UNIT 3 TELEVISION AND VIDEO COMPONENTS

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3.0 INTRODUCTION

Among all the available electronic media, the radio and television, appear to be the most common and popular media for the distance students to learn from and for the distance educators to impart education at a distance.
In the previous unit you have studied the status, purposes and the role of the audio medium in teaching-learning at a distance. In this unit, you will go a step further and study the visual media in which the visual signals supported by audio components pass on the learning messages. By virtue of its audio and visual potentiality, the visual media have become a more popular means of instruction throughout the world.

With the advancement in communication technology, a variety of visual media — television broadcast, videocassettes, video disc, videotext and computer, have become part of the multi-media packages in teaching and learning at a distance. We shall discuss the video components and the corresponding various delivery systems in this unit.

We expect you to view some educational television programmes and discuss the delivery systems and the effectiveness of the programmes with those whom you find suitable for such a discussion. You should develop a few basic skills for effective learning from television and/or video programmes. This will help you understand the underlying potential of the visual media. In fact, the more you watch television, the more your learn about this medium.

### 3.1 OBJECTIVES

After going through this unit, you should be able to:
- explain the potential of educational television;
- enumerate the Indian experience in educational television projects;
- analyse the status of television in developing countries;
- list different types of television broadcast and video standards;
- describe the rationale for using the video cassettes in distance education;
- describe the future trends in the educational television;
- explain the role of the teletext, videotext and video disc in the distance teaching-learning process;
- compare the effectiveness of the television with other media; and
- describe the role of the video media in distance education.

### 3.2 POTENTIAL OF EDUCATIONAL TELEVISION

From a theoretical perspective, we can state that, in favourable conditions, students learn efficiently from educational television. While television can be a powerful educational tool, its value is totally dependent on the quality of material we transmit and the skill with which it is used.

The conclusions of research projects on educational television have shown that television is an effective tool in the hand of educators, if it is utilised
imaginatively. It has proved its effectiveness/supremacy in teaching certain subjects such as agriculture, science, geography, oceanography, etc. Let us discuss some of the major strengths of television.

3.2.1 Strengths of television

i) Social equality in education: Television promotes the goal of social equality in education catering to the masses of rural background and those living in slums of urban areas. Television increases the effectiveness of instruction and cuts down drop out rates.

ii) Higher quality of instruction: Television programmes are well planned/organised and better presented than the usual classroom instruction is.

iii) Reduce dependency on teacher: The students learn from television with their own efforts. They need minimum help from the teacher in case television is pressed into service.

iv) Flexibility: Rapid and continuing change in curricula and instructional methods are made possible through educational television. Courses can be constantly modified not only to update them but to incorporate the constantly changing needs of the society and the expansion of knowledge. This is not possible with some of the advanced electronic media like the videodisc.

v) Use of the best available teacher: Educational television makes educational opportunities equal throughout the country. The students in rural and deprived areas of the country, where educational resources are not available, get the same quality of education as their counterparts in the urban centres. The best teacher is equally available for every student. Thus television bridges the gap between the privileged and the under-privileged, and between the rural and the urban.

vi) Cost effectiveness: If television is utilised on a large scale, it proves cost effective. It can provide education throughout the country at a minimum cost without lowering the quality of instruction. The initial expenditure, of course, will be high.

vii) In-service training: Educational television can be used for in-service training of educators in non-school hours. NCERT, India is telecasting a programme every week for teachers to improve their teaching methods and skills.

viii) Logistically simple: In operating an effective distance education system, educational television is logistically very simple. The problems of planning and operating distance learning can be overcome to some extent by teaching through television.

ix) Combination of audio and video components: Television has the advantage of the audio as well as the video. That is why it has a greater appeal than the radio and the print media.
x) **Stimulation:** Through educational television, we can control the stimulation (the audio and the visual) to get response (learning).

xi) **Mass education:** Educational television can cater to the explosive increase in student numbers.

### 3.2.2 Limitations of television

As we have already mentioned, the potential of television depends on how effectively it is being utilised for educational purposes.

In spite of the numerous advantages listed above, television has its limitations as a medium of education. Some of the disadvantages are as follows:

i) **Limitation of one-way-communication:** Television is essentially a one-way-communication medium and as such it does not provide for interaction/discussion and hence does not provide for immediate feedback on learner’s reactions, queries and doubts. It is a ‘passive medium’ as some educators would call it, since it turns learners into mere (passive) receivers of information. The absence of active participation and lack of provision for feedback are likely to fail to sustain the interest and enthusiasm of learners.

ii) **Problem of pacing learning:** Students differ in their learning speed and style. While watching a television programme, each student is required to be attentive and the teacher teaches at a speed which he assumes to be fairly suitable to an average learner. However, because of individual differences it can’t cater to the speed of every learner.

iii) **Poor accessibility:** Television is still beyond the purchasing capacity of a common man. It therefore cannot become a medium of the masses.

iv) **Insufficient viewing conditions:** There are no adequate arrangements for viewing the programmes in colleges/schools.

v) **High cost:** Teaching through television is expensive. The high cost of sophisticated electronic gadgets demand huge amounts to be spent on the production/telecasting.

vi) **Difficult to integrate:** There are difficulties in building television as a part and parcel of on-going activities of a classroom/school. The difficulties are due to absence of uniform syllabus, absence of teachers with similar training and calibre, etc.

vii) **Visuals becoming a distraction:** Sometimes the visuals themselves create distraction and create interference in learning.

### 3.3 THE INDIAN EXPERIENCE: A HISTORICAL PERSPECTIVE

It is our intention to give you an overview of experiments in technology within the context of a developing country. We present some specific Indian cases below.
i) Secondary school television project (1961)

School television programmes were started in Delhi on experimental basis in October 1961 with three lessons per week in Physics and Chemistry and one lesson each in English and Hindi for Class XI. These programmes were syllabus-based and were telecast in school hours as a part and parcel of school activities. The aim of introducing television service in school system was to improve the standard of teaching in view of shortage of laboratories, space, equipment and dearth of qualified science teachers. The service was an experiment to find out what could possibly be accomplished to minimise the specific difficulties of higher secondary schools in Delhi specially in teaching science.

Commenting on the school television project, Paul Neurath (1968) stated that “by and large, the television schools did somewhat better in the test than did the non-television schools”.

ii) Delhi Agriculture Television (DATV) Project: Krishi Darshan (1966)

Encouraged by the success of school telecast, an experimental TV programme, Krishi Darshan, was initiated on January 26, 1966 for communicating agricultural information to the farmers. Community viewing facilities were provided in 80 villages in the union territory of Delhi. The research on ‘Krishi Darshan’ reported that the experiment was successful and that there was substantial gain in the information regarding agricultural practices.

iii) Satellite Instructional Television Experiment (SITE) (1975)

SITE, one of the largest techno-social experiments ever conducted in human communication, was started on August 1, 1975 for a period of one year. It is a landmark in the use of sophisticated advanced technology for instructional purposes. The main objectives of this experiment, conducted in 2330 villages of six states, were to study the process of existing rural communication, the role of television as new medium of education, and the process of change brought about by the community television in the rural structure. SITE has shown that it was possible to reach with the new technology, a number of people in the remotest areas. Two types of programmes were telecast:

i) Developmental educational programmes in the area of agriculture and allied subjects, health, family planning and social education were telecast in the evening for community viewing; and

ii) The school programmes of 22 ½ minutes duration each in Hindi, Kannada, Oriya and Telugu were telecast on each school day for rural primary school children of 5-12 years age group.

