CHAPTER 2

REVIEW OF LITERATURE

2.1 INTRODUCTION

This chapter attempts to cover resources and literature materials about the educational TV channels and videos. The growth, expansion, case studies and a few critical studies on whether educational TV channels are truly successful or not are represented here. The researcher has referred various books, journals, symposium papers, websites, newspaper articles and research dissertations to get clear idea on the subject, methodology and design to accomplish the research work.

2.2 MEDIA FOR EDUCATION

Media is defined as “all means of communication, whatever its format. In this sense, media include symbol systems as diverse as print, graphics, animation, audio, and motion pictures” (Reid 1994).

Souto (2011) found that television, cinema, drama and literature have the ability to provide educational contents and through innovative educational practice, it can contribute in motivating the students pursuing higher or professional education.

Television can be an important medium for the teaching and learning of the developing child. In one of the articles written by Berry (2003), he astoundingly explores some of the important communication
theories, concepts, and creative issues related to the psychosocial impact on adolescents that appear on television. It explores how social learning theory and the cross-cultural images and portrayals on television influence the multicultural attitudes, values, and beliefs of children.

Since last two decades, there has been a head start of immense technological dispersion throughout the world. Initially, all the mass media technologies are mainly one-way in communication, allowing one or a few individuals to convey a message to an audience of many. During the 1980, different kinds of communication technologies became important, those which facilitated the exchange of information on a many-to-many basis through computer-based communication systems. These new communication also lead to further advantages like increased level of interactivity, distribution of a message to a larger extent, and also increased synchronization between the sender and the receiver of the message. High-tech media now offers expanded capacities in terms of speed, storage, delivery, clarity, reach and simplicity of usage.

Katz & Wedell (2003) bring to light the importance of broadcasting, which contributes in developing a nation’s economic and social condition. Eleven developing countries had formed a part of their field research, which made them find out the role played by broadcasting media in enhancing the integrity of the nation, its impact on the cultural aspect and socio economic improvisation. The authors emphasize on how the western style of broadcasting has influenced these developing nations in designing the programmes meant for broadcast purpose. They stress on the need of adapting programmes from the western thoughts but the content should be changed or partially modified according to the need of the developing country’s socio, political and economic structural demands.
As mentioned by Katz & Wedell, broadcasting is considered to be one of the popular factors and has been appreciated by many media critics widely. India being a developing nation is always dependant on such factors for increasing its socio economic condition. The huge demographic size in India is considered to be the plus point where broadcasting is interdependent on the population. The more the number of viewers, the broadcasters earns more revenue through advertisements and this indirectly helps in raising the economy of the nation.

Akhter (2011) had conducted an evaluative study in Pakistan to find out the effectiveness of educational television programs in distance learning system. By implementing survey method, it distributed a questionnaire to the learners that were part of distance teaching system. The content validity was further determined by expert opinion. Results of the study indicated, educational television programs were very useful for students & majority of students get benefit out of it. The major findings in the study showed that majority of the students fail to watch the programmes as they were not getting the telecast schedule and approximately half of the students could not note down the important features because of slow writing speed and non availability of recording facilities.

Akinbile & Otitolaye (2008) study was based on the use of communication for disseminating agricultural information. It showed that use of television was the highest preferred and contributed more in comparison to other media tools.

Distance education has equally played an important role in reaching the students. In the Indian situation too, ICT (Information Communication Technology) has enabled distance education to spread out effectively. The educational TV channels identify the best experts from various fields and subjects and transmit their lectures, which reach even the rural, and
countryside places. Many students are benefitted from the educational channel. As found by the authors, it helps in breaking the barriers of physical and political boundaries and reaches everyone effectively.

Siddiqui (2009) said in his “Encyclopedia of Education Technology” that technology could enhance the processes of teaching and learning. The third volume deals with technology in higher education and is an authentic in-depth analysis of contemporary situations, progresses and challenges in the field of higher education. He has analyzed that the virtual learning environment includes alternative teaching methods like internet based courses, teleconferencing and virtual reality courses.

Ayurek (2005) had found that almost all educational television programmes are produced in similar ways where their response ratings were quite low and was not of the anticipated level. In order to increase the quality of these programs and to make them regularly watched; people in education and television fields have to work in cooperation.

According to Garland & Loranger (1996) innovative teaching techniques with the use of videos and slides can engage the students to watch the instructor on the screen. Using large font size and "TV friendly" colours, will increase the clarity of the presentation for the learners. Many instructors either forget about, or do not realise, that eye contact with the lens includes the students at the remote sites and increases the effectiveness of their instruction.

Albertson & Lawrence (2009) distinguish from educational television (ETV) programmes instructional television (ITV). Usually, ITV is based on specially designed correspondence courses or tutorial instructions. Enrichment and direct teaching is one of the modes to distinguish these two formats of programmes in commonwealth countries which has been using
television in a balancing way to educate the public. The motto of any educational television programme is to enrich the minds of the viewers. But the chalk and talk or pedagogy teaching programmes are considered to be dull and boring.

Lawrence research shows “an attractive personality expert while addressing the students on a particular subject or topic can establish one-to-one rapport with individual students”. This clearly indicates that the persona of the expert who delivers the lectures on the screen is also accountable in making the students to sit and watch. Lawrence has also suggested the terms called as on-syllabus and off-syllabus. On-syllabus programmes are based on the syllabus and off-syllabus is an added material designed to broaden the outlook of the students. He quotes “educational television is by far the most economical and could be the most effective” especially for developing countries. This form of instructional television would enable poorly qualified teachers to raise their standards and would help to prevent the clever child from losing the chance of higher education due to lack of preparation.

