1.0 INTRODUCTION

Today's world is dominated by the use of Information and Communication Technology (ICT). Communication this day is so easy to the extent that any part of the world can be reached and discuss any issue at any point in time, this implies that the world has being reduced to a concise size through information and communication technology ensures national development through adequate communication to seek for opinion in any other country which brings deep relationship with other nations. ICT can be categorized to information technology comprises of technologies for manipulative communication of information and also consists of the medium for information recording like radio, television, and others, and technology/ mobile phone. ICT is indispensable when considering its importance in the industrialized societies. The use of ICT can be seen as an added advantage which creates suitable environment to the educational system. This might be the reason why it is been said that ICT gives a new phase to the education system in terms of pedagogical approach. The National Policy on Education 2005stated that education is an important tool for national development.

Throughout the world, we are going through a period of reflection on the teaching/learning process of the science education, in order to maintain a healthy school environment. It is today's demand to teach science with a solid understanding of the most important scientific ideas by using new methods. Certain features of teaching science at the present time are fairly general. The biological sciences usually treated as descriptive rather than experimentally and they are aligned to geography and geology rather than to physics and chemistry. The contribution of science to the educative process is of two-fold. On the one hand, it is informative, involving the acquisition, within the limits of pupil's

abilities, of the knowledge necessary for full participation in, and enjoyment of, life in the modern world. In the pre-technology educational context, the teacher is the sender or the source, the educational material is the information or message, and the student is the receiver of the information. In terms of the delivery medium, the educator can deliver the message via the ''Chalk-and-talk'' method and overhead projector (OHP) transparencies. Basically, in lecture method, the teacher delivered the content to the entire class and the student listens to the lecture. Thus, the learning mode tends to be passive and the learners play little part in their learning process. It has been found that lecture method used for teaching sciences in schools has less effective. It is a method of one-way process become of imparting scientific knowledge. While on the other aspect of teaching, through various innovative methods students interact more and the teaching learning process become more effective than traditional teaching style. Hence, I have decided to see the significance difference between traditional and ICT methods of teaching science in IX classes.

The information provided in this research will help one to better understand why this study was conducted. Because technology is prominent in education, there was focus between two different methods of delivering simple step direction: audio, video infrastructure (ICT) versus lecture methods (traditional). Educators' today use both modes of instruction, but one will better result in the method of retaining information. The study is to determine the effectiveness of audio video instruction as opposed to the traditional ones. Within a group of 120 students, students are going to be separated into two groups and each group of 60 students each group will going to be taught in totally different manner, one will attend normal chalk-n-talk other group will be taught through ICT based instructions. It will be expected that the students who receive video instruction recalled more information than

those who receives the traditional lecture instruction of the teacher in chalk-n-talk method. Because of the expected results, this study will suggest that the effectiveness of video instruction will be used as a method to support student learning.

In the current scenario of educational institutions, ICT has dig up its own kind of space in some or the other way as a tool of educational technology. ICT has overcome the barriers of time and space and provides evidence to be accepted as an anytime and anywhere tool for educating multi-disciplinary masses. The process of knowledge acquisition becomes more efficient when the learners experience an event through a ICT simulation. ICT empowers the educational process by means of increased interaction between teachers and the students. Apart from the fact that ICT can provide educators and students with endless possibilities of quality teaching and learning, taking vital

1.1 What is ICT?

Information and communications technology (ICT) is an extensional term for information technology (IT) that stresses the role of unified communications and the integration of telecommunication (telephone lines and wireless signals) and computers, as well as necessary enterprise software, middleware, storage and audiovisual, that enable users to access, store, transmit, understand and manipulate information as per the international federation of ICT.

The term of ICT is also used to refer to the convergence of audiovisual and telephone networks with computer networks through a single cabling or link system. There are large economic incentives to merge the telephone network with the computer network system using a single cabling, signal distribution, and management. ICT is an umbrella term that includes any communication device, encompassing radio, television, cell phone, computer and network hardware,

satellite system and so on, as well as the various services and appliances with them such as video conferencing and distance learning.

