7.1 INTRODUCTION:

Multimedia can be defined as any combination of Text, Graphic-art i.e. image, Sound, Animation & Video delivered by the computer or any other electronic means.

The term multimedia has its origin in the audio-visual movement of the late 1950's. The terms were used to describe on integrated use of a verity of media in presenting and teaching a topic of study.

It was believed that the unique characteristic of each medium could reinforce each other to present students with exiting and rich learning experiences. It was also believed that there are individual differences among the students in terms of their media performance. While one can learn faster through the spoken words, another finds visual assisting him in learning the material at hand.

Based on these understanding, educators advocated provided students with a broad range of information in a variety of formats to meet different learning styles and backgrounds of learners.

In the early 1950's Edgar Dale an internationally acclaimed educational technology educators wrote, "To achieve access to excellence we must increase the range and quality for available choice".

As computer becomes more powerful, they made the orchestration of a verity of media much easier to handle. Using authority and presentation software, computer can present at the learners demand information packaged in different formats including text, still pictures,
moving images, sound, animation and graphics. This annotating capability of the computer has resulted in associating multimedia with computer.

There are two questions arise:

- Why does new technology in instruction look like a fad that comes and goes?
- Shall we expect the same to happen with computer multimedia?

To answer the first, there is a great deal of knowledge, which we have gained from media comparison study. Now we know that each medium is unique and has a definite place in an engineered design of a learning environment. No larger will educational technologist tend to favor a new technology and to reject the older one. An instructional design will select the most appropriate technology of instruction, which contributes to the effective structure of the learning environment for target students under specified learning context.

To answer the second, it is imperative to explain computerized multimedia and its unique characteristic. Computerized multimedia uses the computer to or chest rate the use of information stored in a variety of formats including text, still images, graphs, video, sound-effect.

So one can see the effect of multimedia in develop good environment in the education.

We live in exciting time for it is the century of science and technology. Multimedia is the application of technology, because more than one media is used at one plate form with the help of computer. However, for Quality of Life science plays major role.
Consider the following diagram:

```
SCIENTIFIC KNOWLEDGE
↓
SCIENTIFIC LITERACY
↓
SOCIAL ACTION
↓
PRODUCTIVITY/PROSPERITY OF SOCIETY
↓
QUALITY OF LIFE
```

If we throw a bridge between science and education using psychology, we arrive at the concept of science education which bluntly speaking is an integrated concept. If so it is then within the realm of possibility to link the most powerful concept of science to growing minds of children through achieve experimental pedagogy. In that case science education need no longer remain a single dimension activity. It would be our job then to develop scientific and technical capabilities of our school-going pupils. If we win our race in education in 21st century and walk confidently then we achieve the Quality of Life.

For this there is need to improve the science of education in schools, good orientation of science education and use of latest technology.

Due to many reasons, our science education is limited unto textbook material. The percentage of schools that provide the practical knowledge is very less and the first hand experience not received by science students. Tin textbooks each and every thing is fixed, but for demonstration of experiments there is no scope or no medium.
7.2 JUSTIFICATION OF THE PROBLEM:

The aim of teaching physics is to provide students with the optimum conditions for acquiring a grasp of concepts needed to interpret and predict natural phenomena and to solve problems.

The level of understanding of the concept and the extent of their applicability will of course vary according to the age of the students and the type of the instruction given.

Unfortunately many people from countries and all parts of the world agree that this aim is really achieved. It has been observed that after instructions, students after experience serious difficulties in interpreting phenomena and solving problems within their field of study.

Today, in learning of physics, identification of some of the conceptual difficulties experienced by students as well as teachers. To develop new skills between teachers and students for develop instructional sequence acc to concept and acc to situation. Similarly, development of new awareness regarding new areas of knowledge and its branches through learning of latest concepts.

To integrate new concepts with new process of practices or methodology of teaching to achieve to com plete specific knowledge. To explore the possibilities of new areas of scientific knowledge and working out new directions to enter into research and its applications to social development.

For achieving this goal Multimedia self-learning packer helps in a better way. Many schools starting multimedia applications in classroom teaching for better performance of students, because today computer is
essential part of education as teaching of the basic of reading, writing and arithmetic. Alternatively, we say an interesting use of multimedia in schools involves the students themselves. Students easily see and listen to all the activities during demonstration more than once. There are lot of hyperlinks who help the students to understand the concept in a better way.