Cennamo et al (1991) had tried to discern the cognitive effects of video based learning on undergraduate students. Their study showed the association between the learners reminisces and the real lesson time while watching the instructional television. They even found that there is a significant relationship in between the learners while following interactive video and their efforts in answering the questions given to them to practice after watching it.

Morse & Blackhurst (1996) have enumerated that the conventional media such as videotapes, DVD have gained more popularity among students; while Williams (1996) have found that the use of the internet has been found to be a promising factor for usage in classrooms as well as for distance education. Research shows that computers have been considered to be a
successful medium to deliver instruction to undergraduate and graduate students on topics related to special education. Technology is just a tool for the delivery of instruction and Lahm et al (1997) has consented that by no means can it replace the conventional classroom teaching.

Govindaraju (1996) has detailed the reasons for underutilization of UGC programmes and the overall apathy facing the use of television for higher education. Majority of the researchers have reported that lack of proper information about the programmes, indifference of teachers, non availability of television sets, lack of proper space for the viewing, lack of electricity in the colleges, difficult language used and improper mode of delivery of programmes are some of the reasons that undermine the utility of educational television programmes.

Ramana & Rao (1998) say that the world is witnessing a revolution in computer and communication technology leading to the emergence of multimedia, an effective and efficient means of communication with capabilities of stereo, sound, animation and video.

Garg et al (1999) suggest that information technology (IT) can broaden the educational base and make tailor-made system available at reduced costs. They opine that by combining the education system with IT, it could be possible to overcome time and space constraints and enhance communication, make the education system all pervasive, speed up the learning process, bring about conceptual clarity in the faculty and improve the organization effectiveness.

This can be seen in the case of the four Gyan Darshan channels and the 24x7 Vyas channel that cover a wide variety of subjects. Despite the presence of these channels, there is a need today to take the benefits of the virtual mode of education to every person in the country.
To aid UGC, various media production centers have been opened by CEC in many leading universities across India. They are responsible for the coordination, content creation and dissemination of educational programmes to the existing public TV channels.

“The CEC planned several channels but initially it will launch 20 dedicated channels based on e-learning, virtual classrooms where audio visual lectures on various topics will be broadcast in more attractive forms by using graphics and animation.” As said by the director Mr. Jabbar Patel, “we will design the lectures in such an interactive way that the shortcomings of traditional method of teaching and learning will be overcome” (Patel 2012).

Samaniego & Pascual’s (2007) study shows that television contents are by itself an open source of learning as it conveys lots of information indirectly through its programmes either in the form of drama, news or any other genre. The narratives form a major part in making the viewers not only to get a new idea but also in enhancing their existing knowledge on specific subjects. The Research shows that it is much easier to teach values and make the mass to learn and adapt them in their day today life through the stories or programmes as shown on TV.

Pascual & Samaniego (2007) have categorized the viewer and TV relation based on three important points. It’s said that the content, the medium, which communicates the message and the language, are equally dependant on each other to make the viewer glued to their TV sets. They have analyzed the positive and negative factors produced by television contents, based on the model developed by Schwartz and Bilsky. The questionnaire determines the essence and impact of such contents on the viewers mind after watching TV.
Buchanan (2010) has pointed about the various interactive resources that have made learning easier than the earlier times. The most difficult scientific concepts can be easily understood through demonstrations and exemplifications made by the expert in front of the camera lens. The learners appreciate more the understanding level created through such forms with conveniently divided lesson plans. Visualizing concepts can help to a great extent, making an additional mode for them in understanding it swiftly. Many teachers have started demonstrating with vibrant animated displays in their classrooms. Pupils can also directly interact with experiments displayed on interactive whiteboards.

This had a contradicted view from Vorderer et al (2001) who found that certain categories of TV viewers prefer less entertainment rather than more interactivity. The increasing use of digital TV systems means that, besides video, there are many opportunities to enhance TV displays with dynamic text information. In this context, Kallenbach et al (2007) examines the opportunities for integrating print and TV media. Since TV viewers are, for the most part, familiar with audiovisual material, it is worth measuring the viewer response to an increase in textual information and to assess its impact on enjoyment of the TV experience.

Though Hoerner (1998) study was on evaluation of teaching television lighting, the techniques applied in this study tried to assess the effectiveness of three instructional methodologies like an illustrated text, an interactive CD-ROM, and an already recorded videotape which had put off the chances to interact. The learning styles were determined with the Myers-Briggs psychological type questionnaire. Performance was measured on a post-test of lighting knowledge. The study had a unique approach and found that the CD was more preferred for study purposes.
2.3 INSTRUCTIONAL TECHNOLOGY

The Commission on Instructional Technology, 1970, has provided the following definition: “Instructional technology is a systematic way of designing, carrying out and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human learning and communication, and employing a combination of human and non-human resources to bring about more effective instruction”.

In a qualitative research study, Aslan et al (2011) designed a potential educational technology system, PIES (Personalized Integrated Educational System), for collecting information-age paradigm of education. It is an open-source, integrated, online environments with multiple options designed for teachers, students, administrators and parents in order to enhance the teaching and learning. The research findings showed that there were variation between the current use of technology systems and the identified functions of PIES. They recommended that teachers, policy makers and technology system designers should come together and contribute in bringing up a structured educational format.