ICT is a broad subject and the concept are evolving. It covers any product that will store, retrieve, manipulate, transmit, or receive information electronically in a digital form (e.g., personal computers, digital television, email, or robots). Theoretical differences between interpersonal-communication technologies and mass communication technologies have been identified by the philosopher Piyush Matura. Skills Framework for the Information Age is one of many models for describing and managing competencies for ICT professionals for the 21st century.

1.1.1 What is digital multimedia?

When all of the things that we want to use are converted into digital format, then we call it digital multimedia

1.1.2 The raw bits

These are the various bits and pieces that are combined together to make the final digital project. let's consider some of these.

1.1.3 Text files: These are normally word processor documents that are typed into a computer. They can also be produced by scanning text from a book or elsewhere and then putting them into a word processor file. Text file have file extensions like .doc, .txt, .rtf, etc.

1.1.4 Drawing files: Clip art and similar drawings are available from many sources, including the internet and various software libraries. Some programs come with a collection of freely available clip art. If you have a drawing program me on your computer, you may also be able to create your own files. But be aware that some of these programs take quite a long time to learn. Picture files have extension such as .wmf, .png, .dwg, and many others.

1.1.5 Photograph and pictures: Photographs Digital photographs are now very common and can be made easily on almost any digital camera. The tricky job is often getting these into a computer where they can be incorporated into a multimedia project. The best advice we can give is for you to follow the instructions that came with cameras. Photographs can also be scanned into your computer in the same way as pictures. Digital imaging software can be used to alter your pictures. Sometimes this is applied with either your camera or computer. Once again, it may take some time to become proficient in the use of this. Photograph files have extensions such as .jpg, tif, and others.

1.1.6 Sound recordings: CDs are probably the most common form of digital recordings, but now it is also possible to make simple digital voice recordings on a number of devices, including the computer of course. The old-style cassette tape recorder is now replaced with a modern digital machine that records straight to a computer storage device such as a hard disc. The most common sound files have extensions like .wav, .wma.

1.1.7 Videos: Most video production work is now done digitally. The videotape is very rapidly becoming a thing of the past. In many countries now, even the broadcast television channels transmit digital signals to Tv sets, and in the near future it is likely that old non-digital sets (called analogue receivers) will become obsolete. And we are all now familiar with DVDs of course. For any who want to produce their own digital video recordings; the latest generation of camcorders enables you to do this. Popular video file formats have the extensions .wma, avi, mpg and many more.

1.1.8 Animations: Animations are like cartoons. They are pictures or other objects that move. They could also be moving text. Animations can be very useful in ICT

programs, but they are difficult to create and the creations process is very time consuming. The file formats are usually the same as for videos.

1.1.9 Some examples of ICT

1.1.9.1 Desktop publishing

This is really a misleading term, but it is one that is commonly used to describe a range of software that started to appear in the mid1990s. It is not actually "publishing" software since things are not published on the desktop, but it is a very useful and powerful tool that enables the user to prepare material ready to be published- either on a printing press or simply photocopied. So, it is actually a graphic design and layout tool. But we can refer to it as ICT, since it does enable more than one of the raw bits that we talked about earlier to be combined together. This Guide to the use of ICT, for example, has been prepared using software called In Design, one of the most widely used pieces of desktop publishing software. What desktop publishing enables you to do is combine text and images (including pictures, drawings, photographs, graphs, charts, tables, etc.) Using ICT in the classroom together in the one document and them move them around the page so as to make them look attractive and easier for the reader to use. You can manipulate the text so as to:

- Make it fit into a given space.
- Change the front style.
- Change the size of the font and many other things as well.
- You can create the text inside the program itself or you can import from some other program, such as a word processor. And you can also import (i.e., place into the document) graphic materials of many different types, and when they are there, you can:

- Change their shape and size.
- Move them about the page so as to give the desired effect.
- Put them under the text.
- Rotate them and lots more, depending on the program you are using. To become a good desktop publisher, you need to have a good knowledge of design and you need to know what works well in terms of layout. It is very easy to make a real mess of the layout unless you are careful.

