NATIONAL OPEN UNIVERSITY OF NIGERIA

SCHOOL OF ARTS AND SOCIAL SCIENCES

COURSE CODE: MAC 242

COURSE TITLE: FOUNDATION OF BROADCASTING

COURSE GUIDE

MAC242
FOUNDATION OF BROADCASTING

Course Title — Foundations of Broadcasting

Course Developer — Dr. Femi Onabajo
Department of Mass Communication
Faculty of Social Sciences
University of Lagos.

Course Editor — Prof. Ritchard M'Bayo
Bowie State University United States of America.

Course Coordinator — Chidinma H. Onwubere,
National Open University of Nigeria
14/16 Ahmadu Bello Way
Victoria Island, Lagos.

NATIONAL OPEN UNIVERSITY OF NIGERIA

National Open University of Nigeria
Headquarters
14/16 Ahmadu Bello Way
Victoria Island
Lagos

Abuja Annex
245 Samuel Adesujo Ademulegun Street
Central Business District Opposite Arewa Suites Abuja

e-mail: centralinfo@nou.edu.ng
URL: www.nou.edu.ng

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Introduction

I wish to welcome you to MAC242, Foundations of Broadcasting 3 unit course for postgraduate students in Journalism. The materials for this course have been developed in line with what obtains in Nigeria. This guide provides an overview of the course requirements and organization.

Course Aim

For a thorough understanding of what broadcasting entails, it is necessary to know how programmes in form of signals are generated and transmitted from broadcasting studios to receiving radio and television sets wherever they are located. The broad aims of this course will be achieved through the following:

- Introducing you to the concept of broadcasting and the agencies concerned with the broadcast media;
- Taking you into the world of electromagnetic spectrum; and
- Acquainting you with the nature of radio and television, the broadcast equipment and personnel that make broadcast transmissions achievable.

Course Objectives

In order to achieve the aims set out, MAC242 has overall objectives. Each unit also has objectives. The unit objectives are stated at the beginning of each unit. Please ensure that you read them before venturing into any unit. You may want to refer to them during your study of each unit to check if you are making progress.

Here are the wider objectives from the course as a whole. By meeting the objectives you will also have met the aims of the course. On successful completion of the course, you should be able to:

1. Define broadcasting
2. Understand the nature of radio and television.
3. Understand the internet and its social implications.
4. Trace the emergence of the Nigerian broadcast media.
5. Identify the roles played by the media concerned with broadcasting.
6. Define radio waves.
7. Explain the concept of modulation
8. Discuss the multistage nature of broadcast signals
9. Understand the functions of a transmitter.
10. Explain what goes on in radio and television studios and control rooms.

11. Understand the operational characteristics of the microphone and camera.
12. Explain the production process
13. Identify the functions of key production personnel.

Course Requirements

To complete the course you are required to read the study units and other related materials. You will also need to undertake practical exercises through visiting radio and television studios. The exercises are to aid you in understanding the concepts being presented. At the end of each unit, you will be required to submit written assignments for assessment purposes. At the end of the course, you will write a final examination.

Course Materials

i. Course guide
ii. Study units broken down into 25 units iii. Assignments file
iv. Relevant textbooks including the ones listed under each units
v. Cultivate friendship with broadcast personnel so as to have easy access to broadcast studios.

Study Units

There are 25 units incorporated into 5 modules in this course. The modules are listed below.

Module 1	**The Concept of Broadcasting**
Unit 1	What is Broadcasting?
Unit 2	The Nature of Radio
Unit 3	The Nature of Television
Unit 4	The Interactive Media
Unit 5	Emergence of the Nigerian Broadcast Media.

Module 2	**Agencies Concerned with the Broadcast Media**
Unit 1	Federal Ministry of Communication
Unit 2	Federal Communications Commission.
Unit 3	Nigerian Communications Commission.
Unit 4	National Communications commission.
Unit 5	Nigerian Telecommunications Limited.

Module 3	**The Electromagnetic Spectrum.**
Unit 1	What are Radio Waves?
Unit 2	Modulation
Unit 3	The multistage nature of Broadcast Signals.
Unit 4	The Transmitter.
Unit 5	Transmission of Signals through a Transmitter.

Module 4	**The Broadcast Studio and Control Room.**
Unit 1	The Radio Studio
Unit 2	Radio Control Room

Unit 3 The Television Studio
Unit 4 The Television Control Room
Unit 5 Master Control in Television.

Module 5 The Production Process in Broadcasting.
Unit 1 Preproduction Planning
Unit 2 The Production Process
Unit 3 Microphones and how they work
Unit 4 The Television Camera
Unit 5 Studio Personnel

Assessment File

An assessment file will be made available to you. In this file, you will find details of the work you must submit to your tutor for marking, and the marks you obtain will be part of your final marks. A marking scheme has been provided.

Strategies for Studying the Course

You will be required to study the units on your own. However, arrangements have been made for you to meet with your tutor for tutorials on a regular basis in the study center. Also you can organize interactive sessions with your course mates.

Presentation Schedule

The dates for submission of all assignments will be communicated to you. You will also be told the date of completing the study units and dates for examinations.

Summary

This course guide gives you an overview of what to expect in MAC242: Foundations of Broadcasting. I wish you success as you go through the course.

MAIN COURSE

Course Code MAC242

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Department of Mass Communication
Faculty of Social Sciences
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Course Editor Prof. Ritchard M'Bayo
Bowie State University USA.

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MODULE 1 THE CONCEPT OF BROADCASTING

UNIT 1 WHAT IS BROADCASTING?

CONTENTS

1.0 INTRODUCTION

Broadcasting has to do with the transmission of information as signals from a radio or television source to receiving sets at home. It is important at this point to examine the purpose of broadcasting and how this is achieved and what may obstruct broadcast signals in their journey from a radio or television studio to radio and television sets wherever they are located.

2.0OBJECTIVES

At the end of this unit of study, you should be able to:

i. Define broadcasting
ii. Understand what it means to encode and decode iii.How the atmosphere affect broadcast signals.

3.0 MAIN CONTENT

3.1 Defining Broadcasting

Broadcasting has been defined as the transmission of information through radio waves from a radio or television station, to the audience in far and near places, through their receivers, which help in decoding such information (Onabajo, 2000).

Similarly, broadcasting can also be defined as the dissemination of information by an organization (radio or television station) to a large widely dispersed heterogeneous audience through their radio or television receivers.

As opposed to other forms of mass communication like newspapers, magazines and books, broadcasting is an entirely electronic means of communication because it uses electronic technology to encode, distribute and decode messages; newspaper is not a form of electronic communication because it does not use electronic technology in all the stages of encoding. However, there are now online or internet based newspapers designed, produced and distributed electronically using new forms of technology. Broadcasting is distinguished from "cablecasting"– the transmission of television and sometimes radio signals directly intothe home by means of coaxial cable – because whereas broadcasting is open to everyone provided you have your television or radio receiver, cable is restricted and its services are exclusively available to only those who have decoders. Similarly, broadcasting, from its definition and meaning, is distinguished from "narrowcasting" – the transmission of special interest programmes too much smaller audiences.

SELF ASSESMENT EXERCISE 1

1. What is the major difference between broadcasting and cablecasting?

3.2 The Purpose of Broadcasting

Basically, broadcasting serves three broad purposes; it informs, educate and entertain the audience. However, broadcast stations (radio or television) perform six main functions. These are the news, opinions, education, propaganda, commercial and entertainment functions.

News Function: Broadcast stations survey the environment and give reports or information about things going on in the environment,

especially those things that are likely to have impact on people, and those things that are new and of human interest.

Opinion Function: Here, the broadcast media provide an avenue for the different shades of opinion to be aired in society. Broadcast media enable us to know what different segments of the society are thinking.

Education Function: Through the broadcast media, people acquire new knowledge, attitudes and skills, thus enabling them to cope better with life. Education function can deal with formal, non-formal and informal learning.

Propaganda Function: Governments have often used radio and television as megaphones to exaggerate performance or make something out of nothing.

Commercial Function: Radio and television stations carry adverts which help inform audiences about the existence of certain goods and services.

Entertainment Function: Musical, drama and comic programmes are transmitted to ease boredom and help relax audiences of radio and television stations.

SELF ASSESSMENT EXERCISE 2

1. How does the news function differ from the education function in broadcasting?

3.3 Encoding and Decoding Broadcast Information

From the original source, information must be encoded into the language of a given communication system. The encoded information is fed into a communication channel, which has a maximum information capacity. At the other end, decoding takes place, reproducing the original communication with certain degree of fidelity. In the course of encoding – decoding process, unwanted information noise contaminates the channel and limits its capacity and this can affect the outcome at the receiving end. Encoding – decoding processes are never absolutely perfect, hence, a distortion rating is also commonly applied to communication equipment, giving a measure of the extent to which the components inherently alter the original information in the course of communicating it.

The communication channel in the case of sound broadcasting is a group of radio frequencies. Radio, like visible light, is a form of radiant

energy, which can travel through space. To use radio energy for communication involves four fundamental operations:

1. Radio energy must be generated.
2. Information must be encoded by modulating the energy and imposing on it an information pattern, such as a pattern of sound energy.
3. The modulated signals must be detected at the receiving end.
4. The signals must be demodulated to recover something approximately the original pattern of information in its original form.

3.4 The Ionosphere and Broadcasting

The ionosphere is situated within about 50 to 400 km above the surface of the earth. It consists of ionized atmosphere, that is, air whose atom have a characteristic electricity property induced by the action of the sun's radiations. At certain times the ionosphere reflects Medium and High frequencies waves back to the earth. Waves of other frequencies pass though the ionosphere and dissipate their energy in space.

The ionosphere is not a fixed and constant reflector, nor do all its layers reflect as a given radio frequency equally well; moreover, disturbances related to sunspots and other extra terrestrial events affect its efficiency. For broadcast frequencies, the most important variable is time of day.

During daylight hours, the ionosphere does not reflect standard broadcast frequencies well, but after the sun goes down, the ionosphere gradually cools, until two hours after sundown when it reaches maximum efficiency as a reflector. The ionosphere thus makes possible long-distance night time reception of standard broadcast signals.

4.0 CONCLUSION

While it is desirable to transmit broadcast messages to audiences' radio and television sets, wherever located, however not all messages in form of signals reach their targets. Natural phenomena such as the ionosphere and bad weather can distort these messages or prevent them from reaching us.

5.0 SUMMARY

Broadcasting is the dissemination of information from a radio or television station through the air waves. Apart from the general functions of broadcasting which are to inform, educate and entertain, radio and television stations perform six main functions. They are: the news, opinion, education, propaganda, commercial and entertainment functions.

For information to travel through the air waves, it is encoded and decoded when it arrives at this destination, if the ionosphere or bad weather does not obstruct or significantly alter the direction of the broadcast signals.

6.0 TUTOR MARKED ASSIGNMENT

1. Name the six main functions of a broadcast station.
2. What are the four operations that are necessary before radio energy can be used for communication?

7.0 REFERENCE/ FURTHER READINGS

Onabajo, Olufemi. (2000). *FOUNDATION of Broadcast Journalism* Lagos: Gabi Concept Ltd.

Aspinall, Richard (1976) *Radio Programme Production* – A Manual for Training Paris: UNESCO.

UNIT 2 THE NATURE OF RADIO

CONTENTS

1.0 INTRODUCTION

After having known what broadcasting is in Unit 1, we now zero-in to radio, which is a major channel of broadcasting. Since radio is a vital instrument for communicating information, it is important to know its advantages over other media, its characteristics and how to effectively utilize radio as a veritable means of communication.

2.0 OBJECTIVES

At the end of this unit, you should be able to know:

i. Advantages of radio as a mass medium of communication. ii. What radio broadcasting can be used to achieve.
iii. How to effectively use radio for national objectives.

3.0 MAIN CONTENT

3.1 Advantages of Radio

Radio broadcasting is one of several means of getting a message, to a large number of people at the same time, because it transcends the boundaries of space and time, and also leaps across illiteracy barriers.

In terms of general availability, radio is the leading mass communication medium. In today's world, especially in the developing world of parts of Asia and Africa, there are more radio sets than television sets, newspapers and cinema sets. Radio stations are comparatively inexpensive to run, after the initial capital outlay of transmitters and receivers. It has immediacy in a higher degree than other media of communication. Radio can talk back to its listeners by telephone, where the technical facilities exist, thus putting members of an audience in touch with one another. Radio is flexible, because a scheduled programme can be dropped at short notice and replaced with something more topical or more urgent.

Within limits, radio can persuade and effectively influence large audience,

thereby contributing substantially to the building of a national consensus. It is a powerful instrument in the area of public enlightenment, on health issues, family planning, cultural re-awakening, business improvement and other social development issues.

3.2 Characteristics of Radio

1. Radio signals can reach almost all corners of the world, with an instant message.
2. The message can be understood easily.
3. Radio appeals to the ear and other human faculties, particularly the imagination.
4. Radio programmes can be very stimulating to human emotions, depending on the way they are presented.
5. Radio is very profitable for group listening, because of the discussion which naturally follows.

Radio can reach the farthest areas of a country with educational programmes that stimulate the Normal process of learning. More schools and more people can be reached with radio broadcast through careful planning and imaginative programming.

According to Aspinall (1971), experimental radio clubs (the rural radio forum) in India and Ghana have produced ample evidence that radio can be used to promote and support nation building in developing countries.

Effective programming should take into account the traditional techniques of communication in the developing world and apply them to modern radio.

Although radio is dependent only on sound, it follows therefore, that the listeners must be able to hear distinctly and accurately for it to benefit them. The quality of sound in the studio and at the receiver must be of the highest, so that listeners will not lose interest in the message being sent across. Producers of radio programmes should ensure high quality programming, bearing in mind the idiosyncrasies of their audiences. Radio is a vehicle for projecting personality, through which it attracts and holds an audience. Voice, mannerism, identification with the listener, the things the radio announcer or presenter says and how they are said, are some of the factors that go into making a radio personality. Good personalities heard throughout the day, in every phase of programme activity, give a station a personality of its own and help win and hold audiences for the more serious business of broadcasting.

Situations have arisen in the developing world, in which radio is playing an active role in speeding the process of change and making it understandable and acceptable, because it has embarked upon extensive education schemes and projects for rural improvement and national integration and development.

SELF ASSESSMENT EXERCISE 1

1. What makes a radio personality?

3.3 Objective Of Radio Broadcasting

In many countries in Africa, Radio Broadcasting has come a long way. It has evolved from transmitting programmes from the home countries of the colonial masters to what

were once colonies. Radio in this sense had been effective in brain-washing the Africans on what their colonial masters were doing to cater for their interests.

At independence, the African leaders were to know the effect of broadcasting on the people and so used it as government megaphone. Broadcasting is a medium that could be used for a lot of purpose. It could help inform people about government orchestrated programmes. It could also help to report the activities of the people for government attention and because of the high illiteracy level, broadcasting is preferred to other media of communication because of its flexibility in programming.

Government policies could be translated into languages and broadcast to the people. It is not surprising therefore that broadcasting has been adapted to propagating the ideals of a government in power to the detriment of the people they are supposed to serve.

Over the decades, broadcasting in Africa has served as the channel for government propaganda. Radio for example has been found to be very useful, because it is popular with the rural population and also enjoys the intimacy which other media of communication lack. In the developed world, radio has been used for developmental purpose. Programmes that are meant to achieve these developmental purposes have been conceived and executed at the various levels of the society.

However, in Africa, radio has been seen as a one-way communication channel in which the government communicates to the governed without an appropriate feed-back system. This is contrary to Budd Hall (1981), who said that communication should be a four way process.

1. That the urban people could communicate to the rural people (Urban- Rural Communication).

2. That communication can also emanate from the urban to the urban people. (Urban-Urban Communication).

3. That the rural people are also at liberty to communicate with the urban population (Rural-Urban Communication).

4. That the rural people could also communicate amongst themselves (Rural-Rural Communication).

3.4 Effective Utilization of Radio Broadcasting

1. Radio is a singular medium that is most effective for mass mobilization. This presupposes the fact that any serious government must identify the various segments of the society and be able to develop messages through the help of their leaders in order to ensure the appropriateness and relevance of such messages to their audience so that mobilization efforts could be accepted and adopted by these communities.

