UNIT 2  RADIO AND AUDIO COMPONENTS

Structure

2.0 Introduction
2.1 Objectives
2.2 Origin and Growth of Radio in India
   2.2.1 Some major educational radio projects in India
   2.2.2 An overview of the development
2.3 Audiotapes and other Developments
   2.3.1 Radio-vision
   2.3.2 Audiocassettes
   2.3.3 Audiovision
   2.3.4 Radiotext
2.4 Strengths, Limitations and Use of Radio/Audio Medium
   2.4.1 Strengths of radio/audio
   2.4.2 Limitations of radio/audio
   2.4.3 Uses of radio/audio
   2.4.4 Cost of radio programmes
2.5 Audio Tapes in Education
   2.5.1 Designing programmes on audiocassettes
   2.5.2 Combining audio programmes with other media
   2.5.3 Cost of audiocassettes/programmes
2.6 Learning from Audio Media
2.7 Future Trends in Educational Radio
2.8 Let Us Sum Up
2.9 Check Your Progress: The Key

INTRODUCTION

Today we live in a society in which instantaneous, world-wide communication through electronic media (i.e., television, radio, audio and videocassettes, computers, satellite, films, etc.) has become common. The very pervasiveness of these new technological devices in our lives, however, tends to obliterate the fact that this is still a relatively new phenomenon for us — at least for those of us who live in the developing countries. They are so much taken for granted that many of us are rather too complacent about our knowledge of their potential uses in instructional situations. These sophisticated communication devices and their applications for effective learning have already opened up several instructional options for distance education teachers and learners. It is essential, then, for us to learn of their potential uses in instructional situations.

Distance teaching is basically a multi-media process but most distance education institutions rely on print material as a master medium complemented or supplemented by other media. In this era of technological
revolution, the distance education systems need to outgrow this dependence on print material to become more efficient and effective.

The radio is the cheapest and the most easily accessible of the other three electronic media, i.e. audiocassette, television and videocassette. No doubt, its potential audience is very large in comparison to the audience of other mass media. It caters to people of different ages and levels of maturity ranging from a primary school child to grandfathers. Besides the cost-factor and the wide-ranging appeal, another reason for its popular use is the fact that it is easy to handle. While all these attributes make it a wide-reaching means of mass communication, it has a pedagogically strong reason for its use in education and that is its versatility. The radio lends itself to serve different purposes. For instance, while it provides learners with new joys of learning, it can develop their command over vocabulary, promote concentration and critical listening, and improve fluency and confidence in speech and discussion. It can be used for formal and non-formal education. Its broadcasts can be designed to supplement/enrich the formal school subjects. These broadcasts may clarify a concept, or give additional views on a theme, or provide further illustrations and case studies related to an issue. Broadcasts under non-formal education may comprise programmes relating to children, women, adult education, rural development, social action, etc. These programmes help equalise or enlarge educational opportunities. With a brief overview, at the start, of the non-print media, the major portion of this unit will focus on the development, potentials and future trends and role of educational radio and audio components in education.

2.1 OBJECTIVES

After going through this unit, you will be able to:

- describe the origin and growth of radio in India as a case in point;
- discuss the potential and use of radio/audio medium for education and development;
- distinguish between the educational potential of the radio broadcasts and audio cassette technology; and
- explain measures to ensure optimum learning from the radio/audio medium.

2.2 ORIGIN AND GROWTH OF RADIO IN INDIA

It was a great invention that human voice could be transmitted by electromagnetic waves over long distance without the help of a wire. The radio, which arrived in the first quarter of 20th century, ushered in a new age in the area of communication.

From being the mere curiosity of the early experiments by the radio clubs in Madras (now Chennai) and Calcutta in the 1920s, radio in India has come of
Media in Distance Education

age and is one of the biggest networks in the world. The first radio station of the Indian Broadcasting Company (IBC) at Bombay (now Mumbai), formally inaugurated by the then Viceroy of India, Lord Irwin, on January 23, 1927, heralded the beginning of organised broadcasting in India. Interestingly, this was the year in which the British Broadcasting Corporation (BBC) was formed. The IBC was liquidated in 1930 giving way to the Government controlled Indian Broadcasting Service, which too was closed down on October 9, 1931, due to financial constraints. On popular demand on May 5, 1932, the Government finally decided to run the service under state management. On June 8, 1936, the organization was renamed All India Radio. Some princely states like Mysore (September 10, 1935) — which incidentally designated its radio station as Akashwani, Baroda, Hyderabad (February 3, 1935) Aurangabad, and Trivandrum (March 12, 1943) also opened radio stations. From 6 stations (Bombay, Calcutta, Delhi, Madras, Lucknow and Tiruchirapally) at the time of the partition, AIR has grown to more than 179 stations today.

As of today AIR network broadcasts nearly 2000 programme hours every day in 24 languages and 146 dialects. It reaches 97.1 per cent of the population, which includes substantial population in rural area, and covers 89.7 per cent of the geographical area of the country. The AIR is expected to cover an estimated 97.7 per cent of population in the country on completion of various ongoing projects under the 8th Five-Year Plan. Let us now briefly describe some of the main radio projects, which signify the growth of educational radio in India over six decades.

2.2.1 Some major educational radio projects in India

The history of educational broadcasts in India is almost as old as the history of Indian Radio or AIR itself. Here, we provide a brief summary account of a few major radio projects undertaken in the field of educational radio:

i) School broadcasts

Even before the AIR came into existence there were occasional broadcasts for schools from Bombay and Calcutta. It was only in 1937 that organised school broadcasting started in Calcutta. Funds were allotted to schools to buy radio sets. Out of enthusiasm, the AIR authorities embarked on schools programmes from Delhi, Calcutta, Madras and Bombay without waiting for schools to acquire radio sets. In the beginning, the school programmes were not strictly governed by the curriculum. With the passage of time and the acquisition of more experience, the AIR tried to make its radio broadcasts more curriculum-oriented but in the absence of common syllabi and time tables in schools, even within the same state (leave alone schools across the country), it could not succeed in this aim.

