SUMMARY

INTRODUCTION

Modern age is the age of information and communication technology (ICT). The ICT has entered in our lives in a big way and has vanished the boundaries and barriers among nations. There was a time when the world was big and changes were slow but now it has been converted into a global village. Now whatever happens in any part of the world it is immediately transmitted to every part of the world through mass media and internet. The ICT is the technology that includes the devices for encoding, storing, organising, transferring, retrieving and presenting information in various forms. The technology makes an easy access to diversify aspect of information with the help of resources like TV, computer, internet, e-mail, teleconferencing, world wide web in every sphere of life. It may be politics, communication, health, education, science and technology, etc.

ICT is doing its best in the field of education at all levels from designing of curriculum to instruction and then evaluation which is the main source of feedback for growth and development. Instead of only face to face education, one can avail opportunities of alternate type of education. The concept like smart schooling, virtual classrooms, virtual universities, e-learning, e-library, m-learning, etc are not imagination of ideal brain. Due to implementation of ICT, there are changes in various aspects of education including teaching methods. Today, traditional methods of teaching have gone a distinct change. In traditional classroom system, teachers give information, explanation and instruction by usually using chalk and talk and other teaching aids. Now there is shift in teaching methodology from teacher centred approach to pupil centred method by using different devices of ICT. The use of modern technologies in teaching facilitates learning and is giving more opportunities to students become happier and to enjoy more in learning.

Realising the importance of ICT in education, the UNESCO has established ‘International Institute of Technologies in education’ at Moscow. Bangkok is encouraging ICT in education at different levels in Asia-Pacific region. The National
Policy of Education (1986) has suggested that education technology should be employed in training and retraining of teachers, to improve the quality, to sharpen awareness of art and culture and developing values both in formal and non formal sectors. The government of India realising its importance, its application was initiated in 1998. Not only this, promotional campaign for information technology among students, teachers, education planners and administrators was billed modern to make its knowledge operational through computer literacy. The government further envisaged that computer and internet facilities will be made available to every school by the end of 2003. Various attempts have been made by the centre and state governments for implementing technologies in education from time to time. Some of the efforts are as under.

The All India Radio introduced programmes for children from Bombay station in 1929 and Madras station in 1930. In 1956, radio was put to an innovative use in India by starting the ‘Radio Rural Forums’ as an UNESCO sponsored project in 144 villages of Maharashtra. The first project known ‘Delhi School TV’ was launched on January 19, 1961 for ninth class students by placing 360 TV sets in 159 schools. In mid-70s with the use of US satellite SITE (satellite instructional television experiment) was launched. Based on evaluation of SITE experiment which was a notable success, India embarked on expanding TV network using its own satellite. The study group on INSAT (1981) suggested the Ministry of Education and Culture for utilisation of television in education. Then, Government of India recommended television facilities should be used for educational developments as well as notable for widening of assess of education for existing disparities between different regions and sections of population. Delhi Doordarshan launched its Krishi Darshan in 1986, and introduced telecast of ETV programmes in 1983 for primary school children of Delhi. Telecast of higher education began in UGC countryyard classroom on January 26, 2000.

The Ministry of Human Resource Development with Indra Gandhi National Open University started satellite based national educational and development channel, Gyandarshan. Doordarshan started telecasting IGNOU video programmes on DD Bharti channel from April 27, 2005. The various research studies conducted have
reported that these technologies have improved the educational process. Then, with the introduction of the computers in education, a vast array of instructional strategies like computer assisted instruction, computer based instruction, computer managed learning, simulation has been emerged and researches have been carried. One of the most rapidly changing existing areas of education in the world is computer based learning especially the use of multimedia learning package.

The presence of multimedia technology opens a new era in the development of teaching and learning media. The ability of multimedia technology in combining various kinds of media like texts, voices, pictures, numeric, animation and video in the form of digital software and its interactive capacity makes it an interesting alternative of learning aids. Multimedia is considered as an impressive learning media because of its capacity in activating our perception such as sight, hearing and tactile. Schade (cited in Hoogeven 1995) believes that multimedia improves sensory stimulation, particularly due to the inclusion of interactivity. The interactive component refers to the process of empowering the user to control the environment usually by a computer (Phillips, 1997). With interactive multimedia, the recipient is also active participant in the experience not only seeing and hearing the message but interacting with it well.