The credo for school telecasts was “to make the children realise that science is everywhere, that their environment can be questioned, understood, explained and manipulated by them using scientific method” (Yashpal, 1977). The role of television was appreciated and it was accepted in rural primary schools as an educational force.
iv) Post-SITE project (1977)

A new SITE continuity project was initiated in March, 1977 when a terrestrial transmitter was commissioned at Jaipur. Developmental programmes were telecast by this project. The main objectives of SITE continuity project were to:

i) familiarise the rural masses with the improved and scientific know how about farming, the use of fertilisers and the maintenance of health and hygiene;

ii) bring about national and emotional integration; and

iii) make rural children aware of the importance of education and healthy environment.

v) Indian National Satellite (INSAT) (1982)

Instructional television has further been strengthened through the use of satellite technology. INSAT-1A an indigenous multipurpose satellite, launched on April 10, 1982 was declared unusable on September 6, 1982. Later on INSAT-1B, launched on August 30, 1983 became fully operational on October 15, 1983. However, as a part of INSAT for Education project, ETV broadcasts were inaugurated and continued through terrestrial transmission from 15 August, 1982 in Orissa and Andhra Pradesh. Later, six states namely Andhra Pradesh, Bihar, Gujarat, Maharashtra, Orissa and U.P. were covered under INSAT service using INSAT-1B in June 1983. In each state, a cluster of 3-4 districts was selected on the basis of backwardness of the area, availability of suitable developmental infrastructure and utilisation of existing production facilities.

The prime objective of the INSAT service is to bring the rural and backward areas into the national mainstream, by quickening the development activities in these areas with mass media support. Therefore, the service is aimed at making the rural masses aware of the latest developments in the areas of agricultural productivity, health and hygiene.

Besides developmental programmes for community viewing, educational programmes (ETV) for two different age groups of school children (5-8 years and 9-11 years) are telecast daily. A capsule of 45 minutes duration consisting of two separate programmes — one for the lower age group and the other for the upper age group — is telecast regularly. Each programme runs for a duration of 20 minutes with five minutes change over time from one age group to the other. As of today, these ETV programmes are telecast in five languages — Oriya, Telugu, Marathi, Gujarati and Hindi — for a large population of primary school children. Programmes telecast in Hindi are being received in all Hindi speaking states in the northern belt.


The UGC-INSAT educational television project also known as ‘country wide classroom’ was inaugurated on August 15, 1984. The planning and production of the programmes are actively managed by the University Grants Commission (UGC). Under this programme, the one hour
programme in English in a variety of subjects are presented with the objective of general enrichment for undergraduates, educated public and the teachers as well. These programmes are aimed at improving the quality of higher education to create a dynamic classroom situation.

In order to give impetus to this scheme, an inter-university Consortium for Educational Communication (CEC) has been set up by the UGC and a chain of about 20 audio-visual media Mass Communication Research Centres have been set up at different institutions in the country. Besides producing programmes at these centres, some programmes are imported from other countries, and are edited to suit the requirements of the Indian students.

The “country-wide classroom” programmes aim to update, upgrade and enrich the quality of education while extending their reach. Designed to stimulate and not to satiate, the programmes seek to arouse the interests of viewers, whet their appetite and broaden their horizons.

Check Your Progress 1

Notes: a) Space is given below for your answer.
       b) Check your answer with the one given at the end of this unit.

Briefly comment on the common objective behind the projects listed above.

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3.4 SOME RECENT DEVELOPMENTS IN COMMUNICATION TECHNOLOGY

There are certain advanced electronic devices, which are being utilised by developed countries in their systems of teaching and learning. Though, many of these are not in frequent use in India you, as a student of distance education, should have some basic information about these gadgets. We present in the following sub-sections information about a few of these technologies.

3.4.1 Satellite-based communication

In India, the first educational experiment to exploit the potential of satellites in disseminating information was undertaken in 1975. The experiment, popularly known as SITE, established that the remotest rural masses can also be approached through satellite based television programme.
Thereafter, INSAT-1A and INSAT-1B have provided the means to strengthen distance education systems in India. More about satellite based communication shall be discussed in block 5, unit 2.

Some of the main advantages of satellite based communication systems can be summarised as follows.

i) Geographical coverage: In developing countries where geographical and other factors add to the difficulties in establishing a nationwide network, satellite communication has proved particularly useful and effective. It has the capacity to beam TV signals over a large distance and even in mountain areas where a terrestrial system cannot serve.

ii) Impetus for modernisation: The technology of satellite communication is very helpful in promoting faster social change/development in developing countries. By bringing the world to the villages through television, the communication system has opened the window for innovation and change and thereby quickened the process of modernisation.

iii) Immediacy in implementation: The satellite communication system being a centralised system requires a minimum amount of time for the planning and implementation of educational innovations. It can reduce the implementation time of any educational scheme.

iv) Cost effectiveness: Satellite technology provides a cost effective alternative educational system: the characteristic of the satellite to cover large masses spread over a vast distance makes it more cost effective than the terrestrial system. Since the cost of providing signals is not related to distance, remote communities can be served as cheaply as communities in more central locations without incurring extra costs for cables, station building, etc.

Check Your Progress 2

Notes: a) Write your answer in the space given below.

b) Check your answer with the one given at the end of this unit.

Attempt to list down the considerations that make satellites relevant to the Indian situation:

3.4.2 Videotapes

Videotape is an effective and useful medium for distance education. The videotape technology, a comparatively new device in education, provides all
the advantages of television, while eliminating its crucial disadvantage of imposing a rigid time schedule on its users. The videotape, besides, may serve as an effective medium for illiterate learners who depend on spoken words and on visual images for communication.

Educational videotapes can be stored for future and can be used in a wide range of teaching-learning situations, as and when required. Videotape provides flexible learning situations as the student-user can exercise control over the presentation of the medium. Students can monitor the replay of the learning material with their individual pace of learning. That is, the videotape technology allows learners to stop, interrupt and discuss the material as often and for as long as they wish. More about this in section 3.6.

3.4.3 Compressed video technology
Most television broadcast are analog transmission. Video compression technology is a standard for digital transmission of the video signals. With the compression technique eight programmes could reside in the same space that previously transmitted only one programme. This has become a boon for satellite channels using less space for more programmes. The instrument that is used is called “codec” (short for compression / decompression). A codec converts analog signals from a video camera to digital signals. The algorithms used in the compression by the codec, are extremely sophisticated. In 1988 the International Telecommunication Union standardised this compression technology, which is known as “px64”. This standard is currently being used by all codec manufacturers.

3.5 TELEVISION BROADCASTS

One of the main objectives of establishing a distance duration institution/university is to provide to the various population a wider access to higher education. To achieve this objective, the open universities have adopted a teaching-learning system based on a combination of print and non-print media. In this way, an open university aims to advance and disseminate knowledge by a variety of means, including the use of communication technologies, such as, films, the radio and television broadcasts, audio-video cassettes, teletext, computer, etc. However, in our situation we are not in a position to use all these media because of various constraints. We mainly use television broadcasts and videocassettes.