The AIR is assisted by various agencies in planning their educational programmes, particularly programmes for the young — primary and secondary level students. For example the Central Institute of Educational Technology (CIET), a wing of NCERT and some other such institutes in
Radio and Audio Components

Radio and Audio Components

states regularly produce programmes for primary classes and these
programmes are broadcast by different stations of the AIR.

ii) Adult education and community development project

In 1956 an attempt was made to communicate with rural people through
broadcasts. The programme was called ‘Radio Forum’ and was tried in 144
villages in the vicinity of Poona. This kind of programme was originally
designed and tried out in Canada. With the help of UNESCO, India decided
to try it and ‘Radio forums’ (defined as a ‘listening-cum-discussion-cum-
action group’) of villagers of about 20 members each were organised in
every one of the 144 villages. The members were to listen to thirty-minute
radio programme on some agricultural or community-development
programme, then discuss and decide whether to take any action on it in their
own village.

The project was a great success. Many action programmes were planned and
put into practice. Members of the forum learned a great deal from the radio
showed a substantial gain in processing information and contributing to
constructive discussions.

iii) Farm and home broadcasts

To improve the effectiveness of radio programmes in rural/social change,
the AIR initiated the farm and home broadcasts in 1966. These broadcasts
were designed to provide information and advice on agricultural and allied
topics. The aim was to educate the farmers and provide them assistance in
adopting innovative practices in their fields. The broadcasts under this
programme are of immediate local relevance. They are directly linked with
the day to day agricultural practices of the farmers. The officials also
conduct occasional farm radio schools and these schools have proved to be
very effective.

iv) University broadcasts

Radio programmes on subjects of academic interest have been broadcast
from AIR stations from the very beginning of organised broadcasting. In
1965, an attempt was made to assess the impact of these broadcasts on
students and it was found that there was little interest among students.

However, it was believed that the desire to expand higher education as
widely as possible among the different strata of society could be fulfilled
through the use of educational radio broadcasts. Consequently two types of
programmes — ‘general’ and ‘enrichment’— came into existence. While
general programmes include topics of public interest, the enrichment
programmes support correspondence education offered by universities in
their respective jurisdictions. Responsibility for planning the courses rests
with the academics, while the radio stations in consultation with the
universities arrange broadcasting. In Delhi, the correspondence school of the
University of Delhi works out the details (such as curriculum, scripting,
broadcast schedule, etc.) in consultation with the AIR to provide
possibilities of using radio for its courses. The Central Institute of English
and Foreign Languages, Hyderabad is known for preparation and broadcast of its programmes in teaching of English through AIR.

v) Language learning project

In 1979-80 the AIR conceived of and implemented an experiment to use radio broadcasts for language teaching. The experiment was conducted in collaboration with the Department of Education, Government of Rajasthan. Under this experiment an attempt was made to teach Hindi to school going children as their first language. The experiment was called 'the Radio Pilot Project' and it aimed to cover 500 primary schools of Jaipur and Ajmer districts. The projects were found useful to the children and research studies have revealed the contribution of the project to the improvement of the vocabulary of children. Later, it was repeated in Hoshangabad district of Madhya Pradesh with some modifications and a limited success.

1.2.2 An overview of the development

The development of educational radio in India has two sides to it:

i) the establishment of the broadcast network, and

ii) the preparation and production of specific educational programmes.

As far as the broadcast network is concerned, the AIR has made a tremendous achievement having managed to reach as much as about 90% of the population of this large country. It is a matter of pride that it is one of the largest networks in the world.

As for the educational programmes, the broadcast-projects that we discussed in this section suggest how efforts had been all along towards both formal and non-formal education. Broadcasts of formal education (as the discussion on school broadcasts and university broadcasts suggests) were too general to begin with, but have gradually become increasingly specific. The attempt to make school broadcasts more curriculum oriented and the attempt to make university broadcasts supplement the correspondence education have made the educational radio more purposeful and specific.

The broadcast programmes of non-formal education of the AIR have recorded tremendous success in achieving worthy objectives in the areas of agriculture and rural development.

Activity

For Indian students
Find out how educational radio is being used by open universities in India. Develop a case description of any one open university using radio. For this activity try to make use of your nearest library or any other source.

For other students
Find out the use of educational radio in your country. Discuss any one educational radio project in detail. For this activity, you may use your nearest library or any other source.
2.3 AUDIOTAPES AND OTHER DEVELOPMENTS

Some devices of independent and/or accessory function have come into use along with the radio in the recent years. These are sometimes called extensions of the radio medium and have become popular because they help us overcome some of the weaknesses of radio broadcasts — like the availability of broadcasts on scheduled times alone. Besides, these devices have also been cheap enough to be within the reach of a considerably large proportion of the population. According to Rowntree (1994: 11) the purposes of using audio in teaching could be outlined as follows:

- To provide “aural source material” — e.g. a conversation with a client or college — for the learner to analyse or react to.
- To breathe life into ideas presented elsewhere in the course.
- To talk to the learners through tasks during which it would be disruptive for them to keep consulting written guidance.
- To help the learners practise skills.
- To make the teaching more human and personal.
- To say things which are not so easily expressed in print.
- To encourage or motivate the learners.
- To influence the learners’ feeling and attitude.
- To get worthwhile contributions to the teaching from people who would be unlikely to contribute in writing.
- To let learners hear the voices of experts, users, clients, other learners, etc.
- To present new ideas to learners who are unable or unwilling to read or whose circumstances prevent them from reading.
- To provide necessary variety in the learners’ learning process.
- To act as a trigger for group sharing of ideas and experience.

We discuss in this section four such devices from the point of view of their pedagogical uses. We talk about 'radio-vision' first and then discuss the audiotape device.

2.3.1 Radio-vision

Pioneered by the BBC, the technique of radio-vision allows the subject-matter to be presented through two channels, the audio and the visual. The visuals are presented in the form of still filmstrips, charts, slides, models, etc., while the explanation is given through recorded narration. This is used by educational institutions as a substitute for educational television. Radio-vision has its own advantages:

- It is economical
Media in Distance Education

- It can cater to different categories of learners
- It is easy to produce such programmes at the institutional level or at the learning centres
- It provides visual support to the concept that is taught.