1.1.9.2 Some of the best-known desktop publishing software programs are:

- Adobe In Design (probably the best)
- Adobe PageMaker (now replaced by In Design, but still used quite extensively)
- Microsoft Publisher (lacks many of the features of In Design, but still quite popular)
- Microsoft Word (really a word processor, but the most recent versions have many of the features of a full desk top publishing program)
- Open Office (a free alternative to Microsoft office) has a program very similar to World. It is called Open Office Text Document and has most of the features of word.
- Scribe's is another open-source program (i.e.,it is available for free) that you can download from the internet.

1.1.10 Presentation software

Presentation software is also a form of ICT. The most common one around is probably Microsoft PowerPoint. Again, the software enables pictures and text to be combined in the one place, but this time we have the added possibility of

incorporating both sound and movies. Really effective presentation also depends on good layout and design. It is well worth while noting those you see that are impressive in this respect, and try to incorporate them in your own presentation.

A free alternative to PowerPoint is the open office presentation program. This program will also create presentations of an ICT nature and will also open most presentations that have been create in PowerPoint. Its importance to remember that presentations software is really intended for showing to an audience. They do work for individual viewing of course, but their main purpose is to present things to a group, usually as support for a spoken commentary. If you have a large amount of information that you want to convey, it is better to use another method, such as a PDF file.

1.1.11 Portable document format files

PDF files, as these are generally called, are produced from other documents that have been created in another program. Most desktop publishing programs, as well as word processor and presentation programs, enable you to export the finished file as a PDF document. The word "export" means that you can convert the file into PDF form. The main advantage of a PDF file is that it can be viewed on almost any computer, provided that the software known as Aerobat Reader is installed on it. And Acrobat Reader is available for free. But PDF files have some other features as well:

- They can link to other ICT elements such as sound, videos, internet sites and other files. But to make these links you need to have a more advance version, known as Adobe Acrobat, installed. And this is not free.

- PDF files are quite difficult to edit or change once they have been created. For this reason, they are often used in situations where you do not want the reader to be able to alter them.
- They can also be made in varying file sizes. If the file is to be distributed via the internet, for example, its size needs to be small, so that it can be downloaded easily by a viewer. The quality of the image will be not as good in this instance. But if you are wanting to produce a high-quality printed book from your PDF file, then the size and the clarity of the images and text will need to be greater.

1.1.12 Interactive ICT

Where the user of an interactive ICT project or program is able to interact with it, then we have what is called interactive ICT. In education, this can be a very powerful learning tool when used in the right way. Here are just some of the possibilities for this sort of interaction.

- A link from the main program to another file which may be in another format. Note that in order to run this linked file, it may be necessary to have additional software on the computer.
- A link to a page that should be printed out. For example, a test or assignment sheet. This sheet could be in word or a similar word processor format that a user could fill in electronically. Or it could just be a printout that is completed by hand.
- A page in the program could offer choices to the user, asking them to select which option they would like to take.

- An extension of the above to enable a student to select an answer from a range of possibilities, and then having the computer respond with a comment if the wrong choice is made (or the right one).
- A link from the program to an internet site where more information can be found. Be careful with these, however, since interest sites can disappear without warning and the link may just go nowhere.

1.1.13 Pedagogical usages of ICT

Adoption of ICT in the classroom generally proceed in four broad stages in the way the teachers and learner use of ICT as a support to teaching and learning. The four stages give rise to the mapping that have been broadly classified as supporting work performance, enhancing traditional teaching environment, more than three decades ago, computers and related information technology were introduced to educators for direct teaching and learning purposes. ICT started its journey primarily with productivity tools, proceeded to self-learning courseware and ICT instruction, and finally progressed to web based learning Management system.

Supporting work performance in the initial phase, teachers use productivity tools such as word processor, visual presentation software, spreadsheet, database, email, etc., to support their daily work performance. During this stage, there is usually an emphasis on basic operations of electronic office software. This stage of using productivity tools for teaching and learning is linked with emerging stage in ICT development.

Enhancing traditional teaching from the productivity software comes the stage of learning how to use and develop computer assisted learning software in different disciplines. This stage involves the technique of integrating computer-based

learning in the traditional instructional process. Various instructional package was selected developed and used to enhance traditional classroom teaching.