The experiments and researches in the field of teaching learning has established that teaching learning process is best organized and facilitated through use of multi media instead of single or routine type of media or techniques. “The multimedia is the notion of using multiple channels of communication to present information. In computer oriented term multimedia can be animation, pictures, video and sound to present information” Bagui (1998). Multimedia involves the simultaneous use of multimedia formats (Hede & Hede 2002). Schade’s study implies that ability to recall something learnt by self memorizing is the lowest (1%) However, when using teaching aids such as television and video, the capacity of memory is improving up to 25%-30% further if these dimension media are used the ability to recall may reach 60%.

Al Seghagers (2001) compared various types of media in literacy teaching. The study reveals that video clips provides more meaningful impression towards
vocabulary acquisition (90%) in comparison to picture (76%) and text (60%) multimedia has also as the curriculum can be planned systematically, communicatively and interactively during the teaching learning process. The studies conducted by Morningstar (1968), Kock (1973), Magidson (1978), Robyer (1988), Najjar (1996), Villamll & Molina (1998), Wang and Slemar (1999), Munir, McCrea and other (2000), Urdan and Weggen (2000), Lachs (2000), Mishra (2003), Low et al (2003), have shown that teaching learning process by multi media is more effective. Harper & Hedberg (1997), Sims (1998), Shinde (2003) have shown that an interactive learning environment can generate effective instruction and learning. Interactivity during learning has been noted by many Bosco (1986), Fletcher (1989), to have a strong enhancing influence on learning by improving retention (Stafford as cited in Najjar (1996) and the speed of learning (Bosco 1986, Fletcher, 1989) Novelty also has been associated with why multi media may be effective for learning.

There are many other studies reporting that educational multi media can have a positive impact on learning. These studies conducted by Kulik (1994), Simkins (2002), Patil (2006) and Madan (2009) have shown that the academic achievement of students is improved when taught with multimedia approach. Similarly, Ferror (2002) reported that the use of multimedia approach using PowerPoint presentation, CD-ROMS and graphical software has increased the conceptual understanding among students. The studies conducted by Munirah (2002) reported that use of multimedia in teaching helped in bringing conceptual changes.

A meta analysis by Liau (1998) examined 35 studies and concluded that multimedia based instruction is superior to traditional instruction. However, it is notable that 10 of these 35 studies showed the opposite, namely that traditional instruction is superior to multimedia. A subsequent meta analysis of 46 studies (Liao 1999) confirmed the overall positive effect of multimedia on students' achievement but found that it largely depends on what type of instruction it is being compared with. A review of the research investigations cited above shows that a well designed and implemented multimedia package helps in effective instruction and learning. Thus, multimedia is emerging as a new teaching strategy of instruction in the present age of information technology.
The word 'multimedia' originally referred to the works of arts that combined multiple traditional art media, as in multimedia art installation. The term multimedia appeared in 1990s. The concept of multimedia has been described by educationists in different ways at different times. Multimedia in general means that information is presented in the form of audio, video and animation in addition to traditional media (i.e. text, graphics, drawings and images) Multimedia can be defined as the field concerned with the computer controlled integration of texts, graphics, drawings, still and moving images (videos), animation, audio and any other media that can be represented, stored, transmitted and processed digitally. The definitions of multimedia given by different educationists are as under.

According to Barron and Owing (1995) “Multimedia can be defined as computer based technology integrating some not necessary all of the following, text, graphics, animation, sound and video.”

Tannenbaum (1998) defined multimedia as "the use of at least two of these elements: sound (audio), text, still graphics and motion graphics (visual)". To date majority of education and research do not include other media of touch, taste and smell. The importance of multi channel for delivery of educational content can be found in the theory of multi-channel communication which confine that information presented by more than one channel, there will be additional reinforcement resulting in greater retention and improved learning (Ellic, 2004; Bagui, 1998; Dariels, 1994)

According to Janassen (2000) “Multimedia refers to a computer system based upon the integration of various media such as text, sound, graphics, animation and video, is a powerful tool for knowledge construction.”

In the words of Hofstetter (2001) "Multimedia is the use of computer to present and combine text, graphics, audio and video with links and tools that let the user navigate, interact, create and communicate". According to Damodharam and Rengarajan (2007) “Multimedia is the combination of various digital media into an integrated multi sensory interactive application or presentation to convey information to an audience. Interactivity is also part of elements that are required in order to complete interactive communicative process through the use of multimedia (Jamalludin and Zaidatun, 2005)
Elson Cook (2001) defined multimedia “as a combination of variety of communication channels into co-ordinated communicative experience for which an integrated cross channel language of interpretation does not exists.”