A number of scholars have discovered that the reason for the failure of past mobilization efforts is that urban broadcasters have designed messages which have no relevance to their audiences, since these programmes are not backed by research.

Moemeka (1981) and Onabajo (1995) in their various researches discovered the importance of involving local and community leaders in programme conceptualization, implementation and execution and that rural people showed distancing effect to programming that did not involve their leaders.

2. Radio is also useful in mass education. The citizenry could be educated about government policies that really have a bearing on their lives. The radio could be used to introduce illiterates to some formal education, through teaching them some basic hygiene principles, environmental cleanliness and lessons in preventive health care.

This could be augmented with simplified literature as follow up. Tanzania, Uganda, Sudan and to some extent Ghana have been involved in using radio as a medium for mass education.

3. Radio could be used as an instrument for formal education. Radio Nigeria tried this approach in the 60's and early 1970's before the idea was terminated prematurely, either because of lack of funds or ideas.

While it lasted, formal schools were informed of time of broadcasts of the various subjects which were meant to prepare students still in school and drop-outs for examination in the General Certificate of Education (Ordinary Level). The open correspondence schools also experimented with this system, so also the University of the Air (in Tanzania).

4. Radio could be used in cultural innovation or diffusion. Since culture is not static, radio could help remove the negative aspects of some of our cultures and help the citizens to absorb that which will improve their welfare.

5. Information dissemination is fastest through radio. Radio does not succumb to rigid programming because more urgent issues could be discussed at a moment's notice.

6. The entertainment value of radio is very great. Music that softens the nerves could be played to lift the audience from their stressful moods. While the entertainment value of drama is high, it has been discovered that it is a potential tool for development. Onabajo (1995) in a study of the Badagry Local Government area's utilization of the broadcast media did find out that drama was the most preferred programme type by the people of the area.

SELF ASSESSMENT EXERCISE 2

1. In what ways can radio be effectively utilized?

4.0 CONCLUSION

The flexibility in programming makes radio a great asset in the dissemination of information. It should not just be used as an entertainment medium, but a means of transmitting development messages to Nigerians especially those who reside in rural areas.

5.0 SUMMARY

Radio is the leading mass communication medium in terms of general availability. In Africa and Asia there are more radio sets than there are television sets, cinema seats and newspapers. It is a powerful instrument in the area of public enlightenment and this is made possible because of the reach of its signals and its appeal to the ear and imagination, and its profitability for group listening and discussion.

Radio is popular with the rural population and enjoys an intimacy with its audience. It can be used effectively for mass education, formal education and in cultural innovation and diffusion. Radio is the most effective for mass mobilization and has a great capacity to disseminate information fastest as well as entertain its audience.

6.0 TUTOR MARKED ASSIGNMENT

1 List 4 advantages of radio over other mass media.

2 Budd Hall (1981) says that communication should be a 4-way process, what are they?

7.0 REFERENCES/FURTHER READINGS

Hall, Budd (1981) "Mass Communication and Education" in Lalage, B. & OkedaraJ. T. (eds). *An Introduction to the Study of Adult Education*, Ibadan: University Press.

Aspinall, Richard (1976) *Radio Programme Production* - A Manual for Training, Paris: UNESCO.

Onabajo, Olufemi (1995)"The Impact of Radio and Television Rural Development Programmes on the People of Badagry Local Government Area of Lagos State". Unpublished PhD Thesis, University of Lagos.

UNIT 3 THE WRITING PROCESS IN TELEVISION

CONTENTS

1.0 INTRODUCTION

You are welcome to the world of television, whose aesthetics make it a medium to relish. The popularity of television is because of its nature of sound and picture and the peculiar broad appeal to all segments of the audience through the various programmes offered.

2.0 OBJECTIVES

At the end of unit of study, you should be able to:

i. Understand the nature of television
ii. Know what it entails to write for television
iii. Articulate the features of a standard television script.

3.0 MAIN CONTENT

3.1 The Nature of Television

"Television is an electronic device that brings to us informational, educational and entertainment programmes. It is the greatest communications mechanism ever designed and operated by man. It pumps into our brains an unending stream of information, opinion, moral values and aesthetic taste. Television influences our perception of politics, religion, governance, fashion and culture" (Akpan, 1988).

Television is not just a mere transmission device, but it is a medium, which brings its massive audience into a direct relationship with particular sets and values and attitudes. Its compact structure makes it an intimate medium which brings the world into our homes. Television is team work, in the sense that it requires so many hands to perform a wide variety of duties, in order to produce a single programme. Each area of responsibility requires expertise and every production passes through many hands and stages. The content is scrutinized, so that something worthwhile is produced and beamed to its viewing public.

Good television programming is not a one-man show, but the creative work of a quantum of clearly knit crafts and arts, which include acting, cinematography, architecture, scene design, interior decorating etc. Television viewing is an experience which is unique for both the viewer and the artistes or performers and this can be used to the television communication's advantage.

Because of the medium's intimate qualities and the viewing environment, audiences tend to be involved with television stars and personalities in a unique relationship (Wurtzel 1985).

For actors who portray a role, the intensity of the identification can result in viewers confusing fantasy with reality. The predominance of the close-up shots and the ability of the camera and microphone to detect, capture and magnify the slightest gesture, expression or vocal inflection, means that a performer or presenter, must always behave maturely on screen.

Television is often a high-pressured operation with close deadlines, limited budgets, rushed rehearsals and short production periods. An unexpected technical problem can force sudden changes in the script, revision in the blocking and a reshuffling of rehearsals and shooting schedules.

Experienced television personnel and artistes, are able to cope with these inevitable pressure and be able to deliver an effective and seemingly effortless performance.

SELF ASSESSMENT EXERCISE 2

1. In four sentences, describe the nature of television.

3.2 Writing For Television

Every television programme deserves a script, and the nature of scripting varies from one programme to another. Some scripts are very elaborate, in that they include the narration or the dialogue, as well as specific camera shots and directing instructions; while some other scripts are just a little more than a production outline. Scripting on television aims at establishing a programme format, indicate the programme content, as well as helping to organize important production information.

Every production staff should be familiar with script formats and should be able to translate written material into a television script or make inputs into a programme script. Scripting is the development of a situation, story, characters, copy and dialogue, with the special talents and skills of a writer.

Writing for television is different from writing for other media of mass communication; therefore a script writer must understand the medium's capabilities and limitations and be familiar with basic techniques of television production. Since television is a visual medium, the television script writer must be comfortable working with images and words. Sometimes, script writing deals with very little spoken copy, because the images may convey the message alone, or in combination with appropriate sound effects or music.

The visual quality of television notwithstanding, a television script must be written for the ear and not the eye. This is because the audience never reads the script, but only listens to its delivery. Sentences should be kept simple, direct and to the point.

It is advisable to write in informal style, as much as possible, sometimes using slangs and colloquial expressions when necessary. Otherwise a stiff formal style may interfere with the audience understanding of the message.

For the viewing public to follow the script, the television producer must establish a clear logical sequence of presentation. He should not crowd too many facts, figures and ideas into few sentences and the use of flashback and flash forward must be deftly utilized so as not to confuse the viewers. The use of language and style in scripting also depends on the production situation and the intended audience. The writer should also take into consideration, the composition of his audience. A news bulletin directed to a local audience will be different in style and presentation from that meant for a national audience.

3.3 Features of A Standard Television Script

A complete television script contains the spoken copy or dialogue, sound and music information, and the major visual elements, which should accompany the audio. It should also contain important production information, such as timings, video and audio sources.

A script should always be typewritten and should be double spaced. Sound effects and music cues should be in capital letters and underlined to separate them from dialogue.

The typewritten script is divided into two, the video side (left-of the page) and the audio side, is at the right side of the page. The audio side, apart from containing the dialogue, also houses the sound elements of the show. Performers' stage movements are also included in the audio and are usually capitalized to avoid confusion with spoken copy.

The video side is left almost blank to give room for the director's camera shot notations. However, important visual elements such as titles, graphics, special effects, film or videotape inserts, are usually typed in capital letters, opposite the corresponding audio.

SELF ASSESSMENT EXERCISE 2

1. What are the components of a complete television script?

4.0 CONCLUSION

Television has a great potential for improving the lots of Nigerians and to justify the confidence the public has in it if it helps promote socialization, education, culture and economic well-being of its audiences.

5.0 SUMMARY

Television is not just a mere transmission device, but an electronic device which brings to us informational, education and entertainment programmes. Every television programme deserves a script and the nature of scripting varies from one programme to another. A complete television script contains the dialogue; sound and music information; major visual elements accompanying the audio; and production information such as timings, video and audio sources.

6.0 TUTOR-MARKED ASSIGNMENT

1 What makes television programming a team work?

2 What does scripting aim to achieve in television programmes production?

7.0 REFERENCES/FURTHER READINGS

Akpan, Emmanuel. (1990). "Beyond Message Transmission: A Comparative Approach to TV Production." *Nigerian Journal of Mass Communication.* Vol. 1, No. 1.

Eme–Nwagbo, Ebele. (1995). *Television Production Principles and Practice.* Lagos: STRAAD Ltd.

UNIT 4 THE INTERACTIVE MEDIA

CONTENTS

1.0 INTRODUCTION

As we continue our study of types of broadcasting, let us look at the new media which is based on computer technologies that allow people to respond to messages they receive, select which images they want to receive and even send out their own messages. We shall also take a look at the social implications of the internet, telephone communication, data transmission as well as the differences that exist between analog and digital transmission.

2.0 OBJECTIVES

At the end of the unit, you should be able to know:

i. The interactive nature of the new media.
ii. The differences between "new" and "old" forms of media.
iii. Social implications of Internet.
iv. The differences between analog and digital transmission.

3.0 MAIN CONTENT

3.1 The Internet and the Future of Interactive Media

A whole new generation of media, based on computer technologies, emerged in the 1980s. These disparate forms of media, often called the "new media", have capabilities that differ significantly from the previous generation of mass media. One principal difference is that the new media can be used for interactive communication. This breaks with the one-way nature of "mass" communication and has many of the characteristics of face-to-face communication. In essence, new media technologies provide citizens with the technical apparatus to do more than just receive information. They can respond to messages they receive, select which images they want to receive, or even send out their own messages.

Corporations use a similar technology on a smaller scale for "teleconferencing" which brings people together via television screen even when they may be thousands of miles apart. Perhaps most significant, the Internet provides computer links that permit electronic mail, audio conversation with video images, internet-based publishing and broadcasting, on-line shopping and stock trading, and 24-hours-a-day electronic access to news and government information. In all these examples, the sender and receiver the technology are mere passive audiences.

The differences between "new" and "old" forms of media are substantial. As with the introduction of previous technologies, the new forms of communication have produced often-wild speculation about their social impact. One critic, representing the extreme view, has argued that innovations in computer networking technology are producing "the most transformative technological event, fundamentally changing the way we live. However, such views do not adequately conceptualize the social forces that influence the development of technology or the cultural practices that shape how people use them. New media do indeed; provide resources and opportunities for new forms of social interaction and new ways of relating to, or even manipulating the limitations of time and space. But, again, this is only part of the story. If we are to understand the social significance of the new media, we must look at how their technological properties intersect other social forces.

Rather than focusing on only one causal element, we need to understand the relationship between the "technological drivers," the social psychology of media use, and the economics of the media industries. The new media have technical capabilities that pull in one direction, but social psychological and economic forces pull back hard in the other direction. The short-run outcome will likely be only small social changes, even if opportunities for more significant changes emerge in the long term. In other words, change will be evolutionary, not revolutionary.

The key to understand the new media is that they all connect with one another. This is because we are witnessing the evolution of a universal interconnected network of audio, video print, graphics and electronic text communications that will blur the distinction between interpersonal and mass communication and between public and private communication. These integrated media networks have several key capabilities.

- The new media will become increasingly less expensive
- They will once again alter the meaning of geographic distance
- They provide the possibility of increasing the speed of communication
- They allow for a huge increase in the volume of communication
- They allow for more channels of information flow
- They provide opportunities for interactive communication
- They provide more control for individual users
- They allow forms of communication that were previously separate to overlap and interconnect.

In short, new Internet-based media allow for more, faster, diverse, two- way communications between users who have both more control and more choice. These properties of digital media provide resources for increased media diversity and give

communications power to citizens instead of to central authorities.

However, we have looked at one side of the thug-of-war. The new media may pull toward diversity and participation, but other social forces pull toward uniformity and spectatorship. For example, powerful economic actors who have influenced other media are affecting the development of the Internet as well. In early 1999, the Web's 50 most popular sites (as monitored at www.hot100.com) included those run by traditional media giants Disney, CNN/Time Warner, Sony, CBS/Westinghouse, USA Today/Gannett, the New York Times and MTV/Viacom, among others. As the size of the on-line audience grows, the prominent presence of such traditional media conglomerates on the Internet is likely to increase. In the long run, then, it may turn out that "new media" end up being dominated by well-known "old" producers.

Audience preferences are another way the potential impact of technology is tempered. Most of us have deeply ingrained media habits that are not likely to change dramatically simply because of new technological capabilities. In addition, most of us use media for entertainment purposes, not for strictly information or political purposes.

The development of the Internet continues to accommodate these habits: while some of the more popular sites provide news and information, many others are focused on either entertainment or shopping. Most major retailers now have company web sites where customers can electronically browse store shelves and purchase items without leaving their home or office.

However, this exponential growth of the Internet does not automatically mean that users radically change their media habits. The impact of technology is limited by how people actually use it. Though producers find on-line material easier and cheaper to produce than a magazine or newsletter, they continue to face the difficult task of finding an audience. Most Internet sites are largely unknown. Because potential audiences have to actively seek Internet sites, most producers trying to reach a broad audience through the Internet will instead find that their sites reach a small, select audience, many of whom will be familiar with the producers from their off-line activities.

This works to the benefit of already well-known media producers. Popular names like Disney and CNN can translate their brand name recognition into an advantage on the internet; uses are already familiar with them. Smaller producers, however, still face the same task they had with traditional media; getting people to know that they exist.

3.2 Social Implications of Internet

Ultimately, social forces will determine how new communication technology will be used. Long-standing media habits will not be changed overnight. Most people will relate to new forms of media in much the same way they do to the old media.

Same people, though, will make use of the full range of capabilities offered by the new media. For these individuals, new media technology can offer a significantly different way of accessing, manipulating, and using information. But any communication advantage provided by the new media is likely to be distributed unevenly, replicating existing information inequalities. Those who are already better

educated, more familiar with emerging technologies, and better able to afford devices such as sophisticated home computers will be precisely the people who benefit most from the new media. New media may even inadvertently expand the gulf between the technological 'haves' and 'have-nots.'

Economic forces will also pull away from diversity and toward sameness. The shift from broadcast to cable television is a good example of this dynamism. We now have 50 or more channels, but more programming has not meant diverse programming. The cable coming into our homes can do more than bring us programmes; it can easily transmit out of the home, as well. However, experiment with interactive cable programming have shown little profit potential beyond home shopping. In short, though the internet has certainly opened up access to the mass media, market forces will greatly constrain the-vast technological potential of the new media.

If we weigh the technological properties of the new media along with media habits and market forces, the Internet is not likely to revolutionize the media environment. Instead, it is an important supplement to the old media, serving as a key promotional device for extension of print, broadcast, and film. The situation is not static, however. Media habits are likely to change, albeit slowly, and larger numbers of citizens are taking advantage of the internet each year, providing new markets. Still, larger changes are likely to occur at the margins, as small numbers of people use interactive digital media in new and intriguing ways

Indeed, the Internet appears to be important contributor to the continuing fragmentation of the mass audience. The currently fashionable niche orientation of mass media, driven in large measure by advertisers was already underway before the internet's arrival. But the specific organization and technological capabilities of the Internet is helping to accelerate the pace of audience's segmentation. This marking strategy is an example of how the technological properties of new media – especially their flexibility and relatively low cost work in concert with both social developments, such as multiculturalism and a growing identity politics, and economic forces, such as the search for new consumer markets, to produce a new pattern of social communication.