The television constitutes an important medium widely used to disseminate information to its viewers. More so, in the process of national development, television broadcasting has established itself as an important agent of social change. The television broadcast has clearly proved its superior effectiveness as a force of social transformation over other media. In the developed and developing countries, the television broadcast is becoming an important component of the distance teaching-learning systems. The majority of open universities throughout the world use it for the distance students. India is not an exception in this regard. Since its inception, the television has been perceived as an efficient force of education and
Media in Distance Education

development in our country. Moreover, the television broadcast with its large audience, including the general public, is undoubtedly a better tool in the hands of the educators and media planners to bring the desired changes in society.

Encouraged by the success of the experimental TV service in the country, educational programmes are telecast for the primary, the secondary and the university level students. In India, for example, educational telecasts do form a segment of the Doordarshan (National Television Network) programmes both at the regional and the national levels.

3.5.1 Variety of television broadcasts

There can be a variety of educational television broadcast delivery systems. The three main varieties are as follows:

i) Live broadcast: Under this delivery system, educational events are directly telecast (live). You must have seen live telecasts of important international/national events, such as, Olympic and Asian Games, Cricket Test Matches, etc. This type of delivery system is possible when advanced broadcasting technology is available. The INSAT has, of course, added to the possibility of more live broadcasts in our country.

Live broadcast is not extensively used for education in India. It is, however, very useful for those educational programmes that do not have specific learning objectives but have educational value, either as a source of information on current events, or famous personalities talking to the students, etc.

Live broadcast can present much clearer visual images, which is not possible otherwise. Immediate transmission of the programmes to a theoretically unlimited audience is possible through the live broadcast.

The live broadcast, however, has its limitations too:

- All the students have to watch the same programme at the same time which is very difficult in our context, i.e., in imparting education through the distance mode in a country like ours where access to television and availability of time to all learners cannot be guaranteed.

- It is difficult to provide print support materials, which the students could use with the live broadcast.

- The inability on the part of the teacher to preview the live broadcast makes it difficult to arrange an appropriate discussion on the topic.

ii) Recorded broadcast: Under this system, pre-recorded programmes are telecast as per the transmission schedule. The existing educational television services in the country depend mainly on the already produced programmes. Such programmes are based on certain specific objectives to be achieved by the students.

Recording provides the facility to plan and produce programmes according to the convenience of the producers, and to broadcast during the timings that
are convenient to the students or the educational institutions, though it is the convenience of the broadcasting agency which takes the upper hand usually. Such programmes can be well-planned and evaluated at each developmental stage. For example, formative evaluation can be carried out as the programmes are being developed. Thus recorded programmes could be of a better quality than live broadcasts because all facilities in terms of time, manpower equipment, etc. are exploited for producing these programmes.

**iii) Closed circuit television broadcast (CCTV):** Under this system, the pre-recorded and/or live programmes are transmitted on a closed circuit television. What is the closed circuit television? It is the link between the studio and a series of classrooms, usually by means of cables installed in an institution to transmit educational programmes. The system can link several classrooms or institutions, and allow transmission from any of the classroom studios.

In the developed countries, the production and the commercialization of educational and training programmes are common phenomena these days. Packages of such programmes are frequently available in the market, and they are for use in educational institution through closed circuit cables. The system is not used for educational purposes in India today, although it is used in India in commercial institutions, such as hotels and railway stations. This delivery system can be used in classroom teaching or in the cases of tutorials and some special activities at the study centres. However, it is complicated because it needs sophisticated equipment for recording and transmitting programmes. Every institution may not have the required resources to put the closed circuit television into use. Only when it is put to extensive use in educational situations shall we come to know its potential fully.

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**Check Your Progress 3**

**Notes:**

a) Write your answer in the space given below.

b) Compare your answer with the one given at the end of this unit.

List at least four advantages which recorded programmes have over live television broadcasts.

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3.5.2 Difficulties in using television broadcasts

A television broadcast has its own limitations and constraints. Some of the difficulties in making use of the TV broadcast for delivery of information are discussed as follows. You can list some more, based on your day-to-day experience, or exposure to various television programmes.

i) Inadequate coverage: In many countries including India, there is a problem of providing adequate television coverage throughout the country. In India, the television network covers 81.5 per cent of the total population in the country. However, a substantial number of students cannot receive the broadcast. Reaching the target group through broadcasting is a problem faced by the distance education institutions in many parts of the world. Secondly, many homes cannot afford television sets. Community television sets are limited, and the village/community politics is involved in using them. This is a reason why the majority of the community television sets are underutilised. Many field studies conducted on the utilisation of community viewing scheme confirm this conclusion.

ii) Complexity of viewers: In a broadcast, the same programme is viewed by different groups of viewers. Besides the target students (who also come from different socio-economic backgrounds), the general public also view these programmes. It implies that the programmes for both types of the viewers are a challenge for the academics as well as the programme producers. It is difficult to produce a programme, which is equally satisfying for both the students and the public.

iii) High transmission cost: High cost for making use of broadcast technology is yet another big hindrance for many open universities in the world. This is, however, not the case with India, because we do not have to pay for telecasting educational programmes either through the satellite or terrestrial transmitters, but some open universities such as Allama Iqbal Open University, Pakistan, Norwegian Institute of Distance Education, etc. are charged per hour transmission costs. A part of the budgets of these universities is spent on buying TV time.

iv) Insufficient time: Taking into account the large number of courses offered by the open universities, more transmission time is required. Broadcasting agencies may find it difficult to spare sufficient time for the open university programmes. Progressive increase in university programmes must increase pressure on TV, which will become more and more difficult to obtain with the passage of time.

Moreover, you might have noticed that, in comparison of the educational television programmes, priorities are given to the news and commercial programmes. The emphasis is given to generate as much revenue as possible, but educational programmes are not designed to generate revenue. So the broadcasting agencies do not favour them.

iv) Inappropriate telecast timings: It is very difficult to find the appropriate telecasting time for all the students in the regular transmission slots. By appropriate telecasting time we mean the time suited to a majority if not to
all the students. The open university students' complex profile and the non-availability of prime time for transmitting educational programmes hinders the effective use of the broadcast technologies for education. Moreover, it is very difficult to convince the media planners and administrators to allot prime time for the open university programmes. Many distance education institutions were found dissatisfied with the quality of transmission time available for the adult learners (Bates, 1984).

Activity 1

Undertake the following small survey on television broadcasts. Take an appropriate sample of ten respondents and ask them the following three questions:

i) What is the most suitable time for you to view the educational programmes?

ii) In which language would you prefer to view the educational television programmes?

iii) What are the weakness of the television as an educational medium?

Analyse the responses, i.e., data and compare and discuss your findings with those of other students during a contact programme or measure them with the details and discussions presented in the unit.

Broadcasting is potentially the most effective way of the distribution of learning materials to the distance students in spite of some limitations, and the tremendous growth in the video cassette technology. The problem is one of the trust of the people in the broadcast television as a medium of learning. The public trust in broadcast as a learning experience is doubtful. The public and many of the teachers do not recognise the television as a learning medium. We should, therefore, make the educators, social workers, researchers, etc., aware of the educational advantages which television has over the print-based or face-to-face teaching.

