classroom discussion or working on class assignments most students either use their textbooks exclusively or copy word or they simply ignore the book because they feel it too complicated or confusing.

Many teachers, who feel the pressure of covering a certain amount of specific material in a given amount of time, often view this static one way instructional system involving textbook as an efficient way of covering the material. However what teachers make up for in materials covered and time, save their students loose in comprehension and relevance. One way educators are trying to improve instructional teaching methods by organising classroom activities around central themes or concepts called thematic units.

In an effort to reform science education educators have began to focus on effective science teaching. Schools and districts all over the States are searching for ways to revise current science curriculum to reflect a more student centred and meaningful approach to science instruction. Most educators are using views such as the ones above to develop a classroom atmosphere that will create a partnership between students, teachers and technology that will build on student's curiosity and creativity, emphasizes quality of understanding rather than quantity of information. Expose students to

concepts in a variety of contexts and make students aware of the social and historical influence of science and technology.

We know that in classroom there lies individual difference; everybody has different potential to learn and to achieve success in his/her academics. Each individual has his/her own unique learning style. Not all students have same learning style, they differ in their learning style and hence teacher should be aware about the learning styles of students to improve the teaching learning process.

1.1.10 LEARNING STYLES

The ways in which pupil gathers and interpret information can be surprisingly different. Research shows that individuals have different learning preferences and strength in how they take in and process information. These preferences are referred to as learning style and used to describe and hep in understanding the ways in which individual learn. Some learners may be very receptive to visual forms of information such as picture and diagrams while others prefer written and spoken examinations. Some people prefer to learn actively and interactively while others work better on their own. The idea of learning style usually refers to the preferred way of learning. Each individual has a natural inclination towards learning of some kind and that if preference is identified, teaching and learning experiences can be provided accordingly to help that person learn more effectively.

Teaching and learning practices always need improvement. Learning style is a concept that can be considered important in this movement. Learning style refers to an individual's characteristics way to refer to an individual's characteristics way to respond to certain forces in the

instructional environment. It shows the different ways in which person process information in the course of learning. It is an integral concept that bridges the personality cognition dimension of an individual. Many researchers have reported that learning style influence the degree of learning more than the intelligence (Gibson 1976; Dembo; 1977; Dunn & Dunn 1978: Leacock 1978)

Knowing a students learning style is one of the most valuable pieces of information for a teacher. Just as each person is an individual with his/her own voice, likes and dislikes, similarly individual student learn in a different ways which is unique in nature. The preferred manner that a student best learns retains and express information is known as his/ her learning style. Before examining the phrase learning style and its types, let us explain what is the key concept in learning style and what does the term style mean.

Style is the concept used in the field of fashion, art, sports and media. From this point of view an individual preference are central. When this concept is applied in educational setting it is seen that every student has his/her own learning style.

The phrase learning style has been explained in numerous ways by various thinkers as follows:

Claxton and Ralston (1978) defined learning style as a student's consistent way of responding to and using stimuli in the context of learning.

Schmeck (1983) states that the learning style is a student's own tendency to absorb a special learning strategy independent from the environment.

In the view of **Butler (1988)** learning style is a general concept which highlights the learning differences like the quality of an umbrella. Every individual has a different style. This can be in clothes worn, the music listened to and the colours selected by and the friends and social groups of the individual. Those different individual styles help the individual to identify a learning style.

In the view of **James and Gardener (1995)** learning style is the complex manner and condition in which learners most efficiently perceive, process, store and recall what they are attempting to learn.

According to **Kaplan and Kies (1995)** the learning style is an inborn characteristic which does not easily change and be developed during the life of individual through experiences. This affects the individual while walking, lying, sitting, speaking, playing and writing. Actions are made according to these characteristics. Besides these, learning styles has a sensory learning style (VAK), experiential learning style, learning styles based upon the brain preference including logical (mathematical), social (interpersonal), solitary (interpersonal). Though the learning styles are classified under various categories on the basis of characteristic features, here an attempt has been made to discuss one approach in detail. I.e. Visual-Auditory-Kinaesthetic (VAK) learning styles which are based on the student's neural system of learning.

1.1.11 VAK LEARNING STYLES

The Visual-Auditory Kinaesthetic (VAK) learning style model has been evolved since 1920s and has been adapted to suit a wide range of learning, behaviours and assessment situations. The three major modalities of this model have been defined as Visual (V), Auditory (A), and Kinaesthetic collectively known as VAK. VAK categorises the

student learning based on the neural system that is preferred when receiving the information. Each preferred style has several specific characteristics that contribute to learning. Description of each type is given below. An individual prefer to use this specific characteristic during learning.

1. **Visual/spatial learners**

   Visual/spatial intelligence is the ability to hold the world visually in the mind. A visual/spatial learner has the ability to know where they are in space. This kind of student finds it easy to visualise the things as they were only observing and talking up different positions in a virtual reality realm in their own world. This type of learning is common to those in arts and science.

Visual style characteristics

The learners:

- Prefer to see information and instruction, they may forget the information they have heard.
- Enjoy writing, drawing and imaging.
- Prefer to create their own notes and to read for themselves.
- See pictures and images when they remember things. May use mind maps.
- Prefer to see the whole of concept rather than the individual parts.
- Really heavy on their senses and enjoy working in a groups where they observe non-verbal cues from colleagues. They learn through role play and watching others perform or demonstrate skills.
- Work well in less formal learning situations rather than the traditional classroom.

- May use colour coding, diagrams and symbols to revise and help recall or by writing pieces of text or other information in their own style.
- Are usually organised and observant but can be distracted by noise or movement of others when they are trying to concentrate.

The learners are likely to be regular library users. They may prefer written resources to electronic journals and websites, indeed they may print information from these sources so that they mark and edit them to make their own notes.

VERBAL/AUDITORY:

A verbal/auditory dominant student understands information best when presented in oral language format. They benefit from the traditional structured classrooms settings where the instructor lectures and class participates in discussions. They also can learn quite effectively with audio media such as auditory books on Cds. An auditory learner can usually hear the way someone told the information when trying to remember something. These learners benefit greatly when they interact with others in a group discussion.

Auditory style characteristics:

The learners:

- Follow verbal instructions readily
- Prefer to hear information rather than to read it.
- Tend to conceptual in their learning. They need to understand small parts and the relationship between the parts to create wider picture and deeper understanding.
- Is skill oriented and memorize the task well.

- May be reluctant to make their own notes or conduct personal research.
- Use oral expression well but may have difficulty in communicating through writing. They may prefer delivering presentation to written report.
- Recall accurately what has been spoken but may get little benefit from additional reading or writing out facts.
- Enjoy explaining their learning to others in a group.
- Are talkative and learn from discussions.
- May be confused by directions and have little spatial awareness.

KINAESTHETIC /TACTILE STYLE:

Tactile kinaesthetic learners retain information more readily when physically engaged in a hand on activity. They do not usually benefit from traditionally structured classroom, where students stay seated most of the time. However in a lab setting where they are allowed to touch and manipulate various learning materials they will excel. Thus since the tactile kinaesthetic students learns best when they are physically active; sitting in a lecture course can feel like gruelling work.

Characteristics of kinaesthetic/Tactile style learner:

The Leaner:

- Likes to explore concepts through experimentation.
- Enjoys making things and learning through practical activities.
- Learns best in laboratory workshops, gymnasium, simulated or real environments such as placements where they can be active and gets hands on experience.

- Needs little verbal and written instruction; is confident to explore through hands on experiences.
- Can do, explain and demonstrate to others readily. They may enjoy presentation and include use of models and demonstrations in these events.
- Remembers by auditory or visual means.

1.1.12 IMPORTANCE OF LEARNING STYLE IN TEACHING AND LEARNING

Individual should know what their own learning styles are and what characteristics their style has and they should thereby behave according to this style. Most students have elements of more than one learning style. They may have preference for one way of learning but also may learn in other ways although it may be harder to do so. Knowing ones learning style may help students develop strategies to compensate for weakness and build on strengths. It is important that individual receives education in areas suitable for their learning styles. A person educated in an area having no relationship to his/ her learning style may lack confidence and he/she may be less successful, he/she may as a result become frustrated. When the learner takes the responsibility of his/ her own learning, he/she attributes meaning to the process of learning. He/ she develops an understanding of his/ her own form of learning style and such more satisfied with the environment he/ she interacts with.

Every opportunity for learning is a chance for him/her. It is in the leaner's hand to use different ways and develop the learning styles to some extent. Learning style is important for many reasons; however there are three vital ones. First of all peoples learning style will vary

because everyone is different from one another naturally. Secondly it offers the opportunity to teach by using wide variety of methods in an effective way. Sticking to just one model unthinkingly will create a monotonous learning environment, so not everyone enjoys the lesson. In other words learning and teaching will be just words and not rooted in the reality. Thirdly we can manage many things in education and communication if we really recognise the groups we are called to. Of course we may not know every detail; however being aware of students learning styles will help us to regulate our lessons appropriately and according to the condition.

To address the concern, faculty members should understand their students learning's styles preferences. Catering to students by means such as matching teaching with students learning style is viewed as a way to attract and retain students. Identify the individual students learning style as it enables the educator to prepare appropriate curriculum as well as the more effective lesson plans thus presenting the information in a manner most beneficial for the students learning. For example if a first grade student is a tactile or kinaesthetic learner which means that the child needs to touch or move for the learning ,this student would most likely perform poorly in a traditionally structured classroom setting. A tactile learner needs to touch , to see and would be greatly benefited by utilizing mathematics manipulative such as dominos or cubes for learning addition, subtraction, even multiplication and even division. Likewise a kinaesthetic learner must have a method of application involving action or physical movements such as highlighting or colouring reading materials or playing counting games that involve jumping when learning maths.

1.2 NEED AND SIGNIFICANCE OF THE STUDY

In today's concern teaching is child centred as to minimise the gap between student and the teacher adopting different methods of teaching according to the child's style of learning improves the teaching learning process and also gives us chance for the better communication with the child. All the activities in Approach are in accordance with the need of the student so it makes teaching as well as learning interesting for the child and a teacher.

The primary objective of the study was to determine if there is a significant difference in the achievement of VIIIth grade students when teaching strategy is matched to their learning style. As a secondary objective it is aimed at the educating learners in the process, how to identify conditions suitable to their optimal learning and take advantage of this. This was done by exposing the learners to available literature on the learning style approach.

As outlined before, research articles by Felder (1996), Zhenhui (2001), Garland and Martin (2003) and others expound the benefits of Multimedia Approach. Another purpose of this study was therefore, to add to the existing body of knowledge pertaining to this subject.

Many researchers have been done concerning pupil's achievement and performance but very few researches have been done regarding Multimedia Approach, learning styles and Achievements in science subject and this made me to take up the present research study.

1.3 STATEMENT OF THE PROBLEM

The statement of the present study is:

COMPARATIVE STUDY OF MULTIMEDIA APPROACH & TRADITIONAL APPROACH ON THE ACHIEVEMENT IN SCIENCE OF GRADE VIII STUDENTS WITH DIFFERENT LEARNING STYLES

1.4 OPERATIONAL DEFINITIONS OF THE KEY TERMS

Before proceeding further in any research the researcher should have a clear understanding about the problem. The terms such as Achievement, Learning styles, teaching styles needs special description as it may convey different meaning to the different people. This may result in an ambiguous understanding of the terms. Therefore to overcome this problem the researcher made an attempt to define the terms operationally so as to avoid confusion. In this study the researcher has given the understanding of the terms.

1.4.1 TRADITIONAL APPROACH OF TEACHING

Methods and techniques of teaching as auto merrily used by regular teachers. It is use of lecture method.

1.4.2 MULTIMEDIA APPROACH OF TEACHING

It is defined as the use of various Media techniques like T.V.films, videos, Radio programmes, programmed learning materials, news papers modules, motion pictures etc.

1.4.3 ACHIEVEMENT IN SCIENCE

In this study the science Achievement is operationally defined as the score obtained by the students on the science achievement test developed by the investigator.

1.4.4 LEARNING STYLE

A learning style is the more or less consistent way in which a person perceives, conceptualizes, organises and recalls information.

1.5 OBJECTIVES OF THE STUDY

1. To identify the different Learning Styles of Grade VIII students.
2. To compare the Achievement in Science of Grade VIII students taught by Multimedia Approach and Traditional Approach.
3. To compare the Achievement in Science of Grade VIII Boys taught by Multimedia Approach and Traditional Approach.
4. To compare the Achievement in Science of Grade VIII Girls taught by Multimedia Approach and Traditional Approach.
5. To compare the Achievement in Science of Grade VIII Visual Learners taught by Multimedia Approach and Traditional Approach.
6. To compare the Achievement in Science of Grade VIII Auditory Learners taught by Multimedia Approach and Traditional Approach
7. To compare the Achievement in Science of Grade VIII Tactile Learners taught by Multimedia Approach and Traditional Approach

1.6 HYPOTHESIS OF THE STUDY

1. There is no significant difference in Achievement of Grade VIII students taught by Multimedia Approach and Traditional Approach
2. There is no significant difference in Achievement of Grade VIII Boys taught by Multimedia Approach and Traditional Approach.
3. There is no significant difference in Achievement of Grade VIII Girls taught by Multimedia Approach and Traditional Approach.
4. There is no significant difference in Achievement of Grade VIII Visual Learners taught by Multimedia Approach and Traditional Approach.
5. There is no significant difference in Achievement of Grade VIII Auditory learners taught by Multimedia Approach and Traditional Approach.
6. There is no significant difference in Achievement of Grade VIII Tactile Learners taught by Multimedia Approach and Traditional Approach.

1.7 DELIMITATIONS OF THE STUDY:

1. The study is delimited to North Goa District of Goa state only.
2. The study is delimited to English medium school only.
3. It is further delimited to students studying in VIIIth Std. Only.
4. The study is delimited to the schools affiliated to Goa Board of Secondary Education.
5. This study is delimited to the science content only.
6. The study is delimited to one school only.

In the present chapter we have discussed about the introductory part of the proposed research study which includes introduction to Multimedia, its types, guidelines given by NCF 2005 regarding use of ET, advantages of Multimedia in science education, Learning styles and its importance in teaching learning process, Need & significance of the study, statement of the problem, Objectives, hypothesis and Delimitations of the study.

In next chapter i.e. Review of Related Literature, we are going to deal with different reviews of related literature concerning to the present research study.

CHAPTER-II

REVIEW

OF

RELATED LITERATURE

CHAPTER 2

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

Research takes advantage of the knowledge which has accumulated in the past as a constant human endeavour. It can be never be undertaken in isolation of the work that has already been done on the problems which directly or indirectly related to the study proposed by the researcher. A careful review of the research journals, books, dissertation thesis and other resourceful information on the problem to be investigated is one of the important steps in planning of any research.

2.2 MEANING AND IMPORTANCE

Human Knowledge has three phases: preservation, transmission and advancement. Practically all human knowledge can be found in books, journals and papers. Before taking up specific research project in the development of the discipline, the researcher must be thoroughly familiar with previous theory and research. To assure this familiarity every research project in the behavioural science has to review the available theoretical and research literature. These are the some of the reasons for review of related literature:

1. Indication of direction
2. Pre-request to plan of study
3. Avoid duplication
4. Sources of Problem of Study
5. Finding gaps
6. Clear picture of the problem

7. Determining meaning and relationship among variables.

2.3. REVIEW OF RELATED LITERATURE

Basu (1981), conducted a study entitled, Effectiveness of multimedia Programmed materials in the teaching of the physics, Ph.D. (Edu.) Kal.U.

The main purpose of the study was to wake an appraisal of the relative effectiveness of multimedia programmed learning on the criteria of immediate achievement and retention of group of subject of three level of ability.

Objectives of the study were:

1. To develop programmed learning material on Light in school on four different style semi- programmer programme and hybrid programme.
2. To develop instructional material for the strategy programme of class teaching and to study the effectiveness.
3. To develop programme package using each style of programme in multimedia conjunction with audio video media.
4. To compare the relative effectiveness of different strategies of instruction employing multimedia programmed material and delayed retention.

Major findings of the study were:

1. There was a significant difference among the different strategy means the criterion on overall achievement. It was found that on the criterion of overall achievement the multimedia programmed instruction was better than the strategy of programmed learning. The multimedia programmed instruction was better than the multimedia semi-programmed instruction.

2. The multimedia branching programmed instruction was better than the multimedia linear programme and the multimedia hybrid programme was better than the multimedia branching programme instruction. The strategies of multimedia programmed instruction enabled learner to reach the level of mastery learning.

3. It was found that a significant difference existed in the achievement through the different strategies due to difference in ability.

Kapadia (1981), The impact of television on students learning on exploration, Ph.D. (Edu.), Kal.U. The study focuses on the impact of television on students learning.

Objectives of the study were:

1. To find out the comparative effectiveness of the telefilms and the tape chart programmes and to get the opinion of the students and teachers regarding the television programmes.

Major findings of the study were:

1. Significant improvement has been seen in achievement after the treatment of the telefilms. It was found effective for self learning in both the groups. It showed significant difference in the spot test as well as the retention test scores.
2. The telefilms were found more effective in both groups than the tape chart programmes in terms of achievement scores as well as the retained knowledge.
3. It was also found that television was not considered as the obstacle in the study.
4. Seventy percent of the student pinioned that television motivated self learning.