A small experiment in the use of radio-vision technique was carried out by The National Council of Education Training and Research, India in 1975-76, using it as one of the components of the multi-media package for in-service teacher training designed and operated during SITE. A series of charts and picture-cards were presented to about 24,000 participating teachers 2400 centres along with verbal explanation provided through specially prepared radio broadcasts. The results were found to be encouraging.

2.3.2 Audiotapes

Audiotapes can overcome some of the limitations of radio broadcasts. An audiotape provides considerable freedom to the learners who can use it at any time and place of convenience. The learners can replay the tape any number of times and review the taped material over and over again, even using the stop-start method. The audiocassette also permits a degree of privacy and confidentiality which is not possible through radio broadcasts. The audiotape is comparatively inexpensive, simple to operate, flexible and operate. It is a good learning device. We shall discuss more about audiocassettes further in this unit.

2.3.3 Audiovision

Similar to radiovision, audiovision is use of audiotape along with visual media. This format becomes extremely useful when you want the learners to study a series of photographs, follow a sequence of steps, consult a table, examine a map, etc. Through audiovision you can even conduct field experiments, and even ask the learners to observe actual objects/specimens. This indicates that audiovision takes into account both “listening and looking”. According to Rowntree (1994) audiovision can be made more active by asking the learners to do any of the following activities:

- writing comments or calculations
- completing a form or questionnaire
- using materials
- operating a model
- carrying out an experiment.

2.3.4 Radiotext

Radio has been used along with textual data transfer via computer networks simultaneously to create a ‘radiotext’ environment. The teaching end is normally a FM radio station having data broadcast facility through a computer network. The main points of the radio broadcast are sent through
textual mode to the receiving end via a computer network. The learning end has radio listening facility as well as a computer screen to receive the textual data. Since both audio and text are broadcast simultaneously, the learner at the receiving end gets high quality and low cost teaching. An experiment on the use of radiotext at Yashwant Rao Chavan Maharashtra Open University, Nasik, India resulted in the satisfaction of more than 80 per cent the learners. It also used a peer group discussion at the receiving end after the broadcast, which indicates radiotext could be used for varieties of objectives (Chaudhary, 1997).

2.4 STRENGTHS, LIMITATIONS AND USE OF RADIO/AUDIO MEDIUM

From its very inception, the radio has been and is being used to serve a variety of purposes: to inform, to educate and to entertain people. Continued technological innovations have made radio broadcasting increasingly available to a large number of people throughout the world. Besides the radio can and does play an increasing role, especially for those who cannot read, are physically isolated or are visually impaired and have little hope to afford the television and other expensive electronic gadgets. The radio is a means to reach and teach those persons who do not have access to other sources of information and educational communication.

2.4.1 Strengths of radio/audio medium

The potentials of radio broadcasting stem from two sources:

- its low capital requirements, low operating costs and wide coverage
- its pedagogical values.

Some characteristics that contribute to its potential are listed here:

i) **Easy accessibility:** In comparison to other media, radio is accessible to the majority of our countrymen. Low cost transistors within the easy reach of even the economically weak classes of people are available in the market. It can, therefore, be used as a home-based means of imparting education.

ii) **Wide coverage:** Today we cover a major portion of our territory by radio broadcasts as the broadcast facility is available throughout the sub-continent. As such, the radio can extend learning at a distance as it can easily and quickly reach the isolated rural audiences.

iii) **Low capital investment and operating cost:** Radio technology is comparatively cheap. In terms of installation and production of radio broadcasts it is quite economical and needs less production facilities than the other electronic media.

iv) **Easy learner-reception:** Radio broadcasts can be listened to even while one is doing some manual work. Distance learners can listen to programmes whenever they desire to and from wherever they are.
v) **Effective thought promotion:** Radio taps the thinking process of the learner as listening is invariably accompanied by simultaneous information processing. It can also stimulate a listener's imagination with a tactful use of music or the technique of pauses.

vi) **Motivative supportive facilities:** Broadcasting can make education interesting and enjoyable, when it is used imaginatively. The feeling and motivation of listeners can be stimulated directed by music and other sound effects.

vii) **Easy production:** Production of creative radio programmes is simpler compared to a TV or video programme production. No complicated mechanism or any sophisticated instruments are needed for such production. It requires less manpower too, compared to the production of a television/video programme.

viii) **Effective-creation/transmission of reality:** A powerful 'audio' version brings a scene into sharp focus and also establishes 'movement' effectively. A live broadcast can make listeners share the experience of a scene of reality taking place, say, some 100 miles away. It can also make listeners partake of an experience of a scene of the past that took place, say, some 100 years ago.

ix) **Feasible mode of learner-enrichment:** The most common function of media in education is 'enrichment'. This function is easily materialised with the help of radio and with relatively little expense.

x) **Direct instruction:** The use of radio for direct instruction has been tried. This, however, demands intensive and systematic use of the radio. Under such schemes syllabus based programmes are broadcast for definite target groups.

### 2.4.2 Limitations of radio/audio medium

The radio has its drawbacks too. We can summarise the limitations of radio as a medium of instruction as follows:

i) The radio is not a flexible medium. There is no face-to-face interaction, dialogue or discussion between the listener and the speaker/producer. In the absence of motivation, guidance and supervision, the atmosphere for learning is not very conducive and the teaching/learning process becomes a one-way transit of information.

ii) The doubts/queries arising in the mind of a learner cannot be attended to immediately. Thus there is no provision for immediate feedback to the learner; nor is there any feedback on the quality of the content.

iii) It may not be an effective medium for all types of course materials; for example, the subjects which need demonstration/visual illustrations cannot be taught effectively through radio.

iv) There is a dearth of adequately qualified personnel for producing worthwhile educational programmes. Radio programming demands experienced and creative personnel with both production and academic
Radio and Audio Components

background. It is difficult to find persons with experience along the lines. When persons from either lines are chosen to work jointly, co-ordination within the team becomes difficult; and in the absence of co-ordination the quality of the output suffers.