According to Reddi (2003) “Multimedia is an integration of multiple media elements (audio, video, graphics, text, animation etc.) into one synergetic and symbiotic whole that results in more benefits for the end user that any one of the media element can provide individually.”

Dipika B. Shah (1988) defined multimedia “as more than one medium used in a single communication either sequentially or simultaneously.”

In the words of Hede and Hede (2002) “multimedia involves the simultaneous use of multimedia formats.”

Mayer (2005) extended the definition as "A multimedia instructional message is a presentation consisting of words and pictures that is designed to foster meaningful learning."

According to Ke (2008) “Multimedia refers to computer mediated information that is presented concurrently in more than one medium. It consists of some but not necessarily all of the following elements; text, still graphics, images, motion graphics, animations, hypermedia, photographs, video and audio i.e. sound, music and narration. Multimedia can support the same piece of information in a variety of formats.”

In the words of Blattner and Danneberg (1992) "Multimedia system strives to take the best advantage of human senses in order to facilitate communication. The communicator chooses to combine the media best suited to his/her communicative goals, therefore, multimedia which encompasses other media provides the breadth of communication."

According to Fenrich (1997) “Multimedia is the exciting combination of computer hardware and software that allows you to integrate video, animation, audio, graphics and test resources to develop effective presentation of an affordable desktop computer.”
RATIONALE OF THE STUDY

Teaching is a complex activity carried on in the complex situation of school by complex organism (teachers) directed towards more complex organism (students) who are constantly undergoing complex changes. In the present fast growing age, lot of information has to be collected from multifarious sources, integrated and then presented in a gainful manner not only within self but next generation. Teachers have been shouldered with the responsibility of processing it through a formal system to the different level of students.

Various strategies, methods and approaches are now being tried out to improve the instructional procedure in order to have effective teaching resulting into good achievement by students. With the introduction of computer in education a large number of teaching innovations like CAI, CBL, CML were developed and used to make teaching learning more effective. Internet and world wide web has revolutionized the education field. Different means like web based teaching, e-book, virtual classrooms, e-library, teleconferences are being used specially in higher education. The National Policy Education (1986) stressed upon employing educational technology to improve the quality of education. The significant role of ICT in school education has also been highlighted in the National Curriculum Framework (NCF 2005). It had rightly stated that “The judicious use of technology can increase the reach of educational programmes, facilitate management of system as well as help address specific learning needs and requirements possibilities of teaching and learning at varied paces, self learning, enabling dual modes of study etc. could all benefits from the use of technology, particularly ICT to enable these processes”. This sounds motivational and interesting and forms the base for present research.

The multimedia approach is one of the latest developments in the art and skill of teaching. This instructional approach has the potential of being matched to the objectives of teaching as well as students’ learning styles. This emphasizes on an application of multimedia package in teaching and learning process. A large number of researches have been conducted abroad to see the effectiveness of multimedia packages on students achievement. These studies reported that they show a significant difference in their formal operation level and learning abstract concepts and therefore,
a significant difference in their achievement score was reported (Andeson & Niclson 2003, Turner & Lindsay 2003 etc) Wright and Shade (1994) stated that the impressiveness of a lesson using multimedia technology depends upon the quality of multimedia packages. However, some studies reported that there is no significant difference in achievement scores of students who were taught by using multimedia packages. Many educators think that computers can do wonders in teaching Economics to students by using multimedia package to educate the human being in the existing computerized society where genes of computer are already present in the generation: They needs to be provided a favourable environment with computer as a base to learn and flourish. Therefore classroom activities need to be redesigned and technology be integrated for teaching Economics rather than viewed in isolation or as ‘add on’.

Economics education all over the world has witnessed a paradigm shift in the past decades from teacher dominated to knowledge based to student centered. But in India, teachers still find comfortable to use traditional instruction techniques for usual interaction with students in teaching Economics. But in teaching Economics many concepts and phenomena requires visualization in three dimensional shapes, graphs and other pictorial shape which can be best perceived by using multimedia packages. Integration of multimedia packages in teaching Economics is still far from desired. A few studies have been conducted in this direction which strives to integrate ICT in Economics teaching. Thus a lot of work is required to be done in this direction in India. Thus it is evident in the context of above rationale that there is a paucity of research in use of multimedia packages in teaching Economics. Thus the present study is to develop, validate and to see the effectiveness of multimedia package on students' achievement in Economics. Hence the study is justified.