Facilitating learning the next stage involves using various types of ICT tools to facilitate student learning. The key point is that the teacher s needs to learn how to choose the most appropriate tools for a particular task, and using these tools in combination to solve real life problems. This stage implies the ability to recognize situations where various ICT and specialized software can be utilized for teaching and learning.

1.1.14 Creating innovative learning environments

this stage involves specializing in the use of ICT to create an innovative learning environment that transforms the learning situation. This is possible by incorporating emerging trends in pedagogy and learning principles in teaching and learning. For this purpose, specialized software including modelling and simulation, expert systems, semantic networking etc., are employed to support pedagogical innovation. It helps to develop, deliver and manage open and flexible learning program.

1.1.15 Using ICT in the classroom

Using ICT materials in the class can be fun as well as educationally benefit one can use short segments to add visual impact to your lesson and reality into the classroom. Here are just a few ideas:

- Show students how the theories of science are actually being used in subject look inside a power stations, see renewable energy sources being used, on the different breeds of chickens that are found in the country.
- Print out student work by them, exploring the resources and conducting materials for their study.

1.1.16 Advantages of ICT

Potential advantage to ICT is numerous. Claims ranging from reduced learning time to cost effectiveness abound. Few of these advantages have been evaluated using formal experimentation. In addition, the advantage canbe minimized or eliminated by poor design of the ICT interface. Since the in advantages of ICT is no extensive only advantage with particular impact on the ICT system used in this study will be explained

- Our major advantage to interactive ICT system is the degree of learners. Learners controlled instructions allows the student to study material at a poor that aims his/her needs.
- Students are under less pressure to perform within certain time limits. Learners can choose a logical route through the instructional material that is meaningful to them.
- ICT instructional system allows learners the opportunity to explore material of their choosing at a pace which is comfortable to them.

- Students are more interested in the material since they choose the pace and the sequence of the content. This increases the relevance of the material and creates a greater desire to learn, which in turn helps to increase knowledge retention.

Considerable research has shown that students learn more effectively when the instruction as consistent with their cognitive (Gagne, 1985). ICT enables the learner to organize the information in a manner that reflect his learning style, thereby improving the retention and retrieval of knowledge (Norman, Genter, Steven, 1976). The way students review ICT instructional material mirrors the way they think, learn, and remember. Students more between text and images and sound, stopping for a time to interpret, analysis, and explore. ICT adapts well to individual differences due to the high degree of learner control and the ability to map to many learning styles. Traditional learning relies heavily on reading text that may or may not be accompanied by illustrations. However, the reading comprehension of some students is naturally better than other students. ICT can provide dynamic illustrations (animations and video) that offer even more support for comprehension than the use of static pictures studied by Levie and Lentz (1986). In addition, students with varying levels of reading comprehension can use multiple senses to study information. Poor readers are more likely to perform at the same level as more better readers due to the reduced reliance on reading comprehension as the primary means of learning.

ICT can provide both good and poor readers with more context and support for comprehension than text alone. This helps learners develop better mental models which are key to learning.

1.1.17 Educational ICT program and teaching:

ICT program are the essential components of all methods of teaching. They are necessary in methods like demonstration, observation, project, experimentation, dramatization discussion etc. while in methods like lectures & problem solving, they are felt optional.

So far as the conventional method like lecture &problem-solving technique are concerned use of ICT program should not be optional at primary level & secondary level because the verbal delivery of lectures by teachers often become like a constant hammering. The student fails to respond or conceive the sensory manipulative capacity of the children. Today children are compelled to coin vest maximum time for better understanding of different subjects. Matters which would have been taught with the help of ICT because of these children are bound to give up many extracurricular & recreational activities which are essential for the total growth of their body & brain.

Absence use of ICT in conventional methods of teaching over the time also separates the children psychology from the subject matter of the school curriculum because without ICT the pedagogy often become boring & as a burden for most of them.

Today institutions where use of ICT program is an official culture of the study, the children are found excel over other in all curricular and extracurricular aspects. The demands of such schools among the parent are very high.

Intensive use of ICT programs in school strictly speaking not a matter of cost as much as it is not a matter of keen efforts by the teacher community the school administration & after all the governing policy for this.