In the background of the above facts, a study has been conceived and designed to understand the functionality of new concepts and process in teaching science (with a specific focus on Physics).

7.3 STATEMENT OF THE PROBLEM:

A Study of Effectiveness of Self-Learning Multimedia Package in Physics at +2 Level in the Schools of Haryana.

7.4 FOLLOWINGS WERE THE OBJECTIVES OF THE STUDY:

1. To identify the new concepts in physics which are presently taught in the schools at Senior Secondary stage.
2. To develop multimedia self-learning instructional material with respect to the selected new concepts in Physics.
3. To find out the effectiveness of multimedia self-learning instructional material on the achievement of students of physics in relation to sex and socio-economic status of the students.
7.5 HYPOTHESES:

Following hypotheses were be tested:

1. There will be no significant difference in the achievement of boys and girls in Physics.

2. There will be no significant difference in the achievement of boys and girls in Physics belonging to low socio-economic status.

3. There will be no significant difference in the achievement of boys and girls in Physics belonging to high socio-economic status.

4. There will be no significant difference in the achievement of boys in Physics belonging to high socio-economic status and low socio-economic status.

5. There will be no significant difference in the achievement of girls in Physics belonging to high socio-economic status and low socio-economic status.

6. There will be no significant difference in the achievement of boys belonging to low socio-economic status and girls belonging to high socio-economic status in Physics.

7. There will be no significant difference in the achievement of boys belonging to high socio-economic status and girls belonging to low socio-economic status in Physics.

7.6 PLAN AND PROCEDURE

Procedure:

Following was the steps of the procedure followed:

- The investigator administered a Pre-test on the selected concepts of Physics to the sample to determine the entry behavior.
The teachers teaching Physics to Senior Secondary classes and the students selected in the sample were given orientation as to the proper use of the Multimedia Package on CD-ROM on selected topics of Physics for self-learning.

One copy of Multimedia Package on CD-ROM about the selected topics in Physics was given to each subject the sample. The subjects will be asked to load the multimedia courseware onto the computers in the computer laboratory of the school.

The sample studied the selected topics of Physics with the help of Multimedia Package on CD-ROM for 1 month. The teachers teaching Physics were requested to supervise the students during the study.

After the experiment is over, the sample was administered a post-test to determine the final achievement of students in the selected topics of Physics.

The pre-test and post-test scores were used for final analysis of the data using Analysis and Co-Variance technique.

Sample:

This study covered the target population of Senior Secondary Schools of District Ambala and District Yamunanagar. 200 students (100 boys and 100 girls) studying in Senior Secondary School of District Ambala and Yamunanagar were selected randomly. 4 groups were formed as per 2 x 2 factorial designs as given next.
Design:

2 X 2 Factorial design was used.

Sex X Socio Economic Status (SES)

Sex

↓

-----------------------------↓

Male                     Female

↓

--------------------------------------↓

Low SES                High SES    Low SES                High SES
(A)                     (B)           (C)                     (D)

7.7 TOOLS:

1. Multimedia Package in Physics (Light).
2. Achievement Test in Physics (CRT on Light).
3. Socio Economic Status Scale (S.E.S.)

7.8 STATISTICAL TECHNIQUE:

The data were analysed using Analysis of Co-Variance technique followed by t-test.

7.9 DELIMITATION:

The study will be confined to:
1. Senior Secondary Schools of Ambala and Yamunanager District.
2. Non-Medical group.
3. Selected topics of physics of Secondary classes.
4. Tools used for data collection.

7.10 MAIN FINDING:

1. It was hypothesized that there will be no significant difference in the achievement of boys and girls in Physics.
   After the analysis of data it was found that there exists significant difference in the achievement of boys and girls in Physics. The mean of achievement score in Physics of boys was 36.94 and mean of achievement score in Physics of girls was 39.21, which reveals that Girls have better results than the boys. Therefore it can be concluded that sex have significant effect on the achievement in Multimedia based Self-Learning.

2. It was hypothesized that there will be no significant difference in the achievement of boys and girls in Physics belonging to low socio-economic status.
   After the analysis of data it was found that there exists significant difference in the achievement of boys and girls in Physics belonging to low socio economic status. The mean of achievement score in Physics of Boys with low socio economic status was 34.7 and mean of achievement score in Physics of Girls with low socio economic status was 39.56, which reveals that Girls have better results than the boys. Therefore it can be concluded that with low socio economic status and sex have significant effect on the achievement in Multimedia based Self-Learning.
3. It was hypothesized that there will be no significant difference in the achievement of boys and girls in Physics belonging to high socio-economic status.