3.5.3 Status of television

In Latin American Countries, for instance, there are hundreds of private commercial companies engaged in broadcasting. In many other countries there is just one single agency — either the government or the public service — which provides a broadcasting service to the entire country. There can be other kinds of broadcasting system – private broadcasting agencies run for financial gain, non-profit-making public service agencies, etc. In India, broadcasting is under the direct control of the government and the authority to broadcast radio or television programmes rest with the Ministry of Information and Broadcasting only. Now, there are winds of change blowing through the country to make the radio and the television autonomous institutions/agencies.

Table 1 gives the picture of status of television in the selected countries of the world. It indicates a wide range in access of television from 100 per cent in Japan to about 10 per cent in Bangladesh. In India only 31 per cent of the households have television sets.

With this background information let us now take a look at the status of the television broadcasting in India. Television in India today is one of the biggest networks in the world. Doordarshan expects to cover an estimated
90 per cent of the population in the country, on the completion of various ongoing projects under the 8th Five-Year Plan. At present, it covers 81.5 per cent of the population, which includes substantial population in rural areas (Indian Express, May 5, 1992), as against only 25 per cent in 1981 (Audience Research Unit, 1991). This rapid expansion was possible mainly because of the installation of low power transmitters (LPTs) starting from 1982. Today we have 529 transmitters functioning in India. It is this wide transmitting network which has made television accessible to such a large population in so short a time. This, in turn, motivated more people to have their own TV sets. Starting from 41 sets in 1962, the number of the TV sets reached approximately 2,78,200 in 1990 (Audience Research Unit, 1991). In 1994, 31 per cent of households had at least one television set. Besides easy accessibility of the relevant technology, varieties of programmes and increased duration of transmission network are also reasons for the rapid expansion of the TV systems in India.

To fulfill its main objectives — to inform, educate and entertain the country’s multi-lingual and multi-ethnic population, its varied social, political and economic systems, particularly the rural/urban divide, the Doordarshan is telecasting programmes in seventeen Indian languages including English. This has become possible by using two types of services:

i) Regional service: To cater to the rural and the urban population residing in the effective range of each television centre, the regional language programmes are telecast in the evenings. These include informative and educative programmes addressed to the general as well as the specific audiences — children, youth, women, farmers, industrial workers, etc.

Additionally, the area specific programmes which inform the viewers about, and sensitize them to various developmental issues pertaining to the area are also telecast regionally, and to help students educational programmes are telecast in the respective regional languages.

ii) National service: A common national service provides telecasts daily from Delhi which are simultaneously relayed by all transmitters located in different parts of the country. Besides national and international events, including news bulletins, higher education programmes (HETV) also form part of this service. Currently Doordarshan has six channels. More than 85 per cent of the over 900 million population of the country now receives doordarshan programmes through a network of more than 700 terrestrial transmitters. At present satellite channels cover the Indian television scenario. Nearly 30 satellite channels are available to the people.

The television has both extended and changed the pattern of communication within society as a whole, and within various specific groups of individuals in particular. The recent advances in communication technologies have made the television programmes available to the teachers in classrooms and the distance students at their workplaces. With the reduction of the cost of the TV receivers, and increased television network in the country, a large chunk of population has easy access to the television viewing.
The houses and community centres equipped with receivers are able to receive educational programmes without adding to costs or infrastructure.

The entrance of the television in the service of education has opened new horizons for the public in general, and the students in particular. A television serves the multiple purposes of entertainment, information and education. Besides performing motivational functions, the television facilitates discovery learning and cognitive development of the students, it has also proved its effectiveness in bringing the learning materials to the

Table 1: Audiovisual indicators of selected countries, 1994

<table>
<thead>
<tr>
<th>Country</th>
<th>Households (%)</th>
<th>TV</th>
<th>VCR</th>
<th>Satellite</th>
<th>Cable</th>
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<tbody>
<tr>
<td>Australia</td>
<td>99</td>
<td>83</td>
<td>N.a.</td>
<td>3</td>
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<td>Bangladesh</td>
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<td>N.a.</td>
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<td>N.a.</td>
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<td>Egypt</td>
<td>(94,00,000)</td>
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<td>N.a.</td>
<td>0.2</td>
<td>6</td>
</tr>
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<td>France</td>
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<td>68</td>
<td>N.a.</td>
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</tr>
<tr>
<td>Germany</td>
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<td>59</td>
<td>27</td>
<td>54</td>
<td>72</td>
</tr>
<tr>
<td>India</td>
<td>31</td>
<td>6</td>
<td>2.6</td>
<td>24</td>
<td>15</td>
</tr>
<tr>
<td>Japan</td>
<td>100</td>
<td>85.9</td>
<td>717</td>
<td>718</td>
<td>72</td>
</tr>
<tr>
<td>Kenya</td>
<td>14</td>
<td>65</td>
<td>0.3</td>
<td>0.6</td>
<td>2</td>
</tr>
<tr>
<td>Kuwait</td>
<td>(2410000)</td>
<td>85.5</td>
<td>N.a.</td>
<td>N.a.</td>
<td>6</td>
</tr>
<tr>
<td>Mauritius</td>
<td>(150000)</td>
<td>60</td>
<td>N.a.</td>
<td>N.a.</td>
<td>32</td>
</tr>
<tr>
<td>Netherlands</td>
<td>98</td>
<td>68</td>
<td>5</td>
<td>95</td>
<td>72</td>
</tr>
<tr>
<td>Newzealand</td>
<td>98</td>
<td>75</td>
<td>N.a.</td>
<td>0.4</td>
<td>2</td>
</tr>
<tr>
<td>Pakistan</td>
<td>32</td>
<td>25</td>
<td>12</td>
<td>N.a.</td>
<td>27</td>
</tr>
<tr>
<td>Saudi Arab</td>
<td>(3021875)</td>
<td>78.1</td>
<td>N.a.</td>
<td>N.a.</td>
<td>21</td>
</tr>
<tr>
<td>Singapore</td>
<td>99</td>
<td>84</td>
<td>Banned</td>
<td>21</td>
<td>77</td>
</tr>
<tr>
<td>South Africa</td>
<td>59</td>
<td>32</td>
<td>0.5</td>
<td>18</td>
<td>72</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>53</td>
<td>6</td>
<td>0.5</td>
<td>N.a.</td>
<td>72</td>
</tr>
<tr>
<td>Switzerland</td>
<td>87</td>
<td>62</td>
<td>6</td>
<td>79</td>
<td>72</td>
</tr>
<tr>
<td>Thailand</td>
<td>90</td>
<td>23</td>
<td>0.1</td>
<td>1</td>
<td>72</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>92</td>
<td>45</td>
<td>13</td>
<td>N.a.</td>
<td>72</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>(375552)</td>
<td>88</td>
<td>N.a.</td>
<td>N.a.</td>
<td>72</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>97</td>
<td>79</td>
<td>15</td>
<td>6</td>
<td>72</td>
</tr>
<tr>
<td>United States of America</td>
<td>99</td>
<td>79</td>
<td>2</td>
<td>63</td>
<td>72</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>(389000)</td>
<td>6</td>
<td>0.8</td>
<td>N.a.</td>
<td>72</td>
</tr>
</tbody>
</table>

N.a. = Data not available
Figures in numbers
students in a more direct and personal way than the printed texts can, and thus it is supposed to bring about a sense of belonging among the distance students scattered all over the country.