5. Television had no adverse effect on the attendance of students in the school. The social relations of the majority of the students had been disturbed by the use of television.
6. Majority of the students felt that educational interest was satisfied by the television.

Krishnan (1981), Development of multimedia packages for the teaching of course on audio visual education.

The objectives of the study were:

1. To develop a multimedia package for teaching a course on audio visual education for the instructor training programme.
2. To find out the effectiveness of multimedia packages in terms of achievement of trainees and change in attitude of the instructor trainees towards the multimedia package.
3. To study the feasibility of the multimedia packages in terms of time and cost for the instructor training programme.

Major findings of the study were:

1. 98% of trainees obtained more than 80% of marks on the final post test.
2. The mean percentage of the post test scores varied from 81.41% to 90.46%.
3. The mean gain in the total scores for all the modules was found to be significant at 0.01 levels.
4. The feasibility of the multimedia package was established in terms of cost involved in the reproduction of the various resource materials and time scheduling in an actual institutional set up.

Man (1981), An experimental study of the relative effect of the effect of three methods of instruction – Exposition method, programmed learning method and Multimedia method. Ph.D.Edu. Kur, Univ.

The objective of the study was to see the relative retention in learning through these three methods in science education and to develop multimedia test on the programmed content.

The major findings of the study were that multimedia method was more effective and retention was also higher in it.

Passi & Pal (1983) had conducted a research for preparation of multimedia based instructional module for developing the skill observing classroom behaviour through Flanders interaction analysis category system. It aims to study the effect of multimedia instructional module for developing the skill of observing classroom behaviour.

Kothari (1985), An investigation into efficacy of different instructional media in teaching of mathematics to the pupils of class IX in relation to certain variables, Ph.D. Edu.SPU.

The objectives of the study were:

1. To investigate the efficacy of instructional media (visual projection) over instructional media.
2. To investigate the efficacy of visual projection over programmed learning material.
3. To investigate the efficacy of experiments and activities over programmed learning material.
4. To investigate the efficacy of visual projection over the traditional method of teaching.
5. To investigate the efficacy of activities and experiments over the traditional method of teaching.

6. To investigate the efficacy of programmed learning material over the traditional method of teaching in terms of achievement.

Major findings of the study were:

1. Visual projection activities and experiments were equally effective for unit 1 while visual projection was superior to the activities and experiment approach.

Noemi (1985), has conducted a study to see the impact of technology o the enactment of inquiry in a technology enthusiast six grade science classroom participant that is 42 students (38% female) enrolled in two sections of the classroom and taught by technology enthusiast instructor. Data were collected over the period of 4 months during which several inquiry activities were conducted, some of which were supported with the technology. Non-participant classroom videotaping and semi-structured and critical incident interviews were used to collect the data. The results indicated that the technology in use worked to restrict rather than promote inquiry in the participant classroom.

Desai (1988), had studied the efficacy different instructional media in the teaching of science to the pupils of class VIII in relation to certain variables.

The major objectives of the study were:

1. To compare the achievement of pupil in science learning through different instructional media and traditional way of teaching.

2. To compare the achievement in pupil in science learning through programmed learning approach and the traditional way of teaching.

The major findings of the study were:

That the programmed learning approach was more effective than the traditional way of teaching science. He had also concluded that in teaching science, the experimental approach was the most effective approach of all approaches.

The major educational implications of the study were that there is not only one method of teaching science, there are many methods. The teacher should be experimental minded and should use different approaches in the light of different objectives, media are effective in science education.

Zhenhui (2001), illustrates how the traditional learning styles patterns of East Asian students are probably influenced by their culture and they thus experience problems when exposed to a teacher whose teaching style is completely at odds with how they have traditionally been learning. He provides an example of a committed American teacher who could not understand her students' negative responses to her kinaesthetic, global style of teaching until she realized that they were in herently introverted, analytical and reflective learners.

Ford & Chen (2001), explores the relationship between matching and mismatching instructional presentational style to students' cognitive style in a computer based learning environment. It involved seventy three post-graduate students creating web pages using HTML where one group received instructional material that matched their cognitive styles and the other group was mismatched. Results showed that performance in matched conditions were significantly higher than in mismatched conditions.

Garland & Martin (2005), investigated whether gender and learning styles play a role in how an online course should be designed. In their study, the Kolb learning style inventory was used to determine learning style preferences of 168 students. Some of the students were exposed to traditional face-to-face courses, and others were exposed to courses taught online that were matched to their learning preference. The population was also divided by gender to see whether this was also a factor. The results of this study highlight a number of points (Garland & Martin, 2005: 77).

2.4. CONCLUSION OF REVIEW OF RELATED LITERATURE

By studying the above researches it gets clear that though studies have been conducted in the field of multimedia especially at elementary level in a broad sense. Whatever research has been done is not directly related with the present study. There are many researchers which have been conducted to see the effect of different teaching methodology on the achievement of the students, but no research study has been done relating to teaching methodology, learning style and Achievement.

Hence above mentioned researches are the bases for the present study.

In the present chapter we have discussed about the very important part of the research i.e. Review of related literature. In this chapter many reviews have been given which are directly or indirectly related to present research study. In next chapter we will discuss about the Methodology which is followed for carrying out the present research study.

CHAPTER-III

METHODOLOGY

CHAPTER

METHODOLOGY

3.1 INTRODUCTION

Research methodology involves systematic procedures by which the researcher starts from initial identification of the problem to it final conclusion. The role of methodology is to carry on the research work in scientific and valid manner. This chapter deals with the method employed to achieve the objective of the study.

In this chapter the methodology steps such as selection of the sample, variable of the study, design of the study, administration of tool and statistical techniques used for the data analysis have been discussed.

On the basis of research findings certain generalization can be made which will provide insights towards the study effect of multimedia approach of teaching and learning styles on academic achievement of the students.

This chapter deals with the methodology to achieve the objectives of the study mentioned in the chapter one. Keeping in view the nature and objectives of the study appropriate sample was selected and tools were developed or adopted.

The purpose of educational research cannot be completed without a detailed design of investigation. Research methodology involves a systematic procedure which starts from the identification of problem to analysing the obtained data.

This chapter deals with:-

1. Research Design
2. Sample
3. Administration of data gathering device
4. Scoring
5. Statistics used

3.2 RESEARCH DESIGN

The research design is the detailed plan of an investigation. In fact it is the blue print of the detailed procedure of testing the hypothesis and analysing the obtained data. The research design may be defined as a sequence of those steps taken ahead of the time to ensure that the relevant data permits objective analysis of the different hypothesis formulated with respect to the research problem.

Research design refers to the systematic scheduling of the time in which treatment is administered to the students and at which observations are made on the performance of the subject. This careful scheduling of the treatment and observation will be very helpful in reducing the threats to the internal validity of the research.

3.3 DESIGN OF THE STUDY

The design followed for the present study is experimental two group design. The input given to both the groups were the two approaches of teaching science. The investigator used post test design for control and experimental group to find out the effect of multimedia approach on achievement of VIII grade students.

Two groups of the students were equated on the basis of their academic achievement marks. One of the group called the experimental group was exposed to the multimedia approach of teaching and another group called control group was exposed to the Traditional approach of teaching science. The post test had taken to see the achievement of the students taught by two different approaches of teaching science. The whole procedure of the research design is shown in the fig. 3.3.1.

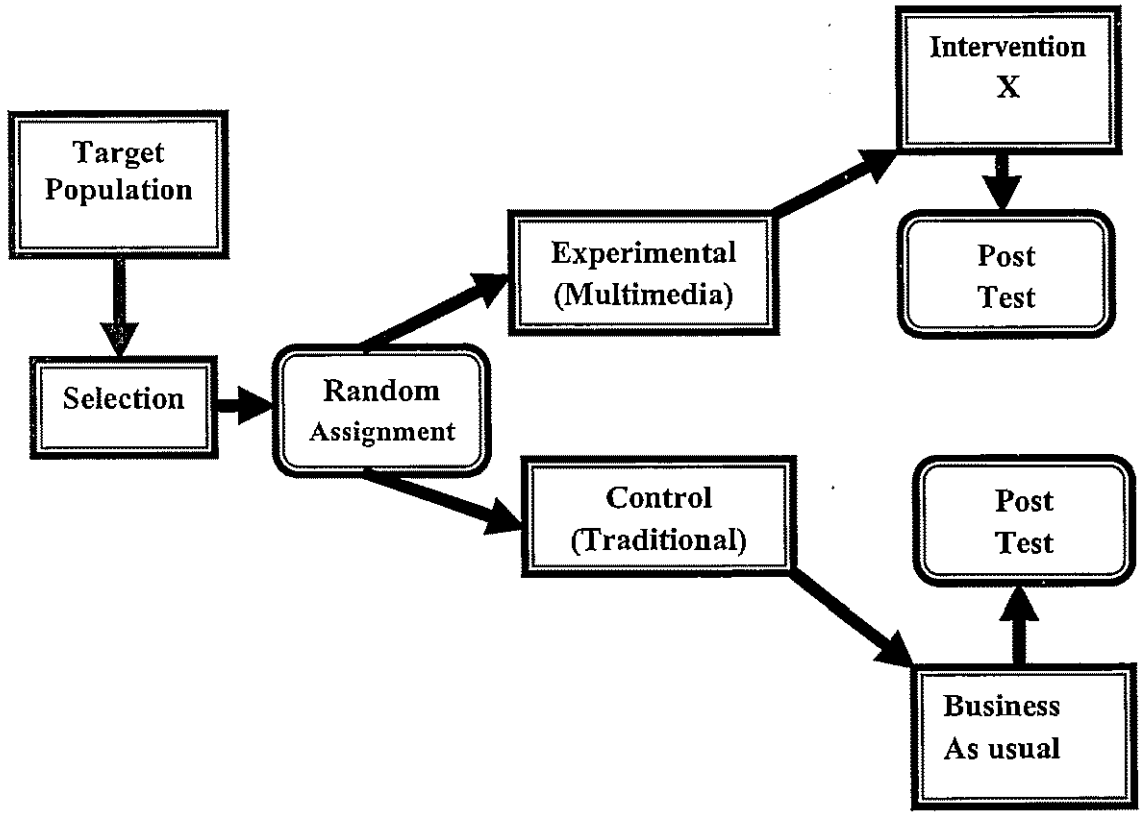


Fig: 3.3.1 Research Design

The research design is further explained in the table 3.3.2

Table: 3.3.2

Characteristics	Control Group	Experimental Group
Treatment	Traditional Approach of Teaching	Multimedia Approach of Teaching

Terminal Status	Post Test	Post Test

3.4 SAMPLE

Most of the educational phenomena consist of large no of units. It would be impractical to observe each unit of the population under controlled conditions in order to arrive at principle having universal validity. Some population are so large that their study would be expensive in terms of time, money effect and Man power. Sampling is a process by which a relatively small number of individual objects of events are selected in order to find out something about entire population from which it was selected.

An appropriately chosen sample size enhances the reliability and validity of the research findings. Commonly used sampling techniques are random sampling, stratified sampling and purposive sampling.

For conducting the present research study keeping in a view the limitation and resources available with the researcher the method of simple random sampling has been used.

Guilford stated that: the best definition of simple random sampling is that it is a selection of cases from the population in such a manner that every individual in a population has an equal chance of being chosen. The selection of any of the individual is also in a no way tied to the selection of any other.

Sample of the study is drawn from one school that is:-

A.J.De.Almeida High School, Ponda-Goa.

Preliminary samples of 100 students were obtained to which tools were administered.

Details of the sample

Group	Boys	Girls	Total
Experimental	24	26	50
Control	25	25	50
Total	50	50	100

3.5 VARIABLES

A variable is something that varies. It is a property that takes in different values. Variables are the conditions or characteristics that the researcher manipulates, control or observes. There are following two types of variables.

Independent variable

The independent variables are the conditions or the characterization that the researcher manipulates, controls and observes. The independent variables in the present study are the two different approaches of teaching science i.e. Multimedia Approach and Traditional Approach. The Experimental group was taught by Multimedia Approach and the control group was taught by the Traditional approach of Teaching.

Dependent variable

The dependent variable is the conditions or characteristics that appear or change as the experimenter removes or change the independent

variables. The dependent variable in the present study is Achievement in Science.

3.6 TOOLS USED

To select or to construct appropriate tools for the study is an important aspect of any research study. Sometimes the researcher uses the tools which are constructed and standardized by others; sometimes the researcher has to construct the tools to fulfil his or her own purpose.

In the present study the researcher has used two tools, one is self constructed and another is standardised tool of Learning Style Inventory by Marcia L. Conner. The two tools used are:

1. Learning Style Inventory
2. Achievement in science

3.6.1 SCIENCE ACHIEVEMENT TEST

Construction of tools

Achievement test in science consisted of following lessons:

1. Solar system
2. Air pollution
3. Lightning

In the first draft the researcher constructed the items. These were given to two teachers who were teaching science to class VIII in the school. The two teachers suggested certain modification to the constructed tool which in turn discussed with the supervisor.

On the basis of suggestion it was reconstructed by making suggested modification. Hence the modified version contained 30 items. The time

limit was 1 hr. The final format of the achievement test consisted of fill in the blanks, Name the following and short answer type.

Tool description

Sr.No.	Name of the section	No. Of Questions	Marks
1.	Fill in the blanks	10	10
2.	Name the following	10	10
3.	Short Answer type	10	10
	Total	30	30

3.6.2 LEARNING STYLE INVENTORY

To identify the learning style of Grade VIII Students, Learning Style Inventory developed by Marcia L. Conner was used. It essentially deals with how information is processed. The inventory consisted of 12 questions. Each questions had three options and student had to encircle one option out of three. The options were given in three horizontal columns and the total of each option encircled in a particular column was done at the end of each column. The three columns were named as Visual, Auditory and Tactile respectively. The column with the highest total represents the primary learning style of students. The column with second highest total represents secondary learning style.This inventory also provided feedback in terms of whether student is primararily visual, auditory or tactile/kinaesthetic Learner.

3.7 DATA COLLECTION

ADMINISTRATION OF RESEARCH TOOLS

Data was collected with the help of the tools described in the preceding section. The tools were administered personally by the researcher spread over a period of 20 days time.

The researcher first established the rapport with the student. After taking the students into the confidence they were motivated to answer the questions asked with care and honesty. The students were psychologically prepared by the researcher to do their utmost too sincerely respond to the items of the tools and leave no unresponded. They were also assured that the whole process has nothing to do with their required examinations.

An illustration of each question was given on the test sheets but these were further reinforced by having them read out the students before they start answering. An example of each item which was given in the test was illustrated on the black board to make sure that students understands it fully and don't make mistakes. The time given to the students was according to the need of the tool administered.

On the day one researcher administered the tool of Learning Styles Inventory to identify the Learning styles of the students. Students were given proper instructions before administrating the tools. Time of 30 minutes was given to the student to complete the inventory and after the completion the data was collected by the Researcher.

As mentioned in the research design the, the sample was divided into two groups i.e. Control Group and Experimental group. Out of these two

groups the experimental group was given treatment with Multimedia Approach of Teaching and control group was given treatment with Traditional approach of teaching. Both the groups were taught the same content for the same period of time by the researcher himself. After giving treatment to both the groups for a time period of 15 days by two different methods of teaching i.e. by Multimedia approach and Traditional Approach of Teaching, the post test was conducted at the end to find out the achievement of students from both the groups.

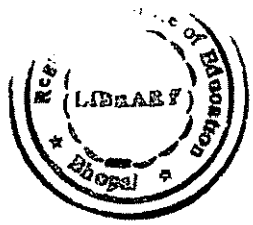
With the completion of field work, now next work was to score the test sheets and tabulate the obtained data for statistical processing and analysis. The score of each student was tabulated in the data sheet for further statistical treatment.

3.8 STATISTICAL TECHNIQUES:

The tabulated data was then processed for obtaining mean, standard deviation and "t" value of the components wise score to analyse the difference as aimed in the objective of the study. The statistical Techniques used in the present study are Mean, Standard Deviation and t-test.

In the present chapter we have discussed about the methodology which is followed for carrying out the entire research study. In the next chapter we will discuss about the Analysis of Data and Interpretation of results.

CHAPTER-IV
ANALYSIS OF DATA
&
INTERPRETATION OF RESULTS



CHAPTER-IV

ANALYSIS OF DATA

&

INTERPRETATION OF RESULTS

4.1 INTRODUCTION

After discussing the uses of multimedia and taking brief review of researches conducted in the brief area to support the rationale of the present study detailed plan of the study was presented in the third chapter.

Raw data is worthless without analysis. However valid reliable and adequate the data may be, it does not serve any worthwhile purpose, unless it is carefully edited, systematically classified and tabulated, scientifically analyzed, systematically interpreted and rationally concluded. Good research has been characterize by what care has been taken in the analysis and interpretation of the data. After careful and depth answers to the research questions of decision makers and information users.

Analysis of data means studying the tabulated material in order to determine the inherent facts or factors in a simple parts and putting the parts together in a new arrangements for the purpose of interpretation. The process of interpretation is essentially one of the stating that the result finding show what do you mean? What is their significance? What is the answer to the original problem? This part is the heart of the research. It calls for critical examination of results of one's analysis in

the light of all the limitations of data gathering. This chapter includes the data collected from the above mentioned school.