1.1.18 Importance of educational ICT program:

Rapid change in the sphere of society economy, policies, science & technology are the characteristics features of the modern world. This first change is most likely to catch a teacher 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 a foundation of all relevant knowledge in a given matter always.

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

- Explosion of knowledge of idea and approaches in the fields and emergence of never subjects and concept of teaching following researches on effective techniques.
- Over crowed classroom which is a characteristic future of Indian school.
- Vastness related to particular topic of global level.
- Lack of scope and opportunity to include all new development in the text books which are considered to be primary institutional material in our country.
- Develop self-confidence, creativity among the students at all level of elementary school. in order to overcome the problems, a teacher must be equipped with proper communication aids widely selective and carefully divided to cater the challenges of teaching in the modern era, ICT programs can provide the best answer to such problems.

1.1.19 Role of Educational ICT in science education.

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

There are many applications for ICT technology in the science classroom teachers are discovering ways to spark students interests motivate them to discover by incorporating a wide variety of software designed classroom presentation that are visually descriptive ways variety of software designed classroom presentation that are visually descriptive and relevant to the content material students are also becoming more involved in the learning process by exploring ICT such as CD Rom based textbook, tutorials, and laboratory experiments and research.

Science simulation allows students to observe & manipulate multiple aspects of complex micro worlds. Database software provides student with a tool for gathering information in different ways across all of these applications the technology itself possess a problem-solving challenge as student learns to master the further features of the tools to accomplish their desired good. Further the computer tasks are often done in collaboration with peers, which in turns add new layer of complexity through the feedback & communication requirements, that working with other.

1.2 Need and Justification of the study:

Today's world is that of technology, and education keeping in view with pace of it, has to inculcate technology into it cater properly to the needs of today's students. In the same context, reviews of related literature have emphasized the fact that it is now unproductive to a large extent, outdated to use the chalk and talk method in the classroom, as it cannot promote constructing the knowledge by the student. Use of ICT makes the students active learners in the classroom, and not passive entities, day dreaming, or waiting for the bell to ring. We know that learning can be effective the most when one is taught engaging the maximum number of senses possible. The famous quote," I hear, I forget; I see I remember; I do and I learn" very much denotes the ICT style of learning in favour of the student.

The reviews, illuminating as they were, were largely of a different state than M.P and even of other countries. The deep insight offered by them in the world of teaching-learning by ICT will be utilized in the performing of this research. Looking at the gaps, the previous researches have been done on college and higher secondary levels.

The researcher is hopeful that the results of the research will prove to be helpful for teachers teaching std. IX Science. In addition, the students will be benefited in their learning, if their teachers have the knowledge of multimedia and will prove to be a felicitator of bringing about a change in their learning style.

1.3 Statement of the Problem

The world today is changing at a fast rate, so also the various sector in the development of a nation. Education being one of these sectors and in fact, the instrument per excellence for national development also moves along within this line. Ways of improving the teaching and learning of science should be great

concern of the stakeholder due to its benefits to the society. The use of ICT might play a tangible role in this area. This study therefore focuses on students' performance in senior secondary science and seeks to find out if there exist any difference in the performance of the students taught science using ICT materials and those taught science without using ICT.

1.4 Objective

1 To investigate the effect of ICT on students' performance in science at secondary stage.

2 To investigate the influence of gender on students' performance when taught using ICT.

3 To investigate the interaction effect of ICT and gender difference on student's academic performance.

1.5 Hypothesis

1 No significant difference will exist between the mean achievement scores of experimental and control groups.

2 There will be no significant difference between the mean achievement scores based on gender groups.

3.There will be no significant interaction effect of treatment on gender on students' academic performance

1.6 Operational definition of variable:

Traditional approach of teaching – method and technique based on behaviourist pedagogy.

Multimedia approach of teaching – it is defined as the use of various media tech

1.7 Delimitation of the Study:

- This study is delimited to Bhopal District of Madhya Pradesh only.
- The study is delimited to Hindi medium school only.
- It is further delimited to students studying in class IXth only.
- The study is delimited to the school affiliated to Madhya Pradesh Board of Secondary Education (MP board) only
- This study is delimited to the science content only.
- This study is delimited to one school only.