3.3 Telephone Communication

Telephone conversations can be examined in terms of their frequencies in much the same way we have been examining radio and television signals.

To reproduce the human voice in a telephone conversation, a range of about 30Hz to 300Hz is necessary. Consequently, wired telephone communication takes place at certain frequencies, much like unwired radio communication. Many different telephone conversations can take place at the same time. When telephone conversations are sent over the air, they are simply separated and each switched to its own space on the spectrum. Each telephone conversation occupies an available space within the larger space assigned to the telephone company.

3.4 Data Transmission

With the increased use of computers and communication between computers, there is an increasing demand for space on the electromagnetic spectrum in which to transmit data. Data Communication requires different standards than a typical radio station because they cannot tolerate interference and they need a considerable amount of spectrum space. Our A. M. radio receiver may experience some interference from nearby electrical generator or a thunderstorm, but such interference would play havoc with sensitive computer data. As a result, computer data is transmitted at higher frequencies where line-of-sight transmission takes place, because of the low noise ratio that exist there and because of the available spectrum space. Much data transmission occurs at frequencies from 1 to 10 gigahertz (GHz) (One GHz equals one billion cycles per second). Frequencies between 1 and 10GHz are referred to as microwave frequencies, the prefix micro indicating that the waves are very short. Long-distance telephone and television-transmission relay take place at microwave frequencies, as does satellite communication.

SELF ASSESSMENT EXERCISE 1

Why does data communication require different standards from that of a radio station?

3.4 Analogue Versus Digital Transmission

Two types of transmission can exist in both wired and over-the-air communication systems: analog and digital. For example, the voice of a radio announcer is modulated in a certain way, transmitted over the air, and received on a radio receiver. The transmission is continuous over a given frequency range, and unless the receiver or transmitter is turned off, the sound at the receiver is the same as the sound that was transmitted. A typical telephone conversation may consist of voice vibrations that are turned into analogous electrical vibrations. What a television camera sees is transformed into an analog signal, which creates in the television receiver a picture similar to what the television camera witnessed.

With digital transmission, however, the signal is not continuous; it is broken up into numbers. The signal consists of a series of on/off pulses transmitted in the same way that information flows in a computer circuit. The pulses are bits of information in a binary-number code. For all practical purposes digital and computer are the same.

With the increased use of computers, digital transmission systems are gaining more and more importance. Since computer data are digital, analog systems that transmit them must convert them first to analog, and then back to digital. A modem serves this function by connecting a telephone with a computer. Overall, this is an inefficient way to move information. Yet because world telephone systems are significantly analog and considerable money has been spent on analog equipment, in many areas it is the only way to send information.

SELF ASSESSMENT EXERCISE 2

1. What is the difference between analogue and digital transmission?

4.0 CONCLUSION

Although the world of the Internet is a welcome relief, it is evident that long standing media habits will not change overnight. Most people are likely to relate with new forms of media as they do with the old media.

6.0 SUMMARY

The new media is a potent weapon for interactive communication and has many of the characteristics of face-to-face communication. The key to the understanding of the new media is that they all connect with one another resulting in the evolution of a universal interconnected network of audio, video, print, graphics and electronic text communication that will blur the distinction between interpersonal and mass communication and between public and private communication.

Telephone conversations can be examined in terms of their frequencies as in radio and television signals. When telephone conversations are set over the air, they are simply separated and each switched to its own space on the spectrum. Data communication requires different standards than a typical radio station because they cannot tolerate interference and they need a considerable amount of spectrum space.

Signals in analog transmission are continuous over a given frequency range, while with digital transmission, they are not continuous but broken up into numbers. The signal consists of a series of on/off pulses transmitted in the same way that information flows in a computer circuit.

6.0 TUTOR MARKED ASSIGNMENT

1. What are the capabilities of the new media? Name 5 of them.
2. Mention at least 5 social implications of the Internet.

7.0 REFERENCES/ FURTHER READINGS

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UNIT 5 EMERGENCE OF THE NIGERIAN BROADCAST MEDIA

CONTENTS

1.0 INTRODUCTION

The Nigerian broadcast media have gone through various transformations before becoming what they are today. As part of an experiment by the British Broadcasting Corporation (BBC) in 1932, the broadcast industry has emerged as the Federal Radio Corporation of Nigeria (FRCN) and Nigerian Television Authority (NTA). Both broadcast organs rank as the most powerful political and social mobilizer of the Nigerian society.

2.0 OBJECTIVES

At the end of the unit, you should be able to appreciate the following:

1 Trace the historical evolution of the Nigerian broadcasting regional
2 How regional stations started
3 The historical antecedents of Broadcasting Organisation of Nigeria (BON)

3.0 MAIN CONTENT

3.1 Historical Perspective

The broadcasting media in Nigeria have come a long way and gone through a lot of changes, in trying to keep pace with the intricacies of an ever-changing society. What took off as a mere rudimentary, experimental monitoring station, can now boast of direct satellite communication equipment.

The actual beginning of broadcasting in Nigeria was in 1932, when as part of an experiment by the British Broadcasting Corporation (BBC), Lagos was chosen, as one of the centres around the world, to receive and retransmit British Empire service signals from Daventry, England. Then the Lagos Station began to experiment with rediffusion service, under the supervision of engineers and technicians at the Posts and Telegraphs Department, who were also mandated to design a system for distributing the signals to major population centres across the country. This relay system of the BBC was replicated in mainly English speaking countries across the globe and succeeded in taking BBC news and programmes to many parts of the world.

The objectives of this innovation by the BBC were:

1 To develop links between Great Britain and English-speaking people throughout the world;
2 To propagate the British way of life, particularly in the empire and;
3 To keep British citizens outside Britain informed about happenings back home.

Therefore, news, music and other aspects of programming, at the time, were designed towards fulfilling these objectives.

3.1 Radio Distribution Services (Rds)

On December 1, 1935, radio finally made its debut, when the first Radio Distribution Service (RDS - Rediffusion), was commissioned in Lagos. By 1939 when the Second World War started, the Post and Telegraph department which was overseeing the Lagos experimental station, had popularized the medium, and had extended the service to Ibadan, the largest city in West Africa. All through the war years, the British made good the service of RDS, through which the BBC kept the King's subjects and citizens across the globe informed about the progress of the war against Nazi-Germany. Few years later, Radio distribution Services were opened in Kano, Abeokuta, Port-Harcourt, Ijebu Ode, Enugu, Jos, Zaria and Kaduna.

3.2 Nigerian Broadcasting Service

Seeing the success of RDS, the British government decided to establish a proper radio station in Nigeria by integrating all the Radio Distribution Services in the country, following the Turner-Bryon report. On June 1, 1952, colonial governor, Sir John Stuart McPherson commissioned the Nigerian Broadcasting Service (NBS).

Although at inception, BBC programmes dominated the Nigerian airwaves, efforts were also made to produce programmes that the local population could relate to. There were programmes and news in three main Nigerian Languages, as well as many dialects.

However the NBS soon became the target of criticism, based on the dominance of BBC programmes in its broadcasts, and for what critics described as lacking the Nigerian orientation. The BBC augmented Nigeria's efforts by providing all the needed training and technical equipment. Infact BBC's T. W. Charmes became first director-general of NBS, while his counterpart, J. W. Murray, became the chief engineer.

3.3 Nigerian Broadcasting Corporation

Having rejected the NBS, which was seen merely as the colonial government's megaphone, the central government thought it necessary to convert the NBS into Nigerian Broadcasting Corporation on April 1, 1957, by an act of parliament. This was to address the issue raised against the former organization (NBS) and to shield it from government interference, and the propagation of the view of the ruling political party.

The duties of the corporation, as spelt out in its Act, included the right:

> "*to provide as a public service, independent and impartial broadcasting services by means of wireless telegraph and by television for general reception within Nigeria; to provide an External Service for general reception, in countries and places outside the country; and to ensure that the services which it provides, when considered as a whole, reflect the culture, characteristics, affairs and opinions of the people of each region, or part of the Federation."*

There were other duties allowed the corporation, such as providing facilities for ministerial statements, political broadcasts, religious services, and organization or providing public entertainment, for the purpose of broadcasting. When the corporation began operation, its recurrent expenditure was ₦4.9 million, over the period 1956 – 1960, while its capital expenditure was ₦1 million, plus additional grants after incorporation. Apart from annual government subvention, NBS had few other sources of income. It existed mainly on development loans, repayable with interest. This naturally created problems for the corporation, especially in terms of acquiring relevant technology and improving staff training. The new corporation came up with four distinct programme schedules, one each for the East, West, and the Northern

region and the fourth schedule of each region, reflected the characteristics and needs of the area, it was meant to serve.

Within two years however, the regional premiers and NBC officials were in a war of words, over what the role of the corporation should be. The regional governments were particularly unhappy with what they saw, as the station's partisanship in the coverage and reporting of news. Since the centralization of broadcasting had been thrown out in the 1954 constitution, the response of the regions was to establish broadcasting stations of their own.

3.4 Regional Stations

The government of the defunct Western region blazed the trail when it commissioned the Western Nigeria Television (WNTV) on October 31st, 1959. In May, 1960, it established its radio station, known as Western Nigeria Broadcasting Service (WNBS).

Their mandate, according to Chief Obafemi Awolowo, then Premier of the Western Region, was to serve as teachers, entertainers and stimuli to all and to transform Nigeria into a modern and prosperous nation.

The East and the North soon copied the initiative of the west, with the establishment of the Eastern Nigeria Broadcasting service and the Broadcasting, Company of Northern Nigeria in 1960 and 1962, respectively. Right from inception, it was clear that the three regional stations were mainly instruments for promoting the views of their proprietors. Each station designed programmes to project the political interests of its owner.

SELF ASSESSMENT EXERCISE 1

1. What was the mandate given to Western Nigeria Television (WNTV)? When it started transmission in October 1959?

3.5 Federal Radio Corporation of Nigeria (FRCN)

The Federal Radio Corporation of Nigeria (FRCN) still ranks as the most powerful, political and social mobilizer of the Nigerian society. All past governments have used it as a means of out-manoeuvering their rivals in the struggle for the country's leadership. Consequently this had led to credibility problem and poor image perception of the system by its national audience.

The nine –point objectives of FRCN are:

a. To provide efficient broadcasting services to the whole Federation of Nigeria based on national objectives and aspirations and to external audience, in accordance with Nigerian foreign policy.
b. To provide a professional and comprehensive coverage of Nigerian culture through broadcasting; to promote cultural growth through research into indigenous culture, and to disseminate the results of such research.
c. To contribute to the development of Nigerian society, and to promote national unity, by ensuring a balance presentation of views, from all parts of Nigeria.

d. To ensure the prompt delivery of accurate information to the people.
e To enhance free enlightened and responsible discussion of important issues and maintain a 2-way contact between the government and the governed.
f To provide special broadcasting services in the field of education, and in all other areas, where the national policy calls for special attention.
g To promote orderly and meaningful development of broadcasting in Nigeria, through technical improvements, the training of appropriate professional staff, programme and other exchanges with other broadcasting organizations in the country.
h. To promote research into various aspects of the communication media and their effects on the Nigerian society. This includes audience research, the investigation of fresh methods of production and the true indigenization of the broadcast media.

i To ensure that facilities and techniques of broadcasting in Nigeria, keep pace with developments in the world of communication (e.g. FM transmission, colour television e.t.c)

FRCN once operated a three-tier system of broadcasting in accordance with the provision of the 1956 ordinance that created it. It has the National, Zonal (states), and Provincial broadcasting House (PBH), which were primarily established to serve certain large local communities, considered to be of political, cultural and economic importance.

SELF ASSESSMENT EXERCISE 2

1. How had past governments utilized the FRCN?

3.6 Broadcasting Organization Of Nigeria (Bon)

The Broadcasting Organization of Nigeria (BON) started in 1973 as a child of necessity. It was then aimed at bringing together the radio and television stations in the country, to pool resources for effective coverage of national and international events. The All Africa Games of
1973 hosted by Nigeria was one of such events that motivated the formation of BON. After that event, BON went moribund until 1977, when it surfaced again due to the world Festival of Arts and culture, FESTAC '77; by then its membership had risen to ten stations. However, BON also went moribund again until 1988 before it was resuscitated.

Before the resuscitation of BON in 1988, there were other electronic media groupings. Such groupings included:

1. "SOBON" – State-owned Broadcasting Organizations of Nigeria. This was a child of the Second Republic Politics which dichotomized the states and the Federal party in the centre.

2. "CEFASERO" – Chief Executives of Federal and State – owned Radio Organizations.

4.0 CONCLUSION

The broadcast media in Nigeria which started as a Federal government parastatal, later as arms of regional and state governments have witnessed private participation through Decree 38 of 1992 which also established the National Broadcasting commission (NBC). You will be acquainted with the duties of the NBC in the next module.

5.0 SUMMARY

Broadcasting started in Nigeria as an experiment of the British Broadcasting Corporation in 1932. By 1935, Radio distribution Service (Rediffusion) was commissioned in Lagos and this resulted into the Nigerian Broadcasting Service (NBS) in 1952. The Nigerian Broadcasting Corporation emerged in 1957 as an act of parliament after the rejection of the NBS which was seen merely as the colonial government's megaphone. NBC had its name changed to FRCN by Decree 108 of April 1978.

The regional governments first ventured into television broadcasting with Western Region blazing the trail in 1959. The former Eastern Region started television broadcasting in 1960 and the Northern Region in 1962.

The Nigerian Television Service went on air in April 1972 and this became the Nigerian Television authority by NTA Act of 1977. Private participation in the broadcast media began in 1992 though Decree 38, which established the National Broadcasting commission to regulate the broadcast industry.

6.0 TUTOR-MARKED ASSIGNMENT

i What were the reasons that led to the beginning of broadcasting by the BBC in Nigeria in 1932?

ii. How did television broadcasting start in Nigeria?

7.0 REFERENCES/FURTHER READINGS

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MODULE 2 AGENCIES CONCERNED WITH THE BROADCAST MEDIA

UNIT 1 FEDERAL MINISTRY OF COMMUNICATION

CONTENTS

1.0 INTRODUCTION

There is the need for you to know that broadcasting needs the assistance of certain agencies to function effectively. The Federal Ministry of Communication is one of them and its principal function is to ensure that broadcasters act in accordance with stipulated principles as contained in their frequency allocation letter.

2.0 OBJECTIVES

At the end of this unit of study, you should know:

i What the Federal Ministry of Communication stand for.
ii. The process for approval of broadcast.
iii The difference between Very High Frequency (VHF) and Ultra high Frequency (UHF).

3.0 MAIN CONTENT

3.1 What The Ministry Stands For

The Ministry of Communication in Nigeria is charged with the responsibility of allocating frequencies to sound broadcast media, monitoring of sound media activities and the management and control of sound media, in relation to stipulated policies and international organizations or associations in charge of managing, controlling and monitoring sound broadcasters' activities.

The aim of the Ministry of Communication is to ensure that sound broadcasters act in accordance with stipulated principles as contained in their frequency allocation letter. One major objective of the Ministry of Communication is to ensure discipline among sound broadcasting operators. This is because more operators with fraudulent tendencies always give false information about their areas and modes of operation. When such people are found out, their offices of operation are usually closed down and their equipment seized or impounded.

Until recently, the Ministry of Communication was responsible for policy formulation and implementation for sound broadcasting. However the function of policy formulation and implementation has been moved to the Ministry of Information. The Ministry of Communication issues out 530 – 110 bands to stations to operate. The Ministry also issues out frequencies to stations e.g. TK 720, TK 230. There is a section called frequency planning that assigns frequencies to stations and guards against overshot. An overshot is a situation where a company with the intention of broadcasting between Lagos and Abuja but seeks for licence of operation between Lagos, Ibadan and Ife. The result is an overshot because signals will pass over intended location to the licensed location.

3.2 Technical Provisions Before Application

First and foremost, all equipment must be in accordance with the band to which it would be used for broadcasting. Before an equipment is approved, it has to go through a type approval testing in which the equipment are standardized or tropicalized to meet with the Nigerian climate. Unless permitted the equipment cannot be used outside its allocated area of operation. The ITU (International Telecommunication Union) in Geneva is the overall world body responsible for regulating communication policies. National policies are added to those of the ITU.