The data thus collected was subjected to the appropriate statistical procedure to test the hypothesis with which the study was initiated. These details of the statistical technique employed for the analysis of the data, results obtained through this analysis and decisions regarding the rejection or non-rejection of the hypothesis are presented in this chapter.

Statistical techniques are used for organising, analysing and interpreting numerical data. Statistics method goes to the fundamental purposes of description and analysis. By applying statistics we can analyse and interpret the data and can draw conclusions. If the collective data are systematically arranged and analyzed through the appropriate scientific and statistical technique, the results obtained are scientific and correct.

Interpretation of data refers to that important part of the investigation which is associated with the drawing of inference from the collected facts after an analytical study. It is the interpretation that makes it possible for us to utilize collected data in various fields.

According to the hypothesis of the study the collected data was analyzed on the basis of scores of different tests conducted on the sample. The statistical method serves the fundamental purpose of the description and analysis, and their proper application involves answering the following questions.

1. What facts need to be gathered to provide the information necessary to test the hypothesis?
2. How are these data to be gathered, organised and analyzed?
3. What assumption underlies the statistical methodology to be employed?

4. What conclusions can be validly drawn from the analysis of the data?

Analysis of the Hypothesis:

"Analysis is the ordering-the breaking down of the data into constituents parts in order to obtain answer to research questions."

F.N.Kerlnger (1964)

There are six hypotheses in the study. All this hypotheses are tested and the results are interpreted as per the problem under the investigation. These hypotheses are pertaining to the effect of teaching method. The results of the hypothesis are presented in the following pages.

4.2 TECHNIQUES USED IN THE DATA ANALYSIS

This study has undertaken a comparative effect of two approaches of teaching i.e. Multimedia approach and Traditional approach on achievement of VIII grade students with different learning styles.

Independent variable: Traditional approach and multimedia approach.

Dependent variable: Achievement in science.

The mean scores and standard deviations for each of the group were computed and the mean scores were compared using 't' test.

4.3 ACHIEVEMENT ANALYSIS

Hypothesis 1: There is no significant difference in Achievement of Grade VIII students taught by Multimedia Approach and Traditional Approach.

The comparison of the Mean Achievement score of students is shown graphically in the fig: 4.3.1

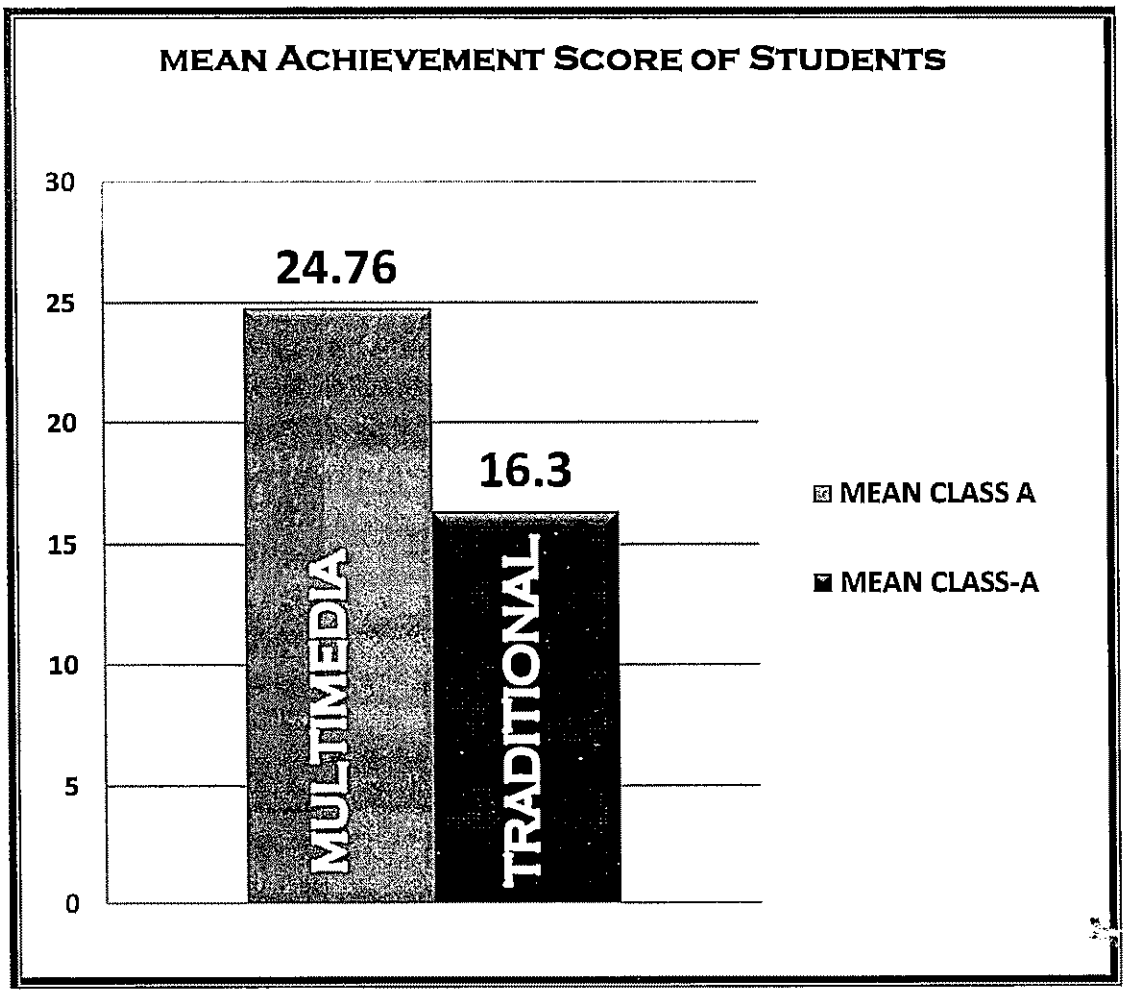


FIG: 4.3.1

The Hypothesis is tested by using 't' test. The mean standard deviation and 't' value are calculated and the results are shown in table 4.3.2

Table 4.3.2: Analysis of Mean Achievement Score of Students

Category	N	Mean (M)	Standard Deviation	't' value	Degree of Freedom
Traditional Approach	50	16.3	3.5	13.53*	98
Multimedia Approach	50	24.76	2.70		

*'t' value is significant at 0.01 level of significance.

ANALYSIS

Table No. 4.3.2 gives the mean difference of the achievement score in science of students studying through Multimedia Approach and Traditional Approach

The calculated value of 't' is found to be 13.53 . The calculated value of 't' is greater than that of table value of 't' (2.63) at 0.01 level. The value of 't' is significant at 0.01 level. Hence the null hypothesis is rejected at 0.01 level of significance.

INTERPRETATION:

From the above table it is found that there is a significant difference in the mean achievement score in science of the students studying through Multimedia Approach and Traditional Approach. The comparison of the means of both the approaches show that the student's achievement exposed to the multimedia approach is better than those under the Traditional approach. This vindicates the findings of study Khare (1986)

CONCLUSION:

It can be concluded from the above data that Multimedia Approach of Teaching is better than the Traditional Approach teaching as far as Science achievement is concerned.

Hypothesis 2: There is no significant difference in Achievement of Grade VIII Boys taught by Multimedia Approach and Traditional Approach.

The comparison of the Mean Achievement score of Boys is shown graphically in the fig: 4.3.3

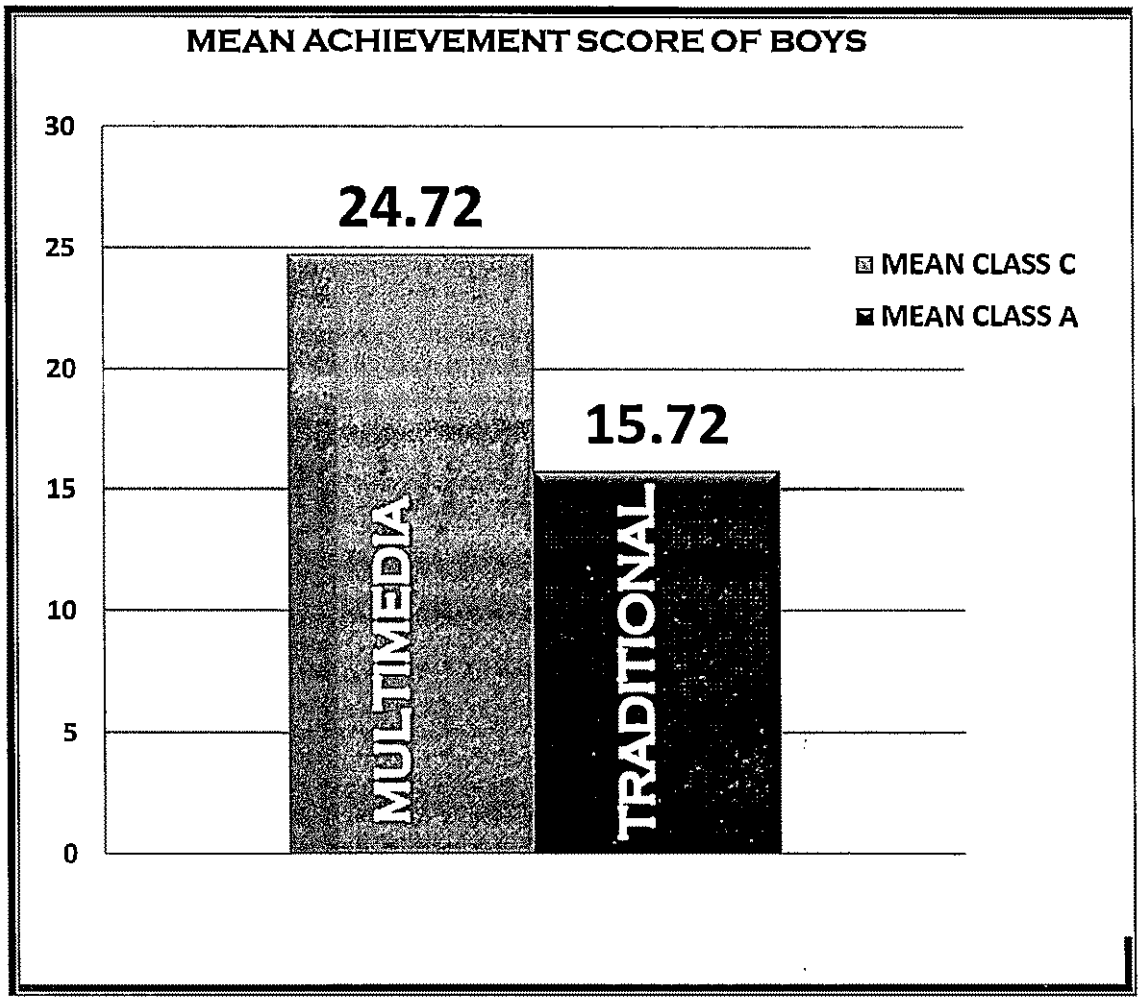


FIG: 4.3.3

The hypothesis is tested by using 't' test. The mean standard deviation and 't' value are calculated and the results are shown in table 4.3.4

Table 4.3.4: Analysis of Mean Achievement Score of Boys

Category	N	Mean (M)	Standard Deviation	't' value	Degree of Freedom
Traditional Approach	25	15.72	3.07	10.32**	47
Multimedia Approach	24	24.42	2.83		

** 't' value is significant at 0.01 level of significance.

ANALYSIS

The table 4.3.4 gives the mean difference of the Achievement score in science of boys studying through Traditional Approach and Multimedia Approach.

The calculated value of 't' is found to be 10.32. The calculated value of 't' is greater than that of table value of 't' (2.68) at 0.01 level. The value of 't' is significant at 0.01 level. Hence the null hypothesis is rejected at 0.01 level of significance.

INTERPRETATION

From the above table it is found that there is a significant difference in the mean achievement scores of boys in science studying through Multimedia approach and Traditional Approach.

CONCLUSION

The comparison of the means of both the approaches show that the boy's achievement exposed to the multimedia approach is better than those exposed to the Traditional approach. So we can conclude saying that Multimedia Approach of Teaching Science is better than the Traditional Approach of teaching.

Hypothesis 3: There is no significant difference in Achievement of Grade VIII Girls taught by Multimedia Approach and Traditional Approach.

The comparison of the Mean Achievement score of Girls is shown graphically in the fig: 4.3.4

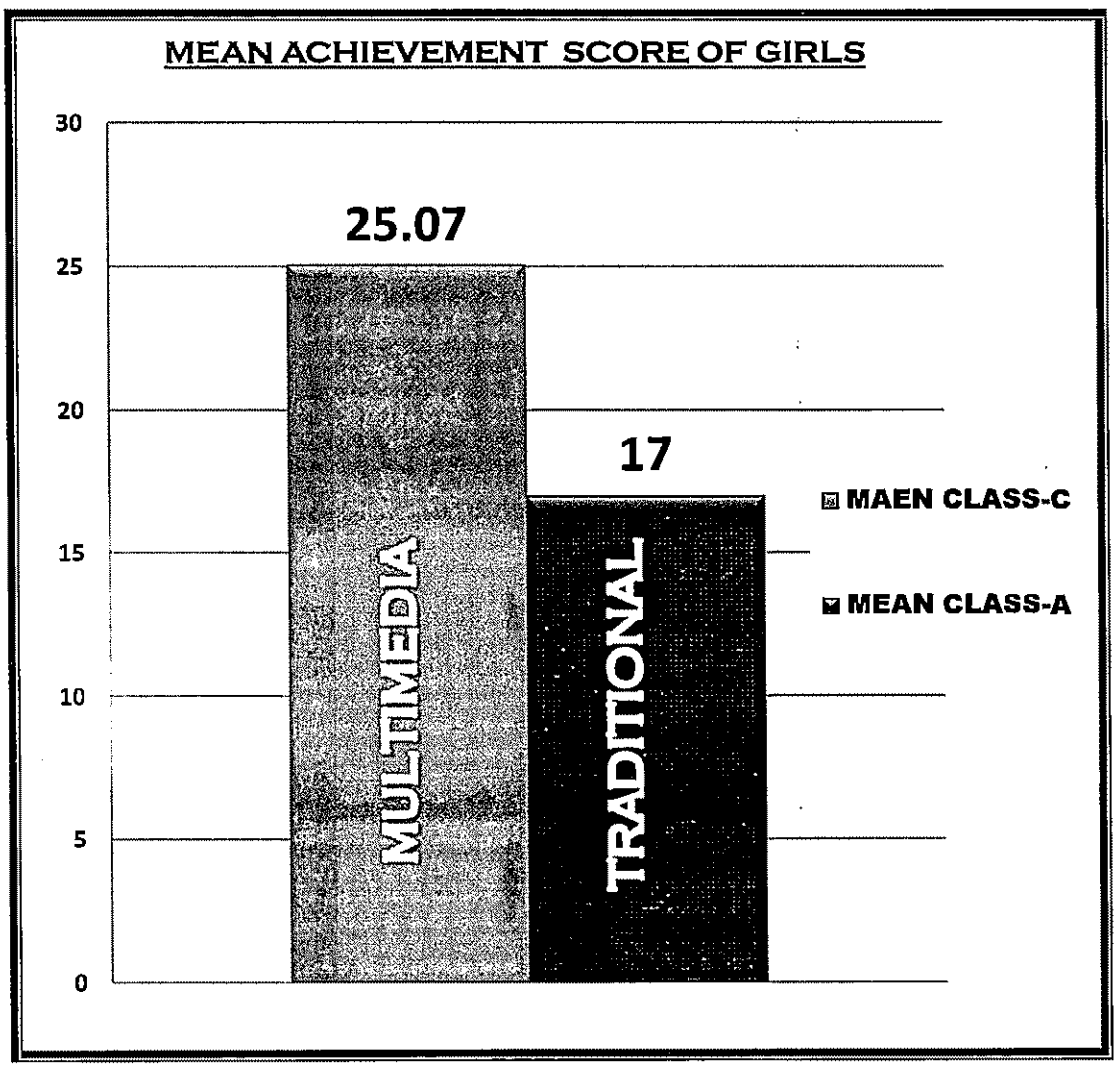


FIG: 4.3.4

The hypothesis is tested by using 't' test. The mean standard deviation and 't' value are calculated and the results are shown in table 4.3.5

Table 4.3.5: Analysis of Mean Achievement Score of Girls

Category	N	Mean (M)	Standard Deviation	't' value	Degree of Freedom
Traditional Approach	25	17	3.74	8.98**	49
Multimedia Approach	26	25.07	2.54		

**'t' value is significant at 0.01 level of significance.

ANALYSIS:

The table 4.3.5 gives the mean difference of the achievement score of Girls in science studying through Traditional approach and Multimedia approach.

The calculated value of 't' is found to be 8.98. The calculated value of 't' is greater than that of table value of 't' (2.68) at 0.01 level. The value of 't' is significant at 0.01 level. Hence the null hypothesis is rejected at 0.01 level of significance.

INTERPRETATION:

From the above table it is found that there is a significant difference in the mean achievement score of Girls in science studying through Multimedia approach and Traditional Approach.

CONCLUSION:

The comparison of the means of both the approaches show that the girl's achievement exposed to the multimedia approach is better than those exposed to the Traditional approach. So we can conclude saying that Multimedia Approach of Teaching Science is better than the Traditional Approach of teaching.