v) Educational radio programmes have not been given adequate and appropriate broadcast time-chunk. This phenomenon causes inconvenience to learners as they have to make themselves available during the scheduled broadcast time whatever be their engagements at the moment.

vi) In most developing countries, educators have to plan programmes for heterogeneous masses (such as the illiterate, school dropouts, the unemployed, etc.). The more heterogeneous the audience, the more difficult it is to produce a radio programme of common utility/appeal.

vii) The span of attention of a learner is short and thus, the retention of factual information given after the first few minutes of the start of the programme is generally low unless some special efforts are made to reassure attention from time to time. Furthermore, educational broadcast is not a priority area of programming in the radio set-up.

viii) The technical staff concerned with the planning and production of radio programmes often lack adequate knowledge of the relevant pedagogical needs of the learners and their characteristics. The subject experts do not have any deep acquaintance with the complexities of programme production. So unless there is a perfect co-ordination and understanding between the two groups, no good production could ever be achieved.

Check Your Progress 3

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

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

List at least five advantages of educational radio.

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2.4.3 Uses of radio/audio medium

The radio as a medium of mass communication is very strong as it can reach every corner of the country or even the entire globe instantaneously. At the same time it is an illusive medium with words disappearing into thin air. Its immediacy and comparative simplicity gives it an edge over the other media in imparting information, education and entertainment. All this is done with three essential inputs, namely, human voice, sound effects and music. What
the radio actually does is interpersonal communication, which should have a relaxed and conversational style. A programme may be meant for a large mass of unseen audience but in effect it is directed towards a solitary listener. Though every bit of information that is broadcast is generally written, it is written for the ear and not for the eye. Again, it is written to be spoken and not to be read. Being a one chance medium, what is written and read or rather spoken should be comprehensible when heard just once.

The radio, being an aural medium, can be used as an effective instrument in instructional technology and educational system. In using the radio, one needs to choose the most effective broadcast and presentational techniques and constantly evaluate results for further improvement. Radio broadcasts can help the students in the process of their learning, stimulate their interest and kindle their imagination. Further, radio broadcasts add variety to the methods of teaching. Because it is a uni-sensory medium, i.e., sound only, it may not be suitable to teach all subjects, especially when it is used, as a direct teaching method. Of course, with supplementary materials, it can serve the classroom as an enrichment programme.

The radio is being used for both formal and developmental education. In fact, most radio programmes have an element of education as they can motivate people to learn new skills, accept new ideas and change faulty attitudes. Let us discuss in brief the use of the radio for both formal and developmental education.

**Formal education**

For our purpose we define formal education as follows. When the radio programme is part of a well-defined curriculum (i.e., as a part of a course of study) for which students are enrolled, their progress is monitored and evaluated, and a certificate is awarded on successful completion of the course, the approach is termed as formal education. The radio is used to impart formal education in many countries around the world.

Jamison and McAnany (1978) analysed various educational radio projects conducted in various countries. They concluded that, in general, the radio is used to achieve the following four broad objectives:

i) **Enrichment of learning**, i.e., giving additional experience to the students, particularly in those areas where the teacher finds it difficult to teach. Use of the radio in India at the primary level of education is for enrichment. The radio is used to supplement the primary school curriculum. This use is easy to implement.

ii) **Direct instruction**, i.e., carrying the major portion of the instructional burden of a teacher’s teaching. A certain portion of the syllabus is taught through the radio and the teacher takes care of the rest. This is a more extensive and systematic use of the radio. The main objective of this use of the radio is to improve the quality of classroom instruction. Nicaragua’s Radio Mathematics Project makes tremendous use of the radio for instructional purposes.
iii) Extending in-school education, i.e., extending the facilities of education to remote and scattered populations, and thus replacing a classroom teacher by the radio. The radio instruction is used to extend school instruction to those who want it. For instance the Mexico’s Radio Primaria (1969) was designed to extend access to elementary schooling in the rural areas of Mexico.

iv) Distance learning, i.e., combining the radio with other media, particularly with the print medium and occasional personal contact sessions, and thus completely replacing both the teacher and institution. The developed countries — UK, Australia, Canada and Japan, make extensive use of the radio for teaching at a distance. China, Thailand and Kenya have many years of experience with the radio correspondence approach to learning. Radio Santa Maria is a successful example of distance teaching. Under this programme, primary equivalence degree is earned in home-study with the help of radio by individuals who failed to attend school-based education. We too are making use of the radio for distance education in India.

Formal education through the radio is imparted in two forms — through radio broadcasts and through audiocassettes. Both the forms are used in pedagogic transactions in India too. The programmes belong predominantly to the cognitive area. Subjects such as language, social studies, sciences and mathematics are broadcast through the regular radio network.

Several studies conducted in India have revealed that languages can effectively be taught through the radio. A project entitled the Radio Pilot Project, for instance, was started jointly by the Department of Education (Government of Rajasthan), AIR, Jaipur, and the NCERT, Delhi. The aim of the project was to teach language (Hindi) to the primary school children. The radio programmes were planned as part of a package, which included the print materials and classroom teacher support. The support services helped teachers in organizing pre-and post-broadcast activities. Studies conducted by AIR showed that all the teachers, who were given the responsibility to arrange listening, unanimously accepted that the role of radio programmes in promoting the students’ knowledge of Hindi was significant.

Similarly, radio programmes are being broadcast for secondary school students. Many radio stations in India broadcast the programmes based on the secondary school syllabus during school hours.

Some directorates of correspondence courses of the conventional universities made use of the radio broadcast for their students. For instance, AIR, Delhi broadcasts programmes produced for the students for the Directorate of Correspondence Courses, University of Delhi; AIR, Jalandhar broadcasts higher education programmes for the correspondence students of the Punjabi University. Similarly, AIR, Tiruchi is engaged in producing and broadcasting programmes for the students of the Madurai Kamaraj University. Some other universities are also engaged in planning, producing and utilising radio programmes for their students.
Some universities/institutions, such as the Central Institute of Educational Technology (CIET), are equipped with programme production facilities. Such institutions produce programme for specific target groups. In some cases, the universities provide content inputs, and programmes are produced and broadcast by AIR.

