CHAPTER-II

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION
2.2 REVIEWS RELATED TO EDUCATIONAL TECHNOLOGY
2.3 REVIEWS RELATED TO EDUSAT PROGRAMME
2.4 OVERVIEW OF STUDIES
Chapter-II

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

“A literature review uses as its database reports of primary or original scholarship, and does not report new primary scholarship itself. The primary reports used in the literature may be verbal, but in the vast majority of cases reports are written documents. The types of scholarship may be empirical, theoretical, critical/analytic or methodological in nature. Second a literature review seeks to describe, summarize, evaluate, clarify and/or integrate the content of primary reports” (Cooper, 1988)

A literature review enables a researcher to accomplish a number of more specific aims. It is likely, for example, that in the early stages of research the researcher may have only a vague idea of the area the researcher would like to explore vastly. The researcher may have only a tentative outline of the research problem. A review of the related literature will help the researcher to focus his tentative problem by both limiting and defining more clearly the topic the researcher is interested in researching. The researcher will be aware of possible pitfalls, or search questions that have been thus far neglected reading around the subject will help the investigator to distil the issues he wish to concentrate upon and leave him with a concise, detailed and distinct plan of action.

A well-structured literature review is characterized by a logical flow of ideas; current and relevant references with consistent, appropriate referencing style; proper use of terminology; and an unbiased and comprehensive view of the previous research on the topic.
2.2 REVIEWS RELATED TO EDUCATIONAL TECHNOLOGY

Kaur and Singh (2014) studied an advanced information communication technologies for delivering education. Education plays a key role in the economic, social and cultural development of developed and developing nations. It cannot be denied that drastic changes in the world economy lead by latest Information Technologies. ICT driven education overcomes barriers of time and place for providing anytime or from anywhere access for learning. The benefits of ICT for students includes - Increased access, Flexibility of content and delivery, Combination of work and education, Learner-centered approach, Higher quality of education and new ways of interaction. Education is the basic source of human capital and poor quality of education can create income disparities. As return on human capital is directly dependent upon good quality of education so government has developed policies and accordingly plans for initiating efforts to improve education system, so as to reduce such income inequalities for economic growth of the country. In this research the impact of EDUSAT on education system and other methods used for e-learning at international/national level is discussed taking into various research studies conducted in previous years.

Suleman et al. (2013) studied to explore the role of instructional technology in enhancing student’s educational attainment in General Science at elementary level in District Karak (Khyber Pukhtunkhwa) Pakistan. All the students at elementary level in District Karak constituted the population of the study. Fifty elementary students studying in Government High School Khurram District of Karak were selected as sample of the study. Sample students were divided into two groups i.e. control group and experimental group by equating
them on the basis of their previous knowledge in subject of General Science as determined through pre-test. Each group was comprised of 25 students. The study was experimental in nature therefore pre-test and post-test technique was used as research instrument for the collection of data. Mean, standard deviation and t-test were used for the statistical treatment of the data. After analysis of the data, it was concluded that instructional technology plays a fundamental and crucial role in teaching of General Science at elementary level. The application of instructional technology during teaching learning process increased the achievement level of the students. It also increased the motivational level of the students. Students of the experimental group were found more attentive and interested. It was concluded that instructional technologies should be utilized in teaching of General Science at elementary level.

**Sulemann (2011)** investigated on Role of Educational Technology at Primary School Level In District Karak. The study was conducted to explore the role of educational technology at primary school level in District Karak (Khyber Pukhtunkhwa). The main objectives of the study were; to investigate the availability, usability and importance of educational technology; and to investigate whether primary school teachers are for the effective use of technologies for teaching learning process. The study was descriptive in nature. All the teachers and students at primary level in District Karak constituted the population of the study. Only three hundred and sixty six (366) primary school teachers; and two thousand and two students (2002) of primary schools (@ of 25% and 5% respectively) were selected randomly as sample of the study. Two different questionnaires were prepared for teachers and students for the collection of data. After analysis of data, the researcher arrived at results that
educational technology was very useful for the effective teaching learning process at primary level. It was found that educational televisions, radios, film strips, flip charts, VCRs, overhead projectors, multimedia projectors, educational softwares, computers, and internet facilities were not available in schools. Majority of the teachers were not using the available technology in their teaching learning process. It was also found that teachers were not trained for the effective utilization of educational technology.

Sharma (2011) studied to find out the impact and effectiveness of Innovative Programmes under SSA for Children with Special Needs. Sarva Shiksha Abhiyan was a flagship programme of government of India for the promotion of universalization of elementary education. The SSA’s understanding of “inclusive” was depicted as a multi-option model of inclusion which includes, depending on the needs of the children, mainstreaming in regular schools, or provision of home based education. Several states are undertaking successful quality improvement initiatives. The Learning Guarantee Programme in Maharashtra had enabled more than eight lakh children to get remedial support for satisfactory learning; other examples are language improvement programme in Andhra Pradesh and Integrated learning improvement in West Bengal. Different states had instituted systems for large scale independent assessment of CWSN and were using the result for systemic improvement like focused teacher training in specific disability area, developing remedial teaching programmes etc. This research analyses the different innovational programmes run by central and states government, NGOs, etc.

Kakoty et al. (2011) analyzed the current e-learning procedure and discussed the prospects and promising research areas of e-learning domain. The
authors concluded that the security of services, the encryption of messages and the common taxonomies to describe services and service access points in e-learning systems environments were key challenging research areas. By employing the new technology in e-learning environment, one could make the system more attractive and interactive for learner that might help to build a learner centric platform in this environment.

Ahmed; Patel and Mohasina (2011) conducted a study on Teachers’ Role in Technology Enhanced Collaborative efforts for Implementation of Keli-Kali Radio Programmes of Karnataka at Elementary School Level. Radio was supposed to be a one way communicative media, which does not had scope for listener to show his/her creative abilities and innovative techniques. The school radio broadcast has removed this prejudice and given a new look for a radio programme. The teacher had a dynamic role to play in the process of entire school broadcast. Teacher functioning at ground level allows him to be part of planning, (s)he gets involved in local recording and production. The listening arrangements during the broadcast have scope for all the teachers to utilise radio programmes. The radio school teacher also gives feedback for improvement of lessons. The teacher plays multifaceted role of planner, trainer, critique, producer, musician, recorder of events, researcher and innovative practitioners in addition to being traditional teacher. The teachers collaborate with each other and other experts for bring success to these programmes.