STATEMENT OF THE PROBLEM

The problem in hand is stated as under

"DEVELOPMENT AND VALIDATION OF MULTI-MEDIA PACKAGE FOR TEACHING ECONOMICS AND ITS EFFECT ON LEARNING OUTCOMES OF SENIOR SECONDARY STUDENTS"
OBJECTIVES OF THE STUDY:

The objectives of present study were

9. To develop and validate the multimedia package for teaching Economics to students of senior secondary school taking into accounts there background and instructional needs.

10. To construct an achievement test in Economics for senior secondary school students

11. To develop an opinionnaire to seek the opinion of teachers about the effectiveness of the multimedia package.

12. To acquaint the students with selected units with the help of multimedia package.

13. To compare the mean achievement test scores of two groups of students taught Economics with and without multimedia package before the experimental treatment.

14. To compare the mean achievement test scores of two groups of students taught Economics with and without multimedia package after the experimental treatment.

15. To assess effectiveness of multimedia package and compare pre and post test mean achievement scores of students of experimental and control group taught Economics by using conventional method and multimedia package.

16. To compare the mean gain achievement scores of two groups of students taught Economics with and without multimedia package

1.5.0 HYPOTHESES

To attain the above mentioned objectives, the following hypotheses were formulated.

6. There exists no significant difference between the mean achievements test scores of students of experimental and control group taught Economics with and without multimedia package before experimental treatment
7. There exists no significant difference between the mean achievement test scores of students of experimental and control group taught Economics with and without multimedia package after experimental treatment.

8. There exists no significant difference between mean achievement test scores of students of experimental group taught Economics with multimedia package before and after experimental treatment.

9. There exists no significant difference between mean achievement test scores of students of control group taught Economics with conventional method before and after experimental treatment.

10. There exists no significant difference between mean gain achievement test scores of students of experimental and control group taught Economics with and without multimedia package after experimental treatment.

**OPERATIONAL DEFINITIONS OF KEY TERMS USED**

The terms used in the present study are operationally defined as under:

**Multimedia Package** – In the present study the multimedia package is combination of various kinds of media like texts, voices, pictures, numeric, animation and video for effective presentation.

**Development** - The development means the preparation of multi-media package for teaching Economics in scientific and systematic way keeping in view the objectives of instruction. It includes selection and origination of content, script writing and its production.

**Validation** - Validation means the inspection and approval of material by experts to judge whether the material are technically valid and correct and an instructional design expert to judge whether the treatment given to subject matter is pedagogically valid and creative.

**Learning Outcomes (Achievement)** - The status of a student with respect to attained skills or knowledge as compared with other students or with the adopted standard of schools. Students’ achievement in Economics in context of the present
study is confined to the students' performance as indicated by their scores on achievement test constructed by investigator.

**DELIMITATIONS OF THE STUDY**

The study has a number of ramifications but due to constraints of time and resources the study was delimited in following aspects.

1. The study was delimited to students of English medium schools affiliated to Central Board of School Education, New Delhi only.
2. The study could be conducted on large sample but it was delimitated to 60 students of 10+1 class of senior secondary schools of Gurgaon district only.
3. The study could be conducted on the whole syllabus of Economics of 10+1 class but it was delimited to four units only.
4. The study could be conducted to see the effect of multi-media package on different aspects but it was confined to its effects on learning outcomes of students only.

**DESIGN OF THE STUDY**

The present study followed a quasi-experimental design’ following the pre-test, post-test group format. The design of study comprised of three phases. The first phase: ‘pre-test’ phase involved testing of two groups on the variables like intelligence, socio-economic status, entry behaviour, etc for equating them. The second phase : ‘Treatment phase’ involved an experimental treatment four weeks duration. In this phase the selected units were taught by using multimedia package to experimental group and by traditional method to control group. The third phase : 'post-test phase' involved the post-testing of the two groups after experimental treatment. In this stage changes in student performance was measured due to influence of independent variables.

**VARIABLES**

In the experimental research the effect of independent variable on the dependent variable was studied. Beside these variables there were intervening variable also. The independent variables of the present study were two methods of
teaching. (i) By using Multimedia package (ii) conventional method. The dependent variable involved in the present study was achievement of the students in Economics. The intervening variable which can not be controlled directly by the experimenter were fatigue, motivation, interest, study habits and academic ability. Extraneous variables which were controlled either experimentally or statistically by researcher. These were intelligence, socio-economic status, previous knowledge, school, infrastructure facilities and teacher competency.