### 3.6 VIDEO CASSETTES

Though comparatively new and yet to become popular in the teaching-learning process, the video cassette is considered a more effective medium than the television broadcast. There are reasons for this. Video cassettes have certain advantages over the television. They are more flexible and convenient in their use because the students have full control over their pace of learning in terms of their time and place of using the video cassettes. Additionally, the replay facility has made it more suitable to individualised learning. Video programmes are equally useful for the distance as well as face-to-face classroom teaching. The main differences between the cassette and the television broadcast are given in Table 2.

<table>
<thead>
<tr>
<th>Video Cassette</th>
<th>TV Broadcast</th>
</tr>
</thead>
<tbody>
<tr>
<td>Available as and when needed</td>
<td>Fixed viewing time</td>
</tr>
<tr>
<td>Repetition/search/mastery learning</td>
<td>Repetition, search, mastery learning not possible, cannot be reviewed</td>
</tr>
<tr>
<td>Individualised pace of learning</td>
<td>Fixed speed for all students</td>
</tr>
<tr>
<td>Integration with other media easy</td>
<td>Integration difficult</td>
</tr>
<tr>
<td>More flexible and decentralised systems of delivery</td>
<td>More rigid and centralised systems of delivery</td>
</tr>
<tr>
<td>Allows the students control over the learning process</td>
<td>Students have little control over the learning process</td>
</tr>
<tr>
<td>Distribution is difficult (through mail)</td>
<td>Distribution is easy (through transmission)</td>
</tr>
</tbody>
</table>

#### 3.6.1 Videotape: Types and standards

The videotapes are normally of two kinds, viz. VHS and U-matic. The former is normally used for mass distribution, where as the later is the standard for master copy because of its superior quality. The videotapes come in three separate colour standards, which are PAL, SECAM and NTSC: These standards are incompatible to each other, and one videotape recorder can’t run the tape of other standard.

**PAL:** This is the system employed in Britain. It stands for *Phase Alternate Line*.

**NTSC:** This is the US standard, which stands for *National Television Standards Committee*. In both PAL and NTSC, the three primary colours (red, green, blue) from which all the other colours are made are transmitted simultaneously.

**SECAM:** This is the French standard. It stands for *Sequential Couleur a Memoire*. As the name suggests, SECAM does not transmit the primary colours simultaneously, it transmits them in sequence.
3.6.2 Strengths and weaknesses of video cassettes

From Table 2 we can infer that the video cassette technology has its own advantages for the distance students as compared to television broadcasts. Now let us discuss, in brief, the practical advantages of the video cassettes, and also some of their weaknesses.

i) Minimum time: The video cassette provides planned learning and saves a lot of study time. This characteristic of the video cassette makes the programmes more useful for educational purposes. The required knowledge can be imparted within a short time. Repeat facility also enables us to receive the desired knowledge/information as many times as we need it. Learning through the video cassette thus saves time, money and resources.

ii) Multiple mode communication: The video programmes can be presented in several modes. To hold the student's attention, and thus to motivate them, the content can be presented in interesting formats, which can help the students retain and recall information presented through the programmes. Also unlike the television, video cassettes can be viewed in various ways, which are independent of the fixed viewing timings.

iii) Standard content: The video cassettes are prepared by experts in the area. All the students receive the same quality content in the same style of delivery. This is not otherwise possible in face-to-face teaching in which only a few students get an opportunity to have high quality education as not all the teachers everywhere are equally effective.

iv) Flexibility: The cassette technology provides individualised learning. The students have control over the medium and hence over their pace of learning. A cassette can be stopped and replayed as many times and for as long as required.

v) Case study: A case study can be recorded on the location. Each step of the process of the case can be demonstrated through the video. Learning through case studies has proved quite effective for distance students and this can be done effectively with the help of cassettes.

Besides, the video cassette has all the educational advantages that the television broadcast has.

The video cassette has some weakness too, particularly in the Indian context. The use of the video cassette depends on the availability of the video cassette replay (VCR) equipment, and we cannot ensure each distance student access to the replay equipment in the near future. It is therefore, not advisable to exclusively depend upon the video cassette technology. The cost of a cassette replay equipment and lack of its availability in most student's homes are serious handicaps for its wide use. Table 1 indicates only 6 percent of Indian household has VCR. To overcome this problem, the emphasis has been shifted from the home-based learning to the study centre-based learning. In other words, we have to depend on the group use of video programmes. The video cassette recorders are made available at the study centres for viewing. You may argue here that it is not simple to provide easy access to the study centres in a big country like India. The use
of the video cassettes through the study centre network has, therefore, its own limitations. Experience shows that only about one-third of the students enrolled make use of the facilities at the study centres.

3.6.3 Video programmes in Indira Gandhi National Open University (IGNOU)

Taking into account the potential and the weaknesses of video cassettes in teaching-learning at a distance, IGNOU makes use of the video cassette and the broadcast technology to supplement the printed texts, and these programmes have become an important component of the IGNOU course materials.

Video cassettes are expected to play an increasing role in IGNOU’s support to its students. Cassettes are made available to the students through the network of more than 350 study centres/work centres (the number is likely to be increased) all over the country. The audio and video cassette recorders are available at the study centres to those students who want to make use of the programmes. The students can go to the study centre according to their convenience. Of course, they have to make arrangement with the co-ordinator of the centre to listen or view the audio-video programmes.

It is expected that video cassettes are viewed in groups at the study centres, and so, the cassettes are usually designed for group viewing. At the end of each programme, there is a general discussion among students and with the academic-counsellor on the content presented. Group viewing helps the students draw more than what they may do individually from the video cassettes. Moreover, they get support and guidance from both the peer group and the academic-counsellor, as they learn as much from the peer group as from the programme itself.

Some video programmes are produced for individual use also. The content of such video programmes is broken into several components with suitable activities/exercises. Such video programmes allow the student full control over his/her learning. Thus with the help of the video cassette we can overcome some of the weaknesses of the television broadcast. Efforts are being made to design programmes allowing enhanced control to students such as,

- clear stopping points,
- use of learning activities, and
- close integration with the text.

The video cassette is a recent development in instructional technology which aims to overcome some of the limitations of television broadcast. The television is generally criticised for not having any scope for involving the students in learning activities since it does not provide for learners ‘control’ over the medium. But, then, where the students do not have access to video cassettes, television is the only way to reach them, notwithstanding the limitations of the broadcast. Accordingly, as per IGNOU plans the television and video cassettes will supplement each other. The combination
will remove various limitations of both the television broadcast and the video cassette.

To make the video cassettes more popular and easily available to both the students and the general public, IGNOU has now made arrangements for the mass production and sale of its cassettes through external selling agencies.

It is pertinent to mention here that we in India do not have much research evidence on how our students use the video cassettes at the study centres. Perhaps, some of you could work on this theme. The answers to the questions a) whether the students and academic-counsellors use the video cassettes in such a way as to get the best from the video cassettes; b) to what extent do the students interact with the video programmes, etc. can be explored through specially mounted studies.

3.7 FUTURE TRENDS IN EDUCATIONAL TELEVISION

Since its introduction in the education sector, the question as to whether or not the television facilitates the students’ thinking or has been discussed widely. The issue is still being debated. However, we have enough research evidence that the TV stimulates students’ learning, i.e., enhances their attention, learning, assimilation and application of knowledge gained.