Srinivasan and Muthumanickam (2010) constructed a Computer-Assisted Instruction Programme (CAIP) in the lesson ‘Learning’ (Education Psychology) for the trainees of Diploma in Teacher Education, Tamil Medium, the investigators found that the students who participated in the CAIP not only
enjoyed it and were self-motivated but also showed higher achievement when taught through CAIP.

Srinivasalu and Vijayalakshmi (2010) conducted a study on to find out the effectiveness of Computer Multimedia Package (SLM) on Achievement in Social Science An Experimental Study. The Objectives of the study were: 1) To develop Multimedia Package (SLM) to certain selected units of high school XI standard Social Sciences content. 2) To study the effectiveness of Multimedia package (SLM) on the achievement of XI standard students in social science. 3) To find out the relative effectiveness of Multimedia Package on the achievement of students of experimental and control group. The study was experimental in nature and post test single group experimental design was used. The study included those students studying Social Sciences at secondary school level. A sample of 104 students of IX standard of Indiranagara were selected for the study. Sample students were divided into two groups i.e. control, and experimental group. Both the groups were equated on the basis of their pre test scores (Intelligence test). It was concluded that, a strategy implemented with self learning Material of Multimedia techniques brings about improvement in Social Sciences on the achievement of students of experimental group. There was a superior performance of experimental group over the traditional group which suggests that SLM (MMP) was found effective. A focused treatment with self learning Material of Multimedia techniques has enhanced the achievement of students of experimental group in Social Sciences. The gender of the students had no influence on the achievement in Social Sciences of students of experimental group.
Nayak and Kalyankar (2010) discussed problems, considerations, issues and approaches to e-learning in India with giving stress on important features of e-learning and benefit of e-learning for rural child development. It was concluded that strategies should be developed and implemented to solve rural areas problems. Along with traditional education, policies should be developed and implemented for IT education. The IT subjects should be incorporated in curriculum at school level. The web based education at school level for rural children and youngsters would increased their knowledge level. It would enhance the quality of education in the country at all levels i.e. primary, secondary and higher education. E-learning technology had great potential to spread learning to reach the rural masses of India otherwise they would be one of the causes of digital divide. Government’s strong support and full dedication could solve all the problems.

Muthuchamy and Thiyagu (2010) conducted a study on higher secondary students perception towards information and communication technology at the School Level. The objectives of the study were to find out the difference if any, between male and female students in respect of their perception towards information and communication technology; to find out the difference if any, between rural and urban school students in respect of their perception towards Information and Communication Technology; to find out the difference if any, between Government, Aided and Self financing school students in respect of their perception towards Information and Communication Technology and to find out the difference if any, between Arts and Science in respect of their perception towards Information and Communication technology. The investigator employed the survey method. The investigator developed and
used a standardized questionnaire and the items given in the questionnaire were verified and pooled with the help of the guide and the subject experts. The tool were administered to the sample selected in Madurai Educational District, data were collected from the students at Higher Secondary Stage. The data were analyzed by adopting appropriate statistical techniques for measuring the Higher Secondary Student’s Perception towards Information and Communication Technology. It was found that higher secondary students of Madurai Educational District had better in their perception towards Information and Communication Technology. Both male and female students were similar in their perception towards information communication technology. Higher Secondary School students from different types of schools differ significantly in respect of their perception towards Information and Communication Technology in education. Students of Government schools had a lesser in perception than the students of self financing schools. Students studying in rural and urban schools had differed significantly in their perception towards Information and Communication Technology. The science group students had more in their perception towards information and Communication Technology than the Arts Group Students.

Kaushik and Sharma (2010) studied on Computer and Internet Awareness in School-Going Students. The government is stressing on computer awareness and education from very initial classes. The schools were also highlighting computer education as their unique selling proposition. The Internet had become the way for life and computers were becoming ubiquitous. Internet users were expected to reach 67 million by 2015. But what’s the present level of computer usage pattern and Internet awareness of school going students? The present study attempted to find this answer. Students of Classes IX and X from
public schools of Rohtak district were taken and responses obtained were analysed. Results of the present study indicate that whatever the schools and authorities claim, the bitter truth is that Internet penetration and awareness to the desirable extent was not there in school-going students.

Kaur (2010) conducted a study on to find out the effectiveness of Computer Assisted Instructions (CAI) in Teaching of Chemistry at secondary level. The objectives of the study were to prepare a computer assisted instructional package on the topic of ‘Chemical Bonding’; to compare the mean gain scores of the control group and experimental group in their pre-test; to find out whether there is significant difference in the scores of the pre-test and post-test of the control group; to find whether there is significant difference between the scores of the pre test and post test of experimental group and to compare the scores obtained by the control group and experimental group in their post test. The basic design of this study was experimental in nature. 60 students of 10+1 class were selected for a sample and sample was divided into two groups namely experimental and control group. The experimental group consisted of 15 male and 5 female students who were taught ‘Chemical Bonding’ and the computer assisted instructions and the control group comprising 15 male and 15 female students were taught by the conventional method of teaching. The sample of 60 students was divided into two equated groups of 30 students in each. Both the groups were equated as nearly as possible in terms of their achievement scores in chemistry in their half yearly examination. Students having similar range of marks in half yearly examination were divided equally and randomly in both the experimental and control groups. To find out whether there was any significant difference between the two groups, t-test was applied to scores of the half yearly
examination. The value of t was calculated as 1.21, which was insignificant. Hence an attempt was made to increase the internal validity of the results and it was assured that both the groups were equivalent to each other before beginning of the experiment. The investigator constructed an achievement test in chemistry on the topic of Chemical Bonding. The achievement test containing 50 items was administrated to 10 students of 10+ 1 class who were not included in the sample of the study. Experts of the field were consulted and as per the opinion of the experts some of the items were deleted and some were modified. The agreement of the views expressed by the experts after the logical evaluation of the test items was taken as the index of the validity of the tool. The reliability was established by the split half method and the reliability coefficient was found to be 0.84, which depicted the reliability of the tool. The final form of the scale containing 45 items was used as an achievement test in 45 minutes. The same test was used in pre-test as well as in post test of the study. The results of the present study clearly point out that significant increase in the mean gain scores was found in the post test scores of the experimental group. Significant differences were found between the control group and experimental group on post test gain scores. The experimental group, which was taught by the CAI showed better learning. The study concludes that the CAI is an effective media of instruction for teaching of chemistry at secondary level.