As mentioned by Clark (1983), learning is only influenced by the instructional method, irrespective of which medium is used. Videos were merely considered as “vehicles (2013) that deliver instruction but do not influence student achievement any more than the truck that delivers our groceries causes changes in our nutrition” (Clark 1983, p. 445). As such, it is recommended that the production of instructional videos requires the collaboration of experienced experts from various sectors. Teachers, academicians, designers, technical experts and producers need to work together in producing the instructional videos. A good combination of expertise and skills are necessary for the production of effective instructional videos (Fong et al 2010). In line with constructivism principles, the design of
the videos should be planned in such a way that puts the students or the audience as the target group of learners. Learners’ participation and engagement should be given priority. Apart from that, the strength of the videos ought to be fully utilized by displaying phenomena, which are not possible to demonstrate in a normal classroom, such as real-life events or expensive and dangerous experiments.

Albiniak (2005) had mentioned about the various educational programmes that are followed in the USA considering the rules set by their broadcasting authorities and checks out whether those programmes are able to meet the required standards or not. The study shows that majority of the educational programmes has inducing skills, which really brings out a positive change among the regular viewers.

Earlier television screen was just one sided. Programmes were telecast on analog mode, which was gradually shifted to digital; providing a bouquet of options for the viewers to select according to their choice. Now even video on demand and interactive shows have taken over the silver screen. Araki (2000) has discussed about the potential of digital broadcasting and its applications, which gives a platform to the viewers to participate. The study explores the various challenges that are faced due to the upcoming of digital video technology.

Arapoglou et al (2004) expounded an educational graphical tool for graduate students studying satellite communication systems. The satellite communication diversity performance tool (SCDPT) illustrated that there was an increase in understanding after the students started following the site which later showed that such educational tools should be developed more for the benefit of students’ perception.
Avila and Gatto (2010) studied, the ability to send applications with multiplexed audio-visual content which was an initiative taken by the Brazilian government to exploit the transmission capacity for new channels offering programmes created to help distance learners. It was found that students prefer to browse and select what education programs are best suited to their current level. Individuals preferred to have personalized systems where the channels were providing the viewer with educational programs relevant to their profile.

The Commission on Instructional Technology which occurred in 1970, has provided the following definition: “Instructional technology is a systematic way of designing, carrying out, and evaluating the total process of learning and teaching in terms of specific objectives, based on research in human learning and communication, and employing a combination of human and non-human resources to bring about more effective instruction”.

2.3.1 Teaching Through Technology

In 1924, Sidney L. Pressey introduced the first teaching machine (Nazzaro 1977; Bruner 1992) and with it started the practice of adopting technology applications in public schools and post-secondary educational institutions. Hence after, the institutions have focussed on investing and using of equipment such as film projectors, audio and video tape recorders, overhead projectors, and computers.

But from 1960 onwards, there was a sudden drift, which has transpired the usage of technology in education. At that time, educators began considering the concept of instructional technology. Blackhurst (2001) has mentioned in his study that technology involves a systematic way of designing and delivering instruction, apart from using devices and equipment.
Instructional procedures that represents are: direct instruction (Carnine Silbert & Kameenui 1990) and learning strategies (Deshler & Schumaker 1986).

The late 90’s witnessed a rapid development in the following spheres e.g. the technology of teaching, instructional technology, technology productivity tools, and information technology (Blackhurst & Edyburn, 2000). The technology of teaching refers to the instructional approaches that are designed systematically and applied in meticulous manner. It includes the use of well-defined objectives, precise instructional procedures based upon the tasks that students are required to learn, small units of instruction that are carefully sequenced, highly involved teachers and students activity and careful monitoring of students performance. Morse & Blackhurst (1996) have enumerated that the conventional media such as videotapes, DVD have gained more popularity among students; Technology is just a tool for the delivery of instruction and Lahm et al (1997) has consented that by no means it can replace the conventional classroom teaching.

Currently we speak about computers, accessories and e-learning, online and various other modes. But the history of teaching machines has been very well described by Benjamin (1988). Few of the inventive teaching aids that are critically assessed are Halcyon Skinner's Device for Teaching Spelling definition, H. A. Aikins's device for Teaching Spelling or Multiplication, Sidney Pressey's Multiple Choice Teaching Machine, etc have been narrated with related literature support. History shows that by 1936, around 700 educational appliances, devices, and apparatuses were patented which started from 1809 itself. The author had concluded that though machines have been contributing in teaching, but none could completely replace the role played by a teacher. These machines have made the delivery of teaching and learning comprehensible.
2.3.2 Intelligent Tutoring Systems

The basic components of intelligent tutoring systems (ITS) were conceptualized 25 years ago (Hartley & Sleeman 1973) as: 1) knowledge of the domain, 2) knowledge of the learner, and 3) knowledge of teaching strategies.

In ITS language, these are often referred to as the expert model, the student model, and the tutor (Larkin 1991). Advocates of ITS promote these systems as “the most promising approach to delivering individualized instruction” (Shute & Psotka 1996) because the “artificial intelligence” aspects of the program can allegedly diagnose and remedy student misconceptions with the precision of a human tutor.

Baruah (2011) has taken the case study of Indira Gandhi National Open University (IGNOU) as that is the prominent university of India, which offers multiple educational formats to the learners. It assesses the impact and evaluation of e-learning technologies on student retention in Open and Distance Learning (ODL) system. IGNOU offers its students to have access to web-based learning, computer-based learning, virtual classrooms and digital collaboration. The study shows that exposure to such technologies have lead to improved performance of the learners. It has enabled the learners to develop essential skills by embedding the use of information and communication technologies within the curriculum. Simultaneously, access to the courseware at minimum costs has been appreciated a lot. The author found that e-gyankosh and SAKSHAT sites have proved to be student friendly and helped in retention.
2.4 TV AS LEARNING MEDIUM

The main logic cited for adopting TV as a learning medium is its popularity. Television is a familiar and reliable consumer device with more than 90% penetration in developed countries. It is felt by Zilmman (2000) that a significant proportion of leisure time is spent on entertainment, and especially on watching TV. Whereas, Draper (1999) opined that play or drama on television can be a very useful teaching strategy. Bates argument is that, though computers and the web have become very popular in some developed countries, they have not reached the pervasiveness of television.