Some of the factors that affect the approval of equipment include the following:-

1 The strength/power of the equipment.
2 Equipment gets impounded because the users loan equipment when seeking for licence.
3 In some cases, users use the wrong equipment for the wrong purpose(i.e. wrong frequency, location and band).
4 Lack of conformity with the standard required of equipment.

3.3 Why Station Dials Interfere

Stations (both radio and television) signals interfere with one another. This is because some stations are not operating within their jurisdiction. What happens is that the station at fault could be closed down or equipment impounded. Years back, Radio Lagos signals were interfering with the police. Radio Lagos equipment were impounded as a result of the interference.

3.4 VHF versus UHF

Very High Frequency (VHF) is reserved for the NTA only. This is because the VHF travels very wide and has a strong reception. NTA uses this as its programmes are networked and received in every state of Nigeria. The Ultra High Frequency (UHF) travels at short distances though powerful. States and Private Television Stations use the UHF because of their restricted coverage.

During network, the NTA uses NITEL lines for network programmes. What happens is that programmes are sent through telephone lines to magnetic cables and to the antenna for transmission.

SELF ASSESSMENT EXERCISE 1

Which television stations use VHF and UHF for their transmission?

4.0 CONCLUSION

The Ministry of communication ensures that sound broadcasters act in accordance with stipulated principles and ensures that there is discipline among sound broadcasting operators.

5.0 SUMMARY

The Ministry of Communication is charged with the responsibility of allocating frequencies to sound broadcast media and monitoring their activities in relation to stipulated policies. It does this through technical provisions which applicants must comply with, before they can be allocated frequency to operate.

6.0 TUTOR-MARKED ASSIGNMENT

1 Name 3 functions of the Federal Ministry of communication.
2 Name 4 factors that affect the approval of broadcast equipment by the ministry.

7.0 REFERENCES/FURTHER READINGS

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UNIT 2 THE FEDERAL COMMUNICATIONS COMMISSIONS (FCC)

CONTENTS

1.0 INTRODUCTION

We shall continue with our study of the agencies concerned with the broadcast media by looking at the activities of the Federal Communications Commission (FCC) of the United States of America which was established to bring order to the confusion which would have occurred in the competition for the airwaves that are necessary for broadcast transmission.

2.0 OBJECTIVES

At the end of this study unit, you should be able to understand:

i What the FCC was set up to achieve.
ii What America's public policy toward radio and television are. iii. What can lead to renewal and revocation of broadcast licenses?

3.0 MAIN CONTENT

3.1 Role Of FCC As Agency Of Government

The Federal communications commission of the United States is the agency of the Federal Government authorized to carry out the law of radio and television. It started as Federal Regulatory Commission (FRC) in 1927 before it became the FCC in 1934. It was specifically established to bring order out of chaos and confusion that seem imminent in the competition for airwaves that are very scarce in face of thousands of privately owned radio and television stations. The FCC in

order to make sure that the stations carry out their public commitments and obligations, licenses all the radio and television stations and these licences are renewed every three years.

The FCC was set up to check radio monopoly and to allocate frequencies to broadcasters. Also the FCC conducts auctions for electromagnetic spectrum.

3.2 The Communications Acts Of 1934

As defined by the Communications Act, the word "radio" is construed to mean television as well as sound broadcasting.

The communications Act is meant:

"*To maintain the control of the United States over all the channels of interstate and foreign radio transmission; and to provide for the use of such channels, but not the ownership thereof, by persons for limited periods of time, under licences granted by Federal Authority, and no such license shall be construed to create any right, beyond the terms, conditions, and periods of the license. No person shall use or operate any apparatus for the transmission of energy or communications or signals by radio except under and in accordance with Act and with a license in that behalf granted under the Provision of this Act."*

In order to leave no doubt about the matter of ownership of radio frequencies and the right of the government to regulate broadcasting, the law states that no licence may be granted "until the applicant therefore shall have signed a waiver of any claim to the use of any particular frequency…… against the regulatory power of the United states". The yardstick for issuing or renewing radio licences shall be "public convenience, interest, or necessity". The FCC is specifically directed to "encourage the larger and more effective use of radio in the public interest". From these provisions we can see that America's public policy toward radio and television involves the following key ideas:

1 The airwaves belong to the people;
2 the federal government shall maintain control over all broadcasting channels.
3 Use of these channels is limited to persons licensed by the federal government.
4 Licenses may be issued to persons only when the "pubic interest, convenience, or necessity" will be served thereby.
5 Licenses are good for limited periods of time only.

6 Radio and television shall be maintained as media for free speech.
7 Use of a radio or television frequency in no way creates an ownership right to that frequency.
8 The regulatory power of the federal government supersedes the right of any individual to the use of a radio or television frequency.

The Act of 1934 created the Federal Communication Commission to carry out the law. The FCC is an independent regulatory commission, quasi judicial in many of its functions, but primarily administrative and policy making in its day-to-day operations.

3.3 Composition of the FCC

The FCC is composed of seven commissioners appointed by the United States President for seven – year term and it was established by the communications act of 1934. It has jurisdiction over the radio, television, telephone and telegraph industries. The FCC's control over Broadcast advertising indirectly stems from its authority to license broadcasters or take away their licences.

3.4 Functions of the FCC

The FCC has the following general functions pertaining to radio and television:

1 It advises the State Department in negotiating international radio agreements and acts as the agent of the United States in carrying out the American end of such treaties. Radio waves cross international borders, and so there must be coordination and agreement in a master allocation plan on a world wide basis to prevent mutual interference. Furthermore, nations must agree on which bands to assign airplane communications, distress signals, ship-to-shore radio, etc.

2 It allocates bands of frequencies to various radio and television services. Examples of this allocating function were the decisions, to use the 88 to 108 megacycle bands for FM radio and to add channels 14 to 83 to the television band.

3 It licenses television and radio stations and broadcast operators. The power to issue licenses is supplemented by power to revoke or renew licences and to approve or disapprove transfers of licences. In carrying out these functions, the FCC holds hearings, conducts investigations, and issues decisions in individual cases involving licence application. It also promulgates regulations bearing directly or indirectly on the entire television and radio industry.

4 It classifies television and radio stations and prescribes "the nature of the service to be rendered by each class of licensed stations and each station within any class".

5 It assigns bands of frequencies to the various classes of stations and assigns frequencies for each individual station, determining the power that each station shall use and the time during which it may operate.

6 It determines the location of stations and regulates the kind of apparatus television and radio stations may use.

7 It makes regulations necessary to prevent interference between stations and to carry out the provisions" of the Act.

8 It is authorized to make special regulation applicable to stations engaged in network broadcasting.

9 It requires stations "to keep such records of programmes, transmissions of energy, communications, or signals, as it may deem desirable".

10 It designates call letters of all stations.

11 It ensures that broadcasters stay on their assigned frequencies and that no unauthorized person uses the airwaves. Volunteer groups made up of such people as radio and television repairmen and amateur radio operators assist the FCC in this work.

12 It encourages new uses of radio, particularly those that will promote safety of life and property.

13 It supervises all common carrier telephone, cable, and telegraph services. The American Telephone and Telegraph Company and other companies whose microwave equipment and telephone lines are used in network broadcasting are regulated by the FCC.

In wartime, the FCC coordinates the use of television and radio with the national security programme. During World War II, the FCC set up a foreign Broadcast Intelligence Service that monitored enemy propaganda broadcasts.

3.5 Licensing Radio and Television Stations

In licensing radio and television stations when "the public convenience, interest, or necessity will be served thereby", the FCC must also try to allot stations among the various states and communities so as to provide a fair, efficient, and equitable distribution of radio service.

The period for which licences are good is limited by law to a maximum of three years; the FCC at fist issued six-month licences for standard radio stations; now AM, FM and TV stations are licensed for three years. There is considerable agitation in the broadcast industry to amend the law to provide for five years licenses.

Applicants for radio or television stations must file written statements describing their citizenship and character and their financial, technical and other qualifications to operate broadcast stations. Aliens, foreign corporations, or any corporation "of which any officer or director is an alien or of which more than one-fifth of the capital stock is owned or voted by aliens" may not obtain a station licence.

Applicant for a licence must set forth:

1. The location of the proposed station.
2. The frequency and power he wants to use
3 The hours of the day during which he proposes to operate the station.
4. The purpose for which the station will be used; and
5. A full statement of his proposed programme service.

To preserve competition in radio and television, the law directs the FCC not to grant licences to applicants when, by doing so, competition would be substantially reduced or commerce restrained. The commission has ruled that not more than one AM, one FM, and Seven TV (five VHF and two UHF) stations serving different areas may be licensed to or controlled by the same persons or corporations.

The Commission has no direct authority to license or regulate television and radio networks. It does in fact, however, regulate networks through rules directed at stations owned by or affiliated with Network.

SELF ASSESSMENT EXERCISE 1

List the 5 items an applicant for a licence with the FCC must state in its application.

3.6 Renewal, Revocation and Transfer of Licence

At least four months before the expiration of a licence, a station must file a renewal application with the FCC. In this application the station is obliged to provide a statement of the programme service it has broadcast in the last three years. The FCC may take this record of actual programme service and compare it with the statement of proposed programme service the station made in its original application for a licence. If the FCC is satisfied that performance reasonably matches the promises, it will renew the application. If numerous complaints about the station have been made to the FCC, if the comparison between promises and performance does not show a high correlation, or if a competing application is filed, the FCC may order a public hearing on the renewal application. In this hearing, the applicant bears the burden of proving that renewal of this licence will serve the public interest.

The FCC has the power to revoke a licence when the station fails to operate in accordance with the law or with FCC regulations, or substantially as it said it would in its application. In revocation proceedings, the FCC bears the burden of proving that the station is not serving the public interest.

The commission hesitates to use its power of revocation because such extreme action is usually excessive punishment for most violations and prior to 1952, the commission usually limited itself to giving a sharp warning to an offending station and waiting until the licence renewal application was submitted for further action.

SELF ASSESSMENT EXERCISE 2

When must a broadcast station file a renewal application with the FCC?

4.0 CONCLUSION

The FCC regulates the radio and television industry in the United States and all National Communications Commissions of other countries are affiliates of FCC and are allocated frequencies for external broadcasting. The FCC through this function

helps bring order into the electro- magnetic spectrum.

5.0 SUMMARY

The FCC was established to bring order into broadcast transmission through the Communications Act of 1934. It is directed to encourage the larger and more effective use of broadcasting in the public interest. It is in charge of renewal, revocation and transfer of licenses.

6.0 TUTOR-MARKED ASSIGNMENT

i. What does the word 'radio' mean in the Communications Act of 1934?
ii. Name 5 functions of the FCC.

7.0 REFERENCES/FURTHER READINGS

Hasling, John (1980) *FOUNDATION of Radio Broadcasting*, USA: McGraw Hill

UNIT 3 THE NIGERIAN COMMUNICATIONS COMMISSION (NCC)

CONTENTS

1.0 INTRODUCTION

We shall continue the examination of agencies concerned with the broadcast media through a close look at the activities of the Nigerian Communications Commission (NCC). This will help us understand its relationship with broadcasting in Nigeria.

2.0 OBJECTIVES

At the end of this unit of study, you should be able to articulate

(i) The purpose for establishing NCC (ii) The objectives of NCC
(iii) The powers of NCC

3.0 MAIN CONTENT

3.1 Role of NCC

NCC is the acronym of Nigerian Communications Commission, a body that acts as the national regulatory authority for the telecommunication industry in Nigeria. The broad business purpose of NCC as derivable from the enabling Decree 75 of 1992 is to facilitate the private sector participation in telecommunication service delivery, coordinate and regulate the activities of the operators to ensure consistency in availability of service delivery and fair pricing. The headquarters is situated at Abuja with three Zonal Offices in Lagos, Kano and Port Harcourt. The Commission's organizational structure has attained a structure comprising of five directorates, fourteen departments and five units under the Chief Executive Officer.

SELF ASSESSMENT EXERCISE 1

What is the role of the NCC?

3.2 The Functions of NCC

The Nigerian Communication Commission as an organization that is responsible for the growth and upliftment of telecommunication has various functions that it performs. The Nigerian Communication Commission is totally responsible for the issuing of licences to any company that wants to operate a private telecommunication. The organization also facilitates the private sector participation in the telecommunication industry, so as to enhance as many as possible competent operators that will compete favourably for progress in the communication sector. The NCC also invests in the telecommunication sector of the Nigerian Economy. With its enormous investment in the industry, the organization will have a say when it comes to matters that concern the progress of telecommunication in Nigeria.

The NCC establishes and supervises the technical and operational standards and practices as well as type approval of equipment for the operators such that whatever equipment the operator has adopted, it must suit the country's gateway carriage and must not cause any harmful interference with communications. NCC also oversees the quality of services provided by the operators and sets the terms of inter connection of different networks, NCC also ensures that the interest of the consumers of telecommunication services are protected by promoting competitive pricing of such services and combating the abuse of market power which gives room for mediating between operator, carrier and consumer. NCC is solely responsible for reporting and giving advice to the minister of communication in formulating telecommunication policies and control of the telecommunication industry.

3.3 Objectives of NCC

Any standard organization has aims and objectives for its existence and the discharge of its service; the same philosophy is applied to NCC as the objectives are listed below:

1. The Nigerian Communications Commission has the objective to encourage massive investment in the telecommunication sector of the Nigerian economy, so as to give room positively.

2. Nigerian Communications Commission also has the objective of extending the available telecommunication service to all Nigerians.

3. NCC also aims at protecting those licensed and the public from unfair conduct of other providers of telecommunication service with regard to the quality of service and payment of tariffs.

4. NCC also promotes effective competition in the market and ensures fair pricing of good quality telecommunication services.

3.4 Achievements of NCC

Since the birth of the organization in 1992, through to this time, the organization has done quite a lot in the telecommunication sector that can be regarded as achievements: one of which is the deregulation of the telecommunication sector.

Before now, communicating in the country was one difficult thing and somewhat exclusively for the rich. NCC has issued operation licences to considerable amount of telecommunication operators and has allocated them a frequency range with which they will operate without causing any harmful interference with other operators. NCC has also made a remarkable achievement in testing the equipment of the operators before commencing operation and has been able to make telecommunication affordable.

SELF ASSESSMENT EXERCISE 1

What has the NCC achieved since its birth in 1992?

3.3 Powers Of NCC

The Nigerian Communication Commission has the power to give written direction to a licencee or authorized carrier in connection with the functions of the commission solely in the interest of the commission, operators, carriers and the consumers.

The Commission can also summon any person or business organization to appear before the commission when necessary for the purpose of effectively discharging its duties under the decree setting it up.

It has the power to consult where appropriate with the President, commercial and industrial organizations, consumers and standard organizations as well as other relevant bodies for the purpose of delivering quality telecommunication services. It has the power to give evidence or produce any document, which is likely to assist the commission or any of its committee under the decree establishing it.

It can delegate any of its powers to a committee properly constituted by the commission according to the provision of the decree. The Nigerian Communications Commission gets its fund from the sales of application forms and the issuing of licences to telecommunication service operators that wish to operate in Nigeria and another avenue for revenue generation is fees for licence renewal.

3.4 Issuing Of Licences

All telecommunication service operators are required to apply to the NCC for relevant licences by obtaining the commission's relevant application forms and to comply with requirements therein. It is responsible for issuing of licence and allocation of frequency, but these duties have procedure that must be followed.

There are two categories of licence, which are:-

1. Basic licence
2 Major licence

For a telecommunication organization to be issued a licence, it must do a complete and accurate feasibility study, and the equipment it intends to use for operation must be tested and okayed. Also the company must be financially buoyant. There are five basic steps that one must follow to be issued an operating licence. They are:-

Step 1 – Obtaining an Application Form
Step 2 – Receipt and Acknowledgement of receipt of application

Step 3 – Evaluation of Application which consists of:-

i Legal Check
ii License Check
iii Service Check
iv Business Plans
iv. Technical Plans
vi Organization Plans

Step 4 – Presentation of project implementation plans and status report.