**TYPES OF CONTROL EMPLOYED**

In order to gain appropriate results, the following controls were implied by the investigator

- **Nature of school**: sample was selected from a single school i.e. Major Bihari Lal Memorial Sr. Sec. School, Bilaspur (Gurgaon)
  - **Grade level**: selecting the students of same grade i.e. class XI as a sample of study.
  - **Teacher**: both groups were taught by investigator himself.
  - **Subject**: both groups were taught same units.
  - **Socio-economic status**: controlled statistically by employing ‘t’ test.
  - **Intelligence of the students**: controlled statistically by employing ‘t’ test.

**SAMPLE OF THE STUDY**

Random sampling technique was used. Major Bihari Lal Memorial Sr. Sec. School, Bilaspur Chowk was selected by using lottery method. The students of both the sections were selected as a sample. Then two groups (30 students each) were formed by the investigator after matching the students on the basis of intelligence, socio-economic status and academic achievement. One group was named ‘experimental’ and the other ‘control’.

**TOOL USED**

Following tools were used for data collection:

- Mixed Type Group Intelligence Test constructed by Mehrotra
Socio-Economic Status Scale constructed by Kulshrestha:
Achievement Test in Economics constructed by investigator to measure the achievement of students.
An opinionnaire constructed by investigator to seek opinion from subject experts for content validation of the package.
Multi-media package developed and validated by the investigator.

PROCEDURE OF DATA COLLECTION
The present study was experimental in nature. Pre test Post test design was employed. The data was collected by administrating the tools selected for data collection. The rapport was established by the investigator and important instructions were given to the students verbally. The purpose of study was also explained and they were asked to give the responses freely. After giving the treatment to the students of experimental group the achievement test was administered to both the groups to see the effectiveness of multimedia package on student achievement in Economics.

STATISTICAL TECHNIQUES USED:
The present study focussed upon the development and validation of multimedia package in Economics and studying its effects on students learning. The one of the important objective of the present study was to compare the achievements of students in Economics taught through conventional method and by using multimedia package. Thus keeping in view the objective of study the main statistically technique used by the investigator was ‘t’ test.

FINDINGS RELATED TO OPINION OF EXPERTS ABOUT MULTIMEDIA PACKAGE
- 90% of the experts were of opinion that the content of the multimedia package was strictly accordingly to prescribed syllabus by CBSE, New Delhi. They further agreed that the objectives were concise specific and stated in behavioural terms
- 90% of the experts appreciated the level of language and found it grammatically correct and according to the level of the learners.
- 90% of the experts appreciated the content, which is divided in topics and sub-topics and is pedagogically structured and presented in well organized sequences.
- 80% of the experts were of the opinion that there is proper balance between verbal and pictorial components of multimedia package and it is durable also.
- 80% of the experts were of the opinion that screen design promotes interaction between content and learner and also helps to navigate from one topic to another.
- 70% of the experts were of the opinion that selection of the colours was adequate and consistent throughout the package. They also appreciated the synchronization of sound, visual and animation.
- According to 80% of the experts the overall quality of multimedia package is good whereas 10% disagreed and remaining 10% could not decide. They agreed that this package will be effective for teaching Economics to students of 10+1 class.

FINDINGS RELATED TO EFFECTIVENESS OF MULTIMEDIA PACKAGE

6. It has been found that there was no significant difference in achievement of control and experimental group at pre test stage. This leads to conclude that before experiment both groups were similar in performance.

7. The post test achievement scores of control and experimental group were compared by using ‘t’ test. A significant difference was found in both the groups. The achievement of the students of experimental group was found to be higher as compared to achievement of control group. So it can be inferred that students who were taught Economics by using multimedia package showed significant improvement in achievement than the students taught by conventional method.

8. There was a significant difference in pre-test, post-test mean achievement test scores of students of experimental group who were exposed to multimedia
package. The students of experimental group scored much higher in post test as compared to their pre-test scores. It can be concluded that multimedia has enhanced the achievement of experimental group.

9. Significant difference was also found in pre test and post test mean achievements scores of students of control group who were exposed to conventional method of teaching. It was found that this method also helps to increase the achievement of students in Economics to some extent.