**Saikumari (2010)** conducted a study to find out the computer phobia of IX standard students and their attitude towards computer usage in education. A sample consisted of 310 students from Villupuram district of Tamil Nadu. Computer Phobia Scale and an Attitude Scale were used to collect the data. The statistical techniques used for the study were Mean, Standard Deviation, t-test
and F-test. The results showed that the factors like locality of the school, gender, types of school management do not influence computer phobia of IX standard students and their attitude towards computer usage in education.

Rout (2009) conducted a study on the Utilisation Educational Media at Primary Stage. This study examined the existing status and utilization of educational radio and television programmes produced by Central Institute of Educational Technology (CIET), National Council of Educational Research and Training (NCERT) New Delhi and broadcasted through Gyan Vani (educational FM radio channel V for Educational Radio (ER) programmes and DD-1 (National TV Channel), Gyan Darshini (Educational free cable channel) for Educational Television (ETV) programmes respectively. A sample of 60 schools run by Municipal Corporation of Delhi (MCD) was randomly selected from three educational zones in Delhi. Views and opinions on the utilization of educational radio and television programmes were collected through questionnaires and opinionnaire. The results revealed that only 50 per cent schools were utilizing educational radio programme, while 27 per cent schools were utilizing educational television programme. Further, regularly/occasionally listening and viewing schools of these media were unsystematic in the process of utilization. It was found after close scrutiny of collected data from the headmasters/headmistress (HMs), teachers, students and informal observation done by the investigator that the genuine cause of non-utilization of educational mass media was apathetic.

Bhat and Manjula (2009) studied on Web Based Induction Programme for elementary teacher educators. After DPEP and SSA there has been a great increase in teacher development programmes. Comparatively, what is done for
teacher educators had been very less. It is important that the implementers of all
the SSA programmes are well educated about the programmes before hand. The
theoretical understanding of these teacher educators, their attitudinal orientations
go a long way in ensuring the success of SSA programmes. A few efforts were
made in Karnataka in this regard. However, it was necessary to make teacher
education programmes sustainable. Teacher educators can empower themselves
provided right inputs are made available to them from time to time. It is from
this angle that a web based induction programme was thought of. DSERT,
Bangalore, in collaboration with RIE, Mysore developed a web page for this
purpose.

Rajpal et al. (2008) studied to know the current status of e-learning
education in India. The researcher discussed three reputed institutes in the
country- Indian Institute of Management Ahemdabad (IIMA), Symbiosis Center
for Health Care (SCHC) and AMRITA those had implemented e-learning and
offered various online courses. The study concluded that there was increase in
number of higher education institutes in India and the number of students
enrolled was high and expected to increase in future. With such increased
enrollment numbers it would then be difficult to provide the infrastructure for
education. All the challenges that India was facing in education and training, e-
Learning provides many answers and needs to be addressed seriously by the
planners, developers and the private industry players. Further the study
suggested that many sectors like Education, Banking, Medical, Agriculture or
even the entertainment industry could use e-learning to attract students and offer
introductory courses that could explain the varied opportunities that those fields
offer.
Vellaisamy (2007) examined the effectiveness of multimedia on the achievement of pupils in Science at VIII standard. For this purpose a sample of 520 pupils was drawn from VIII standard of 13 schools of Nagapattinam block. The pupils were divided into two groups. 270 pupils were in experimental group while 250 pupils were in control group. Pre-test was conducted for both the groups. The control group pupils were taught through conventional method of teaching. The experimental group pupils were further divided into 5 sub-groups consisting of 50, 50, 50, 50, 70 pupil respectively. The treatment was given to experimental group through multimedia approach. The scientific approach especially in the teaching-learning process can be applied through multimedia elements such as graphics, sound, animation, text and images prepared in CDs which are all taken as a treatment of multimedia to the experimental group. After completion of the multimedia treatment, the achievement test was administered as Post test to the pupils of experimental group and control group. A tool to measure scientific attitude was also administered before and after the treatment of multimedia approach. Significant moderate positive relationship between learning achievement and scientific attitude was found. The pre-test and post-test were used to arrive at the following conclusion that the pupils of the experimental group achieved more than the pupils of the control group in science at upper primary level. The pupils of the experimental group have improved than the pupils of the control group in their scientific attitude. This was due to the favourable impact of the multimedia approach in the learning of the VIII standard pupils. The study demonstrated the effectiveness of learning science.
Sife et al. (2007) discussed the application of ICT’s in teaching and learning by reviewing the e-learning context and explained the pedagogical, cost and technical implications of different ICT’s that can be used for e-learning purposes. The researcher analyzed the implementation of e-learning system in various universities of Tanzania and identified the challenges faced by these universities such as lack of awareness, attitude, administrative support etc which would be critical to the successful integration of ICT’s into teaching and learning processes. The study concluded that most of the universities in developing countries possess basic ICT infrastructure such as Local Area Network (LAN), internet, computers, video, audio, CDs and DVDs and mobile technology facilities that form the basis for the establishment of e-learning. Pedagogical, technical and cost issues should be taken into account for each specific technology when integrating ICTs in teaching and learning practices.