The problem is one of relating television to education, because the TV is mainly being used by the public as a medium of entertainment. We want it to play the role of a teacher. But the students who are used to learning through the print media from the beginning may not be comfortable with the television as a teaching machine. So it is necessary to convince the students and teachers (including distance educators) about the use of the TV and help to get the maximum out of it. We have to orient the students to learn from the television. For this the TV and the video programmes have to be attractive, visually rich, interactive in nature and need-based.

A few experiments on educational television have been undertaken by various experts — either as individuals or as representatives of institutions. Based on the empirical evidence available in India and in those countries which have successfully utilitized the television in the service of education, we can plan and identify effective strategies to make the optimum use of this medium, but nothing significant has come up so far.

To ensure proper utilization of the television in the service of education in future, we have to look into some of its pitfalls also. Let us discuss a few of them.

i) Research: This is the most neglected area. We have not yet succeeded in directing our thinking and in mobilising our resources to establish a scientific link between research and effective utilization of the potentials of this medium in our situation. It is a major responsibility for all of us involved in planning, producing and utilizing the television for educational purposes to undertake intensive formative and summative research studies.
This could help us to identify better strategies for teaching/learning through the television. Educational institutions should recognise the need for long term research activities. We need to develop research models to suit our own conditions, and not to depend on research studies conducted in the western countries where the situations, both educational and technological, are very different from ours.

Besides, research will help us to produce programmes, which are suited to the requirement of the target students. The programmes will be able to reflect our social reality and meet actual educational needs.

**ii) Training:** Training the personnel to understand the role of the television and to use it for educational purposes has not been given a serious thought in our country. Human resource development and training are important components in designing and utilising the television for educational purposes. The majority of the personnel involved in educational television lack adequate skills. All those who are involved in distance teaching need intensive training — both pre-service and on-the-job, in theory and in practice, related to the television-mediated education. If we want to use the television on a large scale, we must have more professionals to manage the televised instruction at various levels of education. This can be achieved only if adequate infrastructure for training is created to meet the increasing demands for skilled human power.

**iii) Software:** The production of software is a big challenge for the educators all over the world. The software here refers to the television programmes. We in India need cost effective and quality software which demands imaginative planning, dedication and team-spirit among the agencies and the personnel (professionals) involved in the job.

If you study the development of communication technology in the world in general, and in India in particular, you will find that all along more emphasis has been placed on hardware. Technology is changing at an extremely fast pace and we have not been able to give due attention to developing software at the same pace. It is high time that we divert our resources to develop appropriate software banks.

**iv) Two-way systems:** Distance education is at the threshold of a new era. We are gradually moving away from the single print medium to new, exciting non-print media, which should ensure active participation of the students. Two-way interactive systems are becoming increasingly popular. It is expected that interactive systems would dominate the distance learning mode in the near future. Some mechanism, therefore, is to be developed to make the television a means of effective two-way communication in conditions like ours. While suggesting this, we are fully aware that the interactive systems cost more, and the delivery systems become complex and difficult to manage. And we are also aware that due to lack of adequate technological infrastructure available in the country, we cannot go in for a large scale use of the systems. But we should not forget that two-way didactic interaction shall lead to better learning by the students. We,
therefore, need to make a beginning however humble it might be, in this direction.

v) The current scenario: The explosion of Information Technology and the availability and wide use of electronic media have now become a phenomenon common to the entire world. However in the context of the developing countries, the emphasis should be on harnessing these resources for socio-political stability and economic advancement. The immense power of the electronic media ‘to reach out’ and ‘to educate’ should be kept in mind.

Check Your Process 4

Notes:

a) Write your answers in the space given below.

b) Compare your answers with the one given at the end of this unit.

i) What are the strength of the video cassette? List any four.

ii) Keeping in view the current scenario and future ends in educational television list three important areas which need urgent and sustained attention from academics and electronic media specialists.

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3.8 TELETEXT AND VIDEOTEXT

One of the main objectives of an open learning institution is make education more accessible to a large section of society. The provision of teletext and videotext facilities at domestic, community and study centres can make distance education more accessible and lively. The students can have immediate access to information to be provided by the institution.

3.8.1 Teletext

The inclusion of teletext as a medium of instruction may surprise you because it is not being used for educational purposes in our country. But teletext is one of the advanced communication technologies with a tremendous potential for education at a distance. Teletext is the generic term for transmission of pages of information as digitised signals through the televised medium. It makes the common television receiver function like a computer terminal for retrieval of textual information and graphics from a remote database. Please remember teletext is not television. It however uses the hardware of the television but presents only text messages and graphics to its clientele. With the help of a suitable device, the user can select any
Media in Distance Education

information of the text being transmitted, and can see on the TV screen in place of normal television programmes. In short, teletext is one of the new telecommunication media for widespread dissemination of textual and graphic information through an electronic device to display on suitably equipped television receivers under the control of the user.

The principles of teletext are simple. A number of pages of text or graphics are stored in a distance database, just like the pages of a textbook. Each page is numbered and indexed to indicate the information that it contains. The texts are digitised and are inserted into the unused portions of the analog television signal. The digitised text messages or pages of information are continuously broadcast in a cycle. A viewer can see all the messages in a cycle, or using a control pad, typically a remote control unit, switch back and forth between the teletext service and the normal programming on a given channel. Even, the user can select specific pages of information using the control pad. Suppose a viewer is looking at page 6 and then presses 25 on the control pad, it will not appear until it comes in the broadcast cycle. Similarly if the viewer is in page 26 and presses 25, the viewer has to wait until the next cycle.

3.8.2 Advantages of teletext

We said that teletext is a computerised textual transmission service. It has many advantages for distance teaching.

- It uses the television already available at homes or community centres. Thus it provides much wider access to information.
- Changing and updating the teletext script is easy, as easy as typing a letter. Data can be changed within no time.
- Concise and effective content of the teletext makes the learning more appealing and less burdensome.
- Information about courses, careers, job opportunities, etc. can be transmitted easily with the help of this technology.
- It is useful for transmitting information about agricultural farm management, libraries, industries, etc. It can make these agencies more efficient and cost effective.

3.8.3 Teletext application in India

The teletext service in India was formally inaugurated by the Doordarshan Delhi on November 14, 1985. It is known as ‘INTEXT’ (meaning Indian teletext). Teletext uses the medium of television for transmitting information. The data are organised into pages, which contain text and graphic symbols. Six colours can be used in creating these graphics. The information is pooled and transmitted on a few predetermined lines in vertical ‘blanking’ interval of television signals. The information is in the form of magazines, each of which contains about 100 pages. The details of contents of the magazine are given on the first page.
News items, sports events, financial trends, timings of arrival and departure of important trains, weather forecast, city engagements, AIR and TV programmes to be telecast, etc. are given through teletext service. The information is collected through four hotlines connecting teletext information-room to:

i) the meteorological department,

ii) the northern railway central enquiry,

iii) the Indian Airlines enquiry (for domestic departure), and

iv) the Air Traffic Control (for international arrivals).

Thus using the existing television broadcast, additional information can be transmitted in the form of teletext service.

Efforts are being made to provide the teletext service on a large scale. In addition, it can also create pages with characters from different Indian languages. No effort has so far been made to use teletext service for educational purposes. In advanced countries also the educational application of teletext has been largely on an experimental basis so far.

### Check Your Progress 5

**Notes:**

a) Write your answer in the space given below.

b) Compare your answer with the one given at the end of this unit.