With more number of institutions offering distance education, television performance has been substantial. Enhanced technological prosperity has been heartily adapted in the education sector too. As quoted by Hizal (1983) and Saglik & Ozturk (2001) television in distance education serves the following functions like: supporting and enhancing teaching, instructing, explaining, clarifying, using as supplementary for the other materials.

The characteristics of television in helping the students do not get restricted to the above four factors. Geographic locations and distance are cut through and it facilitates programmes to thousands of learners spread across at a particular time. When one compares the traditional educational methods of chalk and board teaching with the televised audio-visual presentation, the later has more perceptiveness among students in comparison to the former one. “Even the grueling explanations mentioned in the book or explained by the faculty in the class; become easy as the content is supported with vivid visuals, animations and demonstrations” Gokce (1997), Bates (1998) and Turan (1994). As recollecting the content happens with ease, simultaneously it triggers the learner to be more dependants on this method for further use.
Thomas & Schmid (2010) discuss the use of video-stimulated reflection as both a research method and as a means for teacher professional growth. The research findings are drawn from a longitudinal study that investigates a model of Interactive White Board (IWB) technology professional development programme. In this study, English as Foreign Language (EFL) teachers in German secondary/vocational schools were taken up as case studies. They were studied in-depth to understand how IWB was integrated into their teaching.

Classroom observations and field notes, video recordings of school lessons and teacher training workshops, interviews and video-stimulated reflection were used to collect research data. Findings based on the analysis of the amount of data gathered indicate that the teachers as effective opportunities for reflection, self-evaluation and pedagogical development, used the video-stimulated dialogues.

Fladd (2007) did an experimental study to find out the effect of four different modes that was practiced in distance education instructional delivery i.e. conservational classroom teaching via books, instructional television, online, and mixed. The study checked for the gratification level of each format that was viable for the distance learners. The methodology selected for the study was the research survey design for checking the interaction and satisfaction stratum. Descriptive statistics with analysis of variance was used. The findings indicated that the format of instructional television was favored more.

Cuban (1986) reports that total instructional television programs in countries such as American Samoa and El Salvador have met with initial enthusiasm, but declined in popularity after the originality went off and both students and teachers demanded less television and a return to regular classroom activities. Some studies indicate that students in rural schools,
where quality teachers were less likely to be available, benefited the most from televised instruction (Seels et al 1998).

The normal practice has been to use television as a supplement to normal curriculum and modes of teaching (Cuban 1986). It should be noted though that television has never truly replaced teachers in any country. A large-scale survey of teachers in the USA conducted in 1991 by the Corporation for Public Broadcasting indicated that “instructional television is a firmly established teaching tool that is positively regarded by classroom teachers and increasingly well supported with equipment and programming” (Seels et al 1996). Dorr (1992) has concluded in the Encyclopedia of Educational Research that there is no doubt that television is an effective means of achieving traditional instructional goals.

Albertson & Lawrence (2009) did two field experiments to find out which format of the television has a better long lasting impact and is able to influence their knowledge and attitude. The study showed that message repetition along with a persuading programme has more viability and tendency to influence the public’s attitudes though both the television programmes were designed on a particular issue; one was able to have higher impact. Hence the design of the programme format has to be also considered to gain public attention.

Lopez et al (2006) has found that the teacher plays the major role in deciding what happens in the classroom, and as long as teachers experience difficulty in previewing videos, obtaining equipment, incorporating programs into the curriculum, and linking television programming to assessment activities, television viewing will continue to be relatively rare in classrooms.
2.5 GROWTH OF EDUCATIONAL TELEVISION

The book “Educational Television” gives an insight on the growth of Educational TV in the early 50’s in USA. Fred (1972) mentions, “television was initially started with the sole aim to educate the public rather than a means of recreation”. Different age groups of the population were classified into various categories like children and youth. Research was done with thorough observation on how the categories perceive the formats while watching them on television.

In a recent study done by Arulchelvan & Balavivekanandan (2013) on EDUSAT, a comparative study on Anna University and Amrita University, it was identified that both the pioneering institutions are well facilitated and are making extensive use of EDUSAT for their students in delivering lectures. Satellite Interactive Terminals (SIT) has been gaining popularity among students and teachers alike. It also reveals that though the awareness exist and usage level for academic purpose is satisfactory, still it needs propaganda and more frequent usage to meet its motive. The survey result shows that SIT videoconferencing has been competent and needs more constructive usage. It has motivated more number of academic institutions to implement the same. Some of the essential recommendations made by them are: timely intimation about the programmes, more interactivity, specialized subjects and adjustment on telecast timings, live demonstrations and graphics are needed to make it more useful.

In 1924, Sidney L. Pressey introduced the first teaching machine (Nazzaro 1977, Bruner 1992) and with it started the practice of adopting technology applications in public schools and post-secondary educational institutions. Hence after, the institutions have focussed on investing and using of equipment such as film projectors, audio and video tape recorders, overhead projectors, and computers.
Most of the parents and even teachers have the opinion that children shouldn’t watch TV. It’s considered to be harmful as lot of time gets wasted in viewing TV and it affects their studies too. But Huston and Wright (1998) came out with a contrary research, which states that educational programmes had positive impact on them. Entertainment and commercial TV channels have harmful effects but educational programmes create progress in academic field of the school going children. Their study was confined to school goers only.