Rajasekar and Raja (2006) studied on Computer Phobia of higher secondary teachers. The objectives of the study were to study the computer phobia of teachers; and to study if there is any significant difference between: Male and female teachers; Teachers from urban and rural areas; Teachers who have attended computer classes and those who have not attended computer classes; and Teachers who have surfing habits and those who have no such habits in respect of their computer phobia. Normative survey technique was adopted for the study. Cluster Sampling Technique was used in the selection of a sample of as many 670 teachers, working in higher secondary schools situated in Cuddalore district, Tamilnadu, India. A sample consisted of 375 male and 295 female teachers; 299 of them from urban area and the rest 371 from the rural area. Only 305 of them attended computer classes and the remaining 365 have
not attended computer classes while only 242 of them were having surfing habit and the remaining 428 do not have the surfing habit. The findings of the study were 52.38% of the teachers working in higher secondary school of Cuddalore District had low level of computer phobia. The locale of the teacher, teachers who attend and those who do not attend computer classes and the teachers who surf in the net cause significant difference in respect of their computer phobia. The gender of teachers does not cause significant difference in respect of their computer phobia and Since 52.38% of the samples had low level of computer phobia, hence, it is high time to take necessary steps to make the remaining 47.87% free from computer phobia.

Patel (2006) made an exhaustive study of Keli-Kali radio programmes in Karnataka. The study reveals the Keli-Kali Radio programmes developed by the DEP-DPEP and others were effective to learn Environmental Studies (EVS) properly. The students of III and IV standard learnt EVS through the Keli-Kali Radio Programme achieved significantly more than those who learnt through traditional method. The students when taught through the Keli-Kali Radio programme have achieved significantly more than the previous year (II and III standard respectively), which means that the Keli-Kali radio programme material helped the students to learn better than the previous year. The boys when taught through Keli-Kali Radio programme have achieved significantly more than those taught through traditional method both for III and IV standard EVS. The girls when taught through Keli-Kali Radio programme have achieved significantly more than those taught through traditional method both for III and IV standard EVS. Both boys and girls have equal affinity to learn through Keli Kali radio programme for III and IV standard. The teachers who taught through Keli-Kali
radio programme method expressed that, this method is better than that of traditional method to teach EVS for III and IV standard. The students who learnt through Keli-Kali radio programme was also expressed their satisfaction, but they were expressed that this may be supplementary to the traditional method.

Parkash and Sharma (2006) viewed on Educational Television Programme. Since the beginning of Educational Television in India, the ETV programmes are being viewed in the schools by children. With the explosion in Television penetrations availability of multiple channel, there was a need for a paradigm shift. This research based on the feedback received from the viewers of Tarang (telecast on National Channel) explored the implications of such a paradigm shift.

Pandey (2006) conducted a study on Teacher Education and Edusat-Some Critical Emerging Issues. EDUSAT was emerging as a very powerful channel and support which can be utilized for vitalizing in-service teacher education programmes. The write-up highlights some critical emerging issues which have to be addressed squarely in order to assure quality and excellence in the various interventions being planned and advocated by the organizations and agencies of teacher education in the country.

Gayathri (2006) conducted a study on multimedia usage by Mathematics Teachers. Mathematics is an important subject in school education. Following the Central Board of Secondary Education (CBSE) mandate to introduce mathematics laboratories in all its affiliated schools from the year 2004-05, there was an increased usage of multi-media and information technology as teaching aids. The present research based on a research study conducted in Bangalore
city in 2005-06 highlights the existing trend and tries to suggests measures and areas for further research towards achieving an effective teaching and learning of mathematics through the use of new technologies.

**Bhandigadi (2006)** made evaluative study to find out the impact of EDUSAT on the academic achievements of students and opinion of teachers. The primary data of 2000 students and 200 teachers was statistically analyzed by following experimental and control design at schools level in the Karnataka state. The researcher found out that the benefit gained is in terms of gain in knowledge and understanding of the content, improvement in attendance and holding attention and interest in viewing programmes. It was suggested that teacher involvement during the broadcast as facilitator and conduct of Pre- and Post- broadcast activity be made compulsory despite other efforts to ensure the delivery of services.

**Sundararaj (2005)** investigated to find out the attitude towards computer education of the B.Ed. Trainees of Tamil Nadu Open University. The investigator was used survey method for studying the problem. B.Ed. Students studying B.Ed. in Tamil Nadu Open University in the Palayamkottai centre. It was found that, there is significant difference between male and female B.Ed. trainees in their attitude towards computer education that is female B.Ed. trainees are better than the male trainees. There was significant difference between rural and urban B.Ed. trainees in their attitude towards computer education, that is the urban B.Ed. trainees have better attitude towards computer education than the rural trainees and there was significant difference between arts and science B.Ed. trainees in their attitude towards computer education.
Muthaiyah and Sheela (2005) conducted a study on effectiveness of the Audio-Visual Media in Teaching and Learning of Social Sciences to the Primary Level in Private Matriculation Schools. The objectives of the study were to analyze the development and importance of teaching-learning through multimedia, to study the awareness of teaching-learning of social sickness through multimedia at the primary level teachers and students, to analyze the effectiveness of teaching and learning through audio-visual media among students and teacher at the primary level; to elicit the views of the social science teachers over the use of oral and multimedia teaching at primary level. The investigator chose the geographical area Mettupalayam Taluk under the Coimbatore District. The taluk consists of 16 private matriculation schools. The researcher had chosen 5 schools to conduct the research. A total of 300 students were selected as the sample for this study. 150 of them constituted the experimental group and the remaining 150 students constituted the control group. 20 students each from the standards were selected for the study. It was concluded that, every one has gone through the various phases of education from the childhood to profession. The educational system had got a tremendous responsibility to transform a child into a leader. The education in the present trend does not mean the mere text book learning. It aims at giving complete life to the pupils. The experience has shown that education is ever lasting. Hence the investigator has clearly understood that the mere dumping of the materials will not be useful either to the learner or teacher unless it is planned and organized in an effective and purposeful way. From the results of the study, the investigator identified by the present study that Audio-visual aids used in the
teaching learning process have wide significance from the view points of teachers as well as learners at primary level of education.