IGNOU is engaged in planning, producing and evaluating both radio broadcasts and audiocassettes for its students. Not only are the radio programmes broadcasted directly, but these are recorded on tape for use as and when required. From the very beginning, audiotapes have formed part of the IGNOU course materials. These cassettes are not mailed to the students but are made available at the study centres, which are opened for the students on weekends and holidays. The students listen to the audiocassette in groups and in the presence of an academic counsellor. The academic counsellor is to undertake pre-and post-listening activities. One of the advantages of group listening is that students can discuss the content of programmes with their fellow students and learn from peer group interaction. These programmes are used to supplement the printed text mailed to the students.

**Developmental education**

In developmental education, the information passed on to the audience may not be a part of any prescribed curriculum. Development is a widely used participatory process of directed social change in a society, intended to bring about both social and economic change. The use of the radio for development education is quite popular in the developing countries. From the beginning, the radio has been used throughout the world for development education — social, political, cultural and economic.

The radio is considered a powerful, direct force for development. It acts as a one-way, linear, transmitter of developmental messages from the governmental agencies to the people. The developmental radio programmes are transmitted under regular broadcasts. The topics of common interest and those which need media support are taken up for discussion. The major chunk of existing radio broadcasts is developmental in nature.

The main goals of developmental education are to sensitise people about their problems and motivate them to find a common solution. These may be to increase agricultural production, to improve general health of the people, to fight against social evils, to eradicate illiteracy, to impart social education, and so on. Jamison and McAnany (1978) give the following three major objectives of the radio developmental education:

i) **To inform**: The radio has far greater access to the remote areas. This feature of the radio helps the messages reach a large number of people. Regular radio news cover issues related to international and national affairs, about availability of social services, disaster warning, etc. Thus, the radio has the potential to improve the access of developmental messages to an unlimited audience.

ii) **To motivate**: One of the major objectives of radio programmes is to motivate people for socially desirable behaviour. The radio
programmes are aimed at improving the quality of life, to motivate the listeners against social evils such as drug addiction, and so on.

iii) *To teach:* The radio helps coordinate delivery of educational services. It helps teach simple skills — vocational courses such as those on food and nutrition, the preparation of pickles, biscuits and so on. One of the important functions of the radio broadcast is to make people literate. Radio Santa Maria launched the radio literacy programme in 1964. Thousands of adults participated in and benefited from the literacy programme.

AIR broadcasts a variety of programmes for the children. Besides programmes related to their school education, programmes on health, hygiene, national integration, etc., constitute the broadcast fare for children.

For the youth, programmes of general interest are discussed on the radio. The main objectives of these programmes are to develop socially desirable behaviour in the youth, to bring them into the national mainstream, to make them productive, etc.

Programmes on agriculture and allied subjects, health and hygiene, social education, mass literacy, etc. are broadcast for the adult listeners. Farm and home units of AIR produce programmes for the rural listeners.

There are special programmes for the teacher broadcast by many of the radio stations. The objectives of these broadcasts are to upgrade teaching skills, to make teachers aware of innovations in teaching methods; curricular changes, new additions to knowledge and so on. To update their knowledge, programmes on various subjects are broadcast on the regular radio networks.

In the light of these details, it is easy enough for us to conclude that the radio is used for both formal and developmental education. Most of the radio programmes as you have just seen, fall in the category of developmental education which primarily aims at bringing about socio-cultural and economic changes in society.

**Check You Progress 2**

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

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

Define the objective and scope of radio developmental education briefly.

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2.4.4 Cost of radio programmes

Experiences in radio-based instruction show that there is a wide scope for the use of the audio medium in a variety of courses. The amount of work and the cost involved in planning, producing and implementing the audio programmes are likely to be similar to those involved in developing printed learning texts. Even the nature of the work is largely similar at the stages of planning, researching the topics, drafting, editing, etc. (Grudin, 1984).

When we compare the cost involved in producing audio programmes with other media, we find that the audio programmes are a cheaper option. A radio costs roughly one tenth of a television set.

The cost of producing a master programme varies, depending on the nature of the content to be discussed and the facilities available at the open universities. Once the master programme is ready, it can either be broadcast directly or duplicated on blank audiotapes.

There are a number of factors that determine the costs involved. If the radio programmes cater to a large number of students, the cost per student of programme production will be very low. Equally important, as far as the cost of the radio programmes is concerned, is the life of a programme. If a programme, with some slight revision or improvement, can be used over a long period of time, it will prove cost effective.

We should also take the programme’s affordability into consideration. A student has to buy a transistor or an audiotape recorder, and he/she has to spend on batteries or electricity to listen to the radio programmes.

So far we have discussed a number of areas where the radio is used in India and elsewhere in the world. But the use of the radio in the Indian education sector is not satisfactory. Much is required to tap the potential of the audio medium for both education and developmental communication. We quote here the experience of Singhal and Rogers (1989):

...but the development potential of radio in India is largely unrealised. More than any other mass medium, radio has the potential to offer programmes to villagers in a language they can understand and that deals with their day-to-day problems. But unfortunately, the growth of Indian television in the 1980s has forced radio to take a backseat.

Do pause to think about this. What does your own experience tell you?

2.5 AUDIOTAPES IN EDUCATION

We discussed radio broadcasts in the previous section. The master programme produced is directly broadcast for the target audience. We have also discussed some of the limitations of the radio broadcast. Now let us see as to how far we can overcome these weaknesses by making use of audio cassettes/tapes.

In audiocassettes, the focus is on pre-recorded sound delivery in a more permanent form than in a transitory radio broadcast. Thus the word
'cassette' becomes significant. A cassette is a device on which information is stored for the future and repeated uses.

The use of audiocassettes got underway in India in the early 1980s. In the mid 1980s, the Governments of India’s liberal electronic policies encouraged collaboration with the developed countries, specifically Japan, for manufacturing audiocassettes. As a result thousands of audiocassettes were sold in the Indian market. Indigenous industrialisation gave a boost to the audiocassette industry by manufacturing thousands of audiocassette recorders.