Yet, Educational television programs are successful in broadening young children’s knowledge, affecting their racial attitudes and increasing their imaginations, according to a study published in the November 2006 issue of Pediatrics, the official journal of the American Academy of Pediatrics.

But on the other hand, Chaudhari (2000) in educational technology conference had shown his concern that till date Indian educational media isn’t able to produce a comprehensive training centre with the correct studio space, budget, personnel and relevant educational concepts to lure the students minds. “Though hardwares are available in abundant, its pathetic that many programmes don’t follow the basic media aesthetics and are just produced and put in shelves”. Though the educational programmes are rich (2012) in content, still the Indian programmes remain low in production values.

Lopez et al (2006) have pointed out that based on the content, appropriate technology must be chosen. Most types of TV content can also be exploited as a learning resource. Broadband technologies allows the transfer of rich content both to and from learners and educators, which provides opportunities for interactivity on an extended scale and adds considerable depth to the notion of lifelong learning.
Baggaley (2006) has the opinion that the lessons transmitted on educational television for most of the universities, colleges and school have been internationally similar in production structure and style. Though some learners have availed this teaching mode and have also been benefited in enhancing new skills but the majority has not. Mostly, the experts are using a slide sequence and the content shared by them is quite repetitive rather than creative. Educational media, especially, the television should coddle the needs of the community and rather concentrate on supplementing contents that will represent and is accessible by one and all. Educational television has wider implications in bringing development to the society but awfully it has been ignored.

Edutainment has been a popular buzzword in education research; it stands for educational content based on entertainment values. In contrast, Lopez et al (2006) propose an interaction experience, which exploits entertainment content to offer learning opportunities for students. Interpersonal communication is another way to learn. By talking to their classmates, children may become aware of things that they may not have observed as individuals. Papa et al (2002) explain that sharing stories about responses to past events helps people learn. Thus interactive educational TV programming is likely to encourage collective cooperation and enhance learning.

With reference to technology, parents want to know whether various new technologies are more effective for teaching and learning than traditional classroom approaches, whether technologies can be used to increase access or reduce costs within education. The most positive research news about learning “from” television can be found in the classroom where 40 years of research show positive effects on learning from television programs that are explicitly produced and used for instructional purposes
(Dorr 1992, Seels et al 1996). In addition, most studies show that there are no significant differences in effectiveness between live teacher presentations and videos of teacher presentations (Seels et al 1996).

Most often, programs received via satellite dish or cable are recorded by media specialists or technology coordinators and subsequently made available for teachers whenever they would like to see. Flexibility of scheduling and ease of access to equipment and programs are the biggest factors promoting classroom use of television (Dorr 1992, Seels et al 1996).

Arulchelvan & Viswanathan (2006) reported that 15% percent of college student respondents in Tamil Nadu watch UGC Country Wide Classroom (CWCR) programmes and they are benefitted from the programmes. The researchers suggested that, top priority should be given to strengthen the educational usage of the powerful electronic media and creation of awareness among students about educational media should be taken up on a massive scale with a sense of urgency.

Kallenbach et al (2006) investigate the impact of adding more information to TV programs. While children and young adults reported multitasking as their preferred mode (Wallis 2006), there is an established body of research that shows that the human brain does have limits on its processing power (Lang 2000). Findings by Kallenbach et al (2006) confirm the common sense view that (2007) text, and especially lengthy text, has a negative effect on the ability to process mediated messages.

Translation for difficult words or sentences has to be provided to help learners understand the content of the video clips. Video clips should not be merely a medium to present information. It should be a tool to enhance students’ problem solving skills, help them to think critically, stimulate active discussions in class, make learning more fun and enable them to learn on their
own. Based on students’ responses, these elements are still inadequate. Hence, the content of the video clips must be redesigned.

The impact of low-cost educational videos was qualitatively studied by Bravo et al (2010) in various engineering sectors. According to them, new technology and adaptation of it with innovative teaching skills not only motivates the students learning skills; simultaneously it promotes vigorous group participation and helps in increasing the learning and teaching process in every individual on a collaborative cost without much investment.

Learners who are engaged in terms of behavior are active participants in the teaching and learning processes. Given the opportunities, they like to take charge of their own learning. For instance they want to make decisions, solve problems and engage in self-assessment activities. In fact, these learners also have the needs to practice the skills that they have acquired. It makes abstract concepts easy to understand by using the unique attributes of video, e.g. capturing events with motions and sound that cannot be demonstrated in classroom.

Here the television functions like a computer terminal for retrieval of textual information and graphics from remote database. In this system, the information is stored in centralized database, sequenced and indexed in the form of pages of text or graphics. The signal can also be transmitted over one-way cable, via TV transmission lines (Johnstone & Carlson 1998). The digitalized text messages or pages of information are continuously broadcasted in cycle. A viewer can access all these messages on a given channel in cycle or through control unit.

Whereas Wetzel et al (1996) have found that the use of animation can help the learner in providing a focused attention on important elements and topics.
2.5.1 Educational TV - Case Studies

Eduweb TV is an online educational portal run by the Malaysian Ministry of Education transmitting eight (Instructional and non-instructional channels) with an aim to provide digital education for all. The evaluation of the instructional videos telecast in this portal was found out by a quantitative study made by the researchers Melissa et al (2010). They had sub-divided it into the categories like technical quality of the videos, their pedagogical relevance, impact on the students, etc. for determining the impact of instructional videos on the learners. A panel of experts had evaluated 72 videos and feedback from students regarding the effectiveness of these videos formed the sample tool. The recommendations were provided based on the findings in order to improvise the Eduweb TV quality.