Step 5 – Recommendation

4.0 CONCLUSION

The NCC is in charge of the Nigeria's electromagnetic spectrum and therefore issues frequencies to both broadcast and telecommunication operators and also ensures that specified standards are met and subsequently sustained.

5.0 SUMMARY

The NCC through decree 75 of 1992 is to facilitate the private sector participation in telecommunication service delivery, coordinate and regulate the activities of the operators to ensure availability of service delivery and fair pricing. These are achieved through the issuing of operation licences and frequency ranges, with which telecommunication operators operate without causing any harmful interference with other operators.

6.0 TUTOR-MARKED ASSIGNMENT

i. What are the objectives of the NCC?
ii. Name the 5 steps a telecommunication company must follow before being issued an operating license.

7.0 REFERENCES/FUTHER READINGS

Onabajo, Olufemi (2004) Introduction to Broadcasting. Lagos: Gabi Concept Ltd.

UNIT 4 NATIONAL BROADCASTING COMMISSION (NBC)

CONTENTS

1.0 INTRODUCTION

The establishment of the National Broadcasting Commission (NBC) ended government's monopoly of the broadcast industry in Nigeria; and opened the industry to private participation.

2.0 OBJECTIVES

At the end of this unit of study, you should be able to:

i State the main functions of the NBC.
ii Explain what broadcasting should achieve under the NBC
i Identify the monitoring activities of the NBC

3.0 MAIN CONTENT

3.1 Functions of NBC

The National Broadcasting Commission came into existence on the 24th of August, 1992 by virtue of Decree 38 of 1992 which mandated the NBC to control the entire broadcast industry. The decree ended the era of government sole ownership of broadcasting and opened the industry to private participation. The NBC has the following as its main functions:

1. To advise the Federal Government generally on the implementation of national mass communication policy with reference to broadcasting.

2. To recommend applications through the minister of Information to the president for the grant of radio and television licenses.

3. To undertake research and development in the broadcast industry, receiving, considering and investigating complaints from individuals and corporate bodies regarding the contents of broadcast and conduct of a broadcast station.

4. To uphold principles of equity and fairness in broadcasting.

5. To promote Nigerian indigenous cultures, moral and community life through broadcasting.

6. To promote authentic radio and television audience penetration measurements.

7. To monitor broadcast for harmful emission, interference and illegal transmission.

8. To approve transmitting power, location of stations, coverage areas as well as regulate types of broadcast equipment to be used.

3.2 Broadcasting and the NBC Code

1. It must have truthful, comprehensive and intelligent account of each day's national and international events that have significant impact on the Nigerian community.

2. It must present and clarify the goals and values of the society.

3. It should have a forum for exchange of comments and criticisms representing every facet and stratum of the society as required in a federation like Nigeria in which the views and opinions of every area is catered for.

There are so many requirements in the code of NBC. These requirements help the proper operation of broadcast stations if followed strictly by the operators. They include the following:

1. Any information given in programme form must be presented accurately; all sides of the issue of public interest must be presented adequately to ensure fairness.
2. The right of reply shall be granted to any person or body with a genuine claim to misrepresentation.
3. Self correction is very important and professionally mandatory.
4. Deceptive and misleading information are forbidden.
5. Obscene, pornographic or vulgar expressions and presentations are forbidden.
6. Physical and mental disabilities should not be presented in an embarrassing manner.
7. Womanhood shall be presented with respect and dignity.
8. Cruelty, greed, selfishness, drunkenness and other evil acts should not be

presented as something desirable.

3.3 Conditions for Issuing Broadcast Licence

Broadcasting Industry has been privatized, so for the entry of any individual or corporate body into the industry, the following are required before licence is finally given:

1. Well functioning transmitters which must be located close to the station.
2. The person or body must be financially stable
3. The station must not be located in a choked-up area
4. The name(s) and nationalities of directors must be given
5. The target audience of the station must be known, the coverage area, the type of link system to be used, the proportion of local content to foreign content (60%) local and 40% foreign content), method of reception, should also be made available.
6. Type of broadcast licence required (Television, radio and cable television) and so on.

The individual or corporate body must obtain application form which cost N50, 000, which should be filled and submitted to the NBC. If he meets the requirements of the NBC, he is recommended. He is given a licence which the Federal Government approves. If the licence is not used after one year, it becomes invalid. But if it is in use, a licence fee is paid periodically to maintain its validity.

Revenue for NBC is generated from licence fees, fines (when stations commit breaches) donations and budgetary allocation from the Federal government.

SELF ASSESSMENT EXERCISE 1

When does a licence issued by NBC to a broadcast station expire when not utilized?

3.4 Monitoring Activities of NBC

The NBC has a monitor room where there are a number of television sets switched to various channels and also a number of radio sets switched to different stations. One person is assigned to a station to monitor properly. There are some rules and regulations that must be followed; if they are not followed strictly, the stations are penalized. They may be suspended from air for a while, or pay fines and many more. If the rules are not followed strictly, they are said to have committed a breach.

Breach is any action or inaction constituting non-compliance with any provision of the code on the part of any broadcast operation. Generally, the following rules must be observed strictly, if not, they are penalized. They must present 60% local programmes and 40% foreign programmes; religious programmes should not be more than 10%; advert of tobacco and alcoholic drinks is prohibited: slangs are forbidden and words must be pronounced properly.

Professionals must be employed. A number of specific programmes have their own laws, which must be followed. For news and current affairs, all sources must be duly acknowledged, all news programmes must be guarded by ethical standards of journalism, all news stories and special reports shall be factual and presented accurately and impartially. Discussion programmes require that panelists should be of comparable status and shall reflect various viewpoints sports programmes require that adverts

should not obstruct or disrupt the essence of the event. It should not overshadow the sports commentator's voice; rather it should be at the background.

SELF ASSESSMENT EXERCSE 2

How does NBC monitor the activities compliance with its code?

4.0 CONCLUSION

The coming of the NBC has brought about competitive programming among government and private broadcast stations and the audience can no longer be taken for granted since he can choose which station to tune to at any point in time.

5.0 SUMMARY

The NBC came into existence through Decree 38 of 1992 with the main purpose of regulating the broadcast industry, and making it more relevant to the Nigerian society through the transmission of programmes that will promote Nigerian indigenous cultures, morals and community life. It has monitoring rooms in its zonal offices from which the programmes transmitted by broadcast stations are monitored to ensure that its broadcasting code is followed to the letter.

6.0 TUTOR-MARKED ASSIGNMENT

i Mention 5 main functions of the NBC

ii List 5 rules of the NBC code that must be followed by broadcast stations so as not to be penalized.

7.0 REFERENCES/FURTHER READINGS

Onabajo, Olufemi (2000). *FOUNDATION of Broadcast Journalism*, Lagos: Gabi Concept Ltd.

UNIT 5 NIGERIAN TELECOMMUNICATIONS LIMITED (NITEL)

CONTENTS

1.0 INTRODUCTION

Let us take a look at the last major agency concerned with the broadcast media. The Nigeria Telecommunication Limited (NITEL) occupies a strategic place of relevance and significance in the telecommunication industry and is particularly useful in the transmission and reception of network programmes on radio and television.

2.0 OBJECTIVES

At the end of this unit of study, you should be able to:

i State the objective of NITEL
ii i Identify its involvement in international and network transmission
3.0 Identify other services of NITEL.

MAIN CONTENT

3.1 Objectives of NITEL

The Nigerian Telecommunications Limited, NITEL, Nigeria's pioneer telecommunications services provider, occupies a strategic place of relevance and significance in the telecommunications industry. NITEL

has undergone a series of development lately, which have largely positioned the company to properly compete with other service providers and in response to the changing face of the telecommunications industry in general. The overall objective of the telecommunications industry is to provide efficient telecommunication services to the public at reasonable cost.

The company is however not taking its relevance in the industry for granted. It is therefore taking adequate and appropriate steps in response to changes and the dynamics of the telecommunications industry. Its services to the nation at both local and international levels include:

i Telephone with and without International Direct Dialing (IDD)
i Telex and Telex Delivery Services (TAS)
iii Telegraph public Coin Telephone
iv Transmission and reception of real time television for network services
v. Telegraphic address service etc.

SELF ASSESSMENT EXERCISE 1

What is the overall objective of NITEL?

3.2 Telephone Service

This is about the most popular medium of communication in the world. The satellite has greatly enhanced the preference of telephone service to other media of communication because the quality is as perfect as talking with somebody next door irrespective of distances over continent and seas. Telephone is the fastest means of communication. NITEL operators can also get calls connected through the switchboard to any part of the world. This process is done by dialing 171 from anywhere in the country to access the customer to their Lagos or Kaduna exchanges. Local operators can also connect international call; the customer dials
190, announces his telephone number, name, overseas number and the country which will enable the operator to connect the customer or pass further instructions to the customer.

3.3 The Telex Equipment

It is a teleprinter machine which is mainly acquired by firms, business organizations and government agencies which have constant exchange of correspondence with local and overseas partners. The service is comparable with the telephone service because the telex subscriber is fully in control and can establish both internal and international telex

connections within a minute without the assistance of NITEL operators. The telex machine has in-built facility to receive and record messages unattended. Telex service combines both speed and accuracy which are regarded as the cornerstone of any efficient business organization. The telex delivery service is an auxiliary of the telex service and it is developed to meet the needs of Nigerian small-scale businesses. NITEL receives on customer's behalf all telex messages on 24 hours basis and deposits them in numbered telex boxes for collection at customers' convenience.

3.4 Telegraph

This is also one of the services rendered by NITEL. It is the oldest system of local and overseas communications. It was popularly known as cablegram before the advent of high frequency radio and satellite communications. Telegraph has diversity in application for individual contact, seasonal greetings, business transactions and government or high security correspondences.

3.5 The Public Coin Telephone Booth Service

This enables a customer to get in touch with business partners, relations, friends etc when he/she is out of office or home. The telephone coin box booths are installed in strategic locations in major towns of the federation. All the customer needs is few coins and he is on to the required person. It is easy to operate; the customer will lift the handset, listen for the dial tone and insert the phone card bought into the slot on the right-hand top cover of the coin box for local calls. For distant calls, a minimum of 50k is needed. The customer will press the number he requires immediately the red light is off. The town code should be included when making a distant call.

3.6 International and Network Transmission

International and Network Transmission is another important service. The live broadcast of Christmas message by the Pope in Rome, the Hajj, International soccer matches and so on are all received through NITEL satellite system and relayed to domestic TV sets by the Nigerian Television Authority (NTA). NITEL could transmit and or receive any programme "Live" through the satellite on request. The satellite station is equipped with television converter, which converts to any standard required by the customer. Sufficient notice for international link – up to any country in the world required by the customer is the most important thing to link the customer. The live radio broadcast is done by pre- arrangement with the press or broadcasting media. NITEL plays a prominent part in soccer commentaries and other international events broadcast "live" through the domestic receivers.

3.7 Other Services of NITEL

NITEL offers private leases sometimes referred to as "**hotline" telegraph and telephone services.** It operates on point-to-point basis and it is exclusive to the leaser. Computer link, leased telegraph circuits and leased voice grade channel are various types of private wire services. NITEL has stridden into the area of computer service for the business sector. For the comfort of office, computer data entry operator can now access customer computer base for data input and retrieval on the keyboards i.e. during board and management meetings, required decision information can be obtained from the computer without any delay. Ships at sea, anywhere on the world oceans, are still within NITEL reach. The Radio telegraphy continues to play

a dominant role in relaying messages to ships through their facilities like radio telephony and telex-via-satellite which are more instant. Many ships now install the most modern system on board to enable easy communication with the land.

SELF ASSESSMENT EXERCISE 2

How does radio telegraphy play a dominant role in relaying messages to ships?

4.0 CONCLUSION

The broadcast industry cannot function effectively without NITEL. Live transmission of proceedings from the United Nations, international soccer engagements and many international award ceremonies are all received through NITEL satellite system and relayed to domestic television and radio sets by the Nigerian Television Authority and Federal Radio Corporation of Nigeria.

5.0 SUMMARY

NITEL is involved with the provision of telephone, telex and telegraph services. It is also involved in international and network transmission. NITEL is also active in the area of computer service for the business sector, as well as radio telegraphy which plays a dominant role in relaying messages to ships through their facilities like radio telephony and telex-via-satellite which are more instant.

6.0 TUTOR-MARKED ASSIGNMENT

i. How is NITEL involved in international and network transmission?

ii Name at least 5 services provided by NITEL at local and international levels.

7.0 REFERENCES/FURTHER READINGS

Onabajo Olufemi (2004). *Introduction to Broadcasting.* Lagos: Gab Concept Ltd.

MODULE 3 THE ELECTROMAGNETIC SPECTRUM.

Unit 1 What are Radio Waves? Unit 2Modulation
Unit 3 The Multistage Nature of Broadcast Signals.
Unit 4 The Transmitter.
Unit 5 Transmission of Signals through a Transmitter.

UNIT 1 WHAT ARE RADIO WAVES?

CONTENTS

1.0 INTRODUCTION

You are welcome to the world of the electromagnetic spectrum which consists of radio and electric waves, heat, light, gamma, cosmic and x- rays and which have wavelengths varying from over a mile in length to one millionth of an inch. Radio waves are at the lower end of the spectrum and they consist of low and high frequencies. They help transport programme signals from radio and television stations.

2.0 OBJECTIVES

At the end of this unit of study you should be able to know:

i. What Oscillation is.

ii How radio waves are classified
iii What ground and sky waves are
iv What is frequency?

3.0 MAIN CONTENT

3.1 What Is Oscillation?

Radio waves are born whenever an electrical current oscillates and **oscillation** is the process whereby an electric current vibrates and reverses its direction of flow in a regular way. This gives birth to an alternating current which helps generate radio waves, which are released to the atmosphere.

Radio waves travel at the speed of light-about 300 million metres per second (about 186,000 miles per second) and they are used for terrestrial broadcasting.

SELF ASSESSMENT EXERCISE 1

What is Oscillation?

3.3 Classification of Radio Waves

Radio waves can be classified into eight (8) groups of frequency bands:

i Very Low Frequency (VLF) waves iiLow Frequency (LF) waves
iii Medium Frequency (MF) waves
iv High Frequency (HF) waves
v Very High Frequency (VHF) waves
vi Ultra High Frequency (UHF) waves
vii Super High Frequency (SHF) waves
viii Extremely High Frequency (EHF) waves

VLF waves are used in long distance telegraphy; LF waves are used in long distance sound broadcasting; MF waves are used in sound broadcasting and ship to shore transmission; HF waves are used in both medium and long distance sound broadcasting; VHF and UHF waves are used in television and high quality frequency-modulated (FM sound broadcasting – (FM covers only very limited local areas and other short distance transmissions) – SHF and EHF waves are used in point to pint microwave transmission, as in Cable and Satellite television.

3.4 Propagation of Radio Waves

Radio waves that are of very low frequency or low frequency or medium frequency, usually follow the earth's curvature and move out in all directions as **GROUND WAVES**. These waves travel for distances, and because of this obvious advantage, they are often used for AM radio broadcasts. The greater the power of the radio transmitter, the further the round waves can travel. The site of the transmitter can either hamper or assist the movement of these waves. Damp loamy soils are preferable in locating transmitters than dry sandy soils because the former conduct ground waves faster and more efficiently.

Reception signals on our sets often clearer and the listening areas increased at night, because there is less atmospheric interference than at day-time.

Radio waves can also move from the transmitter to our receiver sets in form of SKWAVES. These are high frequency waves that have been refracted and reflected back to earth by a layer-of gases called the ionosphere which is found at between 50km and 400km above the earth's surface. The higher the frequency of a radio wave, the more difficult for any of the ionospheric layers to refract and reflect it back to the earth.

High frequency waves that are not susceptible to interference by the ionosphere (between 3 and 30 Megahertz) are used in short wave radio broadcasting. Very High Frequency waves which were before lost to space are now picked up by satellites, floating at a height of 700 km or more, above the earth's surface and are sent back to the earth as satellite or microwave signals. The changing nature of the IONOSPHERE, especially at night, makes the use of sky waves unreliable for broadcasting service, as it could send down clear signals or noisy and distorted signals. Radio waves move in a straight line as direct waves at very high frequency, from the radio mast to the receiving antenna. However, there must be perfect alignment between the transmitting (mast) and the receiving antennas. The line of sight or direct radio wave is a very reliable mode of transmission when there are no absorptive obstacles between the transmitting and receiving antennas and when the atmospheric conditions are not adverse. Frequency Modulated (FM) radio broadcasting and VHF television service, rely on line-of-sight or direct wave propagation and this can be made more efficient by mounting the transmitting antennas on very high ground.