Hypothesis 4: There is no significant difference in Achievement of Grade VIII Visual learners taught by Multimedia Approach and Traditional Approach.

The comparison of the Mean Achievement score of Visual Learners is shown graphically in the fig: 4.3.6

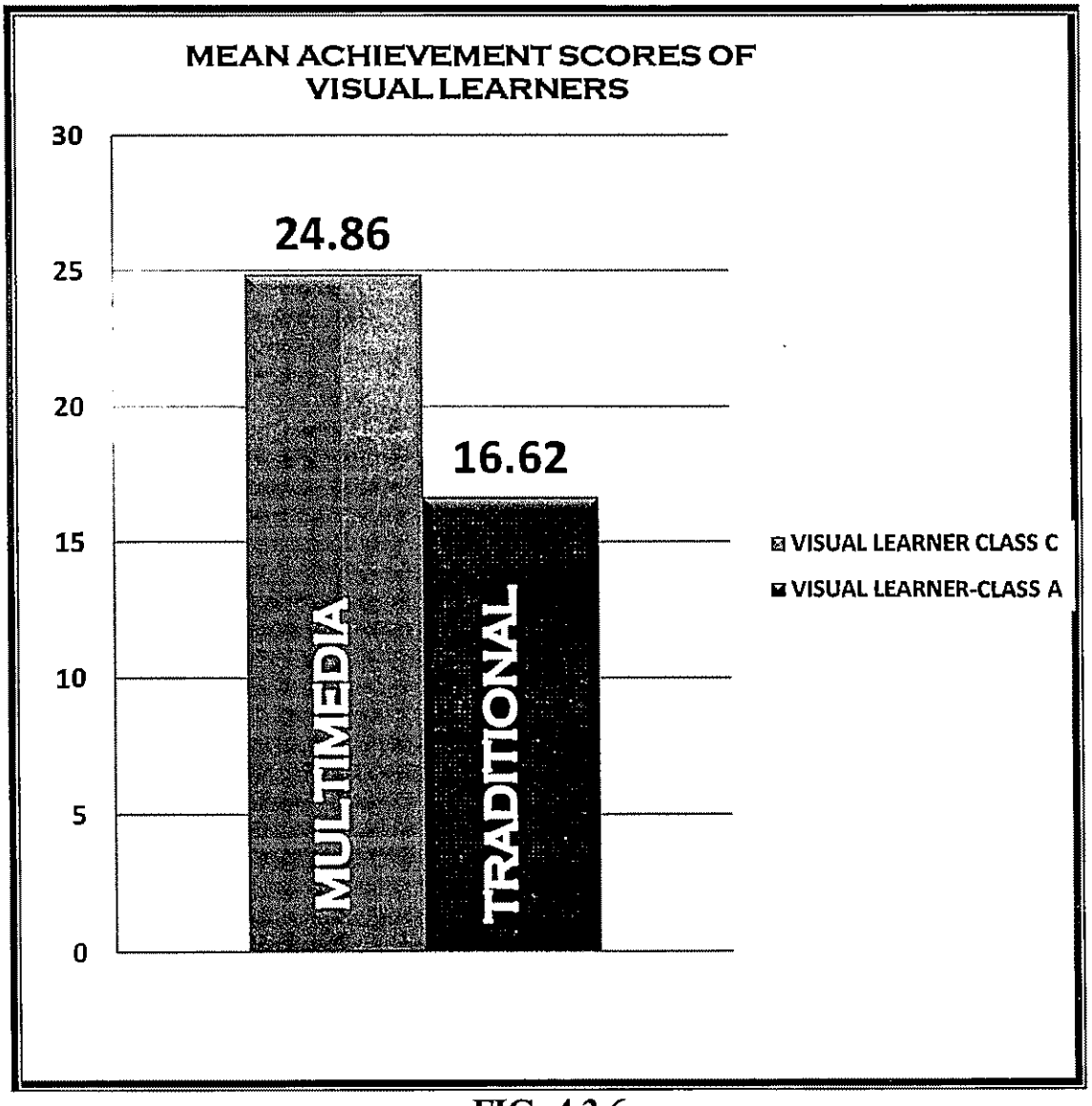


FIG: 4.3.6

The hypothesis is tested by using 't' test. The mean standard deviation and 't' value is calculated and the results are shown in table 4.3.7

Table 4.3.7: **Analysis of Mean Achievement Score of Visual Learners**

Category	N	Mean (M)	Standard Deviation	't' value	Degree of Freedom
Traditional Approach	36	16.82	3.06	6.63**	49
Multimedia Approach	21	24.36	2.87		

** 't' value is significant at 0.01 level of significance.

ANALYSIS:

The table 4.3.7 shows the mean difference of the achievement of Visual Learners of grade VIII in science studying through Traditional approach and Multimedia approach.

The calculated value of 't' is found to be 6.63. The calculated value of 't' is greater than that of table value of 't' (2.68) at 0.01 level. The value of 't' is significant at 0.01 level. Hence the null hypothesis is rejected at 0.01 level of significance.

INTERPRETATION

From the above table it is found that there is a significant difference in the mean Achievement score of Visual Learners in science studying through Multimedia Approach and Traditional Approach. The comparison of the means of both the approaches show that the Visual Learners achievement exposed to the multimedia approach is better than those exposed to Traditional approach.

CONCLUSION:

From the above data we can conclude saying that Visual Learners learn better when they are exposed to Multimedia approach of teaching. Hence Multimedia Approach of Teaching is better than Traditional Approach of teaching as far as science achievement is concerned.

Hypothesis 5: There is no significant difference in Achievement of Grade VIII Auditory learners taught by Multimedia Approach and Traditional Approach.

The comparison of the Mean Achievement score of Auditory Learners is shown graphically in the fig: 4.3.8

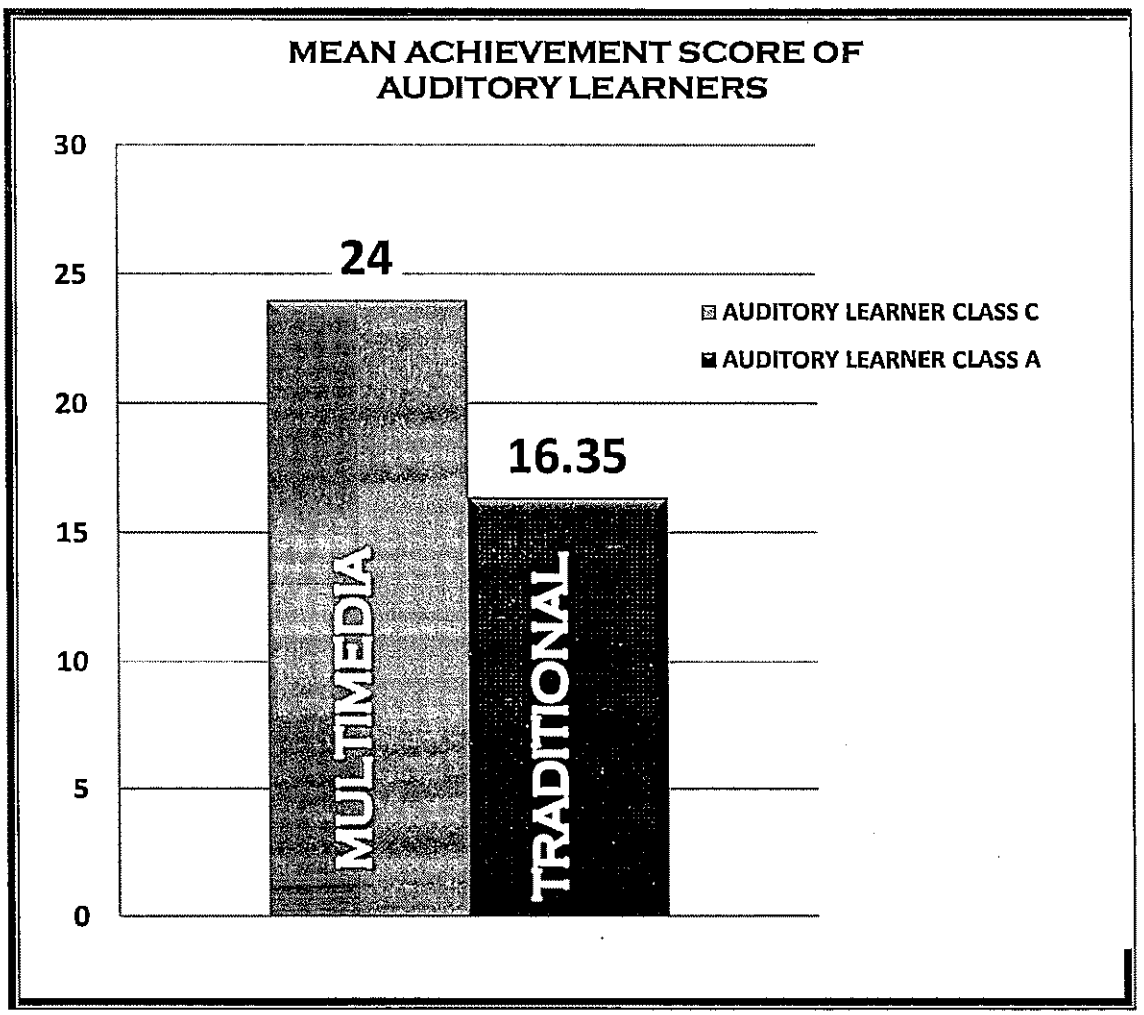


FIG: 4.3.8

The hypothesis is tested by using 't' test. The mean standard deviation and 't' value are calculated and the results are shown in table 4.3.9

Table 4.3.9: Analysis of Mean Achievement Score of Auditory Learners

Category	N	Mean (M)	Standard Deviation	't' value	Degree of Freedom
Traditional Approach	7	16.35	3.82	4.99**	25
Multimedia Approach	20	24.00	2.27		

** 't' value is significant at 0.01 level of significance.

ANALYSIS

The table 4.3.9 shows the mean difference of the achievement score of Auditory Learners of grade VIII in science studying through Traditional Approach and Multimedia Approach.

The calculated value of 't' is found to be 4.99. The calculated value of 't' is greater than that of table value of 't' (2.79) at 0.01 level. The value of 't' is significant at 0.01 level. Hence the null hypothesis is rejected at 0.01 level of significance.

INTERPRETATION

From the above table it is found that there is a significant difference in the achievement of Auditory Learners in science studying through Multimedia approach and Traditional Approach. The comparison of the means of both the approaches show that the Auditory Learners achievement exposed to the multimedia approach is better than those exposed to Traditional approach.

CONCLUSION:

From the above data we can conclude saying that Auditory Learners learn better when they are exposed to Multimedia approach of teaching. Hence Multimedia Approach of Teaching is better than Traditional Approach of teaching as far as science achievement is concerned.

Hypothesis 6: There is no significant difference in Achievement of Grade VIII Tactile learners taught by Multimedia Approach and Traditional Approach.

The comparison of the Mean Achievement score of Tactile Learners is shown graphically in the fig: 4.3.10

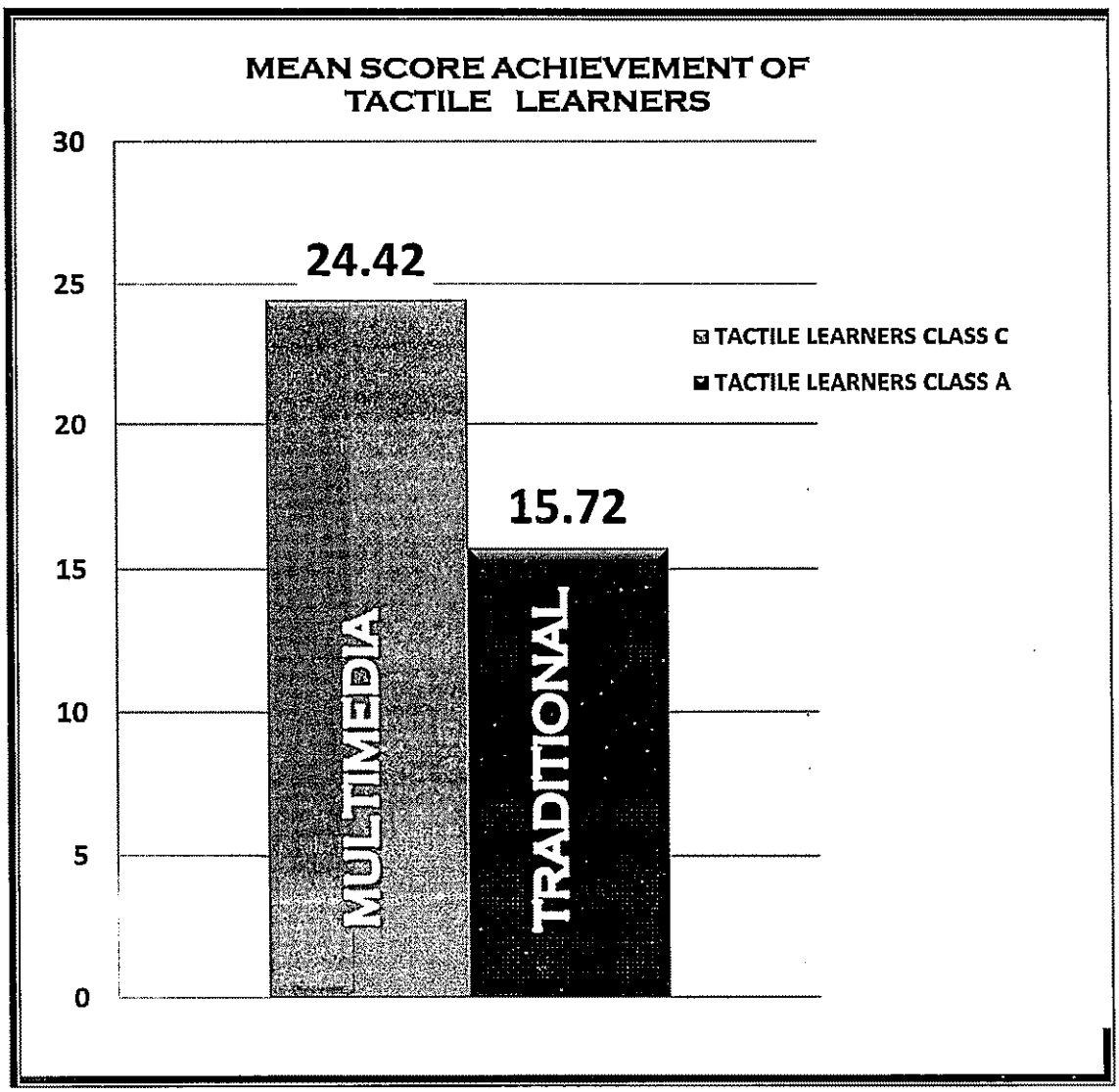


FIG: 4.3.9

The hypothesis is tested by using 't' test. The mean standard deviation and 't' value are calculated and the results are shown in table 4.3.11

Table 4.3.11: Analysis of Mean Achievement Score of Tactile Learners

Category	N	Mean (M)	Standard Deviation	't' value	Degree of Freedom
Traditional Approach	7	16	3.43	6.17**	14
Multimedia Approach	9	25	2.0		

** 't' value is significant at 0.01 level of significance.

ANALYSIS:

The table 4.3.11shows the mean difference of the achievement score of Tactile Learners of grade VIII in science studying through Traditional Approach and Multimedia approach.

The calculated value of 't' is found to be 6.17. The calculated value of 't' is greater than that of table value of 't' (2.98) at 0.01 level. The value of 't' is significant at 0.01 level. Hence the null hypothesis is rejected at 0.01 level of significance.

INTERPRETATION

From the above table it is found that there is a significant difference in the achievement score of tactile learner in science studying through Multimedia Approach and Traditional Approach. The comparison of the means of both the approaches show that the Tactile learner achievement exposed to the multimedia approach is better than those exposed to Traditional approach.

CONCLUSION

From the above data we can conclude saying that Tactile Learners learn better when they are exposed to Multimedia approach of teaching. Hence Multimedia Approach of Teaching is better than Traditional Approach of teaching as far as science achievement is concerned.

In the present chapter we have analysed the data by giving statistical treatment and thus arrived at the findings of the study. In next chapter we will discuss abut Summary, Conclusion and suggestions.

CHAPTER-V
SUMMARY, CONCLUSION & SUGGESTIONS

CHAPTER -V

SUMMARY, CONCLUSION AND SUGGESTIONS

5.1 INTRODUCTION

Children in today's technologically advance society are growing up in an educational environment that is struggling to overcome the teacher centred classrooms in which student's achievement is based on the memorization and recitation of the material contained in a single content area text book. In order for a students to succeed in today's competitive society they must be given the opportunity and guidance to develop not only the knowledge level skills but they should graduate from high school with the ability to use that knowledge in the real world situations.

Teachers are slowly realizing that traditional methods of teaching are no longer capable of providing an education foundation that is strong enough to withstand the pressure of such technologically dependent society.

The teaching learning in the classroom constitute the instructional generation in their pursuit of education method. The conventional instructional method features the teacher talking, children listening, the text book structuring all classroom activities with a lot of copying from the blackboard and memorization and recitation of factual information. The teacher is the centre of the process. He is the designer of instruction and planner of the lesson.