A report from a newspaper confirms the news that big bouquets of educational TV channels are going to appear soon in the Indian TV screen. “Consortium for Educational Communication (CEC) will be launching 20 new TV channels catering to various fields of education” Jabbar Patel, Director CEC (CEC 2012).

One successful case study where the usage of satellite for education purpose was identified by Benschoster and Benson (1992) where the University of Nebraska Medical Center used NEBSAT, state-owned satellite television system to transmit several types of educational presentations. Transmission of compressed video apart from regular course syllabi in nursing and medical technology also included a bouquet of administrative meetings, case conferences. The system represented the latest in a series of pioneering two-way television activities, which even commenced educational opportunities to students and professionals’ off-campus.
But Trucano's (2010) article about the live debate and the proceedings held in New Delhi 2010 showed that the educational institutions who have invested more in technology were a waste. The debate was conducted based on “the survey of information and communication technology for education in India & South Asia” which was commissioned by Price Waterhouse Coopers India. The report was based on the latest in a series of regional surveys of the current state of the use of technology in education. It compares Indian and South Asian experiences and expertise on such topics as policy coherence in the use of ICT's for education, use of ICT's in non-formal education and capacity building effectiveness. It shows that, there is a general consensus among education practitioners that ICT's such as radio, TV, computers, the internet and mobile phones can be influenced to increase the educational experience of learners. He opined that the usage of technology in schools has been made over-hyped in order to lure both parents and children.

The Open Education Faculty of Anadolu University, Turkey, has been using the television for interacting with their students from last two decades successively. Saglik and Ozturk (2001) research showed that in one-way teaching, the programmes were produced beforehand and the recorded videotapes were used for telecast purpose. But when the interactive television was started, it was noticed that the effect of teaching fortified by allowing the participation of the audience. They have concluded that in order to have interaction with the students, live broadcast is essential. Anna University also follows both the patterns for Anna EDUSAT. It started with live telecast but now has moved to pre-recorded transmission.

Tow & Philips (1982) examines the role played by educational technology in the University of Malaya. It emphasizes the three approaches to educational technology found in the literature.
1. Educational Technology One (ET1) stresses on the use of machines, equipment and other aids in instruction. The focus is towards the teacher and his teaching. "Technology is seen as a means of mechanising or automating the process of teaching with devices that transmit, amplify, distribute, record and reproduce stimuli materials, and thus increase the teacher's impact as well as widen the potential audience" (Davies 1978, p. 13).

2. Educational Technology Two (ET2) is based on behavioural science to improvise learning. Though equipments are used, the focus is on the learner and his learning. “Machines and mechanisation are viewed merely as instruments of presentation or transmission”.

3. ET3 rejects systematic development i.e. step-by-step, rigidly mechanical or mechanistic procedures. It is considered to be a systemic approach to education while planning an instructional content or developing a curriculum or even designing an institution-wide programme.

Recommendations made in this research are not only applicable to the University of Malaya but similar institutions of higher education as well.

The Children's Television Act in USA makes it mandatory that TV channels have to provide a minimal amount of educational and informative programming for children. Many critics challenged some educational programmes like Sesame Street on the grounds that it hinders the thought process and language development in a child. Such Programmes produces shortened attention spans and retards thought and language development in children. However, Daniel’s (2008) research shows that “Educational TV is
not an Oxymoron” and both short and long-term benefits are found from curriculum based programmes on TV. The research provides no support for these attacks and instead reveals both short-and long-term benefits from curriculum-based programming.

More importantly, there is strong evidence that television is used most effectively when it is intentionally designed for education and when teachers are involved in its selection, utilization, and integration into the curriculum (Johnson 1987). In the past, the biggest barrier to the integration of television programs into the classroom was the fixed-time limitation of instructional broadcasts, but the widespread availability of videocassette recorders (VCRs) has provided teachers with the ease-of-use and flexibility they require (Mielke 1990).

According to Vaney (1994) studies about the large-scale implementations of instructional television, which have shown, mixed results. Three major forms of utilization have been investigated which are: 1) instances where the total instructional program is delivered via televised teachers, 2) examples where there is an integration of teacher-directed instruction with television programming, and 3) instances where television is used to supplement teacher-centered instruction, either for enrichment or remedial purposes.

2.6 VIDEO CONFERENCING

Gage et al (2002) have pointed out the use, need and contribution of videoconferencing in teaching and learning. The Motivate Project used by them points out about the videoconferencing tool in enrichment of mathematics and also to give an idea of how mathematicians use mathematics in their work. The methods used could be applied to any curriculum area. Students’ views were obtained from 250 evaluation questionnaires. It was
found that a majority of students felt more confident about their ability to do Maths. This Project had encouraged them to think of studying Maths at higher education level too. Most students felt that being able to discuss problems in LIVE telecast helps them to understand better.

Research evidence about video conferencing can be found across the educational sectors and includes the following key benefits: allows interactive access to experts, enables collaboration by teachers and learners with peers, enriches the experience of interaction and motivation among students.

This report was based on an analysis of research made by video conferencing and its impact on teaching and learning. Video conferencing allows people in different locations to see and talk to each other. It also supports the electronic exchange of files and sharing of computer applications.