3.5 Ground Waves

Ground waves are electromagnetic waves that adhere to the contour of the earth. In radio terminology, the area covered by the ground waves is the PRIMARY SERVICE AREA. This is the area in which the ground waves are not subject to objectionable interference or objectionable fading. It is also the portion of the station's signal that is most protected by the Federal Communications Commission (FCC), when it licenses other stations that could interfere.

3.6 Sky waves

Sky waves propagation is the phenomenon in which the radio waves travel into the sky instead of along the earth's contour. However, not all radio waves remain in the sky; some are reflected off various layers of the ionosphere back to the earth's surface. There is also a section of the earth's surface that neither ground nor sky waves reach. This phenomenon is referred to as SKIP, and the distance from the transmitter to where a sky wave touches the earth is the SKIP DISTANCE. The area in which a radio station's signal is heard clearly because of sky wave proportion is referred to as SECONDARY SERVICE AREA. This is defined as the area served by the sky wave which is not subject to objectionable interference.

The point at which the signal from a station begins to fade as known the INTERMITTENT SERVICE AREA of the station or that area receiving service from the ground wave but

beyond the primary service area and subject to some interference and fading. The ionosphere has different reflective qualities at different times during the day. The sun warms it and decreases its ability to reflect sky waves.

SELF ASSESSMENT EXERCISE 2
Distinguish between Sky waves and Ground waves.

3.7 Microwaves

In addition to standard AM, FM and TV frequencies, much higher frequencies of the electromagnetic spectrum – in the thousands-of- megahertz range – are used. It is in this area that microwave transmission is found. The higher the frequency, the further the electromagnetic waves will travel in a direct line-of-sight path between transmitter and receiver. Thus, microwaves always travel by line-of- sight.

Microwaves also allow many more channels of communication to operate because of their short wavelength. Because the waves are shorter, many more will fit into the same space on the electromagnetic spectrum. Many thousands of channels are possible. When we realize that an AM radio station is allocated a width of only 10KHZ, it is easy to see how much more information can be transmitted at higher frequencies. We need microwaves in order to view our evening television programmes or to relay satellite pictures across oceans. However, the current microwave technology has barely scratched the potential of this multiphase and carrier of information, especially in the broadcasting industry.

3.8 What is Frequency?

What differentiates radio waves from light waves or X rays is their frequency. Two radio stations in the same community operate on different frequencies so that they will not interfere with each other. When current is applied to the transmitter of a radio station the antenna emits electromagnetic radiation. This radiation is a series of electromagnetic waves, one after another. When electromagnetic energy travels through the atmosphere of the vacuum of outer space, a series of waves ripple one after the other in all directions. Frequency is the number of waves passing a certain point in a given interval of time.

In broadcasting the waves are termed **Electromagnetic Waves**. When one complete wave passes a given point, it is called a CYCLE. The term KILOCYCLE or KILOHERTZ is used to represent 1000 cycles while MEGACYCLE or MEGAHERTZ is used to denote 1, ooo, ooo cycles. Satellites and microwave transmission systems operate in the GIGAHERTZ (billions of cycles) range.

When 1000 waves pass a given point in one second (1000 cycles per second or one kilocycle), the frequency or location on the electromagnetic spectrum is 1 kilocycle. Similarly, 535,000 cycles per second is represented as 535 kilocycles. On an AM radio that particular frequency will be at lower end of the dial.

Each radio station is assigned a 10-kilocycle range on the electromagnetic spectrum. Thus the station assigned the lowest frequency is assigned 540 kilocycles which permits it to operate between 535 and 545 kilocycles. Some radios though

capable of receiving 540 kilocycles begin numbering their dial at 550 kilocycles or abbreviate it as number 55.

3.9 Defining Wave Length

The distance between two waves is called WAVELENGTH. Cycle is closely related to wavelength. All electromagnetic waves travel at the speed of light which is either 186,000 miles per second or 300,000 meters per second. The number of waves passing a certain point in one second is called CYCLES PER SECOND. Wavelengths of radio waves can be arrived at by simple division. Given that electromagnetic waves travel at a speed of 186,000 miles per second, if 10,000 cycles (10,000 complete waves) pass a given point in one second, the wavelength of each wave will be 18.6 miles (186,000 divide by 10,000).

If 535 kilocycles (535,000 cycles per second) or 535,000 complete waves pass a given point in one second, the wavelength = 186,000 divided by 535,000 = 0.3477 miles and if converted to feet = 0.3477 x
5280 (5280 ft takes a mile) =1,836feet.

When a radio set is tuned from one station to another, the receiver is picking up only those waves that are being transmitted on the same frequency to which one tunes. Thus different frequencies on the radio dial correspond to different positions on the electromagnetic spectrum.

4.0 CONCLUSION

Radio waves make broadcasting possible and it is the frequency that differentiates them from other types of waves. In broadcasting radio waves are referred to as electromagnetic waves and they travel at the speed of light which is about 300 million metres per second. This is why programme signals transmitted from a broadcast studio reach your radio or television sets, wherever they are located simultaneously.

5.0 SUMMARY

Radio waves are classified into 8 groups of frequency bands. They can be of low, medium, high or extremely high frequencies. Their frequencies determine whether they will be useful in telegraphy, sound broadcasting or in cable and satellite transmission. Radio waves that follow the earth's curvature are referred to as ground waves while those that travel in the sky are called sky waves.

6.0 TUTOR-MARKED ASSIGNMENT

i Radio waves can be classified into 8 groups of frequency bands. Name them.
ii To what use can these 8 groups of frequency bands be put to?

7.0 REFERENCES/FUTHER READINGS

Bittner, J. R. (1985). *Broadcasting and Telecommunication.* 2nd edition. New Jersey: Prentices Hall.

UNIT 2 WHAT IS MODULATION?

CONTENTS

1.0 INTRODUCTION

Modulation is the process of encoding information into the language of radio energy. A radio or television broadcast transmitter radiates energy continuously as long as the station is turned on, whether or not any information is being transmitted.

2.0 OBJECTIVES

At the end of this unit of study, you should be able to:

i. Understand how radio waves are modulated.
ii. What are frequency and Amplitude modulation?

3.0 MAIN CONTENT

3.1 Modulation of Radio Waves

Radio waves can be modulated in many ways, but broadcasting uses primarily two methods: Amplitude Modulation (AM) and Frequency Modulation (FM). As the modulated signal travels through the atmosphere, it may encounter random charges of electromagnetic energy generated by natural electricity in the atmosphere, which we sometimes see as lightning. These random bits of energy interact with the amplitude modulated radio signal, distorting the original pattern.

Modulation then means the transfer of a pattern of energy from one medium to another. Once the message is conceived as consisting essentially of an energy pattern, the possibility of translating patterns from one medium to another becomes

apparent. The air in the studio, the electrical current in the wires and finally the electromagnetic energy radiated by the transmitter are radically different media, yet each can duplicate an identical pattern of amplitude and frequency.

The audio wave from the studio arrives at the transmitter as electron waves representing the frequency and amplitude of the original sounds. The audio wave is then modulated on the carrier wave which may be altered in either its amplitude or frequency characteristics.

3.2 Amplitude Modulation (Am)

AM broadcasting is that portion of the electromagnetic spectrum falling between 535 and 1605 Kilohertz (KHz).

Amplitude Modulation (AM) waves follow the curvature of the earth for some distance and arrive at the antennas of home receiving sets in a fairly direct manner. Some of the waves go skyward and encounter resistance when they reach the ionosphere, which is an area of active ions surrounding the earth. These waves are then reflected back to earth. Since the ionosphere is more active at night, some stations that do not interfere with others during the day time would do so at night, and therefore are obliged to cease their operations at sundown.

Thus, AM is prone to interference because its signals are transmitted directly on the ionosphere. Though AM has a wider coverage area than FM, its reception is often impeded by hills, trees, high buildings, and tunnels – AM signals travel in form of a torpedo and are affected by the earth curvatures.

3.3 FM Broadcasting

In Frequency Modulated (FM) broadcasting, there is no change in the amplitude of the wave but the frequency or wavelength varies. Different sounds indicate different wavelengths (cycles per second). FM broadcasting to the general public operates between 88 and 108 megahertz. Each FM station is allocated a width of 200 KHz (Kilohertz).

SELF ASSESSMENT EXERCISE 1

Between which ranges does FM broadcasting operate to the general public?

3.4 FM Stereo

Throughout its history, radio broadcasting has taken three major strides to improve the quality of sound reproduction from the studio to the living room. One was the development of FM broadcasting. Another was the development of stereo FM broadcasting.

Within the 200-KHz space allocated to each FM station is ample room for the separation of broadcast signals, room that permits the same station to broadcast on two slightly different frequencies. There is also room for a tone that triggers specially equipped radios to receive this stereo signal. Radio equipped to receive stereo actually have two separate receiving systems, which, when

triggered by the tone, separately receive the two frequencies being broadcast by the stereo station. When the tone is not transmitted, the radio still receives a monophonic signal. Many of us have seen a small light flip on in a stereo FM receiver when we tune it to a station broadcasting in stereo. This signal tells us that our radio is tuned to a stereo station that the station is broadcasting in stereo and that our receiver is receiving both channels of the stereo system.

Stereo broadcasting has grown steadily in popularity. The reproduction of quality music with the added dimensions of space and depth (it is almost as if the orchestra was playing in your sitting room) has been the main distinction between stereo FM and standard FM and AM broadcasting.

3.5 Quadraphonic FM

Whatever added dimensions stereo broadcasting brought to FM, quadraphonic doubled. In quadraphonic systems, four instead of two frequencies are employed. The problem in broadcasting four-channel sound is to develop systems that will provide distinct separation of the four frequencies and still allow radios not equipped for quadraphonic reception to receive stereo FM and monophonic FM. When there is true separation of the four quadraphonic channels, the listener is literally surrounded by sound.

3.6 AM Stereo

AM stereo is now emerging from the experimental stage. For many years, AM broadcasting did not seriously consider stereo beyond laboratory ventures, primarily for two reasons. The first was the narrow channel width of AM stations – 10 KHz compared with 200 KHz for FM. Second, as long as FM was not a serious competitive threat to AM, there was no widespread interest in the system. However, with FM gradually gaining ground among the AM audience, AM broadcasters began to search for something with which they could regain their competitive edge.

Active evaluation of all systems – undertaken by the National AM Stereo Committee (NASC) of the Electronics Industries Association – began in the mid 1970s. The collection of field performance data on AM stereo was completed in 1977.

AM stereo could grow, for two reasons. First, there is considerable backing for it from the many AM broadcasters who have felt the competitive sting of FM. Second, the technology is available and already in use by many stations.

SELF ASSESSMENT EXERCISE 1

State 2 reasons why AM broadcasting did not seriously consider broadcasting in stereo for many years.

4.0 CONCLUSION

Except radio waves are modulated they cannot transport broadcast signals. The wave characteristics of music and the human voice are transformed into the wave which in turn carries them between the transmitter and receiver,

5.0 SUMMARY

Radio waves can be modulated in broadcasting in only two ways: Amplitude Modulation

and Frequency Modulation; and modulated signals as they travel through the atmosphere may encounter random changes of electromagnetic energy which manifest sometimes as lightening. This interacts with radio signals distorting the original pattern.

6.0 TUTOR-MARKED ASSIGNMENT

i. What is modulation?
ii. In which 2 ways can radio waves be modulated?

7.0 REFERENCES/FUTHER READINGS

Bittner, J. R. (1985). *Broadcasting and Telecommunication.*2nd ed. New Jersey: Prentice – Hall.

UNIT 3 THE MULTI-STAGE NATURE OF BROADCAST SIGNALS

CONTENTS

1.0 INTRODUCTION

Radio and Television equipment will enable you to maintain a link between the location where signals are being made out of live sounds and visuals and the recipients of such signals. This process has many facets which include Transduction, Processing, Storage, Distribution and Reception.

2.0 OBJECTIVES

At the end of this unit of study you should be able to:

i Identify the multi-stage nature of broadcast signals.
Ii Discuss the various stages.

3.0 MAIN CONTENT

3.1 Transduction

At this stage, cameras and microphones are used to generate signals, from real life situations in the studio, or in outside locations. These events are reduced to electrical signals, which are processed and channeled through electronic gadgets.

3.2 Processing

The various activities that go on during the signals. Processing can be explained thus: The signals coming into the systems after transduction are boosted and stabilized especially in television, and in the process eliminating any electrical noise. Some of the signals are selected and combined and the resulting signals are monitored until the required standard is achieved, which are then boosted and transmitted for the signals to be decoded by our receiving sets at home. The following equipment are vital in signal processing. They include audio mixers, vision mixers, camera control units, time base correctors, digital video effects unit and synod generator or oscilloscope.

SELF ASSESSMENT EXERCISE 1

Explain the various activities that go on during broadcast signals processing.

3.3 Storage

Here signals are put into a permanent or enduring form for access and use in the future. The magnetic tape or disc (audio and video) is utilized for storage. It is made to go through a tape of video recorder or the compact disc, which act as the information loader. These recorders often double as play-back machines. Live and recorded programmes go through a process of storage, either for re-transmission or for exchange with other broadcast stations, or for syndication.

3.4 Distribution

The signals may be channeled to other stations which form a network with another station or are sent in such a way as to be made available to potential receivers. There are two major avenues for distributing broadcasting signals. They are: (i) Cables (ii) Radio/micro waves.

Cables: Telephone lines are used for distribution within stations involved in sound broadcasting, while coaxial cables or optic fibres are used for television.

Radio/Micro waves: Radio waves are used for terrestrial broadcasting to the audience and micro waves are used for satellite broadcasting.

3.5 Reception

This is a multi-stage process. In the first instance, the receiving antenna picks up the modulated programme signals in the air. The receiver then demodulates the signals picked up, by extracting the information signals from the carrier waves. The demodulated signals are converted back to visual and aural stimuli that are reproductions of the original live sounds and visuals.

SELF ASSESSMENT EXERCISE 2

How are broadcast signals received by our radio or television sets?

4.0 CONCLUSION

The various stages of signal transmission begin at the studio and terminate at our radio and television sets where such signals are decoded through a process called demodulation.

5.0 SUMMARY

Signals of programmes go through 5 stages of transduction, processing, storage, distribution and reception.

6.0 TUTOR-MARKED ASSIGNMENT

i. What types of cables are used for distribution of signals between 2 radio and 2 television stations.

ii How are programme signals put into a permanent or enduring form for future use?

7.0 REFERENCES/FUTHER READING

Onabajo, Olufemi. (1999). *Essentials of Broadcast Writing Production.* Lagos: Gabi Concept.

UNIT 4 THE TRANSMITTER

CONTENTS

1.0 INTRODUCTION

The transmitter is the most important electronic equipment in a broadcast studio, without which transmission of programme signals is impossible. It uses radio and micro waves for signal distribution, a principle in which programme signals are combined with carrier waves. It is through modulation that the radiated signals are made to carry information.

2.0 OBJECTIVES

At the end of the unit of study you should be able to know:

i. What a transmitter is and how it functions. ii. Types and uses of transmitters.

3.0 MAIN CONTENT

3.1 What Is Transmitter

A transmitter is an electronic equipment used in sending signals (audio or video or both), over a certain range of distance. Without a transmitter, it will be impossible to get information to people through the television or radio. A transmitter could consist of two complete transmitters – one for picture signal and the other for the accompanying sound. Consequently, a broadcasting transmitting station may consist of the following:

1 An amplitude-modulated visual transmitter
2 A completely independent frequency – modulated aural transmitter.
3 Various auxiliary facilities, including antenna and transmission line systems, power supply units, water-cooling equipment and allied components.