Knowledge ⟶Teacher ⟶ Student

The traditional concept of the teacher as the transmitter of the knowledge. This approach is likely to be motivationally and instructionally ineffective. It is also unsuitable for helping students achieve higher level learning objectives. Not all methods are suitable for all the situations, the choice of the method will have to depend among other things like the children being taught, the teachers own abilities, facilities available.

The present study has investigated into in teaching science. The achievement in science of class VIII students studying through Multimedia approach and compare its achievement with traditional approach which is currently used in the classroom as the study intended to see the relative effectiveness of the traditional approach and multimedia approach on the achievement in science.

5.2 STATEMENT OF THE PROBLEM

COMPARATIVE STUDY OF MULTIMEDIA APPROACH & TRADITIONAL APPROACH ON THE ACHIEVEMENT IN SCIENCE OF GRADE VIII STUDENTS WITH DIFFERENT LEARNING STYLES.

5.3 OBJECTIVES OF THE STUDY

1. To identify the different Learning Styles of Grade VIII students.
2. To compare the Achievement in Science of Grade VIII students taught by Multimedia Approach and Traditional Approach.
3. To compare the Achievement in Science of Grade VIII Boys taught by Multimedia Approach and Traditional Approach.

4. To compare the Achievement in Science of Grade VIII Girls taught by Multimedia Approach and Traditional Approach.
5. To compare the Achievement in Science of Grade VIII Visual Learners taught by Multimedia Approach and Traditional Approach.
6. To compare the Achievement in Science of Grade VIII Auditory Learners taught by Multimedia Approach and Traditional Approach
7. To compare the Achievement in Science of Grade VIII Tactile Learners taught by Multimedia Approach and Traditional Approach

5.4 HYPOTHESIS OF THE STUDY

1. There is no significant difference in Achievement of Grade VIII students taught by Multimedia Approach and Traditional Approach
2. There is no significant difference in Achievement of Grade VIII Boys taught by Multimedia Approach and Traditional Approach.
3. There is no significant difference in Achievement of Grade VIII Girls taught by Multimedia Approach and Traditional Approach.
4. There is no significant difference in Achievement of Grade VIII Visual Learners taught by Multimedia Approach and Traditional Approach.
5. There is no significant difference in Achievement of Grade VIII Auditory learners taught by Multimedia Approach and Traditional Approach.
6. There is no significant difference in Achievement of Grade VIII Tactile Learners taught by Multimedia Approach and Traditional Approach.

5.5 VARIABLES

A variable is something that varies; it is a property that takes in different values. Variable are the conditions or the characteristics that the experimenter manipulates, controls and observes. These are the following two types of variables.

Independent Variables

The independent variable are the conditions or characteristics that the experimenter manipulates ,controls and observes .The independent variable in the present study are the two different teaching approaches.ie Traditional Approach and Multimedia Approach of Teaching.

Dependent Variables

The dependent variable is the conditions or characteristics that appear, disappear or change as the experimenter removes or change the independent variable. In present study the dependent variable is Achievement in science.

5.6 SAMPLE

In the present study the sample was taken from A.J.De. Almeida high school, Ponda-Goa and Random Sampling Technique was used for the selection of sample.

In this research work 100 students were taken from the VIII grade which was then divided into two groups of 50 each named as experimental group and control group.

5.7 TOOLS USED

1. Science Achievement Test
2. Learning Style Inventory.

5.8 STATISTICAL TECHNIQUES USED

This tabulated data was processed for obtaining mean, standard deviation and 't' values of the components wise score to analyze the difference as aimed in the objectives of the study. First of all Means of all the scores are taken and then its standard deviation score is calculated which is then subjected to the t-test and correlation among the two groups were obtained.

5.9 DELIMITATIONS OF THE STUDY

1. The study was delimited to North Goa District of Goa state only.
2. The study was delimited to English medium only.
3. It was further delimited to students studying in VIIIth STD. Only.
4. The study was delimited to the schools affiliated to Goa Board of Secondary Education.
5. This study was delimited to the science content.
6. The study was delimited to one school only.

5.10 MAJOR FINDINGS OF THE STUDY

1. There is significant difference in Achievement of Grade VIII students taught by Multimedia Approach and Traditional Approach
2. There is significant difference in Achievement of Grade VIII Boys taught by Multimedia Approach and Traditional Approach.

3. There is significant difference in achievement of Grade VIII Girls taught by Multimedia Approach and Traditional Approach.
4. There is significant difference in achievement of Grade VIII Visual Learners taught by Multimedia Approach and Traditional
5. There is significant difference in achievement of Grade VIII Traditional Approach.
6. There is significant difference in achievement of Grade VIII Tactile taught by Multimedia Approach and Traditional Approach.

5.11 CONCLUSION

By analyzing the data it was found that Multimedia approach is better than the Traditional approach as far as achievement in science is concerned. So multimedia programmes are beneficial and it should be adopted by the teachers so as to increase the science achievement among the students.

5.12 EDUCATIONAL IMPLICATIONS

Multimedia is now regarded as a super teaching machine, its use in education has been tried as an innovation and it has proved its teaching efficiency in many developed countries. Multimedia has been helping teachers in following areas:

1. Allocation of learning materials according to the individual needs and interest.

2. Multimedia provides direct interaction between pupil and subject matter.
3. Multimedia engages students in tutorial work.
4. Multimedia provides immediate feedback to the students for better interaction and feedback.
5. Making teaching more rewarding: considering learning style forces teachers to self reflect and consider ways to change teaching methodologies and move away from being caught in teaching the way we were taught, assuming that it will work for all the students.
6. Multimedia Lessons should be adopted by the teacher to provide different learning situations for the learners and to cater individual differences.

7.13 RECOMMENDATIONS FOR TEACHERS & PARENTS

TEACHERS

There are several practical modifications teachers can make to their basic lesson plans that will allow them to cater learning preferences of their students. Following are the examples for catering to learning styles in accordance to the four modalities.

VISUAL LEARNERS

- Use wall displays, posters for example colour posters of electrical circuits or the system of human body, flash cards, graphic organizers etc.
- DVDs, videos and computer simulation activities and games allow the leaner to visualise the concept or content covered.

AUDITORY LEARNERS

- Use audio tapes, storytelling, songs, raps, memorisation techniques like acronyms and acrostics as well as drill methods.
- Allow learners to work in pairs and small groups regularly as they benefit from verbal exchange of ideas.

TACTILE /KINESTHETIC LEARNERS

- Use physical activities, board games and role play wherever needed. Integrate Multimedia in different activities.
- Intersperse activities which require students to sit and listen with activities that allow them to move and be active. For example have them to observe a demonstration of an experiment and then have them carry out the same experiment on their own. Different Experimental demonstrations can be shown to them through videos.
- Allow them to be active while listening to lectures or explanation, for example, have them fill in a table or while listening to a lecture or have them label a diagram while reading.

PARENTS

There is much that parents can do to facilitate their child's academic success through a proper understanding of their learning style approach and thus providing them with proper learning environment. The key lies in educating themselves through reading relevant literature on the subject. This will promote their understanding of the factors that influence their child's learning. This point is succinctly captured in the following quotation written by the parent:

"understanding my sons learning style has helped me understand him better and assisted mi in reinforcing skills he needs to succeed in school" (Fellers,2006)

- Create learning environment at home by ensuring that environmental factors that affect learning like temperature and light intensity are conducive to learning.
- Encourage their children by doing activities with them, for example buy a home chemistry kit and tryout simple experiments together.
- With regard to kinaesthetic learners, allow them to be physically active while doing homework as this helps them to focus .
- Consider investing in books/tape selections to cater for the auditory learners.
- Video lesson CDs on different lessons should be provided to the visual learners.

5.14 SUGGESTION FOR THE FURTHER RESEARCH

The present study was an effort to critically compare the use of multimedia approach in science with traditional Approach of teaching at elementary level on VIII class students only. The survey of the related literature revealed the fact that only few studies have been conducted in the area of multimedia in Indian context. Here the results of present study bring out certain points for further study which are as follows:

1. To replicate the study the researcher can conduct a similar study with large sample of students and teachers in other districts of Goa and other state.
2. The effect of multimedia on achievement of science at other elementary level can also be studied.
3. Evaluation of different multimedia programmes can be done.
4. Effect of multimedia programme teaching on the mental health of normal and especially needed children's can be studied.

5. The results of the learning style inventory can be used as a starting point from which further research can be conducted as to how the learners an use knowledge about his/her learning style to further enhance his/her approach of learning.
6. The research itself can be duplicated in other schools and other settings, with learners of different ages, in order to evaluate the usefulness of teaching to learning styles.
7. The study can be also adopted to other subjects like in mathematics in an attempt to investigate the factors that influence academic success.
8. A parallel study may be carried out with bigger groups of students in order to see whether similar results are obtained.

As schools and colleges of future will be increasingly asked to prepare children and youth to face uncertainties in the complex society of tomorrow, in order to enable students to cope up with challenges of the change, the teacher must use such methods which solicit greater involvement of the pupils and encourage them. The curriculum developers should take adequate steps to prepare instructional material for teaching various subjects in order to meet the future instructional needs of the students.

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APPENDICES

APPENDIX-I

SCIENCE ACHIEVEMENT TEST

ACHIEVEMENT TEST

MARKS:30 SUBJECT: SCIENCE STD.:VIII

DATE:19/01/2012 TIME: 45 Mins.

ROLL NO:

I. Fill in the blanks: (Each question carries one mark)

1. The smallest planet of the solar system is _____
   (Mars, Uranus, Mercury, Saturn)
2. A celestial body which revolves around the planet is knows as_____
   (Comet, Satellite, Asteroid, Meteor)
3. The planet which is called as red planet is_____
   (Jupiter, Mars, Venus, Neptune)
4. The planet Jupiter has _____ moons.
   (63,60 ,27,13)
5. The major gas responsible for Green House effect is_____
   (NO_2.SO_2, CO_2, CO)
6. Smog is the combination of Smoke and _____
   (Dust, Water vapour, Fog, CO_2)
7. The gas which is not a Green house Gas_____
   (Carbon dioxide, sulphur dioxide, Nitrous oxide, Methane)
8. The Process of electric discharge between two or more clouds or between the clouds and earth is called as _____
   (Lightning, Earthquake, Charging, Earthing)
9. During lightning the safest place is to be_____
   (Under the tree, under the car, on the ground, in water)
10. The process of transferring the charge from the charged object to the earth is_____
    (Earthing, Lightning, Charging, Discharging)

II. Name the following: (Each question carries one mark)

1. The full form of CFC._____
2. The planet which is called as morning or evening star._____
3. The largest planet of the solar system._____
4. The first Indian artificial satellite._____
5. The comet which appears nearly after 76 years. _____
6. The two major gases responsible for Acid rain._____
7. The gas which affects the oxygen carrying capacity of blood._____
8. The device which is used to protect building from lightning._____
9. The chemical industry which has affected the Taj Mahal._____
10. The path of revolution of planet around the sun._____

III. Answer the following questions in one sentences (1 mark each)

1. What is solar system?

   _____
   _____
   _____
   _____

2. Write the names of the planets in their order of distance from the sun.

   _____
   _____
   _____
   _____

3. What is period of revolution?

4. Why planet Pluto has been removed from the solar system?

5. What is the composition of atmospheric air?

6. What is Air Pollution?

7. What are the natural sources of air pollution?

8. Give two safety measures that are to be taken during lightning.

9. What are the two types of charges developed between the clouds?

_____

_____

10. Carrying an umbrella during lightning is not a good idea. Give reason.

_____

_____

_____

_____

**********GOOD LUCK**********

APPENDIX-II

ANSWER KEY

ANSWER KEY:

I. Fill in the Blanks:

1. Mercury
2. Satellite
3. Mars
4. 63
5. CO_2
6. Fog
7. Sulphur Dioxide
8. Lightning
9. under the Car
10. Earthing

II. Name the Following:

1. Chlorofluoro Carbon
2. Venus
3. Jupiter
4. Aryabhatta
5. Halley Comet
6. NO2 & SO2
7. CO
8. Lightning Conductor
9. Mathura Oil Refinery
10. Orbit

II. Answer the following questions in one sentence.

1. The sun and the celestial bodies which revolve around it form the solar system.
2. Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune.
3. The time taken by planet to complete one revolution around the Sun is called as Period of Revolution.
4. The planet Pluto has been removed from the solar system as it was a dwarf planet and it was not revolving in its own orbit.
5. Nitrogen-78%, Oxygen-21%, Other-1%

6. When Air is Contaminated by unwanted substances which have harmful effects on both the living as well as non-living things, it is referred as air Pollution.
7. Volcanic Eruption, Forest Fires, Dust
8. Put off all the electrical appliances, bathing during lightning should be avoided.
9. Positive charge & Negative charge.
10. Because the umbrella has metallic rod which may conduct electricity & we may get shock.

APPENDIX-III

LEARNING STYLE INVENTORY

What's Your Learning Style?

By Marcia L. Conner

Learning style refers to the ways you prefer to approach new information. Each of us learns and processes information in our own special style, although we share some learning patterns, preferences, and approaches. Knowing your own style also can help you to realize that other people may approach the same situation in a different way from your own.

Take a few minutes to complete the following questionnaire to assess your preferred learning style. Begin by reading the words in the left-hand column. Of the three responses to the right, circle the one that best characterizes you, answering as honestly as possible with the description that applies to you right now. Count the number of circled items and write your total at the bottom of each column. The questions you prefer provide insight into how you learn.

1. When I try to concentrate...	I grow distracted by clutter or movement, and I notice things around me other people don't notice.	I get distracted by sounds, and I attempt to control the amount and type of noise around me.	I become distracted by commotion, and I tend to retreat inside myself.
2. When I visualize...	I see vivid, detailed pictures in my thoughts.	I think in voices and sounds.	I see images in my thoughts that involve movement.
3. When I talk with others...	I find it difficult to listen for very long.	I enjoy listening, or I get impatient to talk myself.	I gesture and communicate with my hands.
4. When I contact people...	I prefer face-to-face meetings.	I prefer speaking by telephone for serious conversations.	I prefer to interact while walking or participating in some activity.
5. When I see an acquaintance...	I forget names but remember faces, and I tend to replay where we met for the first time.	I know people's names and I can usually quote what we discussed.	I remember what we did together and I may almost "feel" our time together.
6. When I relax...	I watch TV, see a play, visit an exhibit, or go to a movie.	I listen to the radio, play music, read, or talk with a friend.	I play sports, make crafts, or build something with my hands.
7. When I read...	I like descriptive examples and I may pause to imagine the scene.	I enjoy the narrative most and I can almost "hear" the characters talk.	I prefer action-oriented stories, but I do not often read for pleasure.
8. When I spell...	I envision the word in my mind or imagine what the word looks like when written.	I sound out the word, sometimes aloud, and tend to recall rules about letter order.	I get a feel for the word by writing it out or pretending to type it.
9. When I do something new...	I seek out demonstrations, pictures, or diagrams.	I want verbal and written instructions, and to talk it over with someone else.	I jump right in to try it, keep trying, and try different approaches.

10. When I assemble an object...	I look at the picture first and then, maybe, read the directions.	I read the directions, or I talk aloud as I work.	I usually ignore the directions and figure it out as I go along.
11. When I interpret someone's mood...	I examine facial expressions.	I rely on listening to tone of voice.	I focus on body language.
12. When I teach other people...	I show them.	I tell them, write it out, or I ask them a series of questions.	I demonstrate how it is done and then ask them to try.
Total	Visual: _____	Auditory: _____	Tactile/Kinesthetic: _____

The column with the highest total represents your primary processing style. The column with the second-most choices is your secondary style.

Your primary learning style: _____

Your secondary learning style: _____

APPENDIX-IV

LESSON PLANS FOR TRADITIONAL APPROACH

LESSON PLAN FOR TRADITIONAL APPROACH

SUBJECT: SCIENCE **TIME**: 35 MINS

TOPIC: SOLAR SYSTEM **CLASS**: VIII

INSTRUCTIONAL OBJECTIVES:-

1. The students will be able to recall names of different planets.
2. The students will be able to recall what is solar system.
3. The students will be identify different objects found in the solar system.
4. The students will be able to define what is orbit, period of Rotation & Period of revolution.
5. The students will be able to recall properties of different planets.

CONCEPTS:

1. What is solar system?
2. Composition of solar system
3. Orbit, Period of rotation & period of revolution
4. Comets, meteors and meteorites
5. Satellites.

PREVIOUS KNOWLEDGE:

1. Students know about sun, moon etc.
2. Students know the names of different planets.

INSTRUCTIONAL MATERIALS:

Charts, Pictures etc.