Kumar and Ambedkar (2005) studied to find out the effectiveness of Computer Assisted English Language Learning. The study was made to assess the effectiveness of CAELL over conventional method of teaching grammar. A three group experimental method was followed. The study revealed that the computer with teacher support group has the most significant effect on the pupils achievement in grammar. The emerging trend all over the world is towards more individualized and flexible forms of learning with an emphasis on the individual learning. The National Policy on Education 1986 has emphasized the application of educational technology to improve the quality of education at all levels. It has also laid a special emphasis on using computers in the teaching learning process. The rapid development in computer technology, together with the use of computers in language teaching and learning. Six studies investigated how technology could be used to promote speaking skills Borras, (1993) Coniam, (1998) Derwing, Munro, & Carbonaro, (2000) Gonzalez-Edfelt, (1990) Johnston & Milne (1995) Liaw, (1997) research described a group of students using computer books and the conversations that took place as they read them. These studies found that as the students became more prolific readers; their discussions shifted from dealing with technological difficulties to the content of the books. The studies suggested that for meaningful discussions to take place, learners must have something to talk about. Computer books could provide the content on which discussions could evolve.

Basil and Amina (2005) studied to find out the use of computer in higher education in Nigeria, with particular reference to the University of Benin. The
questionnaire was used as an instrument for data collection. Analysis of the data revealed that the use of computers in higher education is a recent development in Nigerian Universities. Computers available at present are used mainly for administrative purposes. However, the result shows that computers can be used to enhance the teaching/learning process. The objectives of the study were to identify the different areas where computers are being used in higher education; to highlight the benefits of the use of computers in education; to identify the benefits, the use of computer has in education and the society at large; to find out the role of the government and the National Universities Commission (NUC) in the encouragement and implementation of computers in education in Nigerian universities. To detect the factors militating against the use of computers in higher education. Conclusively the use of computer in education has added a new dimension to education in general. No doubt the use of computer in the teaching/learning process and provision of online services through the Internet is a powerful resource to educational institutions. This has in turn helped to move education forward in the higher institutions.

Tiwari (2004) studied on Theatre in School Education: Some Challenges of Teaching-Learning. This research explored ways by which theatre could be a part of school education to support teaching-learning process for the all round development of children. The various strategies for using the cultural artistic aspects for designing the activities are attempted. The study concluded that theatre is not only part of curriculum but also an extension of education.

Rout and Panigrahi (2004) examined the study on Multimedia Centre: Tapping Potential for Quality School Education. Use of all forms of technology to help the teaching-learning processes in schools will pave the way for enriched
learning of children in school. This also serves as a base for improvement of quality of school education. This research discusses about how a multimedia centre could be setup to benefit schools for improved learning.

**Phalachandra (2003)** has found improvement in education achievement, school performance, teacher transaction of curriculum, teacher’s personality. Interschool communication and competitions were developed. In the review it was first time observed that the school interacted with each other. Radio phone-in conference became the important means of interaction among the schools. This concept was the emerging area in the DPEP period. To examine this intervention in the context of DPEP and present it was a case study. It may be noted that the DPEP Karnataka had conducted about 7 radio phone-in conference till the completion of DPEP programmes.

**Patel (2003)** says that the cost of broadcast of 30 minute programme ranged from Rs.8000/- to Rs.13500/-. The cost of production of programme was Rs.10000/-. Hence, the total 30 minute radio programme cost less than any other format of distance programme. Such programmes, if produced at one end and transmitted from two powerful stations could cost about 2x13500+10000=37000 in Rupees for half an hour of programme each. Two such stations can cover entire population of about 5.00 lakh students and the cost per candidate can be go upto a fraction of paise.

**Balasubramanian** and **Meera (2002)** studied to find out the relative effectiveness among different modes of computer based instruction. An attempt was made in this study to establish the relative effectiveness among Tutorial, Drill & Practice, and Simulation as different modes of computer based instruction in realizing the instructional objectives as well as enhancing the
retention of what has been already learnt in the content of teaching modern physics at Higher Secondary stage. The study concludes that there was significant difference among different modes of computer based instruction. Simulation as one of the modes of CAI is more effective compared to Tutorial and Drill and Practice.

**Murthy (1997)** examined the Role of Audio Visual Communication Media in Social Development with Special Reference to Contemporary Indian Situation, in view of the communication revolution that is sweeping the world today. This study was conducted in rural area to establish relationship between the degree of media effect and the existing social background of the selected respondents in two villages. During course of the study an attempt was made to elicit the views of 3,500 respondents about their level of information, media habits, programme-content, and media preferences as related to their status in society, which have been analyzed. The study revealed that even a pluralistic and traditional Indian Society is being increasingly influenced by the present communication revolutions necessitating a change in their social attitude, behaviour and interaction.

**Jaiswal (1992)** took up a study on the effectiveness of TV programmes in science education. The study was conducted on B.Ed. Diploma in Computer Education students. Lecture with demonstration and illustration talk formats were found, quite effective. About 70% of the programmes focused on the lower cognitive skills of knowledge and understanding. About 3/4 of students were satisfied with the quality of the programmes in terms of language used, technical quality, additional information and synchronization and compatibility of sound with visuals.
Mohrana (1990) conducted a study on effectiveness of educational television programme at the primary school level. The main objective of the study was to study the effect of ETV programmes on primary school children in terms of academic achievement, attitude towards school and motivation in learning. The study concluded that the academic achievement of children exposed to educational television programmes was higher than those not exposed to educational television programmes. Out of the three comparisons made in three school subjects, two have reached the level of significance. In Mathematics the difference was not significant, though the result was in positive direction and in favour of ETV group.

Chaudhary (1990) conducted a study on teachers’ attitude towards school television (STV) and its relationship to mass media behaviour and job satisfaction. To know the teachers’ attitude towards STV and its relationship with mass media behaviour and job satisfaction. It was found that the custodian teachers, on the whole, had a fairly favourable attitude towards STV. They perceived STV as an acceptable medium for teaching students and for presentation of instructional material; teachers supported the effect of visuals on students; they perceived STGV as an effective learning medium; the custodian teachers’ attitude towards STV was independent of their personal and academic characteristics; the teachers who taught the higher classes (Classes IV and V) showed a more favourable attitude toward STV, I comparison to those who taught all classes from classes I to V. The custodian teachers were fairly satisfied in their job situation. Teachers’ attitude toward STV and their job satisfaction were positively related. Job satisfaction were positively related Job satisfaction was associated with authority-figures responsible for work allocation, work
supervision and the role of custodian of STV. The intensive case study method revealed that the majority of teachers did not operate STV regularly. Most of the sets were out of order. Teachers were not found happy with regard to their training, viewing, arrangement and mode of viewing.