The signals from a transmitter are sent out from an antenna placed on a mast, via connecting cables. The higher the height of the mast, the wider the reach of the

signals. So, it is expedient to site a transmitter on a hill, mountain or near the sea for good wave propagation. The video transmitter has 5 – 20 times as much power as the audio transmitter, because of the greater load of information the video transmitter has to process. Weather can affect the signals from the transmitter. When it is favourable, signals could travel beyond its usual reach, and could recede when weather becomes awful. The height gained on a very high mast, helps the signals to wade through space at longer time and distance before receding. Transmitter could be located directly in the premise of the broadcast station and this involves the use of only one transmitter for transmission. But when a transmitter is located at a distant area from the station base, an additional microwave transmitter is required for effective transmission of signals. The Microwave is a mini and unidirectional transmitter, which usually is used to boost signals from origin to the main transmitter in remote areas.

Transmitters could be transistorized or valvalised. The transistorized transmitter is the most modern, while valvalised variety are old fashioned and could be water-cooled or air-cooled. The telephone is a transmitter, so are Orbit Satellites, which are highly specialized and they both receive and send out signals. The signals travel as electromagnetic waves (at the speed of light) thereby preventing time lag.

SELF ASSESSMENT EXERCISE 1

What is a transmitter?

3.1 Types of Transmitters

Transmitters are of several types and brands. It is near impossibility to name the whole brands of transmitters and difficult to enumerate all the types of transmitters for both radio and television stations.

For radio stations, the types of transmitters are:

- Frequency Modulation (FM) transmitters.
- Short Wave (SW).
- Medium Wave (MW) and
- Amplitude Modulation (AM) transmitters.

Radio Lagos and its sister station, EKO FM use two types of transmitters; AM and FM. Specifically, Radio Lagos uses the AM transmitter on frequency 89.75 MHz. Radio Nigeria (FRCN) 1 and 2 use both AM and FM transmitters, but FRCN 3 uses only FM transmitter on the frequency
92.9 MHz.

Medium wave frequency broadcasting is popular in the developing countries, because relatively large areas can be covered with smaller transmitters.

However, the traditional wave band for broadcasting in the developing countries has always been short wave, which enable radio signals to be broadcast over long distances with relatively few transmitters.

3.2 Uses of Transmitters

Generally, the following transmitters have these uses:

1 The AM Transmitters are used for video transmission
2 FM Transmitters are used for audio transmission
3 Narrow Band Transmitters usually employ pulse, amplitude or frequency modulation.
4 Wide Band Transmitters are used for long range military, marine and aircraft communication.
5 Pulse Code Modulation (PCM) Transmitter is an encoder, that is, a circuit that converts a signal into a specific code.

There is low power or low voltage transmitters and high power or high voltage transmitters. Not only these, there are the VHF (Very High Frequency) bands, which are used for both radio and television broadcasting, and the UHF (Ultra High Frequency) bands, that are used for only television broadcasting.

SELF ASSESSMENT EXERCISE 2
What are the uses of AM and FM transmitters?

3.3 Brands of Transmitters

There are many brands of transmitters, and they are classified according to their manufacturers. These brands include: Siemens, Neck, Pye, Thomson, Lakarn, Acrodynes, Taylor, Harris and other transmitters, which are either made in Britain, Germany or Japan. Radio Lagos uses Harris transmitter. Channels Television uses Acrodyne and Taylor transmitters while NTA Ikeja Channel 7 (now defunct) used Siemens transmitter.

4.0 CONCLUSION

The transmitter is the basic equipment used in signal transmission. It has inbuilt mixer through which it modulates studio output signals in successive stages before sending the signals via the antenna on the mast to the outside world. Without a transmitter, it will be impossible to get information to people through radio or television.

5.0 SUMMARY

The transmitter is an electronic equipment used in sending audio or video signals or both. A big transmitter has stages or sections in it and sends programme signals after they have been amplified to the desired frequency. Transmitters could be transistorized or valvalized and have various types that can be put to various uses.

6.0 TUTOR-MARKED ASSIGNMENT

i. Name 4 types of transmitters that a radio station can make use of.
ii. What is a micro wave transmitter?

7.0 REFERENCES/FURTHERREADING

Onabajo, Olufemi. (2004). *Introduction to Broadcasting.* Lagos: Gabi Concept.

UNIT 5 TRANSMISSIONS OF SIGNALS THROUGH A TRANSMITTER

CONTENTS

1.0 INTRODUCTION

In the last unit, you were introduced to the transmitter, its type and uses. Now it is time to know how a transmitter after having modulated programme signals, helps to distribute them.

2.0 OBJECTIVES

At the end of the study unit, you should be able to:

1 Understand the three-stage function of the transmitter.
2 Know what is involved in the transmission of radio and television signals.

3.0 MAIN CONTENT

3.1 Means of Distributing Signals

There are two types of wave signals: the direct wave signal which is a line-of-sight wave that travels through the atmosphere and the ground – reflected waves, which depend primarily on the terrain.

There are also two means of distributing audio and video signals to receiving sets: wireless distribution of broadcasting signals from transmitters, using the radio frequency spectrum, and wired distribution by electric wave forms, via cable or wires.

Wired distribution methods are commonly used, where for various reasons "over air" signal will not provide adequate reception, or where the density of the population renders it uneconomic. This is the case in Manhattan in New York, where many Television sets, receive their programmes from wired distribution system, because the large number of high – rise buildings affect radio frequency broadcasts. However, the most commonly used means of programme distribution, is by broadcasting signals, over the radio frequency spectrum.

3.2 Transmission of Radio Signals

In radio transmission, there is the signal source, the transmitter, then the antenna system or mast. The studio is the signal source; it is the place where signals originate. Signals include the news, music, and other recorded programmes, that are relayed on radio. The signals from the studio are generated with the aid of microphone, cassette decks, disc players, audio console or mixer, turn-tables, the reel-to- reel machine, cartridge players etc. With these studio equipment, programmes are produced and are sent to the audio console or mixer, in the control room. The output from the mixer is sent to the transmitter.

The transmitter has in-built mixer. The transmitter, through the help of its in – built mixer, mixes or modulates the studio output signals, and amplifies the signals in successive stages. A big transmitter has stages or sections in it, and sends the signals, after they have been amplified to the desired frequency, via the antenna on the mast, to the outside world. The signals thus sent out, are carried in wave form, by a carrier wave to any receiving set, which picks it, demodulates it and the message is broadcast.

SELF ASSESSMENT EXERCISE 1

Name the 3 sources in radio transmission.

3.3 Transmission of Television Signals

Television transmission is almost the same as that of a radio. The transmitter modulates and sends signals in a wave form to the outside world, and the television set receives the signal, in a wave form and demodulates it. The demodulated signal is then broadcast as moving pictures and sounds by the set. Modulation helps in the conversion of information into an electric signal. It makes possible transmission of information and provides a means of sending many channels of information, over one communication link.

SELF ASSESSMENT EXERCISE 1

How is the transmission of television signals achieved?

3.4 Three-Stage Function Of the Transmitter

For our purpose, the transmitter functions in three stages as; the pre- stage, which is also the combined Unit (CU) stage.

In the pre-stage, there is modulating signal and there is carrier signal. The modulating signal is the message you want to send. It is like a passenger. The carrier signal is like a vehicle, which is used to carry signals by air. In a transmitter, there is a modulator and the modulator is in this first stage. In this modulating stage, the signals from the control room are modulated to give intermediate frequency (I.F). The I. F. of picture is 38.9 MHZ while that of sound is 33.4 MHZ.

This output from the pre-stage which is the I. F., is transferred to the next stage, the Final or Amplification stage. The output from the first or pre-stage is amplified in order for the signal to travel very far.

The output of the second state is fed in the third or Diplexer stage, and the output of the Diplexer stage goes to the antenna, on the mast. From there, the Radio Frequency is carried in wave form, by the carrier signal to the various receiving sets. The receiving sets have demodulators that demodulate the signal and broadcast the signal in visual and sound.

4.0 CONCLUSION

It is important to note that the transmitter is the most active equipment in signals transmission and this is achieved in three stages before programme signals from a radio or television station are sent to the atmosphere through the antenna placed on a high mast.

5.0 SUMMARY

Transmission of broadcast signals can be carried out through direct wave signals that travel through the atmosphere or the ground reflected waves that travel via cable or wires along the earth's curvature.

6.0 TUTOR-MARKED ASSIGNMENT

1 Describe briefly two means of distributing audio and video signals to receiving sets.

2 When do we use wired distribution system to transmit broadcast signals?

7.0 REFERENCES/FURTHER READINGS

Dominick, Joseph (1990). *The Dynamic of Mass Communication.* USA: Von Hoffman Press.

MODULE 4 THE BROADCAST STUDIO AND CONTROL ROOM

UNIT 1 THE RADIO STUDIO

CONTENTS

1.0 INTRODUCTION

The studio is the center of broadcast activities in a radio station and it is important at this stage to study the nature and characteristics of a studio.

2.0 OBJECTIVES

At the end of this study unit, you should be able to:

1 Appreciate what distinguishes a studio from an ordinary room.
2 Understand what constitutes a studio complex.
3 Know the importance of the studio floor.

3.0 MAIN CONTENT

3.1 Nature and Characteristics of the Studio

Radio transmission is possible because of the unbroken chain of flow of signals. The studio is the point, where signals are originated. It affords the operational personnel, a comfortable place to carry out their duties. It contains the equipment that convert real life experiences into electronic signals and enables one to control an environment in which broadcast events occur without procedure. The quality of programmmes depends on how well the man in the studio can manipulate other persons, equipment and spaces in the studio. The studio can be divided into two sections:

1 The Control Area: this is where the technical members of the production crew stay in order to control programme signals.

2 The Performance Area: This is essentially for the creative members of production. The interpretation of programme scripts takes place here. Some members of the technical crew may also be found in this area. It is sensitive to sound especially during recording and has to be handled carefully. Some of the facilities used in controlling sounds in the studio include:

3 Heavy door with air tight locks. This helps prevent any sound coming from without. The door must be sufficiently wide to allow for movement of sets in and out of the performance area.

4 Double glass windows with a corridor between them – This is used in keeping the sounds from the control and performance units, confined to their different areas. The glass windows enable visual communication between the production crew in the performance area and those of the control area.

5 The walls of the performance area are treated with sound-proof materials to prevent outside sound from coming in.

6 The ceiling of the performance area is shaped to reflect sound optimally.

7 Noiseless air conditioners are provided for the comfort of the performance, as well as to prolong the life-span of studio equipment.

8 Suitable lightings which do not hum must be provided in the performance area.

SELF ASSESSMENT EXERCISE 1
Name the 2 sections a studio can be divided into.

3.2 The Studio Suite

All writings for radio will be in vain, without inputs from the studio suite, for the purpose of production or broadcast of pre-transmission programmes which are recorded in the studio and coordinated by the control room. So also are live programmes on radio. The studio suite is made up of the studio and the control center and both of them constitute the workshop of broadcasting. The group of studios in a broadcasting center is known as the studio complex. A rural or community radio station may have just one studio and a control room, while a large broadcasting center, may have several studios of different sizes, recording rooms, an echo chamber, a master control and switching room and a quality control room. The various units of the studio complex are interconnected and can be joined together in a variety of combinations.

In the continuity system, all programme materials whether from another studio or from tape or from an outside broadcast point, passes through a studio, where an announcer and technical operator, are on continuous duty. The announcer's continuity studio has final control of all programme material in this system, before it leaves the

studio for the transmitter. The announcer can break into a programme any time, for Breaking News, commercial adverts, programme promotion or for important broadcast, comment on timing, suitability of content, sound quality and other relevant matters. He is also responsible for maintaining the broadcast schedule.

The technical operator in the control room of the continuity suite selects contributing studios, pre-test them and maintain final level control. In large broadcasting network, there is a quality control room in the continuity function, where a senior programmes officer or studio supervisor, is concerned with quality control and programme management, while his engineering counterpart, pre-tests contributing studios and pre-selects them for connection to the transmitter.

SELF ASSESSMENT EXERCISE 2
What are the components of the studio suite?

3.3 Studio Floor

The studio floor is where the production actually occurs. During the days of radio, it was important for directors and audio engineers located inside the control booth, to have a direct view of the performers in the studio. This enabled the director to send hand signals to the performers, while a production was in progress.

The studio floor is an open area, which contains the microphones, sets performers and crew. The size of the studio floor, will usually determine the complexity of programming activities that will be carried out by the studio. The larger the studio, the more space for sets, performers, and equipment and the more flexible the operation. Smaller studios restrict equipment, technicians, and performance and tend to limit the size of the set and the number of performers.

Located around the walls of the studio are various connector boxes, to which microphones are connected. With so much activity taking place on the floor simultaneously, it is important to keep cable and wires to a bare minimum.

Studios are equipped with powerful air conditioning to keep temperature levels down. The temperature is important both for personnel comfort and especially for the operation of delicate electronic equipment, which require a fairly stable environment, to function properly.

A well-planned studio facility will provide a large area, adjacent to the studio floor for storing props, sets, and equipment. Otherwise, a portion of the studio floor must be used for storage, and this limits the amount of room available for the production.

3.4 The Studio Complex

Large broadcasting networks have many studios which vary in dimensions and designs, depending on their functions.

Studios are built according to certain acoustic principles to provide quiet places where various kinds of shows and performances can be recorded and transmitter undisturbed. They are usually detached from the structural walls of buildings

housing them, so as to prevent sound interference from other offices within the building.

The length, breadth and height of studios are usually calculated to give the best quality of sound. The materials used in constructing their internal walls have special acoustic properties to absorb and reflect sounds at different frequencies. The studio complex could have the following components:

i. **The Announcing Studio** is small in size and it is equipped with a bank of turn-tables. It can also be used for news – reading and rap-talks.

ii. **The General Purpose Studio** is furnished with a table and chairs, suitable for talk shows, personality interviews and discussions. It may also be used as a dubbing center for assembling documentaries.

iii. **The Drama Studio** is specially constructed to re-create different acoustic environments. It also contains manual sound effects equipment.

iv. **The Auditorium** is built like a mini-theatre with a raised stage, with sets arranged in front of the stage, for audience – participation programmes.

4.0 CONCLUSION

Without a broadcast studio, it may be different to eliminate noise and this may lead to poor programme output. The studio complex also permits various shows and performances to be transmitted live or recorded simultaneously.

5.0 SUMMARY

The studio is the venue of signal origination and it contains equipment that convert real life experiences into electronic signals. It is made up of a control area where the technical members of the production crew stay and a performance area for the creative members of production.

The studio is provided with certain facilities which eliminate sounds emanating from outside the studio. They include (i) Heavy door with air tight locks (ii) Double glass windows with a corridor between performance and control units, (iii) studio walls treated with sound- proof materials.

The studio suite is made up of the studio and the control center and both of them constitute the workshop of broadcasting. The studio floor is where the production actually occurs and it is an open area which contains the microphones, sets, performers and crew.

The studio complex has a central studio and other smaller studios that are interconnected with the central or main studio. It could be made up of (i) the announcing studio, (ii) the general purpose studio and (iii) the drama studio.

6.0 TUTOR-MARKED ASSIGNMENT

i Name 4 characteristics of a studio that distinguish it from an ordinary room.
ii What are the disadvantages of a small studio floor?

7.0 REFERENCES/FURTHER READINGS

Onabajo, Olufemi. (1999). *Essentials of Broadcast Writing and Production*. Lagos: Gabi Concept.

UNIT 2 RADIO CONTROL ROOM

CONTENTS

1.0 INTRODUCTION

Conventional broadcast stations, like Federal Radio Corporation of Nigeria, Ogun State Broadcasting Corporation and some state broadcast stations have radio control rooms. This is because of their complex nature of broadcast programming and transmission. However FM stations combine their studios and control rooms together for staff maximization.

2.0 OBJECTIVES

At the end of this unit of study you should be able to understand the following:

1 The functions of the Audio Console.
2 Other control equipment and their uses in radio broadcasting.

3.0 MAIN CONTENT

3.1 The Audio Control Booth

The Audio control booth houses the Audio, or Mixing Console, Digital Cart, Cassette, Compact Disc (CD), and digital Audiotape (DAT) machines; a reel-to-reel audiotape recorder and, a regular turntable; a physical patchbay, despite the presence of computable patching; one or more desktop computers; a cue and two program speakers; intercom systems; a clock; and a line monitor. One audio engineer or an Audio Technician or Audio Operator (AO) operates the audio controls during a show.