Sequential Teaching Learning Activities	Expected Behavioural Outcome
Teacher introduces the lesson by giving some example related to the planets. Teacher: from where we get the light during the day time? Teacher: where does this Sun	 Students respond saying sun. Students responds saying in the

Located?	sky
Teacher (T): ok good, what other things are present in the sky?	Student (S): stars, planets etc.
T: how many planets can you name?	S: Eight planets
T: so where these planets are found?	S: In solar system
T: ok so today we are going to learn more about the topic solar system.	
T: Teacher writes the name of the topic on the black board and explains what the solar system is?	S: students listen carefully
T: can you name the planets which are there in our solar system	S: students answer one by one.
T: (teacher writes the names of planets on black board)	
T: we have eight planets and Sun is at the centre of this eight planets	
T: is Sun a planet?	S: yes
T: (teacher Explains), no sun is not a planet, it's the star.	
T: (teacher then explains the following points) What is an orbit?, what is period of rotation?, what is period of revolution?	S: Students listen carefully
T: can you give me some points regarding each planet?	S: students are unable to give points but give some points regarding the planet earth.
T: (teacher explains the characteristics of each planet in detail)	

T: Till now we have studied about the different planets, now let us discuss about the other members of the solar system (Teacher explains about other members of the solar system one by one i.e. Asteroids, Comets, Meteors, Meteorites and Satellites. T: so today we have learned about solar system and its members. In next class we will study about the Stars and its types. (At the end teacher asks some questions to evaluate the students)	(some students answers the questions correctly)

LESSON PLAN FOR TRADITIONAL APPROACH

SUBJECT: SCIENCE **TIME**: 35 MINS

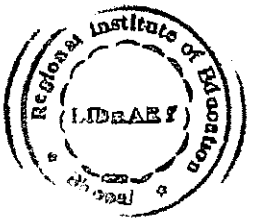
TOPIC: LIGHTNING **CLASS**: VIII

INSTRUCTIONAL OBJECTIVES:-

1. The students will be able to recall different Natural Phenomena.
2. The students will be able to classify the Natural phenomena into destructive and non-destructive Natural phenomena.
3. The students will be able to understand what is lightning & how it occurs.
4. The students will be able to recall the effects of lightning.
5. The students will be able to recall the safety measure to be taken during lightning.

CONCEPTS:

1. What is Natural Phenomena?
2. What is lightning?
3. Process of Lightning
4. Effects of lightning.
5. Safety measures during lightning.



PREVIOUS KNOWLEDGE:

1. Students know about when does lightning takes place
2. Students know about some of the natural phenomena.

INSTRUCTIONAL MATERIALS:

Roller B.B., photos of natural phenomena.

Sequential Teaching Learning Activities	Expected Behavioural Outcome
Teacher introduces the lesson by	

during thundering?	Lightning
T: ok good, so today we are going to learn more about the topic Lightning and its Effects. (teacher writes the topic on the black board)	
T: The process of electric discharge between clouds and the earth or between different clouds causes lightning.	S:(students note down the definition)
T: (teacher explains about the lightning conductor and how it protects building from lightning)	
T: ok so now tell me what harm does lightning can cause?	S: it can destroy building, plants etc.
T: ok good,(teacher explains the effects of lightning in detail)	S: students listen very carefully.
T: Now we will study about safety & measures during lightning	
T: can you tell what things we should not do during lightning or what things we should do during the lightning?	S:(students responds saying few points)
T: (Teacher Explains the Dos and Don'ts during lightning)	S: (students note down the points)
T: so today we have learned about what is lightning? what are its effects and what are its safety Measures. In next class we will study about another Natural Phenomena i.e. Earthquake.	

LESSON PLAN FOR TRADITIONAL APPROACH

SUBJECT: SCIENCE **TIME**: 35 MINS

TOPIC: AIR POLLUTION **CLASS**: VIII

INSTRUCTIONAL OBJECTIVES:-

1. The students will be able to define what is Air Pollution.
2. The students will be able to identify different sources of Air Pollution.
3. The students will be able to recall the composition of Air.
4. The students will be able to identify different types of air pollutants and their effects.
5. The students will be able understand the concept of Acid rain, Global Warming and Green house Effect.

CONCEPTS:

1. What is Air Pollution?
2. Composition of Air
3. Sources of Air pollution, types of pollutants
4. Acid Rain, Global Warming and Green House effect.
5. Satellites.

PREVIOUS KNOWLEDGE:

1. Students know about how pollution takes place.
2. Students know different sources of Air pollution.

INSTRUCTIONAL MATERIALS:

Roller B.B, Charts, Pictures etc.

Sequential Teaching Learning Activities	Expected Behavioural Outcome
Teacher (T): teacher introduces the lesson by asking some general questions related to the environment. T: Have u ever gone to any metropolitan city?	 S: yes

T: what you can observe their?	S: lots of vehicles, shops etc.
T: so what these vehicles give out?	S: smoke
T: so what does it leads to?	S: Air Pollution
T: ok good, so we know that Vehicular exhaust leads to the Air Pollution. So in today's class we are going to learn more about the topic Air Pollution and its sources. (Teacher writes the topic on the board)	
T: can you tell me some sources of Air pollution?	S: Vehicles, Industries, factories etc.
T: Good, so can you define what Air Pollution is?	S: (students unable to define)
T:(teacher defines what is Air Pollution)	
T: When Air is contaminated by unwanted substances which have harmful effects on both the living and non living, it is referred to as AIR POLLUTION.	S: (students note down the definition)
T: (teacher explains in detail about the different sources of Air Pollution by showing the chart with different pictures related to Air pollution)	S: smoke, smog, fog etc.
T: what are the different Air pollutants?	
T: ok so all this pollutants leads to the Air Pollution.	S: (students note down the definitions simultaneously)
T: (Teacher further Explains About the different concepts related to Air pollution i.e. What is Acid Rain, what is Green House Effects and Global Warming)	

T: so today we have studied about what is air pollution, its sources and its effects, in next class we will study about Water pollution T: (teacher asks some questions to the students to evaluate on the content taught to them)	S: students respond actively.

APPENDIX-IV

LESSON PLANS FOR MULTIMEDIA APPROACH

LESSON PLAN FOR MULTIMEDIA APPROACH

SUBJECT: SCIENCE **TIME**: 35 MINS

TOPIC: SOLAR SYSTEM **CLASS**: VIII

INSTRUCTIONAL OBJECTIVES:-

1. The students will be able to recall names of different planets.
2. The students will be able to recall what is solar system.
3. The students will be identify different objects found in the solar system.
4. The students will be able to define what is orbit, period of Rotation & Period of revolution.
5. The students will be able to recall properties of different planets.

CONCEPTS:

1. What is solar system?
2. Composition of solar system
3. Orbit, Period of rotation & period of revolution
4. Comets, meteors and meteorites
5. Satellites.

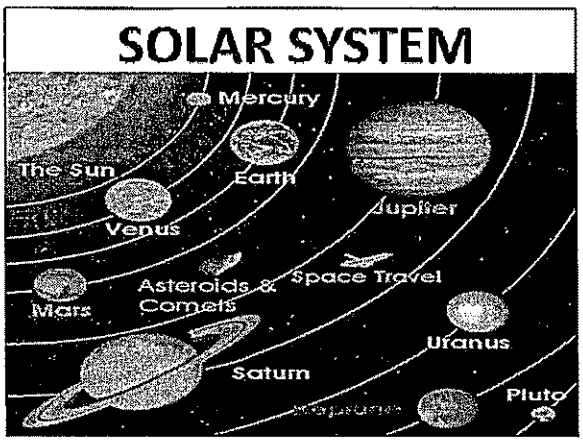
PREVIOUS KNOWLEDGE:

1. Students know about sun, moon etc.
2. Students know the names of different planets.

INSTRUCTIONAL MATERIALS:

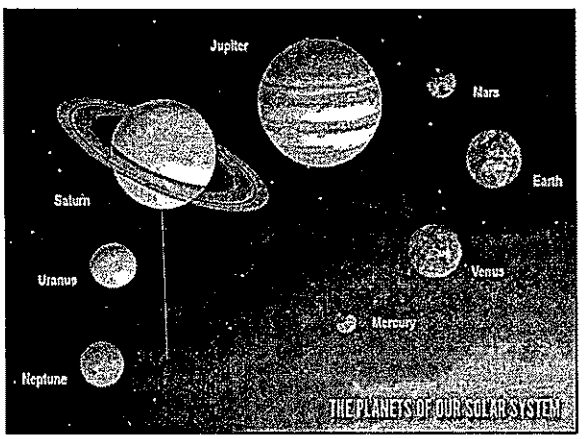
Computer, L.C.D. projector, C.D.,videos,Animations.

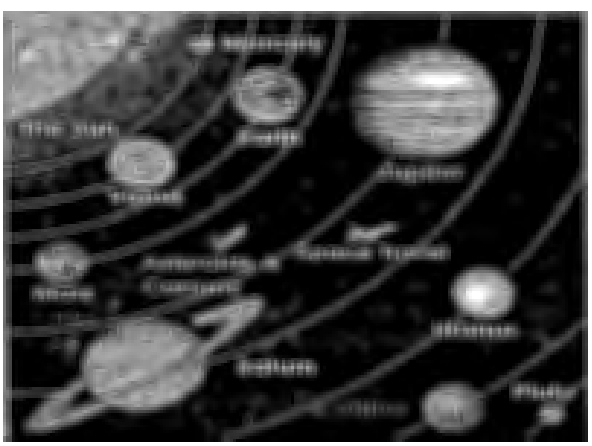
The overview of the lesson followed for the Multimedia Approach is given as follows:

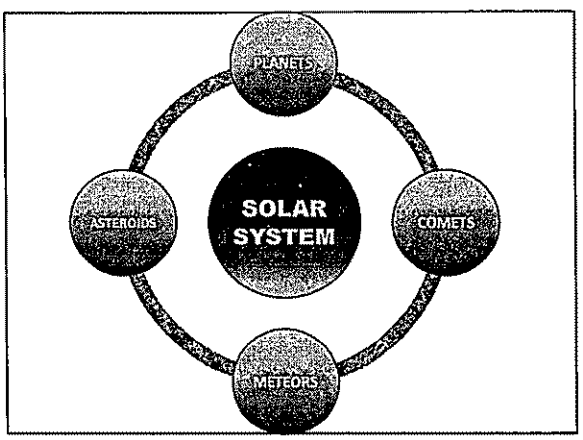


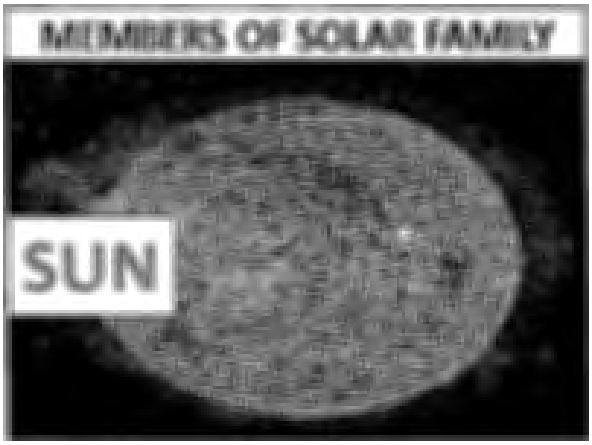
WHAT IS SOLAR SYSTEM???

The sun and the celestial bodies which revolves around it forms the solar system







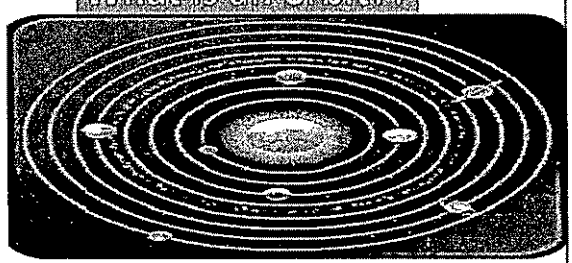


PLANETS

MERCURY
VENUS
EARTH
MARS
JUPITER
SATURN
URANUS
NEPTUNE

MY VERY EAGER MOTHER JUST SHOWN US NINE PLANETS

What is an orbit??



A definite path through which planet revolves around the sun is called as an orbit.

Period of Revolution

The time taken by planet to complete one revolution around the sun is called as Period of Revolution.

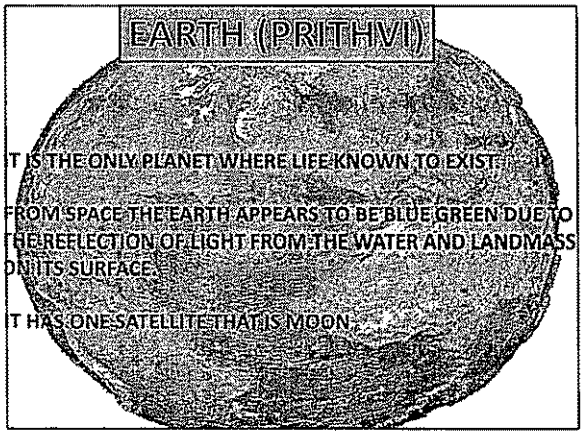
Period of Rotation

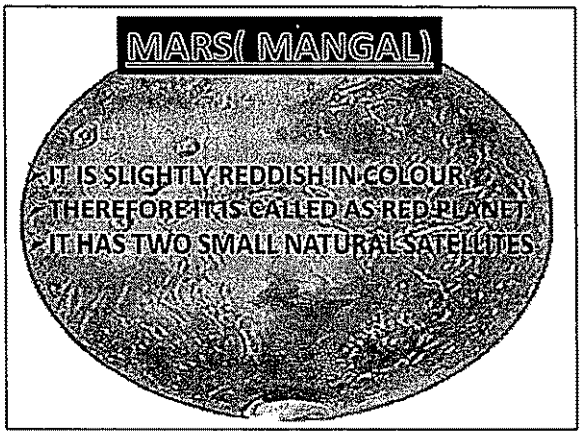
The time taken by planet to complete one rotation around its own axis is called as Period of Rotation.

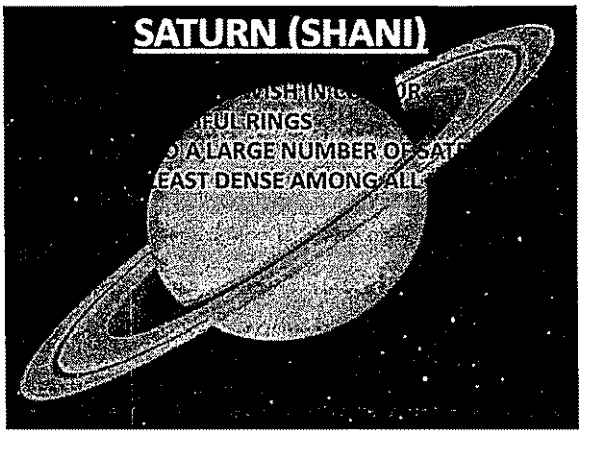
What is an satellite???

Any celestial body revolving around another celestial body is called as an satellite.

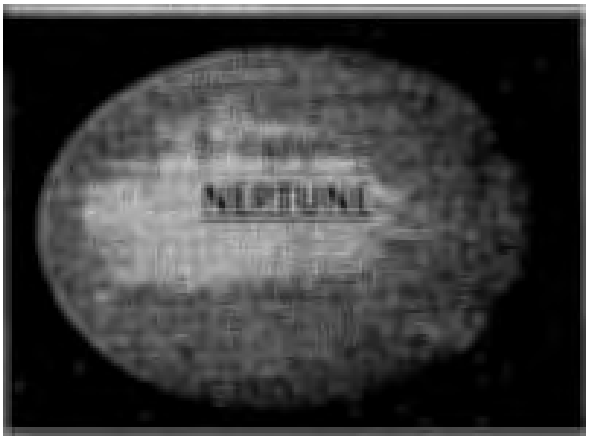

MERCURY

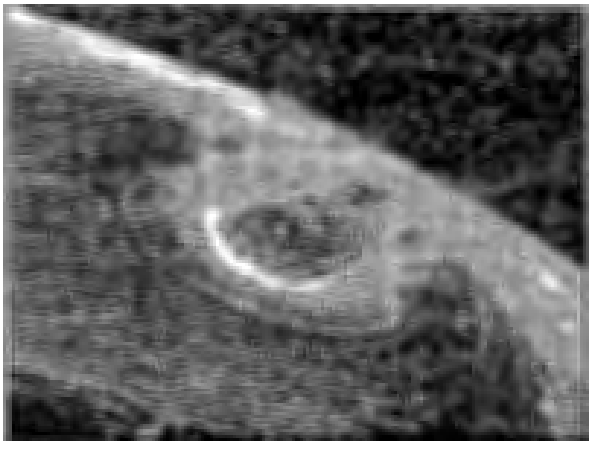

EARTH (PRITHVI)
T IS THE ONLY PLANET WHERE LIFE KNOWN TO EXIST
FROM SPACE THE EARTH APPEARS TO BE BLUE GREEN DUE TO
THE REFLECTION OF LIGHT FROM THE WATER AND LANDMASS
ON ITS SURFACE
T HAS ONE SATELLITE THAT IS MOON