Chaudhary (1990) conducted a study on teachers’ attitude towards school TV (STV) and its relation with job satisfaction. It was found that job satisfaction was associated with the authority responsible. For work allocation, intensive case studies revealed that the majority of teachers did not operate STV regularly and the majority of TV sets were out of order. Teachers perceived STV as a good tool for teaching and were fairly satisfied with their job. Teachers teaching Classes IV and V showed a more positive attitude towards STV than teachers teaching Classes I – IV.

Behera (1990) investigated the impact of ETV on competencies of teachers of elementary schools. The study demonstrated that teachers exposed to ETV programmes achieved significantly more on their knowledge understanding and application in the specified content areas. In actual classroom interaction, ETV teachers significantly differed from Non ETV teachers on Teacher Response Ratio, Teacher Question Ratio, and Pupil Initiation Ratio. Teachers also pointed out power failures, mechanical disorders and unsuitable time slot as some of the vulnerable problems.

Seth (1983) conducted a study on effectiveness of educational television on the educational development of primary school children. The main objective of the study was to inquire into the effect of educational television (ETV) on the educational development of primary school children in terms of language development, acquisition of information related to ETV programmes and
scholastic achievement. The study was concluded that language development of children exposed to ETV was higher than those not exposed to ETV. Language development among children exposed to ETV along with intervention programmes was higher than those exposed to ETV alone and those not exposed to ETV. The scholastic achievement of students exposed to ETV programmes along with intervention was higher than the ETV and the non-ETV groups.

Singh and Shukla (1980) studied an utilization and attitude of teachers towards school broadcasts, the study aimed at the process of programme planning and production and liaison between the directorate of education and Akashvani in various stages of programmes planning and production and comprehensibility of radio lessons on the part of students. The study concluded that after listening to the programmes, the experimental group gained on all programmes to the extent of 7 to 17%. Item analysis of the tests showed that the students gained very little on words knowledge and concept formation. Most gain was on acquisition of factual information.

Phutela (1980) investigated on utilization and comprehensibility of School Television Programmes on the part of the students of different classes. The result of four out of five comprehension tests regarding utilization STV programmes showed real difference in the learning of the subject matter, indicating that these lessons were well understood.
2.3 REVIEWS RELATED TO EDUSAT PROGRAMME

Sathiyan and Sumangala (2014) conducted a study on VICTERS-reaching the un reaches: how do secondary school students of Kerala utilise. Government of Kerala was utilising the service of EDUSAT-the educational satellite-and set up the first Interactive Broadband network for school education in India- the ‘ViCTERS’ (Virtual Classroom Technology on EDUSAT for Rural Schools), which is now re-named as “ViCTERS”-Versatile ICT Enabled Resource for Students since 2005. ViCTERS telecast the programmes pertaining to school education and the channel operates 17 hours daily from 6 a.m. to 11 p.m. The programmes are chartered to cater the needs of educational community of Kerala schools including students, teachers and educational administrators. The present study was an end user study to know how far standard IX Students of Kerala Secondary Schools utilise such programmes by a survey design administering a structured questionnaire. Sample for the study consists of 351, Standard IX Students of Kerala and this was drawn from selected schools of Kollam, Ernakulam and Kozhikode districts. A purposive sampling had to be done in selecting the sample as the study was to know the Utilisation of the programme. Statistical analysis used for the study was Percentage analysis for Total sample and Sub samples. It was found that, 1. Of the Total sample, 86.61 percent of Students view ViCTERS programmes at Home. Similarly, among the Sub samples like Gender, School Locale and Type of School Management, majority (83.57-90.97%) of Students watch ViCTERS programmes at Home. 2. With regard to the nature of viewing, the majority of Students are Favourite programme viewers (49.57%) and Holiday viewers (39.32%). 3. Despite the delivery of ViCTERS programmes for 119 hours a week, almost half of the
Students (49.57%) utilise only less than two hours per week and 40.74 percent of the Students utilise between two to four hours per week. 4. Self motivated viewers (0.85%) of EDUSAT programme are very meager and Students view because of the motivation either from teachers or parents and friends. 5. The study indicates that the viewership of the VICTERS programmes among the Secondary School Students was low. The three programmes Bhasha parichayam (44.73%), Communicative English (41.88%), and Innalekalile innu (41.88%) are having relatively higher viewership though it was below 50 percent.

**Pallai (2013)** discussed various projects initiated by ISRO to cater to the country’s need for education, training, and general awareness among the rural poor. The institutions which play a vital role in the implementation of EDUSAT-based programmes are described like. It was researcher who concluded that for the successful use of EDUSAT satellite a rigorous planning was needed and collaborative efforts were essential for designing of the software and its utilization for achieving goals of education.

**Ambedkar (2013)** studied on Edusat awareness among the higher secodnary studnets in Cuddalure district. Normative survey method was used in the present study. The study was coducted on higher secodnary studnets from various schools situated in Cuddalore District of State Tamil Nadu, india. The sample size was 250. It was selected by using random sampling technique. Edusat awareness inventory constructed by the investigator. Statistical techniques such as descriptive analysis, differential analysis and correlation analysis were employed to analyze the data. It was found that, Edusat awarness of higher secodnary studnets is not adequate; there is no significnat difference between male and female higher secodnary studnets in respect of their edusat
awareness. This indicates that edusat awareness has nothing to do with sex of the students. There was no significant difference between urban and rural higher secondary students in respect to their edusat awareness. This proves that edusat awareness has nothing to do with the locale of the students. There was no significant difference between arts group and science group students in respect of their edusat awareness. This indicates that edusat awareness has nothing to do with the subject of the students. There was no significant difference between day’s scholars and hostellers in their edusat awareness. This indicates that Edusat awareness has nothing to do with the residence of the students. It was concluded that the study has revealed that majority of the higher secondary school students do not have adequate awareness on edusat. The edusat plays a predominant role in all walks of life, especially teaching and learning. So, the higher secondary students must be aware of the application of Edusat. It is the duty of the teachers to make their students to update their knowledge in every walk of life. The schools may also conduct seminars, workshops on Edusat.