10. The mean gain achievement scores in Economics of experimental and control group differed significantly in favour of experimental group. This means that students who were taught Economics by multimedia package showed significant improvement in their achievement than the students taught by conventional method.

CONCLUSIONS

Information and communication technology has been playing very important role in present scenario. Impact of ICT on education and specially in class room teaching has increased during the last ten years. The use of computers, projectors, internet, web designed programs, CD-ROMs etc. has been increasing day by day among teachers and students. These technologies not only enhance students performance but they help the students to be more interactive and engaged and get immediate feedback. The effectiveness of multimedia packages over the traditional method has been established through various researches. The purpose of the present study was to ascertain the effectiveness of multimedia package for teaching Economics to students of 10+1 class. The findings of the study revealed that the use of multimedia package is more effective as compared to conventional method of teaching to enhance the achievement of the students. The findings of the present study are also supported by the studies conducted by Morningstar (1968), Kock (1973), Magidson (1978), Robyer (1988), Najjar (1996), Villamll & Molina (1998), Wang and Slemar (1999), Munir, McCrea and other (2000), Urdan and Weggen (2000), Lachs (2000), Mishra (2003), Low et al (2003), who also found that teaching learning process by multi media is more effective. Harper & Hedberg (1997), Sims (1998), Shinde (2003) have shown that an interactive learning environment can generate
effective instruction and learning. The studies conducted by Ahmed (2013) Khushnir, Munzhula & Volka (2013), Adeyemi (2012) Abdallah (2012), Semra (2012), Bindal & Sharam (2013) have also found that computer assisted instruction and web based multimedia programmes have been effective as compared to the conventional method of teaching.

EDUCATIONAL IMPLICATIONS

Research studies are conducted with a view to augment knowledge in the concerned field, thereby building new principles and theories. The present study was conducted to develop and validate multimedia package in Economics and to study its effect on students’ achievement. A perusal of the present study makes it evident that students learn better when exposed to multimedia package as compared to conventional method of teaching Economics.

The findings of present study have a bearing for researchers, educational planners, policy makers, government, principals, teachers, ICT experts and other personals related to teaching profession. The educational implications of present study are mentioned as under:

6. The findings of present study will serve as a basic data for research scholars of education for undertaking research work related to multimedia packages development and other related areas like CAI, CBL CML, Web based teaching, and development of different contentware of different subjects for different levels.

7. The use of computers in education in the present scenario is not a take it or leave it option. The computers will impinge on education the only question is how? There is increasing recognition that now learning is more than just transfer of knowledge and students are active participants in their own learning process and not passive recipients of information only. The traditional methods are not sufficient now a days. So Govt. of India and especially Govt. of Haryana has initiated the process to include computers in teaching learning process. The Haryana Govt. has set up computer labs in all high and senior secondary schools and is providing computer teachers. But there is not enough
information about coursewares or products. The coursewares related to different subjects for different classes are not adequately prepared or provided to schools. So the state government should take initiative to get the coursewares developed in collaboration with different agencies like NCERT, SCERT, IGNOU, CIET etc. The government agencies and other producers and intermediaries should provide the catalogues to show products.

8. By only introducing computer education as a subject in schools will not be useful until and unless it is not integrated with the teaching learning system at different levels. The instruction should be supplemented by using multimedia packages and others computer mediated teaching where teacher acts as a facilitator or guide for an interaction between students and computer. But at present most of teachers are not well acquainted with the procedure and use of computers during teaching. A study conducted by Mehra (2007) revealed that teachers possess fairly positive attitude towards computers but majority of teachers needs to be provided training for using computers in educational setting. So the state government and other agencies should make arrangements for providing training to teachers for developing and using multimedia package in their concerned subjects.

9. By making policy we can encourage the use of information communication technology in schools but ICT should be used in teaching learning context. Initiation and motivation has to be provided by school heads and management with the help of professional developers of multimedia packages in various subjects, as resource persons and the interest has to be reflected by teachers. The government should provide financial assistance to schools for development of these multimedia packages as per their requirements. The government should also give incentives to those teachers who are doing good jobs in their field so that other teachers may also be encouraged and motivated.

10. Use of ICT based multimedia packages can not be imposed forcefully or legislatively for teachers. By only providing infrastructure and computers in schools is not the only solution. We will have to provide social environment
where teachers can talk face to face with technical experts and discuss their experience and problems faced by them during developing and using multimedia package.