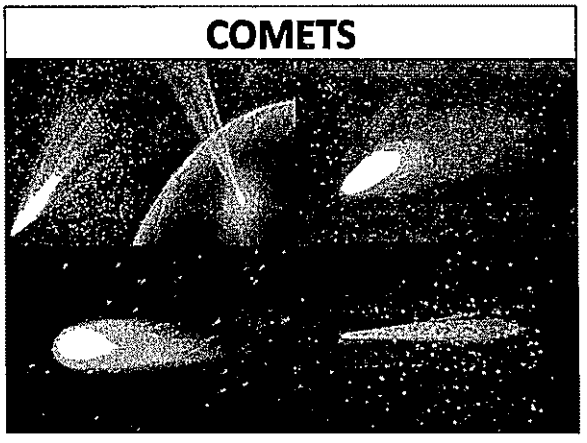

MARS(MANGAL)
IT IS SLIGHTLY REDDISH IN COLOUR
THEREFORE IT IS CALLED AS RED PLANET
IT HAS TWO SMALL NATURAL SATELLITES

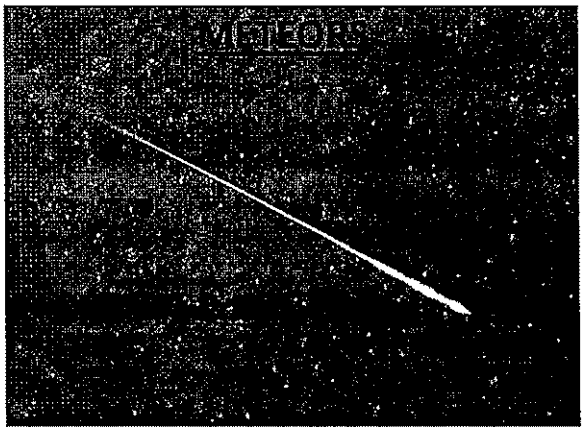

SATURN (SHANI)
UL RINGS
A LARGE NUMBER OF SAT
EAST DENSE AMONG ALL

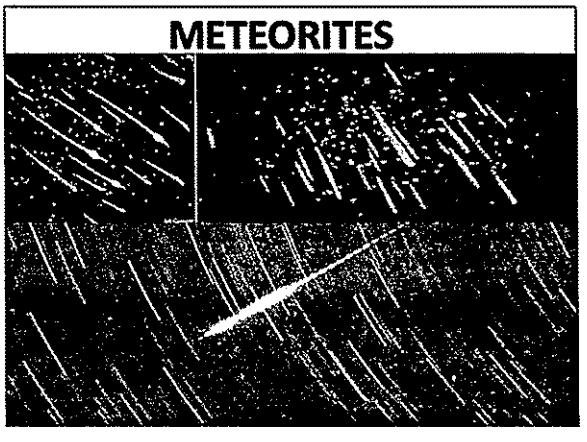

URANUS

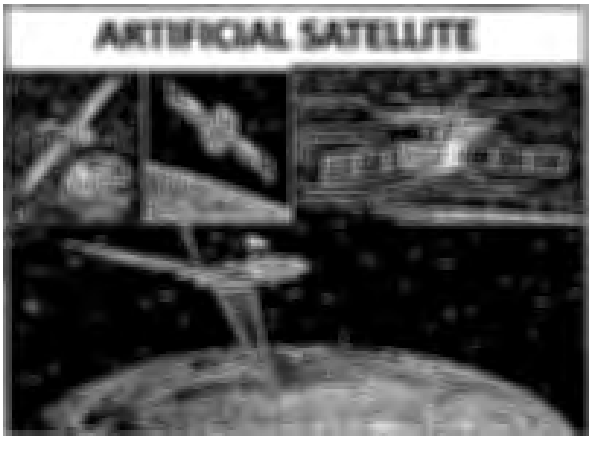

NEPTUNE




COMETS


METEORS


METEORITES


ARTIFICIAL SATELLITE

LESSON PLAN FOR MULTIMEDIA APPROACH

SUBJECT: SCIENCE **TIME**: 35 MINS

TOPIC: LIGHTNING **CLASS**: VIII

INSTRUCTIONAL OBJECTIVES:-

1. The students will be able to recall different Natural Phenomena.
2. The students will be able to classify the Natural phenomena into destructive and non-destructive Natural phenomena.
3. The students will be able to understand what is lightning & how it occurs.
4. The students will be able to recall the effects of lightning.
5. The students will be able to recall the safety measure to be taken during lightning.

CONCEPTS:

1. What is Natural Phenomena?
2. What is lightning?
3. Process of Lightning
4. Effects of lightning
5. Safety measures during lightning.

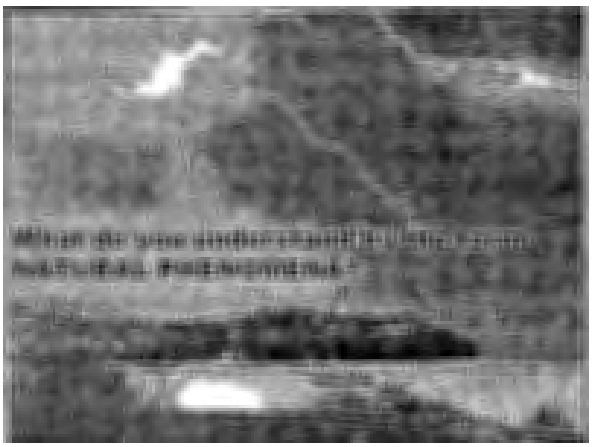
PREVIOUS KNOWLEDGE:

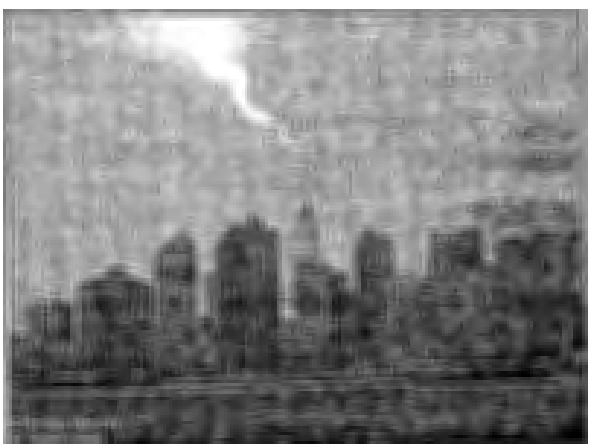
1. Students know about when does lightning takes place
2. Students know about some of the natural phenomena.

INSTRUCTIONAL MATERIALS:

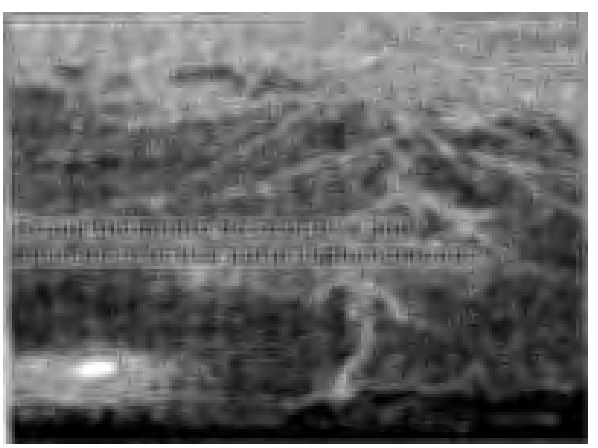
Computer, L.C.D. projector, C.D.

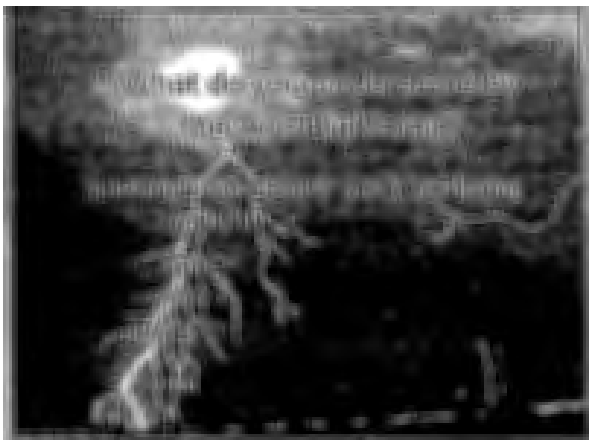
The overview of the lesson followed for the Multimedia Approach is given as follows:

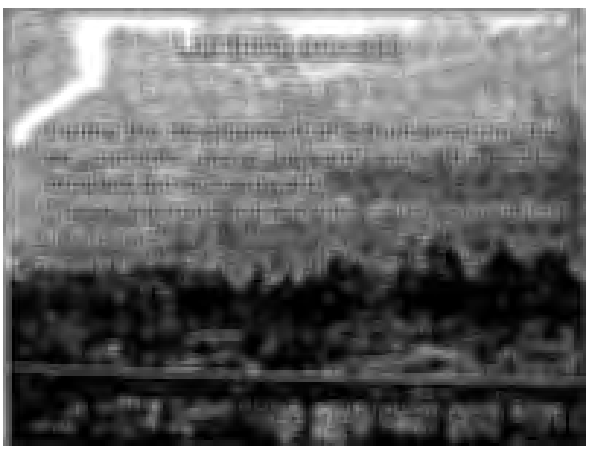




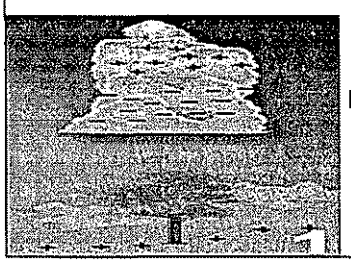

watch this





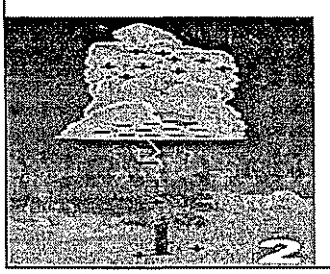


Positive charges collect near the upper edges of the clouds and the negative charges accumulate near the lower edges.

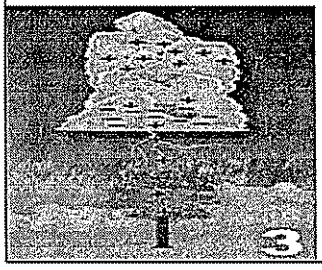


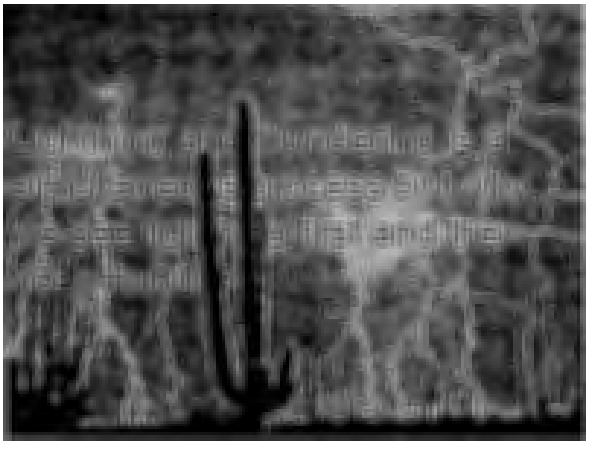
There is also accumulation of positive charges near the ground

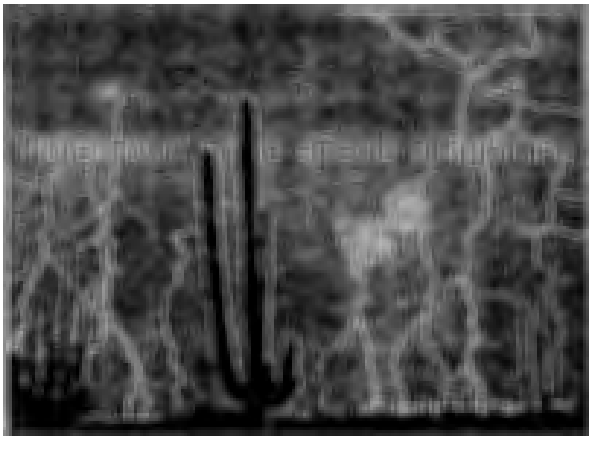
When the magnitude of accumulated charges becomes very large, the air no longer able resist their flow,



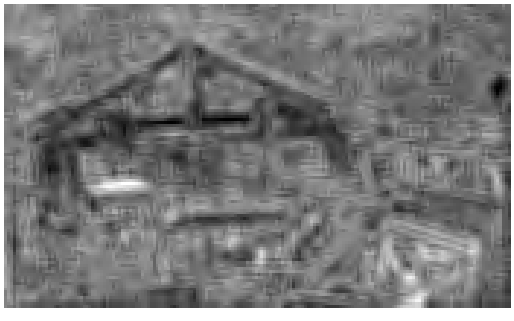
Negative and positive charges meet, producing streaks of bright light and sound.

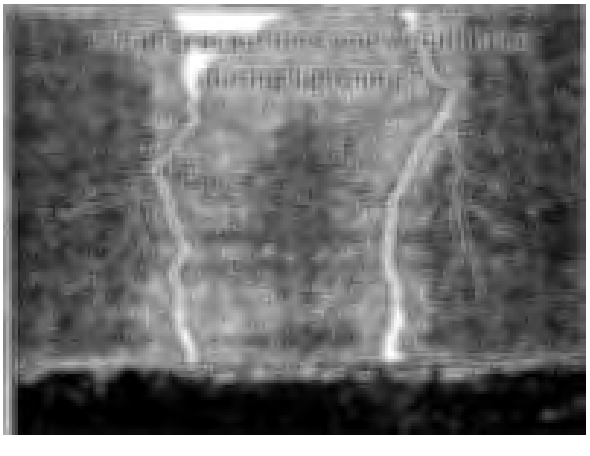


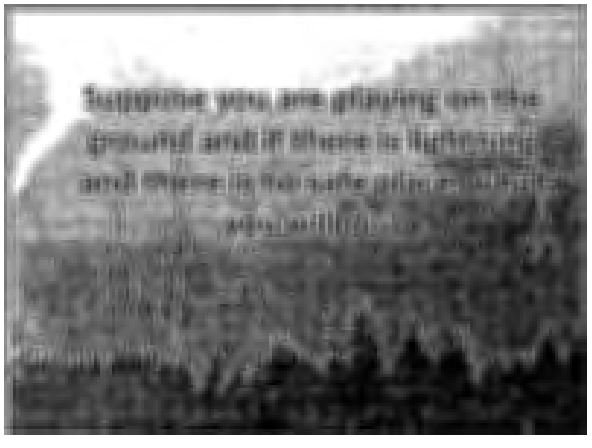




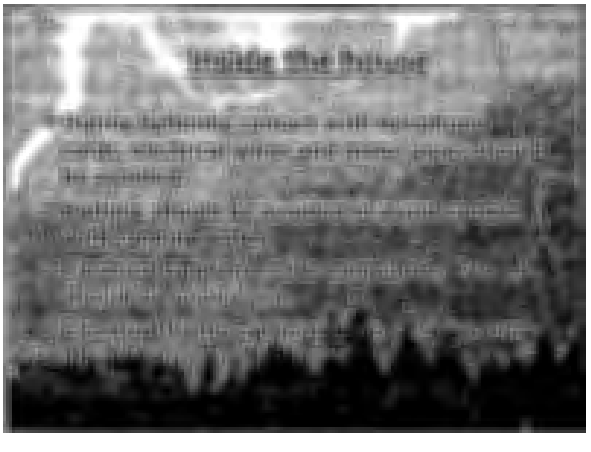
Destruction caused by lightning.