On the basis of what you have studied in this section, list three disadvantages/limitations of teletext.

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### 3.8.4 Videotext

Videotext is a two-way interactive communication, wherein students and other users can transmit the requests to a central database; a large master computer fulfils the needs of the users simultaneously. On the other hand, teletext is a one way system with signals flowing from a source to a user who can read the desired information on a television signals.

Both the cost and the scope of videotext are far greater than teletext. Teletext usually emphasises the information with broadcast appeals (e.g., weather, sports, news headlines) while videotext offers more specialised information (e.g., educational features, financial data, classified advertisements).

Videotext allows the students to put questions to or ask for information from database or a sources in order to obtain specific information, whereas with teletext a single set of electronic text is sent simultaneously to all users, and
by using a special fixture attached to the receiver a student can select the needed pages of the text from the continuous cycling pages of data appearing on the screen.

Videotext is also referred to as 'videotex' and the terms are used interchangeably. Therefore, one should not get confused over their usage.

3.8.5 Technology of videotext

Videotext is a system for providing an interactive information retrieval service. This particular technological development is one further step in the 'information revolution' which many industrialised countries are now experiencing.

Videotext allows the home television to function like a computer terminal that retrieves text information and graphics from a remote database. Thus, these technologies bring in 'power into home at a reasonable cost' (Antoni, 1982).

The basic videotext system consists of a keypad or keyboard, a TV display unit, a decoder, a telecommunication link (modem) and a central computer containing a database. Videotext uses television and telephone in order to provide access to the computerised information. The keypad, a small frame with number-buttons on it, is used to request pages of required information from a remote computer.

The television is connected to the computer by telephone and it is adapted by means of a decoder to display the recordings on a videotext when it is played. Thus the home television set is turned into a terminal (see Figure 1). As a television set is already present in most of the homes, of developed countries, this device promises a wide range of social and educational utility.

The decoder can be wired directly into the television set during the manufacturing process or can be fitted on externally at a later stage. The decoder allows a TV set to display text and graphics from digital signals transmitted down the telephone line and to transmit back the information entered through a keypad. A modem (modulator-demodulator) enables the computer and the decoder to communicate in digital form over telephone lines designed for the speech.
3.8.6 Applications of videotext

Most videotext application are currently at their initial phases. A number of applications for videotext have been tested such as word games, teaching a second language, instruction to deaf, etc. In distance education videotext can be used for the transmission and two-way interaction on general or specific information.

A videotext system is very useful in disseminating general information about courses and programmes available, in raising the level of awareness of potential learners about educational opportunities available.

The system with a substantial database can be very helpful to learners in remote areas as they could have access to the kind and the volume of information currently available to learners in areas with large libraries.

Videotext offers advantage over other time-bound communication media like radio, television or telephone because it is free from a time schedule. If a keyboard could be added to the user terminal, a videotext can offer computer-assisted instruction also. Two-way interaction between the teacher and the taught is also possible with alphanumeric keyboard (i.e. a keyboard with number-buttons). It is definitely faster than the post and has an advantage over telephone because this kind of interaction does not have to wait for a mutually convenient time for discussion. In the long run it may also prove to be quite cost-effective.
3.8.7 Limitation of videotext

However, while the videotext system provides graphic capabilities, there is no provision for including audio. So videotext would work better if it is used as a part of multi-media system in providing instructional material. As it is still at an experimental stage, its cost-effectiveness can not be determined.

Thus videotext systems provide means for delivering instructional material to those individuals who have chosen to learn at a distance. However, there are at present few instructional programmes, which are being delivered by this method. To date, most educational applications of videotext and teletext systems have as their information base a catalogue listing the courses available or the services provided by the institution.

Some developed countries such as UK, France, Japan, Canada and USA use videotext for various purposes. Some universities in the UK and Canada utilize videotext to help their students who receive a wider variety of materials for study and research. The success of this technology in the developing countries is still very much in doubt. Unless the necessary infrastructure is created at both the institution’s and the students’ ends, the use of videotext and teletext will remain limited.

Check You Progress 6

Notes: a) Write your answer in the space given below.

b) Compare your answer with the one given at the end of this unit.

Distinguish videotext from teletext by listing at least four characteristics of the former.

3.9 OPTICAL DISCS

The delivery of video or visual information has changed dramatically over the years since the development of high density storage media. With the emergence of optical laser disc technology, the typical videotape may be redundant and obsolete in the coming years. The optical discs, besides providing high storage capacity can also be used as an interactive media, with which the learner can interact and learn. It has also the capacity of being a full multimedia technology having text, sound, pictures and full motion video. The optical discs are basically of two categories, viz. The Compact Disc Read Only Memory (CD-ROM), the Digital Video Disc
(DVD). Currently the CD-ROMs are in common to deliver educational materials. A CD-ROM can store 680 MB of data which is equivalent to approximately 475 high density floppy diskettes. In other words it can store 275,000 A4 size pages of text or about 70 minutes of audio or about 23 minutes of video. Whereas, DVD can store about 300 minutes of video, which is equivalent to about 8 GB of information. Typically a DVD can store between 3.95 GB of information on each side, and as it supports two sided media (in contrast to CD which support one side only) a total of 7.9 GB can be stored in a single DVD (Parsons, 1998). The enormous storage capacity of CD-ROM and DVD makes them more popular. A typical CD-ROM/DVD is 12 cm in diameter and 1.2 mm thick with a 15 mm hole is the centre. The CD-ROMs physical composition comprises a polycarbonate substrate (to give the disc its rigidity), a very thin layer of reflective aluminium (to store the data), and a lacquer protective coating (to prevent damage to the reflective data surface). A DVD can be said to be two CD-ROMs joined together by an adhesive layer. However, they differ in terms of their storage capacity. Now let us discuss in details the educational applications of video discs, which will subsume in it the application of CD-ROMs.

3.9.1 Characteristics of video disc

Here are some of the major characteristics of the video disc technology, and their educational implications.

i) Automatic frame stop: The disc can freeze a single frame that begins a formal instructional sequence to which the student may be asked to respond. This capacity is made possible by a tiny micro-processor unit within the video disc player.

ii) Frame number: Because each frame (picture) has its own electronic number, the students can search specific information without any loss of time. Since the audio-video information stored on the video disc is read by an optical device, individual frames can be singled out and presented for any length of time as desired. A microcomputer can be added to it to make the video disc system more effective and purposeful so that it offers individualised and interactive instruction to the students. If the student responds to a question improperly, the computer not only processes the answer but goes automatically to a pre-assigned frame which begins another corrective instructional sequence.

iii) Dual audio tracks: The video disc can have two different language tracks. This capacity allows a student to listen to any one or two languages for any given pictorial sequence or in an elementary or advanced version of his native tongue. This characteristic should be very useful for a multilingual country like India.

iv) Adjustable forward and reverse timing: The students can follow any sequence in slow motion so that they may comprehend it better and learn at their own pace. The video disc can be stopped to pose questions, moved backward to repeat display of information, or stepped forward to a desired
bit of the information. The students have the option to fast forward, to skim part of the material they do not want to view just as they do while reading the printed material.

v) *Still frame:* The video disc can focus on still frames, enabling the students to give more attention to detailed information. Also, with still frames, more time can be given for commentary and complicated learning activities, including diagrams, tables, graphs, etc.

vi) *Chapter stop:* The fast forward and reverse functions can be used to go to pre-designated locations, which can be thought of as chapters. This will encourage the students to use glossaries, items in dictionaries and reference materials.

vii) *Interaction:* The video disc coupled with the microcomputer allows students to interact with the material at their own pace and at their own choice. The major educational advantage of this technology is in terms of student control. This characteristic has made it more suited to education and training.