After the analysis of data it was found that there exists no significant difference in the achievement of boys and girls in Physics belonging to high socio-economic status. The mean of achievement score in Physics of boys with high socio-economic status was 39.18 and mean of achievement score in Physics of girls with high socio-economic status was 38.86, which reveals that boys have better results than girls but calculated t-ratio is less than at 0.05%. Therefore it can be concluded that with high socio-economic status and sex have no significant effect on achievement in Multimedia based Self-Learning.

4. It was hypothesized that there will be no significant difference in the achievement of boys in Physics belonging to high socio-economic status and low socio-economic status.

After the analysis of data it was found that there is no significant difference in the achievement of boys in Physics belonging to high socio-economic status and low socio-economic status. The mean score of achievement in Physics of boys with high socio-economic status was 34.7 and mean score of achievement in physics belonging to low socio-economic status was 37.2, which reveals that high profile background have better score than low profile background but t-ratio is less than at 0.01% and 0.05%. Therefore it can be concluded that in same sex (Boys) with different socio-economic status have no significant effect on achievement Multimedia based Self-Learning.
5. It was hypothesized that there will be no significant difference in the achievement of girls in Physics belonging to high socio-economic status and low socio-economic status. 

After the analysis of data it was found that there is no significant difference in the achievement of girls in Physics belonging to high socio economic status and low socio economic status. The mean score of achievement in Physics of girls with high Socio economic status was 39.56 and mean score of achievement in physics belonging to low socio economic status was 38.86, which reveals that high profile background have better score then low profile background but t-ratio is less then at 0.05%. Therefore it can be concluded that in same sex (Girls) with different socio economic status have no significant effect on achievement Multimedia based Self-Learning.

6. It was hypothesized that there will be no significant difference in the achievement of boys belonging to low socio-economic status and girls belonging to high socio-economic status in Physics. 

After the analysis of data it was found that there is significant difference in the achievement of boys in Physics belonging to low socio economic status and girls belonging to high socio economic status. The mean score of achievement in Physics of boys with low Socio economic status was 34.7 and mean score of achievement in physics of Girls belonging to high socio economic status was 38.86, which reveals that high profile girls have better score then low profile boys. Therefore it can be concluded that sex (Girls) with different socio economic status (High) have significant effect on achievement Multimedia based Self-Learning.
7. It was hypothesized that there will be no significant difference in the achievement of boys belonging to high socio-economic status and girls belonging to low socio-economic status in Physics.

After the analysis of data it was found that there is no significant difference in the achievement of boys in Physics belonging to high socio-economic status and girls belonging to low socio-economic status. The mean score of achievement in Physics of boys with high Socio-economic status was 39.56 and mean score of achievement in Physics of Girls belonging to low socio-economic status was 38.1, which reveals that high profile boys have better score than low profile girls but t-ratio is less than 0.05%. Therefore it can be concluded that sex (boys) with high socio-economic status and sex (Girls) with low socio-economic status have no significant effect on achievement Multimedia based Self-Learning.

7.11 EDUCATIONAL IMPLICATIONS:

The present study has substantially that self-learning multimedia package significantly improves the performance and learning achievement of the students in Physics. In present time the computer has been introduced at the school level and teacher should use computer as a medium for instructions in classrooms. With the help of computers and internet the students get freedom to collect any type of information whether quantitative or qualitative. The students get exposed to a new atmosphere in which they can interact with specific self-learning multimedia packages by learning on their pace. It will help the students to improve his/her composition and presentation skills. Study concludes that technology based learning effects positively on students’ attitude towards learning, self-confidence and self-esteem. It is also helpful in
improving school attendance, decreasing the dropout rates and has a positive impact on students' independence and feeling of responsibility for their own learning.

Researcher investigating the impact of self learning multimedia package, and found that when teachers are learning to integrate technology into their classrooms, the most important self development features include opportunities to explore, reflect, collaborate with peers, work on authentic learning tasks and engage in hands-on, active learning.

In essence, authorities creating successful learning environment for students. Technology based learning has also been shown to increase students motivation and engagement, prepare students for challenges of life and enhance students ability to work collaboratively.