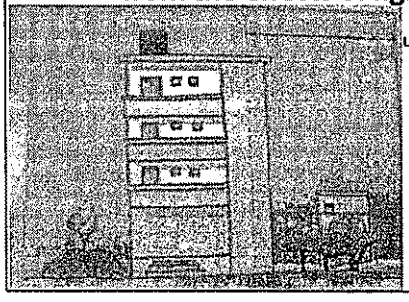


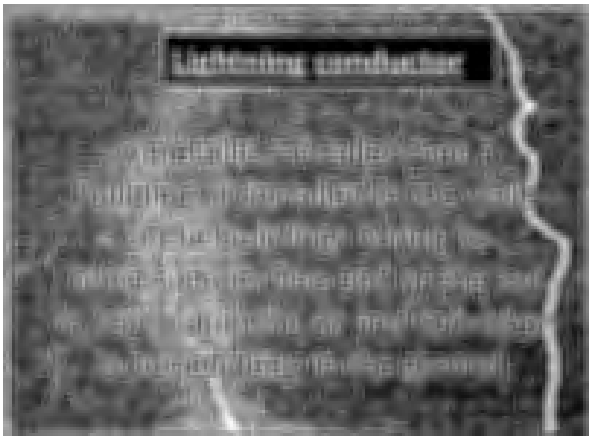
Safe position during lightning

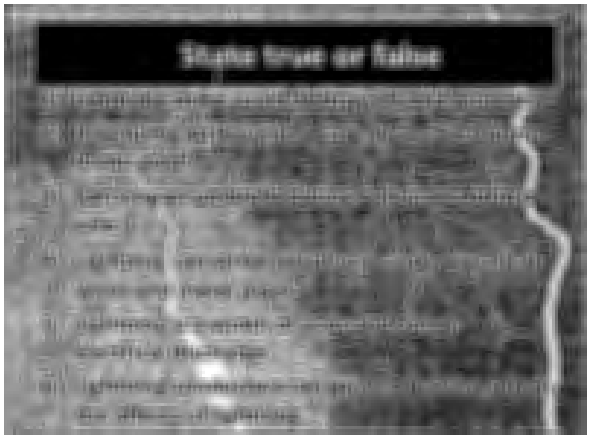


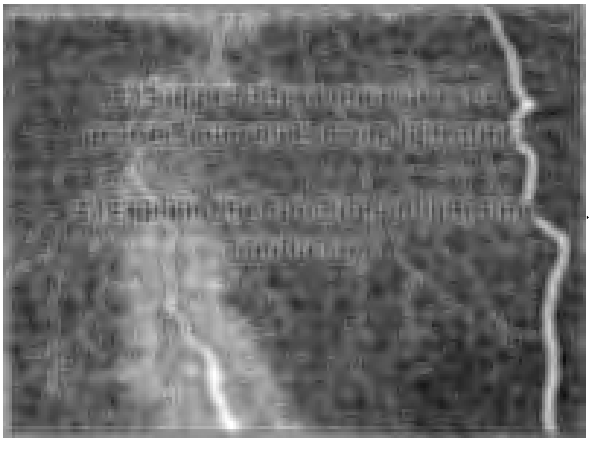
Lightning conductor

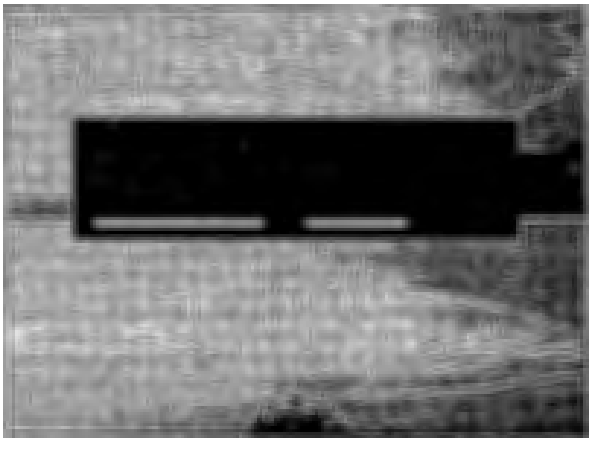
It is a device used to protect buildings from the effects of lightning

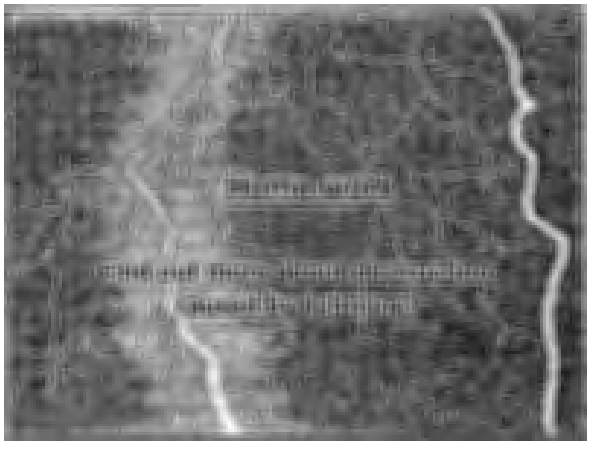












LESSON PLAN FOR MULTIMEDIA APPROACH

SUBJECT: SCIENCE **TIME**: 35 MINS

TOPIC: AIR POLLUTION **CLASS**: VIII

INSTRUCTIONAL OBJECTIVES:-

1. The students will be able to define what is Air Pollution.
2. The students will be able to identify different sources of Air Pollution.
3. The students will be able to recall the composition of Air.
4. The students will be able to identify different types of air pollutants and their effects.
5. The students will be able understand the concept of Acid rain, Global Warming and Green house Effect.

CONCEPTS:

1. What is Air Pollution?
2. Composition of Air
3. Sources of Air pollution, types of pollutants
4. Acid Rain, Global Warming and Green House effect.
5. Satellites.

PREVIOUS KNOWLEDGE:

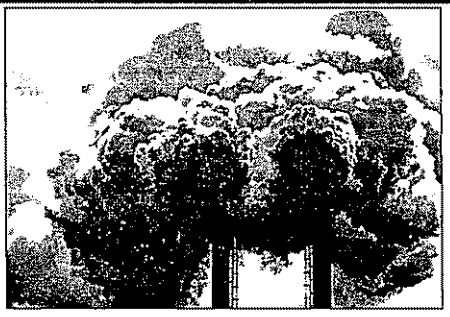
1. Students know about how pollution takes place.
2. Students know different sources of Air pollution.

INSTRUCTIONAL MATERIALS:

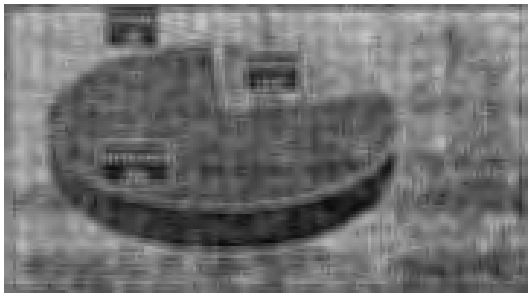
Computer, L.C.D. projector, C.D., Videos, Animations

The overview of the lesson followed for the Multimedia Approach is given as follows:

Air Pollution

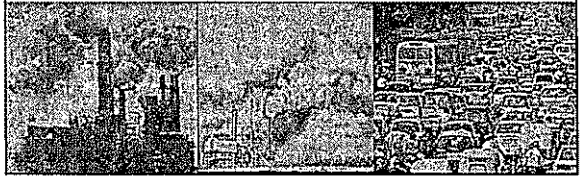


COMPOSITION OF AIR



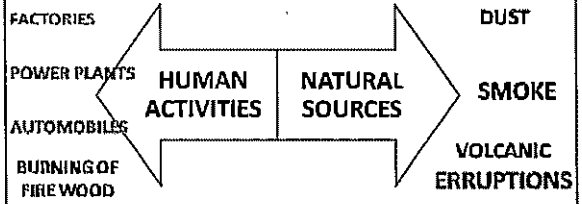
WHAT IS AIR POLLUTION???

When Air is contaminated by unwanted substances which have harmful effects on both the living and non living ,it is referred to as AIR POLLUTION



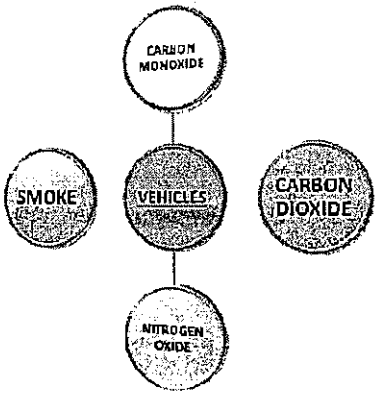
WHAT ARE AIR POLLUTANT????

- The substances which contaminate the air are called as <u>AIR POLLUTANT.</u>



HOW DOES AIR GETS POLLUTED??

VEHICLES



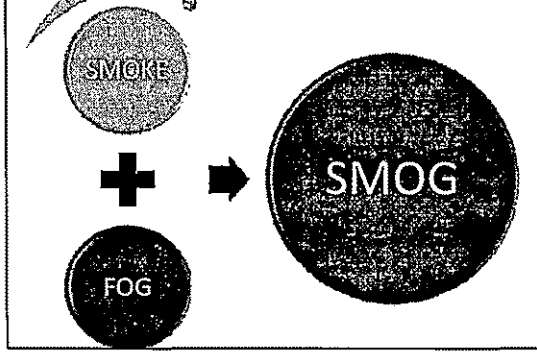
CARBON MONOXIDE (CO)

- It is produced from incomplete burning of fuels such as petrol and diesel.

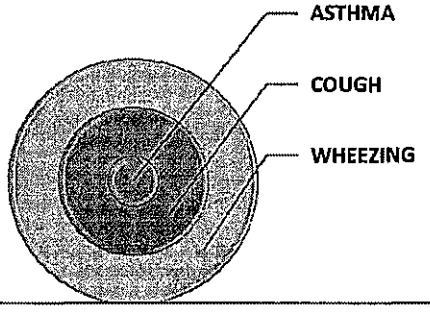
- It is a poisonous gas.
- It reduces oxygen carrying c[illegible]

SMOG

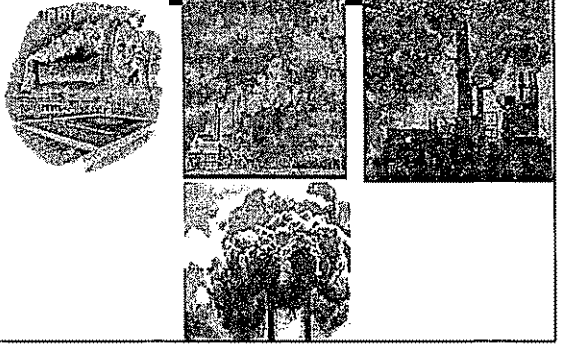
OXIDES OF NITROGEN



CAUSES OF SMOG



INDUSTRIES



PETROLEUM REFINERIES

SO_2 NO_2

COMBUSTION OF COAL IN POWER PLANTS

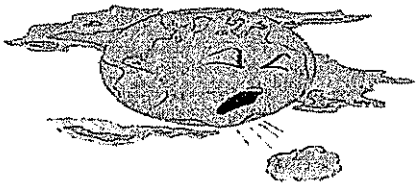
IT CAN CAUSE RESPIRATORY PROBLEMS INCLUDING PERMANENT LUNG DAMAGE

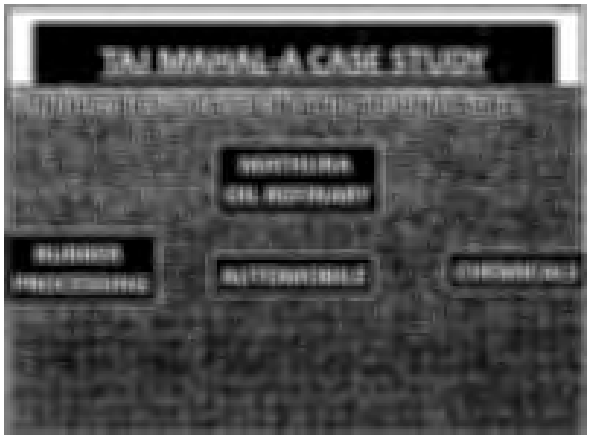
CHLOROFLUROCARBONS(CFC'S)

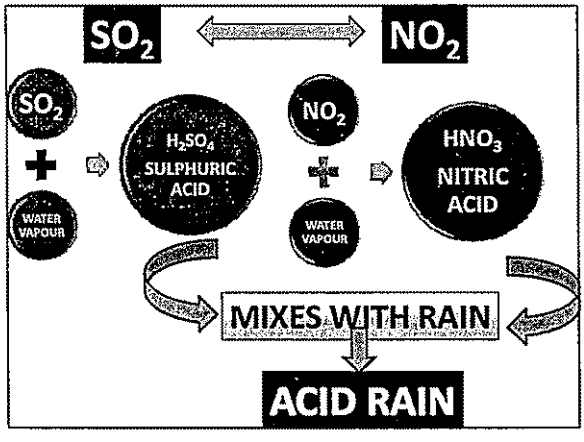
- REFRRIGERATORS
- AIR CONDITIONERS
- AEROSOL SPRAYS

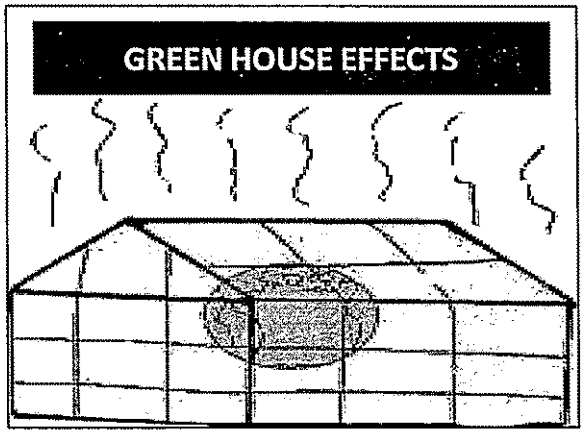
WHAT DOES IT CAUSES??

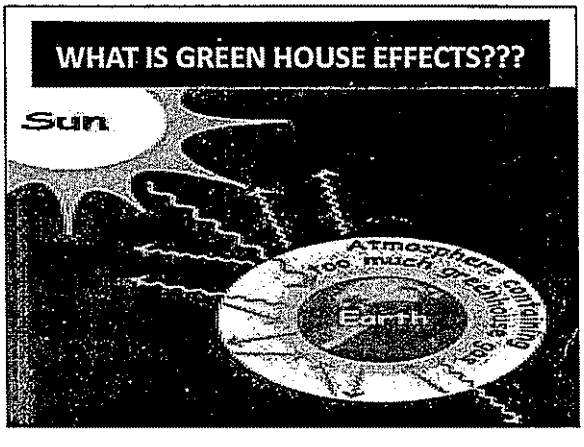
IT DAMAGES THE OZONE LAYER

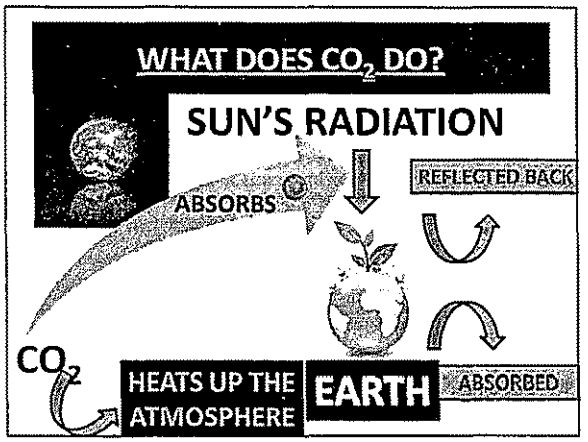


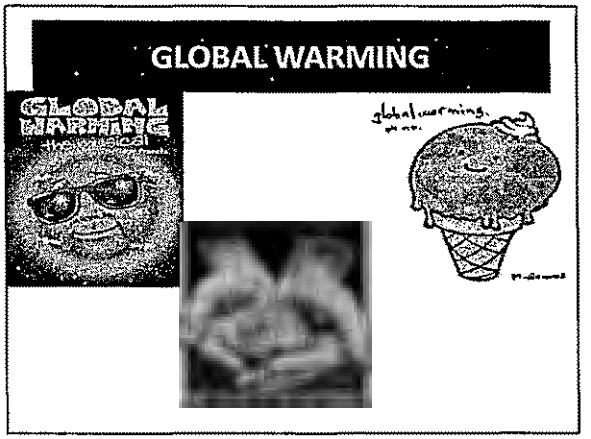


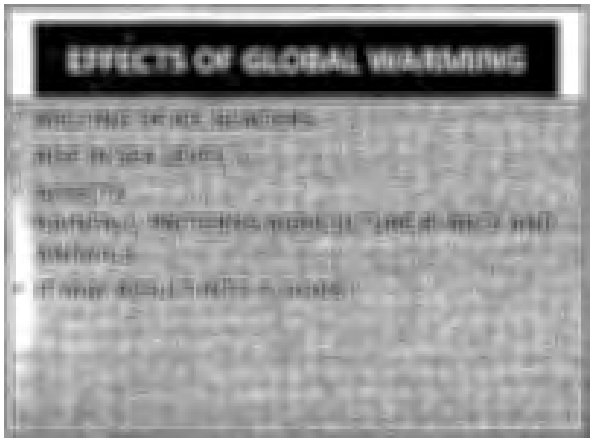


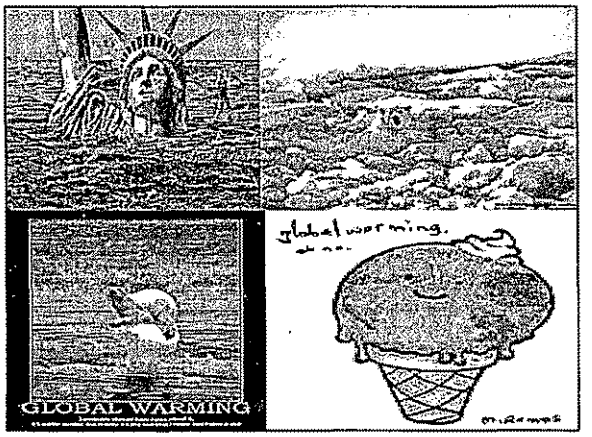


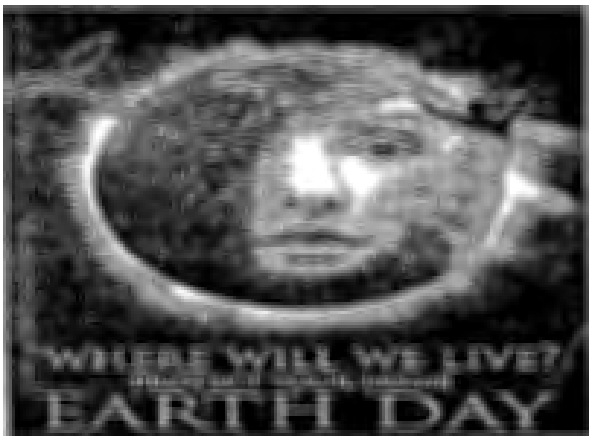












WHAT WE CAN DO TO REDUCE AIR POLLUTION?

- PLANTING TREES
- SWITCHING TO FUELS LIKE CNG AND UNLEADED PETROL.
- MAKING USE OF SOLAR ENERGY,HYDROPOWER AND WIND ENERGY.
- AVOIDING BURNING OF PLASTICS.
- USE OF CFC FREE SPRAYS AND PERFUMES.
- CREATING AWRENESS AMONG PEOPLE AND EDUCATING THEM ABOUT POLLUTION

Video 1

Video 2

Video 3

Video 4

THANK U