Live video lectures are sometimes used so that two or more classes may be taught simultaneously by one good expert, of whom one is present with the teacher, the other connected by video conference. In this situation the question of equity arises: for the remote students to get a good deal in sharing their experience should be of the same quality as the other. With limitations on interaction, whether it should be discussion, game playing or simulations, the authors are deeply concerned that all students may not be benefitted equally.
2.6.1 Teacher and Student Interaction

Lafayette & Lehigh’s (1998) study shows that teleconferencing enables students and faculty to interact with guest experts from around the world without having them physically present in the classroom.

Hence, the videos must be improved to engage learners’ cognitively, emotionally and behaviorally (Fredricks et al. 2004, Richardson & Newby 2004). This is because learners who are engaged in learning cognitively are not passive receiver of information. On the contrary, they are active learners who construct their own understanding about the learning materials. They are able to pay attention during the teaching and learning processes and can connect the content to the real-life situation.

In addition, they are also able to reflect on the issues and questions posted to them, engage in problem solving, think critically, participate in discussions and are able to learn on their own without being overly dependent on teachers. Learners who are engaged in learning emotionally are interested to learn and enjoy schooling (Ainley 2006). They are always motivated, curious and have a thirst for new knowledge.

The Regression models examined with longitudinal associations to identify the survey data by Anderson et al (2009) revealed the television viewing behavior where the respondents were categorized as limited television users (< 2 hours/daily), moderately high television viewers (25 hours/daily), and heavy television viewers (5 hours/daily).
2.7 INTERACTIVE TELEVISION (ITV)

In interaction the onus is on the exchange of ideas with other learners, instructors or with the learning materials as is seen in learner-content interaction. The learner gains and constructs knowledge by working with the subject matter. In learner to instructor interaction direct communication between the learner and the instructor happens. In this process the instructor assists students to understand the course content.

The growth of user interactivity with audiovisual content via alternative distribution channels and devices has become a significant part of ITV research. Traditional TV is watched in a passive mode (Wallis 2006). Hence the educational content of traditional TV can be enhanced with interactivity.

Sanaz, in a conference paper explores the potential of convergent media which stands for the interactive TV (iTV) and mobile phone, for delivering interactive language learning. As proposed, iTV is an innovative and workable cross-media solution architecture that uses the power of the Digital Video Broadcasting (DVB) stream, the Java programming environment and Bluetooth technology. The advantage of this newly designed architecture was highly appreciated over current methods of delivering interactive content.

Rosemary & Benedict (2008) addressed the subject of interactive educational TV and discussed the issues involved in combining the production of TV with the interactive theories in Education. They aimed to find out different sorts of learners who get beneficial through Broadband Learner Model. The paper digs out the changes occurred with the interactive educational content after merging with the technology. They found that the connection between the learners to derive knowledge and the content supplier
gets tangled. This combination of technological emergence with educational content delivery produces effective learning experiences on the learners.

Bellotti et al (2010) investigated the value of interactivity in an educational TV with in depth analysis. According to them, television is accepted widely as a medium, which disseminates informal education in several aspects. Thus, interactive television (itv) may play a significant role in the current life-long learning challenges, provided that meaningful applications are implemented. In this research work, the approach preserves a media-driven strategy and the role of the author/director in proposing contents (storytelling) should follow the tv script writing tradition.

The interactions help viewers better understand the concepts being highlighted. This research work is the first one discussing user test results about the usefulness of a class of iTV applications that can be instantiated serially in several different contexts.

Wolfe & Thomas (2009) point out that onslaught of new technologies opens up new avenues of teaching practices. But the video tele-training teaching experience of the U.S. Air Force (USAF) Academic Instructor School (AIS) shows that there is a need to acquire new teaching skills. Interactive television has shown that there is a need for new ways of thinking about a classroom.

They have identified some of the instructor skills that have been proved as critical to the success of its Interactive Television (ITV) educational or training broadcasts. Communication skills are considered, including clarity of speech, enunciation, grammar, vocabulary, questioning skills, non-verbal communication, and listening skills.
Deodhar has mentioned that the use of video for storing audio-visual information for education and entertainment is growing continuously. Both formal and non-formal education is getting dependent on video for classroom aid, supplementing and aiding teachers and helping them to take into their classrooms and training institutions. Expertise of the subjects are capable of giving deeper insights into varies aspects through these videos and enables the students to learn from basic to science subjects through right kind of visuals.

Educational TV programs are part of many broadcasting schedules, but do not offer mechanisms for personal communication among learners. In this context, the integration of text messaging with TV is an established and successful ITV application. It has become very popular to offer mobile phone text-messaging along with analog TV channels. An integrated instant-messaging ITV application is a worthwhile service, especially in support of learning programs (Jokipelto 2006).

Through Aarreniemi & Jokipelto’s (2006) historical review of educational programming in Finland, it is clear that ITV continues to transmit educational programming. In Finland, the development of educational TV is on par with the US. The two countries also share a common goal to educate children in the home and in the classroom via television (Revelle 2003).

Lyn and Richard implemented observational techniques as research tools for evaluating the usability and acceptability of desktop systems such as interactive applications and web sites. They found that when interactive elements such as quiz, electronic programme guides and voting polls began to be integrated into broadcast television programmes, observational techniques was the best tool to supplement the survey-based techniques. In this paper, they explore how the observational techniques helped the practitioners, which
can be used to study viewers’ interactions with interactive and enhanced television.

2.8 E-LEARNING AND VIRTUAL LEARNING

Mohan (2007) has very clearly stated the steps to be followed by teachers in both classroom and virtual learning systems. E-learning describes teaching methods that make use of new technologies and usually refer to the internet or video-conferencing. The term ‘small group teaching’ traditionally refers to teaching methods such as tutorials, seminars and lab work, as well as student group works these are the methods that have a focus on some interaction between the students and the tutor and tend to involve discussions as a means of learning.