The audiocassette recorder is more an urban phenomenon, and is generally used to listen to music. Most audiocassettes in circulation in India contain music — classical, popular and film music. This means that the audiocassette is not used for or is not popular as a means of education in India. IGNOU is perhaps the first institution where the audiocassettes are used for educational purposes on a large scale.

Depending on your experience, can you compare the educational effectiveness of the radio broadcast with that of the audiocassette? Of course, you will find that the audiocassettes have an edge over the radio broadcast. We may argue in support of our viewpoint as follows:

- Unlike the rigid radio broadcast, the audiocassettes present considerable freedom to the students, they are free to choose to listen at a time and place convenient to them. The audiocassettes are at their disposal to be made use of. Thus, the audiocassette satisfies their individual needs more effectively as it suits their convenience.

- The technical facilities/devices — stop, pause, replay — are available with audio cassette players. These devices facilitate studies according to learner’s requirements. One can study according to one’s style of learning and individual pace. Learning through audiocassettes is not time and space bound. The students can use a cassette time and again until they master the content of the programme. It implies that even high level content, which needs special efforts on the part of the students, can be discussed on audiocassettes.

- The students can browse, skip and review certain learning tasks or activities. Thus, the audiocassettes give the students the facility of selective reading. These features of the audiocassettes offer all the advantages of the printed text.

If you review all the three points given above, you will observe that the main point that emerges is the control, which the students enjoy while using the audiocassettes. The students have more control over their learning and proceed according to their individual pace and needs. The broadcast programmes could fail to meet the students learning needs — individualisation, self-pace, selective reading and so on.
Check Your Progress 3

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

Give three advantages which audiocassettes have over radio broadcasts.
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2.5.1 Designing programmes on audiocassettes

The special features of the audiocassette technology have some bearing on its design. While designing a programme on audiocassette, we have to keep its specific features in mind. That is, we should exploit the specific uses/potential of audiocassettes. By doing so, we can overcome some of the weaknesses of the radio broadcast and printed text.

Following are two important points that should be taken care of while planning and producing the audiocassette programmes.

- To make learning interactive, we need to incorporate some activities in the programmes. That is, an audio programme should be so devised as to ensure the students' participation in the teaching-learning process. In-built activities can be presented in a variety of ways. A discussion can be interrupted with activities and questions, which helps the students learn concepts, solve problems and recapitulate important/difficult learning points. The design of the audiocassette presentation should allow for such pedagogic activities.

- One of the education potentials of the audiocassettes is to help the students acquire practical skills. Therefore, the audiocassette should provide time and scope for the development of skills such as drawing of graphics/diagrams, setting up of equipment etc. In each case, commentary can provide an essential and supporting voice as the students set about their work (Durbridge, 1984). To achieve these objectives, we, however, need to follow the multi-media approach in teaching.

2.5.2 Combining audio programmes with other media

In comparison to other media, it is easy to integrate audiocassettes with any other medium of instruction. Integration of audiocassettes with the printed
text can be so effective that optimum learning can be achieved. This approach has proved very popular with the British Open University students. Various subjects, including Engineering and Science are being taught with the help of audiocassettes integrated with the printed text, which is presented in the form of illustrations and diagrams in a sequential order, and each illustration is supported by a powerful commentary. Illustrations in the form of visuals are presented frame by frame, and each frame is supported with voice that is, the sound track complements the visuals to enhance their effect.

2.5.3 Cost of audio-cassettes/programmes

The procedure of preparing master tapes is the same for both the radio broadcast and the audiocassette. Once the master tape is ready, it can be either directly broadcast or transferred in the form of audiocassettes. So the costs for preparing programmes for the radio broadcast and audiocassettes are almost the same. In the case of the audiocassettes, the institution has to purchase blank audiocassettes and get the master tape duplicated. The audiocassettes can be either mailed to the students as part of their learning material or made available at the study centres where the students can make use of the programmes they need. In either case, it depends on the costs and accessibility of appropriate technology to the students. As a distance educator, you have to ensure that the teaching media you intend to use are accessible to the majority of the students. You have to ask yourself whether the radio is accessible; whether audio cassette players are available with the students; whether the study centres you are planning to equip with the audiocassettes are within the reach of the students.

To make use of the audiocassettes at their workplace, the students have to buy an audiocassette recorder. Moreover, they have to invest in buying batteries or paying electricity charges. Thus the total cost of producing and utilizing the audiocassettes includes both the institutional and individual expenses.

We may conclude from what we have discussed in this section, that we have yet to exploit the total potential of the audiocassette tapes in education. This method allow the students to learn at their own pace, be it slow or fast, and then the cassette is a permanent record with the students. Durbridge says:

'It is understandable that more glamorous technologies such as video and computer attract a great deal of attention, but the humble audio cassette has a great deal to offer to distance education, and should not be ignored.'

Glamour and fancy may be justifiable in countries, which can afford expensive technology and bear enormous costs incurred in using it for educational purposes. But developing countries like India must not fall prey to glamour. They should try to use the available technology intelligently rather than introduce expensive new technology, the uses of which they are not sure when they do not have the trained manpower to use it.
2.6. LEARNING FROM AUDIO MEDIA

Among the various technologies now being used throughout the world, ranging from programmed instruction to computers, videotext and teleconferencing, the radio is the most economic medium. Developed countries — Australia, UK, etc., are engaged in producing and broadcasting radio programmes for the students at various levels of education — primary, secondary, university and teachers' training. Some of the developing countries, such as, India, Kenya, etc., broadcast educational programmes for the students of their countries. Some universities at various places in the world have their own low-powered campus radio stations, which provide educational radio programmes for the students enrolled with them.