Singh et al. (2012) presented a study on Edusat Satellite Based Education: Study of Scope for Enhancement of Audio-Video Quality: A Case Study of Madhya Pradesh Bhoj (Open) University. This related with Edusat network of Madhya Pradesh Bhoj (Open) University, which includes Hub dedicated for higher and distance education, Studio and 40 Satellite Interactive Terminals with Edusat-network provided by Indian Space Research Organization (ISRO). These SITs have been installed in urban, rural and tribal areas. Detail study of equipments of hub, studio and receiving terminals was taken up. Target group was chosen and most easy and suitable way of virtual class was identified. Various factors affecting quality of audio/video were drawn
from the study and content/presentation of video lectures were analysed. Recorded video lectures and live lectures were telecasted for 177 working days and observations related to BER (Bit Error Rate) correlating problems encountered during operation of terminals, audio-visual quality of lectures, skill and response of operators were made. Researcher aimed at identifying the scope of enhancement in audio-video quality of the material telecasted through Edusat. The study was based on the network which has been created mainly for the students of rural and tribal areas. On the basis of observations and BER data collected from hub, the present study makes findings and suggests those possibilities which can enhance the audio-video quality of the telecast without any major change in satellite’s band width and hub, and with minimum increase in cost and expenditure.

Kumar and Kaur (2012) evaluated a study on EDUSAT program in schools of the Haryana state of India. The aim of the study was to find out the opinion and difficulties faced by teachers, students and principals; facilities provided by schools; subjects and classes covered by EDUSAT program. The primary data of 10 principals, 50 teachers and 150 students from all the government schools of Hisar district having the EDUSAT facilities was taken. The analysis was done using simple percentage method. The study concluded that all the subjects were not given equal importance and subjects like Hindi, Commerce, Economics were not covered through EDUSAT. Only the curriculum of XIth and XIIth standards were taught through EDUSAT. The major areas where the principals faced the difficulties were: time table adjustment, maintaining discipline, maintaining technical equipment, maintaining coordination with teachers, whereas 90% teachers complain that the
syllabus was not completed in the time through EDUSAT teaching. Moreover, according to teachers, expert teachers fail to understand that how much the students had learnt from EDUSAT lectures. It was found that difficulties faced by students were speed of lesson delivered by EDUSAT teacher, fluctuation in volume or picture, electricity failure and timing of telecast of lecture.

Gupta (2012) conducted a comparative study about the various methodologies with their problems and constraints available to support the impact studies of the Satellite Enabled Educational Receive Only Terminals (ROTs). The study concluded the benefits of the integration of ‘People Meter’ and ‘Picture Matching People Meter’ devices at the receiving end. With the integration of suggested technology, the authorities would be able to get periodic information regarding viewership data for the purpose of effective monitoring, control and optimum return of the investment. The mechanism would provide quick, authentic, instant information about viewership whenever required without visits to the receiving locations. It was possible to shift the device to other places after stipulated time intervals.

Chaudhary and Garg (2010) discussed a case study of Rajiv Gandhi Project for EDUSAT-Supported Elementary Education (RGPEEE) project for imparting value added ICT enabled education for improving the quality of education and professional development of in-service teachers. Initially, the project focused mainly on Sidhi district in Madhya Pradesh which was predominantly inhabited by tribal people, who had remained on the margins of development, and 700 schools, the District Institute of Education and Trainings (DIETs) and Block Resource Centers (BRCs) were connected. For the achievement of this project’s objectives, multipronged strategy to identify hard
spots, develop e-content and beam programmes at pre-decided schedules, train school teachers from within the district in presentation skills was adopted. Feedback studies revealed that with the launch of the program, EDUSAT supported education helped to increase attendance of students in schools and their retention for more time, apart from empowering teachers in teaching hard spots and motivating them to make their teaching more effective using innovative methods and aids.

Desai et al. (2009) studied the enhancement of primary education using EDUSAT and found out that due to the non-availability of required number of trained and expert teachers’ knowledge divide exists between students from urban and rural/remote areas. Distance Learning or Tele-education was chosen as best option to bridge this gap. In the study it was decided to provide a Teleeducation network in and around the Sidhi district of Madhya Pradesh, with uplink and studio facility (Hub) at Jabalpur (MP) and around 700 receive only terminals (ROTs) in various schools and it was found that it enhanced achievement of primary school learners.

Dash (2009) investigated to know the effectiveness of EduSat for improving learning achievements of primary school children – A Critical Study. Implementation of EduSat in general and Rajiv Gandhi Project for EduSat Supported Elementary Education (RGPEEE) in particular present a great challenge in the light of optimum utilization of communication technology for improving classroom practices (teaching learning process) at elementary level. The first phase of this project focused on Sidhi district of Madhya Pradesh, India as a pilot project to supplement classroom teaching learning process and improving professional competencies of teachers. The
present research reported the effectiveness of implementation of EduSat on improving academic achievement (average achievement in curricular subjects namely; Hindi, English, EVS and Mathematics) of children of primary grade (standard III and V). Results of the study indicated that no significant difference in achievement of students of schools having receive only terminals (ROTs) and non ROTs. The result concludes that mechanisms to make EduSat more effective in teaching-learning process.

Bhattacharya (2008) conducted a study on Engineering Education in India and influence of the Role of ICT on it. Engineering education in India has witnessed a major change over the past few years. Substantial increase in the demand for high-quality education has led to the adoption of Information and Communication Technologies for extending the outreach of education. This research presents a review of some of these technology-enhanced initiatives already taken up by the government of India, as well as by some of the leading institutions in the country. Important developments include the National Programme on Technology Enhanced Learning (NPTEL), the use of an educational satellite called the EDUSAT and various other approaches such as the use of “virtual classrooms” and “virtual laboratories.” The study goes on to discuss some of the problem areas in the present mode of dissemination and deployment; some possible future trends and modalities are also outlined. These include blending collaborative learning with interactive technology-enhanced learning initiatives and finding ways of providing support for learners’ queries.