E-learning is constantly evolving. When properly integrated with more traditional practices, the power of e-learning is magnified through a learning architecture. “A learning architecture is the design, sequencing and integration of all electronic and non-electronic components of learning to deliver optimum improvement in competence and performance” (Rosenberg 2001).

Davis (2008), took a case study of the bonneville joint school district 93, USA to analyse whether e-learning was really needed. He found that the school was forced to create an e-center for online courses for their high school students, which was open to access from 7am to 7pm. The motto for establishing this e-center was to bring back the students of that district who had moved to other nearby district schools. In order to lure them and also to attract new students they invested heavily in technology. Though it was an expensive project still it was found to be successful as students and parents nowadays are more technology crazy.
E-learning consists of teaching methodologies that are based on new technologies like Internet or video-conferencing. Small group teaching is a teaching method where there is some sort of interaction/discussion between teachers and students. This method also involves the use of tutorials, seminars and lab work, as well as student group works (Mohan 2007).

Chris (2009) favors online education as in order to transform knowledge-delivery processes and virtual education in a faster mode, e-learning has brought over profound changes in the way people learn and train, allowing them to do it anywhere, at any time. Through the help of web it is easy to access content from any point, off campus or in campus, through a computer and connectivity medium. Web is being used for delivering more extensive content on a particular course. The technology allows asynchronous delivery of various kinds of data presentations including PowerPoint presentations, server-hosted digital data, still pictures and graphical information.

The internet today acts as a medium between the learner and the instructor in the form of virtual classroom learning. Here the Internet allows students to attend lectures given by experts located in a different place.

As lectures are given live on Internet, the student gets the opportunity of asking queries to the instructor instantly. As the learner is no more required to attend the lectures/sessions in person, this new method of learning helps keeping the lecture costs much lower than conventional classroom teaching without compromising on the quality of learning.
2.9 NEW DIMENSIONS IN EDUCATIONAL DELIVERANCE

Arulchelvan et.al (2012) have emphasized on the need of Social Interactive Television (SITV) as part of the Interactive TV which focuses on the ways to socialize through the television set. The research was carried out in India. The development of Social iTV applications had identified opportunities in the Indian market and the conceptualization of possible interactive applications. These were evaluated in India by Indian TV viewers and industry operators. The survey was being performed and they tried to understand the viewing habits, digital literacy, iTV experience and expectations for Interactive TV applications. The results show that TV, computer and mobile phone usage is increasing although many Indian houses have only one TV and one computer. Regarding the expectations for upcoming iTV services, the majority of respondents are highly interested in having more interactive services for communication; recommendation and making comments; participating in shows/contests; social network features.

Jensen and Lee (2013) have opined that the advent of the massive open online course promises to bring world-class education to anyone with internet access. Instructors use blended models of education to deliver course content via video, text, interactive assignments, exams, wikis, and discussion forums. Courses with largely theoretical content are readily adapted to blended models for online audiences.

According to Esch et al. (2013), the idea of the 3D Web as a global scale Distributed Virtual Environment (DVE) is very popular and a lot of research work is done in this field. For the HyperVerse project, a two-tier Peer-To- Peer (P2P) architecture was developed as basic infrastructure for a federated, open and scalable 3D Web.
Medouri and Tabaa (2012) feel that the Web has revolutionized our vision as to how courses are delivered in a radically transformed and enhanced way. Boosted by Cloud computing, the use of the Web in education has diversified with new aspirations such as MOOCs (Massive Open Online Courses) as a technology-led revolution ushering in a new generation of learning environments. Expected to deliver effective education strategies, pedagogies and practices, which lead to student success, the massive open online courses, considered as the “linux of education”, are increasingly developed by elite US institutions such MIT, Harvard and Stanford by supplying open/distance learning for large online community without paying any fees, MOOCs have the potential to enable free university-level education on an enormous scale.

Mehlenbacher (2012) study on MOOCs shows that it is receiving the intense attention of the media and, in turn, of academic and industry researchers fascinated by their potential to revolutionize educational access and life-long learning through "the single biggest change in education since the printing press." Nevertheless, a concern often is raised about MOOCs is that a very small proportion of learners complete the course while thousands enrol for courses.

Chamberlin and Parish (2011) have talked about the disconnect that can occurs in the online learning environment? With Massive Open Online Courses being heralded as the next big thing by instructors, the learner's perspective has been overlooked.

Delwiche (2006) has pointed out that videogames have the potential to enhance literacy, attention, reaction time, and higher-level thinking. Massively multiplayer online games (MMOs) such as Everquest and Second Life have educational potential, but there is little data about what happens when such tools are introduced in the classroom. Two MMO-based courses
were studied in the context of situated learning theory. The results show that potential virtual environments can be selected on the basis of genre, accessibility, and extensibility. Game-based assignments are most effective when they build bridges between the domain of the game world and an overlapping domain of professional practice.

### 2.10 IMPLICATIONS OF THE REVIEW

The literature review shows technology plays an important role in education and it has enhanced the educational effectiveness. Television has been accepted as a medium, which disseminates education in several aspects. The usage of multimedia and audiovisual aids has supported the delivery of instructional television which is liked by the learners group. Educational programmes needs to offer more mechanisms for personal communication among learners. E-learning has abridged the gap of distance educational learners, especially in remote areas. Virtual learning has the potency to divulge the new educational learning system in future.