6 The findings of present study reveal that the students who were taught Economics by using multimedia package exhibited higher achievement as compared to those who were taught Economics by using a traditional method. Therefore, efforts should be made by teachers to create a suitable environment in class room so that students may be motivated to participate in learning with understanding. In the course of different subjects, proper guidance should be provided to the teachers about the effective use of ICT based teaching learning.

7 Teacher education institutions play an important role in producing competent and trained teachers. In the present age of ICT, the curriculum of teacher education programme needs to be restructured. Now some universities have introduced ICT enabled practical in teacher education programme. As the findings show that teaching with multimedia packages enhance achievement. So pupil teachers should be provided training how to integrate ICT in their teaching subjects. These institutions can tie up with some professional organizations. Although National Council for Teacher Education (NCTE) in its recent norms and standards (August, 2009) has recommended to appoint and maintain the services of at least one teacher educator with specialisation in ICT, yet it would remain a distant dream until the related universities try to strictly enforce the same.

8 The State Government Department of Education may organise workshops and seminars for teacher educators who are working in Collages of Education, DIET, SIT so that they can persuade the pupil teachers for developing and using multimedia and other computer based programmes.

9 The local experts should provide time in developing softwares related to different subjects according to the syllabus of concerned boards. They should motivate and reinforce teachers to develop such programmes as per their needs and requirements.
SUGGESTIONS FOR FURTHER RESEARCH

Due to paucity of time, and resources at the disposal of investigator, all aspects of the present problem could not be studied. Therefore, the present study opens up certain avenues for further research which are given as under:

1. The present study was confined to 60 students of 10+1 class of Major Bihari Lal Memorial Senior Secondary School, Bilaspur Chowk(Gurgaon). Further studies can be conducted on larger sample taken from different districts of Haryana.

2. The study was confined to teaching 4 units only. Further studies may be conducted on teaching the whole syllabus by using multimedia package and its effectiveness may be studied.

3. The present study was delimited to development and validation of multimedia package in teaching Economics to 10+1 grade students. Similar studies may be conducted on students of 10+2, high school, degree classes and other professional courses.

4. Further studies may be conducted on students of different types of schools like government schools, Kendriya Vidyalayas, Navodaya Vidyalays and public schools.

5. The present study was conducted to compare the effectiveness of teaching with multimedia package and traditional method. Further studies may be conducted to compare its effectiveness with other teaching methods like project method, discussion method and problem solving method etc.

6. Further studies may be conducted to compare the effectiveness of teaching with multimedia package and other CAI like tutorials, drill, practice session, games and simulation individually.

7. The present study was confined to compare the effectiveness of teaching with multimedia in Economics. Further studies may be conducted to develop, validate and use of multimedia package in teaching other subjects like science Mathematic, Geography, History, Computer Science etc.
8. The present study was confined to students belonging to rural area background only. Further studies may be conducted to compare achievement of students of rural and urban background.

9. The present study was to develop and validate a multimedia package and studying its effects on student’s achievement in Economics. Further studies may be conducted to see the effect of multimedia package on other variables like attitude, self concept, creativity, problem solving and decision making etc.

10. The further studies may be focused upon different dependent variables such as learning related behaviour (co-operativeness, motivation, reflection, time devoted to learning etc.) thinking and learning styles.

11. Further studies may be conducted by moderating different students’ achievement such as prior achievement, aptitude, ability, age, personality, gender, social, class etc. to compare multimedia using teaching and traditional instruction.

12. The study was conducted by using ‘Quasi Experimental’ method. Further studies may be conducted by using pure experimental method and using randomised sample.

13. Further studies may be conducted to study the attitude of teaching towards development and using multimedia packages as an instructional method.

14. The present study was conducted to develop and see the effectiveness of multimedia package on students’ achievement in Economics. Further studies may be conducted to study different problems faced by teachers during development and use of multimedia package in teaching.

15. The present study was confined to development and use of multimedia package and compare its effectiveness with traditional method. Further studies may be conducted to compare its effectiveness with edusat programmes and teleconferencing programmes of teaching.

16. Studies may also be taken up to know the cost benefit analysis of educational multimedia packages their development and use.
17. Further studies may be conducted to study the attitude of principals, higher authorities and management of schools towards using multimedia packages in teaching learning process.

18. Further studies may be conducted to study the attitude of students towards learning using multimedia packages in teaching.