### 3.9.2 Limitations of video disc

There are some problems in using the video disc in distance education. The weaknesses of the video disc technology appear to be few but they are very significant.

i) Probably the greatest problem is the non-availability of the courseware. Without adequate courseware the video disc is of little use in education.

ii) It requires highly sophisticated equipment. The cost of equipment and courseware is very high, which the Indian students cannot afford. Because of the non-availability of courseware in the market, and also the high cost, the video disc has limited practical utility.

iii) Lastly, unlike the video cassette, it is not possible to re-record programmes on a pre-recorded video disc. Therefore, video disc is best suited to the recording and storing of programmes of more or less permanent nature on subjects like History, Language and Literature. More precisely, it can’t be used for information that change very fast.

### 3.9.3 Advantages of video disc

Use of video is inexpensive, when the discs are mass-produced. Besides, the discs require little storage room. These two factors make it possible to gather extensive library of courses on small discs. The discs also provide easy accessibility and retrieval of the material of our choice. The random access feature permits rapid frame search. The video disc can be used to increase learner productivity through:

- more information in attractive presentation modes,
- immediate access (forward and reverse) to different parts of the disc,
3.9.4 Courseware development

The recording and reading of programmes in a video disc are done by employing the laser beam technique. High power recording LASER beam modulated by the video signals writes on the disc in patterns of grooves, called land and pits. The disc looks like a gleaming silver disc with grooves on it. Because of the necessity for good courseware, several production agencies in the developed countries are engaged in the development of the video disc programmes. The video disc production agencies feel that, on account of the expenses involved in the production of the video disc programmes, duplication of efforts should be avoided.

The suggested method for the video disc formatting is called pre-mastering. This involves four stages. The first stage is assembling of information to be put on the disc. The second stage in the evaluation of the material using special electronic equipment, which simulates the video disc player performance prior to disc mastering and duplication. A sample target audience evaluates the effectiveness of the material against its instructional design objectives. The third stage is where revisions are made and the final one is that of coding instructions for transfer to the video disc. The master video disc is then produced and duplicated for mass distribution. Because of the high cost of making the master disc, the cost effectiveness of the video disc depends on the market size.

Check Your Progress 7

Notes: a) Write your answer in the space given below.

   b) Compare your answer with the one given at the end of the unit.

How does use of video disc enhance learning?
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3.10 LET US SUM UP

Discussing the potential of television in this unit, we pointed out how it can help the much desired concept of democratisation of educational opportunities, while at the same time, offering quality education through the best available teachers. We also referred to its pedagogical soundness, resulting from the complementary use of the two channels of ‘sight’ and ‘sound’ for its communication. Television has its limitations too. It is essentially a one-way communication and consequently, offers no provision
for interaction and immediate feedback. Besides, learners cannot exercise any control over the presentation to suit their conveniences of time and ability. Sometimes the means may turn out to be a source of distraction from the desired end. Some good visuals or a fine piece of music may preoccupy the learner’s mind and this blocks their way to the desired end.

Several inventions have been made to add on to the potential of the television by attempting to eliminate some of its weaknesses. Chief among them are the invention of the videotape and the use of satellites for telecasts.

The growth of the television in India has been given as a reference points to pitch the discussion within the context of the developing countries. The establishment of a national open university and of the prospective state open universities has given a new thrust to the use of satellites and educational television.

The television is an important high quality medium for distance education. The effectiveness of the television depends on the situation in which it is used and the degree of success in exploiting fully its unique teaching characteristics. More so, its effectiveness depends, to a large extent on how the content and relevant visuals are structured and presented. Above all, the availability of technology based on which the distance students decides, whether or not to use a particular medium.

We have also discussed the television broadcast and its three types — live broadcast, recorded broadcast and closed circuit broadcast. Difficulties in making use of the broadcast viz. inadequate coverage, diversity among the viewers, high transmission cost and inadequate timings, too have been discussed.

The challenges before educational television in the developing countries are: lack of research studies; inadequately trained personnel involved in planning, scripting, producing and evaluating television programmes; and the limited availability of software. There has only been a small beginning in using media for educational purposes in our situation.

We also discussed the teletext, videotext and video disc technology and their educational applications.

### 3.11 CHECK YOUR PROGRESS: THE KEY

1) The common purpose behind the various television projects can be formulated as: the use of television for the social, economical and intellectual growth of the country and for an attempt towards the standardisation of education in the country.

2) The following considerations make satellites specially relevant to the Indian situation:

   i) It can cater to a large geographic area.

   ii) It is very helpful in promoting faster social development/modernisation.

   iii) It can, being a centralised system, reduce the planning and implementation time of educational schemes.
iv) It provides a cost-effective alternative educational system.

3) i) Recorded programmes are produced and can be broadcast as per the convenience of the producers and the students respectively.
   ii) Recorded programmes are based on specific objectives.
   iii) Proper editing and addition of music and sound effects are possible in recorded programmes.
   iv) Formative evaluation can easily be carried out in recorded programmes.

4) i) Strengths of video cassettes:
   - Available as and when needed.
   - Repetition, search, stop-start techniques are possible as required.
   - Integration with other media is easy.
   - Allows learner's control over the learning process.
   ii) Areas which need urgent and continuous attention of academics and ET/media specialists are:
   - Research
   - Training
   - Software Development
   - Utilization

5) i) Limited application for educational purposes.
   ii) No explanations possible — it is a one-way communication system.
   iii) Poor access — students cannot use the system.
   iv) Only visual presentation, no background commentary possible in this system.
   v) Non-availability of courseware that could be used on a large scale.

6) i) Videotext is a two-way communication system.
   ii) Videotext is costlier.
   iii) Videotext has wider scope; it can offer more specialised information.
   iv) The student can get feedback through videotext.

7) The use of video disc can enhance learning through:
   i) giving more information in an appealing format,
   ii) making different parts (content) of the disc easily available (by means of forward and reverse techniques),
   iii) providing facility for repetition to achieve mastery,
   iv) providing higher motivation/reinforcement,
   v) giving immediate feedback, and
   vi) providing frequent interaction with contents.
REFERENCES AND FURTHER READINGS


Garrison, D.R. (1985) Three Generations of Technological Innovations in Distance Education: *Distance Education*, Vol. 6(2).


Rothe, Peter J. (1985) Audio Conferencing and Distance Education: Towards a Conceptual Synthesis; *Distance Education*. Vol. 6(2).


Dear Student,

While studying the units of this block, you may have found certain portions of the text difficult to comprehend. We wish to know your difficulties and suggestions, in order to improve the course. Therefore, we request you to fill out and send us the following questionnaire, which pertains to this block. If you find the space provided insufficient, kindly use a separate sheet.

**Questionnaire**

Enrolment No. □□□□□□□□□

1. How many hours did you need for studying the units?

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2. Please give your reactions to the following items based on your reading of the block:

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3. Any other comments:

Mail to:
Course Coordinator (ES-318)
STRIDE, IGNOU, Maldan Garhi
New Delhi – 110068, India.