Now a question arises — can the radio teach? We can authoritatively say 'yes'. As we have already discussed, the radio has the potential to influence people's knowledge, awareness and attitudes. This conclusion is based on the following features of the radio as a medium of instruction.

i) The radio brings new resources to the students.

ii) It takes the students out of the four walls of the classroom or the school.

iii) It has tremendous power to reach remote areas.

iv) It carries the burden of a teacher (distance teaching through radio), as it can disseminate information to one and all.

v) It is very effective in teaching certain subjects. It has proved its potentiality in teaching Languages, History, Environmental Studies and Literature, for example.

vi) It helps teachers and students achieve higher level objectives as it is quite effective for creative thinking and affective learning.

vii) The radio is quite a flexible medium. It presents up-to-date information. Agriculture related messages, weather broadcast, market price, etc., can be broadcast instantly. Similarly, information on public service can be given to the people within a short time.

viii) Another example of its flexibility is that the radio can effectively be used in conjunction with other media — particularly printed texts.

The effectiveness of the radio depends on how well it suits the requirements of the content being discussed or taught.

The radio, as a uni-sensory medium, provides only the voice and leaves the students to imagine about the appearance of objects, people, places and events depicted in the programmes. Thus, the radio stimulates the imagination of the students and contributes to achieving the educational goal of developing the students visual creativity (Thomas, 1987). This being the case, the producers and script-writers have important decisions to take with regard to what faculties ought to be stimulated, and how to prevent unwanted subject-matter.
All the subjects are not suitable for the audio medium. For example, when there is a need for showing certain objects, charts and diagrams as illustrations, it is not possible to do so unless the support material such as workbooks, etc., are provided. Searie and Sipper (1977) discussed some principles of good teaching, using the radio as an instructional medium. A list of these principles is as follows:

- Learning is more effective when the students are actively involved. Radio instruction should generate some action on the part of the students. Active responding may be oral, physical, or written.

- Learning will increase if the student is made aware of his/her progress on the programme. In other words, feedback will enhance the pace of learning. Therefore, the provision for feedback should be there in each programme.

- The content presented in a logical sequence — simple to complex, concrete to abstract — will ensure more learning from the radio.

- Practice with learning materials facilitates learning. The radio programmes should give the students opportunities to practise what they learn. Through practice they get an opportunity to review it. Meed (1977) also found in his study that the majority of the radio programmes require activities from the students other than that of listening.

- The students have individual differences and learn according to their pace.

- The students should know how to use radio programmes for optimum learning. They should know about the content being discussed and related activities well in advance. Here, programme notes can play an important role. Programme notes along with the students workbook should be made available to every student. Programme notes, besides a brief account of the content being discussed, include the title of the programme, objectives to be achieved, important learning tasks, pre-and post-listening activities. The pre-listening activities get the students psychologically ready to learn from the programme. These activities may also include necessary guidance/instructions to help the students learn smoothly. At the end of the programme, the post-listening activities help the students judge their performance/progress. These activities (see Figure 1) also help the students to recapitulate and revise what they have studied in the programme. Thus, well thought out pre-and post-listening activities can ensure effective learning from the audio programmes.

![Figure 1: Pre- and post-listening activities](image-url)
Although the radio is being used all over the world to achieve a variety of educational objectives, its use in education has been little researched. In India, we have not done any significant research on educational radio. You will not be able to find sufficient reference materials on educational radio, though the radio has a history of more than sixty years in India.

It has been proved through many studies that, given favourable conditions, students can learn from any media available to them. Media researchers' general conclusion was that the radio, when supported by other media, can teach effectively. Jamison and McAnany (1978) reviewed research literature and concluded that the radio, properly used, can teach as well as or, in some cases, better than the traditional instruction. Considering the effectiveness, the costs and the access to technology, they further stated that the radio is a more suitable medium for the Third World countries, if they plan to use any electronic medium at all. The radio can be used to promote a variety of educational goals in different contexts.

Learning patterns

The radio is used for individual as well as group listening. We discuss both the patterns in some detail as follows.

i) Individual listening: The radio plays an important role in individualising instruction. There are various ways to use the radio for individuals learning. We touch upon three of them here.

   a) The radio conveys the actual content to the students and they listen to programmes individually. Most AIR programmes (educational) fall in this category.

   b) The radio is used to manage instructional process in conjunction with other media. For instance, the audiocassettes are used in conjunction with the print medium — textbooks, notes, workbooks, etc. After listening to a programme, each student works on the printed texts. This process helps individualization of learning.

   c) The radio is used as a vehicle of interactive learning in which the individual student actively interacts with the content being transacted. S/he performs pedagogic activities as part of the learning process. The student works on in-built activities incorporated in the audiocassettes.

ii) Group listening: The radio can also play a useful role in group listening. As a group listening medium, it can be used at least in two ways:

   - The radio functions as a vehicle for supplying information for group consumption. News related to the weather conditions caters to a group to people in a region concerned.

   - The radio is used as a vehicle for guiding a group through common exercises/activities. A group, a community as a whole, is addressed and directed for certain purposes/behaviours. The radio generates some group activities for people to work on. They interact and learn.
certain modes of behaviour. Programmes on social education and general sanitation, etc. belong to this category.

In group listening, students do not use programmes in the same way that they do in individual listening. For instance, an individual listener uses relay/control facility more frequently than a listener in a group. Individual learners can skip or skim any part of the programme while doing so is problematic in group listening. Similarly, the individual listener is aware of the use of equipment, i.e., he or she knows how to start, stop and replay the equipment and search for the required contents. Such opportunities are not usually available to the listener in a group situation. Another important point is that the individual learner pays more attention to the discussion or transactions, while a group situation is itself a distracting factor for a listener in a group. But it does not mean that group listening is inferior to individual listening. Both have their own advantages. It depends on the nature of the content being discussed and the learning characteristics of individual students. In group listening, a student has his/her tutor and fellow students to discuss the content with. The student can raise a query, ask for certain clarifications and argue for or against the issue being discussed. The students feel more confident about their learning if it is followed by a discussion. This advantage is missing in an individual listening situation.

Check Your Progress 7

Notes: a) Space is given below for writing your answers.
b) Compare your answers with those given at the end of the Unit.
i) Write two functions of the pre-listening activities.
ii) Write three functions of the post-listening activities.