Phalachandra NCERT, (2006) conducted a study on impact of EDUSAT on school students and teachers. In the year 2004 the Govt. of India launched a dedicated Satellite called EDUSAT (Educational Satellite) to serve
the educational sectors offering an interactive satellite based distance education system for the country. EDUSAT is to provide connectivity to schools, colleges, and other similar institutions. Initially it is proposed to use the facilities in four different states for reaching different target groups. In Karnataka State the Edusat is being used to supplement classroom teaching in all the elementary schools (850 Schools) of one district. The schools are provided with receiving solar backed system to receive signals (programmes) in all the 850 schools. On each day two programmes of 30 minutes were broadcast for the benefit of students of Grade III to VIII. The contents covered almost all subject areas of all the grades. In the academic year 2005-06 almost 200 video programmes were broadcast. The teachers were given training with respect to the use of television as medium of instruction and also to conduct Pre and post broadcast activities. As part of evaluation of Edusat Project in Karnataka a comprehensive research study was initiated to find out the impact on the attendance, and academic achievement of students by following experimental and control design. The content achievement (one test of about 20 items for each grade) and visual achievement (one test of 10 items for each grade) tests were administered on students of different grades to ascertain the learning gains. The feedback from teachers were obtained. It was found that the students have benefited from the video programmes delivered through the satellite. The benefit gained in terms of gain in knowledge and understanding of the content, improvement in attendance and holding attention and interest in viewing programmes. This research shows that the implementation of the EDUSAT project and analysis the impact on students attendance, learning gains and attitude and opinion of teachers based on the data collected from about 2000 students and 200 teachers.
Meenu (2006) studied on Utilization and Effectiveness of Educational Television Programmes at Primary School Level. This study was undertaken with a view to providing valuable suggestions for better planning and organization of the school television system in general and meaningful utilization of educational television programmes for the students at the primary stage in particular. The research presents the results of the survey of the facilities for utilization of ETV programmes in Delhi at primary school level. It also reported an experimental study of the effect of ETV exposure on achievement in Mathematics and Environmental studies at Class III and Class V. Some of the significant findings of the so were that half of the municipal schools and all central schools build slots in their timetable for ETV. Privately managed schools funded by the Government of Delhi do not provide viewing time. The language of the programmes of ETV channel was Hindi, but the students of Central Schools Study Mathematics and Science through English medium. The experimental study indicated that the ETV exposure increases achievement and it further improved when the teacher provided post-telecast follow up activities. It is concluded that ETV should be integrated in the school time scheduling and required infrastructure should be provided in schools.

Mishra (2005) conducted a study on Edusat in Teacher Training and Education. The objective of EDUSAT was to acquiring experts in the setting up and operation of education-oriented multimedia, multicasting and interactive network to support teaching and learning activity and evaluating the effectiveness of such interactive network for learning and education; Training the user agencies to understand the organizational, managerial, technical and software requirements to run an interactive network on an operational basis;
Experimenting with different presentation genres and formats using interactive multimedia multicasting; Involving and encouraging different users and subject experts in the production of educational software; Creating a response-sensitive organizational and management structure to enable mid-course correction and create sustainable system; Evolving modular network architecture to cater to different sectors of education as well as different regions; and Adoption of these modules by different agencies in the country in operational phase. CEC was providing opportunities to all the teachers, media professionals working in EM²RCs and teachers’ trainers in the ASCs in transferring skill to develop e-content material as well as basic knowledge of instructional design methodology for development of subject material for the purpose of e-content, as well as development of syllabus-based topics in the form of lectures which can be used for telecast in the 24 hour higher education channel. By this method, CEC was training the teachers located in various parts of the country to develop their own skills for making teaching and learning more interesting with the use of multimedia inputs. The use of graphics, animation and special effects as well as other instructional design methods to impart the knowledge, makes teaching and learning more absorbing and interesting. To conclude one can say that opportunities are enormous. With the concerted efforts of technology-enabled learning we can overcome the limitations of space, time and also manpower up to a large extent. This would not only enable the teachers to update and reach the students at large but also enable the students as well as the masses to reach the best teachers available in the country. EDUSAT is a boon for educational fraternity. It is an opportunity to make teaching-learning more interesting by way of having live interaction for imparting skill or building capacity, sitting in
various locations, with the help of technology-enabled learning without the constraint of distance and bigger infrastructure.

Krithivasan and Iyer (2005) discussed various models for efficient dissemination of multimedia content along with advantages, problems and challenges in implementing the different models. The study focused mainly on – Satellite based models, Models for Streaming over the Internet and Hybrid Models. The scholars identified the various user groups of distance education such as- Educational institutions catering to higher educational needs, Schools, Governmental agencies, Business organizations and industry. Satellite based network models would work fine where the focus was on the community at large rather than individual users. Flexibility of space and time was absolutely essential for users in a business organization or an individual industry professional for allowing access to knowledge on their desktops. The streaming models satisfied the requirements of working professionals but major hurdle was guaranteeing quality. By deploying the hybrid models quality guarantees could be made within a local area. A satellite-based model for an application such as distance education would restrict its reach to institutions and organizations within the country. Internet based streaming would open up the program to participants anywhere in the globe. It was concluded that the choice of the model changed on basis of the objectives of the program, targeting a community or an individual user or whether it caters to national or international students. The researchers mapped the objectives to the models proposed with a view to provide the basis for choosing one model over the other. With the launch of EDUSAT, the proposed models that use the satellite network as the primary infrastructure can be considered for reaching the masses.
2.4 OVERVIEW OF STUDIES

The researcher has attempted to review 56 related studies. Out of these reviews, 42 are about Educational Technology and 14 are about Edusat Programme. From the above review of the literature it is found that most of the studies have been conducted on various issues of educational technologies used at primary and secondary school levels in India as well as abroad. Few studies have been carried out on Edusat Programme. The review also shows that good amount of work has been done on Edusat Programme, and no studies have been done so far on the present study depicting the utilization and effectiveness of EduSat Programme with teachers and students attitude towards Edusat Programme. From the studies it was concluded that several researchers have concluded that personal factors such as sex, type of management, locality, religion are correlated with Achievement in Environmental Studies.

In India only few studies have been carried out related to the Achievement of Environmental Studies of students in the field of primary education in relation to utilization and effectiveness of Edusat Programme. This research makes the study in hand vital in spirit and strength, so the above related studies pursits the researcher to conduct the present study.