2.7 FUTURE TRENDS IN EDUCATIONAL RADIO

With the advent of television, video and more sophisticated technological means of mass media, the future of the radio apparently looks bleak. The added advantages, sophisticated provisions, natural aspiration for the ‘new’ and the popularity in the urban areas, all of which the recently developed
media enjoy, make us wonder whether the radio can continue to serve as a means of education for long. However, we believe that the radio will still enjoy a long period of service to the cause of education at least in India and other developing countries. Our belief is based on the considerations of the economy and the vast rural masses in remote areas who are still far behind the advancements that we notice in the cities. To cater to the educational and entertainment needs of all these rural people, we cannot switch over to the modern gadgets overnight. Any attempt towards this might cost our exchequer exorbitantly. Hence, perforce we will have to continue with the cheaper and more feasible medium of knowledge dissemination — namely the radio for quite a considerable time to come.

Besides, however well established our telecast system and however wide-ranging our community TV programmes turn out to be in future, the radio cannot be totally replace at any stage. It will come in as a handy complementary device, wherever the other media prove disadvantageous in terms of cost-effectiveness, unfavourable operational conditions (like frequent power failures) and access to large section of the potential audience.

Again, if you consider the recent developments on audio broadcasting technology, for example the increase in FM radio stations and emergence of DAB makes the educational radio scenario qualitatively more enriching technically. At this stage the use of the acronym DAB must be making you wonder — what it is? In fact all radio broadcasting are analog transmission. “DAB is the acronym for a system of Digital Audio Broadcasting which has the advantage of being particularly convenient for covering transmission interference problems. DAB consists in combining a series of services into a frequency band called a base group. Unlike analog radio, in which each programme corresponds to a single frequency, the DAB system combines several programmes or services in one frequency division or ‘carrier’. This enables a multiplex bit stream to be created in which services of all shapes and sizes can be transmitted. A carrier bandwidth of approximately 15 MHz can contain up to five stereophonic programmes simulcast with additional data” (WCR, 1997: 139). The most important advantage of this technology is perfect sound quality free of any interference, capable of serving a mobile audience. Also the cost of transmitters can be 10 times less than those used by FM equipments. However, this technology is in the experimental stages in many countries though it has been proved quite useful.

2.8 LET US SUM UP

Inspite of advanced communication technologies with more glamour and efficiency, the radio is capable of generating the students’ own complete and thoroughly satisfying imaginative images (Jones, 1962). The content offered through the radio allows the students to build their own mental pictures, thus satisfying their needs. Merdian (1979) also finds that the radio is able to stimulate and make use of the students’ imagination to a far greater extent than the television. It implies that the main objective of the educational
Radio programmes should be to stimulate thinking. For example, programmes like “discussions” and simple “dialogues” would function as thought-inducing agents. Programmes serve no purpose if they do not provoke thought. This observation identifies the important role of the educators and producers. While producing the radio programmes, due consideration should be given to include those ideas which ought to be stimulated, and those which should be left out.

We might agree that the radio always involves some form of scientific knowledge, whether it is a programme on History, a Natural Science broadcast, or whether the aim is to teach Music. Each programme has a piece of knowledge to convey. The second feature of the radio in this reference is that it caters, as far as educational programme are concerned, to clearly defined target groups: specific level of education, age, etc. It has implications for the educators and producers also, because they are supposed to have full knowledge of their students.

In conclusion, it may be said that the radio helps the students enhance skills of learning from listening. They learn how to develop meaningful and critical listening habits and get the maximum benefit out of it. By doing so, the radio develops the skills to assimilate information.

You may recall that beginning with the growth of educational radio in India in this unit, we have focused mainly on the following points in a discussion of the audio/radio medium.

- Due to its wide reach and pedagogical versatility the radio is a major means of delivering knowledge to the students, both under formal and non-formal systems of education. Various educational radio projects have been undertaken to exploit the potential of radio broadcasts. Some of the limitations/shortcomings of radio broadcasts can be overcome by use of audiotapes, radio-vision, audiovision and radiotext.

- The radio is used for both formal and developmental education. The main objectives of formal education are to enrich learning, help in direct teaching, extend in-school education and impart distance education as radio programmes are broadcast for the students of the primary, the secondary and the university level. For the last category, IGNOU is engaged in producing and using audiocassettes on a large scale.

- The radio is considered a powerful medium for developmental education — social, political, cultural and economic. The main objective of the development programmes is to sensitise people about their problems and motivate them to find adequate solutions.

- The radio is a comparatively cheaper medium. The cost of the radio programmes depends on the number of students to be catered to, and the life of a programme.

- The audio cassettes/tapes allow the students to control their learning pace. These make teaching-learning more interactive and participatory. This technology helps the students to acquire some desirable
psychomotor skills also. In comparison to the other media, it is easier to combine audiocassette with any other medium.

- Media experts claim that the radio is as effective as other media. Learning form the radio is more effective if the programmes generate activity, feedback is provided and the content is presented logically. The teacher of tutors should organise per-and post-listening activities accordingly.
- The radio is used for individual as well as group listening.
- In spite of innovations in communication technology, the radio may be the best bet for distance students. The emergence of DAB technology will play a vital role in the future of educational radio.

2.9 CHECK YOUR PROGRESS: THE KEY

1) Your answer may include any five of the following:
   i) Early accessibility
   ii) Video coverage
   iii) Low cost production
   iv) Easy learner reception
   v) Effective thought promotion
   vi) Stimulation of motivation.

2) Developmental communication refers to a participatory process intended to bring about desired changes in a society: social, cultural, political and economic. The three major objectives of radio developmental education are to inform, to motivate and to teach.

3) Audio cassettes have the following advantages over radio broadcasts:
   - Students can have control over their learning.
   - Students can play and replay cassettes until mastery over learning is achieved.
   - Students can learn the selected content: can skip, skim etc.
   - Integration of cassettes with other media is easy.

4) i) Functions of pre-listening activities are:
   - to link the programmes with the previous knowledge of the students.
   - to set students psychologically ready for the next programme
   - to give an overview of what is to be discussed in the programme.

   ii) Functions of the post-listening activities are:
   - to give feedback on the students' participation
   - to provide scope for discussion, and thus clarify doubts
   - to provide opportunities for peer group interaction.