3.2 Audio Production Room

Because of the many and various audio production demand in post production, larger stations and independent production houses have still another audio production room or facility. This room, which resembles a small control room of a recording studio, is not used for the sound control of studio shows. Rather, it is for such post-production activities as making some sounds more prominent while eliminating unwanted ones – an activity called sweetening – composing music tracts, adding sound effects to the audio

tract of a play or a laugh track to a situation comedy, or assembling various music bridges and announcements for the next day's programming.

The audio production room usually contains a fairly elaborate audio console, two or more multitrack audiotape recorders (ARTs) and DAT machines, digital cart and cassette machines, CD players, keyboards (synthesizers) and samplers, and a computer system for the creation, modification, and a storage of audio material, for synchronizing video and audio tracks, and for patching. Despite the computer-activated patching and routing, many audio production rooms also contain a physical patchbay to route audio signals. Finally, the room contains several high-fidelity monitor speakers.

SELF ASSESMENT EXERCISE 1
What is the audio production room used for?

3.3 Audio console

Regardless of individual designs, all audio consoles, or audio control boards are built to perform five major functions:

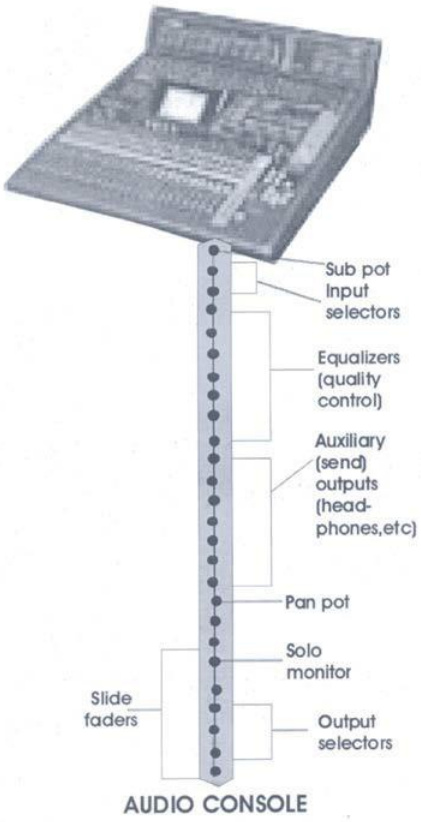
1 Input: to preamplify and control the volume of the various incoming signals.
2 Mix: to combine and balance two or more incoming signals.
3 Quality Control: to manipulate the sound characteristics.
5 Output: to route the combined signals to a specific output
6 Monitor: to listen to the sounds before their signals are actually recorded or broadcast.

Input: Studio consoles have many inputs in order to accept a variety of sound sources. Even small studio consoles may have as many as sixteen or more inputs. Although that large number of inputs are rarely used in the average in-house production or broadcast day, they need to be there in the event of having to produce special programmes.

Let us now take a closer look at the input section of an audio console. Each of the input modules has a preamp (Preamplifier that boosts incoming, low-level signals) and a volume control, a variety of quality controls, switches (mute or solo switch) that silence all the other inputs when you want to listen to a specific one, and assignment switches that will route the signal to certain control parts of the audio console and to signal outputs.

Volume Control: All sounds fluctuate in loudness (Volume). Some sounds are relatively weak, so there is the need to increase their volume to make them perceptible. Other sounds come in so loud that they overload the audio system and become distorted, or outweigh the weaker ones so much that there is no longer proper balance between the two. The volume control that helps adjust the incoming sound signals to their proper level is usually called a pot (potentiometer) or a fader (their names for it are attenuator and gain control).

To increase the volume, which makes the sound louder, push the fader up, away from you. To increase the volume, which makes the sound softer, pull the fader down toward you. Small portable mixers have mostly rotary pots which you turn clockwise to increase the volume and counter clockwise to decrease the volume.



AUDIO CONSOLE

Mix: The audio console enables one to combine, or mix, the signals from various inputs, such as two lavaliere mics, background music, and the sound effect of a phone ring. The mix bus combines (mixes) these various audio signals with the specific volume assigned by the operators. Without the mixing capability of the board, one could control only one input at a time. The completed mix is then fed to the line-out.

A mix bus is like a large intersection at which the cars (signals) from several streets (inputs) come together (are mixed) and then move out again as a unit (mixed sound signal) along a wide, single street (output, or line-out).

Quality Control: All audio consoles have various controls that let you shape the character of a sound. Among the most important are equalization, filters and reverberation (reverb) controls.

Equalization: This is the process of controlling the audio signal by emphasizing certain frequencies and eliminating others. It can be

accomplished manually or automatically through an equalizer, which works very much like the tone control on a home stereo receiver. It can boost or reduce selected frequencies and thereby influence the character of the sound. For example, you can make a sound more brilliant by boosting the high frequencies or more solid by boosting the lows or you can eliminate a low frequency hum or a high-frequency hiss. Filters eliminate automatically all frequencies above or below a certain point. The reverb controls can add an increasing amount of reverberation to each of the selected inputs.

Among the additional quality controls on large consoles are switches that allow you to accommodate the relative strengths of incoming sound signals or that prevent input overloads, and others that let you "pan" the stereo sound to a particular spot between the two stereo speakers.

Output: The mixed and quality – processed signal is then routed to the output, sometimes called line-out. Just to make sure that the mixed signals stay within the acceptable volume limits, they are regulated by final volume controls – the master pots – and metered by volume indicators. The most common volume meter is the VU (Volume Unit) meter. As the volume varies, the needle of the VU meter oscillates back and forth along a calibrated scale. Much like the amplifier in a home stereo system, the VU meter is some audio consoles consists of light- emitting diodes (LEDs), which show up as thin, coloured light columns that fluctuate up and down a scale.

Some audio consoles have an additional peak programme meter (PPM), which measures loudness. A PPM reacts more quickly to the volume "peaks" than the needle of the VU meter and shows quite clearly when you are over modulating.

Output channels: We often classify audio consoles by the number of output channels. Today, however, even small television consoles have t least two output channels to handle stereophonic sound, or to feed two sources (such as headphones and videotape recorder) simultaneously with two independent mixes. The increasing demand for high-quality audio has led to greater use of multi channel (output) console in television in the audio control booth and especially in the audio production room.

To identify how many inputs and outputs a specific console has, they are labeled with the number of input and output channels, such as a 6 x 1 or a 16 x 4 console.

This means that the small 6 x 1 console has six inputs and one output; the larger 16 x 4 console has sixteen inputs and four outputs. With a single output channel, the 6 x 1 board is obviously monophonic.

Input/Output Consoles: Some of the more elaborate consoles have input/output, or I/O modules, which means that each input has its own output. If, for example, there are twenty-four inputs and each one receives a different sound signal, you could send each of them directly to the separate tracks of a twenty-four track recorder without feeding them through any of the mix buses. That way the console is used to control the volume of each input, but the console does not function as a mixing or

quality control device. In fact, the sound is sent to the tape recorder in its raw state. The mixing quality controls of the various sounds are all done in the postproduction and mixdown sessions. The I/ O circuits allow one to try out and listen to all sorts of mixes and sound manipulations without affecting the original sent to the recorder.

Monitor and Cue: All consoles have a monitor system, which allows one to hear the final sound mix before switching it to the line-out. A separate audition or cue return system allows for hearing of a particular sound source without routing it to the mix bus. This system is especially important when you want to cue a CD or cassette while on the air with the rest of the sound sources.

Computer-Assisted Consoles: Many newer consoles contain a computer through which you can present, store, recall and activate many of the audio control functions. For example, you can try out a particular mix with specific volume, equalization, and reverberation values for each of the individual sounds, store all of it in the computer's memory, try something else, and then recall the old set up with the press of the button.

3.3 Mixer

An audio mixer differs from a console in that it is small, portable and normally serves as the input (volume control) and the mixing (combining two or more signals) functions.

Most small portable mixers have only four, or at best eight inputs and one or two output channels. These few inputs are usually sufficient in that you are simply trying to record the sounds but not mix or otherwise process them. Most small mixers have no sound quality controls. They mix and output sounds the way they come in – that is, possibly with the hisses and hums. Some digital mixers, however, have more inputs and equalizers for each input.

SELF ASSESSMENT EXERCISE 2

How does a mixer differ from a console?

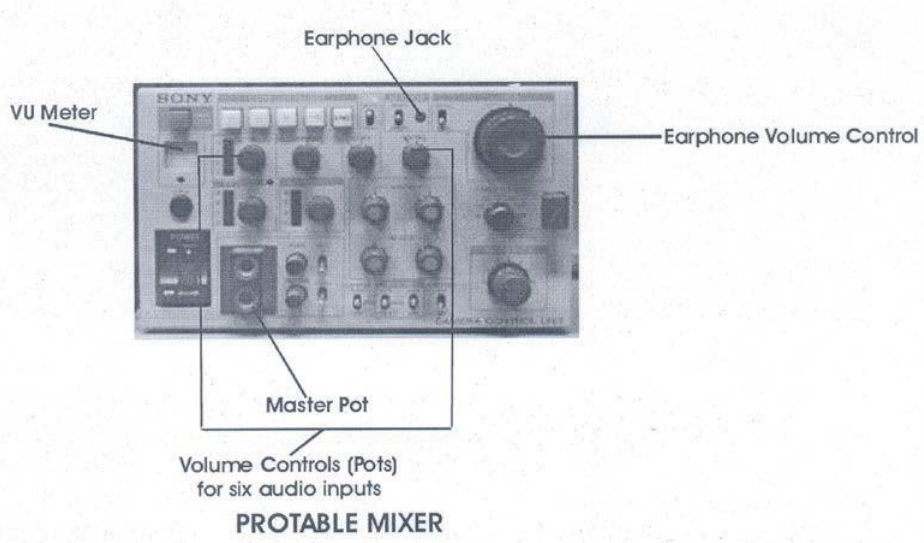
3.4 Patchbay

The primary function of the patchbay or patch panel is connecting and routing audio signals to and from various pieces of equipment. You can accomplish this by using actual wires that establish a specific connection or with a computer that treats the signals as files and simply rearranges them according to your instructions. Whatever method is used, the principle of patching is the same.

Wired Patchbay: All wired patch panels contain rows of holes, called jacks, which represent the various outputs (from microphones, cartridges, turntables, or tape recorders) and inputs (to different pots or channels at the audio console). The upper rows of jacks are normally the outputs (which carry the signals from mics. CDs and so forth). The rows of jacks immediately below the output jacks are the input jacks that are connected to the audio console. The connection between output and input is made through the patchcord.

Patchbays are usually wired so that the various input jacks are directly below the output jacks.

Computer-Assisted Patching: In computer – assisted patching, the sound signals from the various sources, such as mics, direct boxes, CDs, or video tapes, are routed to the patch panel programmer, which assigns the various signals to specific fader modules on the audio console for further processing. One does not need any physical patches to route but should enter the routing information into the computer (patch panel programmer) which tells the electronic patch panel to connect the inputs to the desired faders on the console, show the information on the display screen and store the patching commands on a floppy disc for future use.



4.0 CONCLUSION

The audio console is the life wire of the control room because it performs a number of operations on the programme signals that emanate from the studio before the signals are transported to the transmitter.

5.0 SUMMARY

The radio control room usually contains a fairly elaborate audio console, two or more multi-tract audio tape recorders, digital cart and cassette machines, CD players, keyboards and samplers and a computer system for the creation, modification and storage of audio material. The audio console performs input, mix, quality control, output and monitor functions.

6.0 TUTOR-MARKED ASSINGMENT

Take a trip to a radio studio and control room and answer the following questions.

i. Are the radio studio and control room together in the same room?
ii. Which equipment can you find in the radio studio? iii.Which equipment are located in the control room. iv.Name 5 functions of the audio console.

7.0 REFERENCES/FUTHER READINGS

Alten, S. R. (1994). *Audio in Media.* 4th ed. Belmont, Calif: Wadsworth Publishing Company.

UNIT 3 THE TELEVISION STUDIO

CONTENTS

1.0 INTRODUCTION

You are welcome to the television studio with its various types of lighting devices and cameras which can be creatively used to achieve programme aesthetics.

2.0 OBJECTIVES

At the end of this study unit, you should be able to:
i. Understand the physical layout of a television studio.
ii. Be familiar with the major installations in a television studio.

3.0 MAIN CONTENT

3.1 Physical Layout

Most Studios are rectangular with varying amounts of floor space. The advent of the zoom lens has drastically reduced the need for actual movement of the camera (zoom lens can make a scene look closer or father without camera movement), but room size still greatly affects production complexity and flexibility.

Size

The larger the studio, the more complex productions can become and the more flexible they will be. If all that is done in the studio is news and an

occasional interview, then one may require a little space. In fact, some news sets are placed right in the middle of the actual newsroom. Other news sets may take up substantial portion of a large studio. Elaborate productions, such as musical or dance numbers, drams, or audience participation shows, need large studios. It is always easier to produce a simple show in a large studio than a complex show in a small one. The larger the studio, however, the more difficult it is to manage. Medium- sized or even small studios are generally more efficient to run than large studios, but they are not as flexible.

Floor

The studio floor must be even and level so that cameras can travel smoothly and freely. It should also be hard enough to withstand the moving about of heavy equipment, scenery, and set properties. Most studios have concrete floors that are polished or covered with linoleum, tiles or hard plastic.

Ceiling Height

Adequate ceiling height – a minimum of 12 feet – is one of the most important design factors of a television studio. If the ceiling is too low the light will be too close to the scene for good lighting control and there will not be enough room for the heat to dissipate.

Also, the low lights and the boom microphone will encroach into the scene. Higher ceilings can accommodate even tall scenery. Many large studios, therefore, have ceilings more than 30 feet high.

Acoustic Treatment

The studio ceiling and walls are usually treated with acoustic material that prevents sound from bouncing indiscriminately about the studio. This is why television studios sound "dead". When you clap your hands in an acoustically treated studio, the sound seems to go nowhere; in a more "live" studio, one can hear some of the reverberations which are similar to a slight echo.

Air-Conditioning

Because television studios have no windows, air-conditioning is essential. The lights produce a great amount of heat, which has an adverse effect on performers and delicate electronic equipment. Unfortunately, many air-conditioning systems are too noisy for studio productions and must be turned off during the taping of a show – just when cool air is needed the most.

Doors

Studios need heavy, soundproof doors that are large enough to move scenery, furniture, or even vehicles in and out. There is nothing more frustrating than trying to squeeze scenery and properties through undersized studio doors or to have the doors transmit outside sounds.

SELF ASSESSMENT EXERCISE 1

What type of doors does a television studio require?

3.2 Intercommunication Systems

The intercommunication system, or intercom, allows all production and engineering personnel actively engaged in the production of a show to be in constant voice contact with one another. For example, the director, who sits in the control room physically isolated from the studio, has to rely totally on the intercom system to communicate cues and instructions to every member of the production team. In most small stations, the P.L (private line or phone line) system is used. Each member of the production team wears a small telephone headset with an earphone and a small microphone for talkback. Large stations use a wireless intercom system.

SELF ASSESSMENT EXERCISE 2

What in your opinion is the use of intercom in television production?

3.3 Studio Monitors

Studio monitors are high-quality television sets that display the video feed from the programme switcher. A studio monitor is an important production aid for the crew and talent. The production crew can see the shots the director has selected and this anticipate their future tasks. For example, if it is seen that the on-the-air camera is a close-up rather than a long shot, one can work closer to the set without getting into camera range. Also, after seeing that one camera is on a close-up, the other camera operator then go to a different shot to give the director a wider choice. The studio monitor is essential for the newscaster to see whether the various taped or live inserts are actually appearing as per script. In audience participation shows, several studio monitors are usually provided so that the studio audience can see how the event looks on-screen.

3.3 Scenery and Properties

Television scenery consists of the three-dimensional elements used in the studio to create a specific environment for the show or show segment. The most common scenic element is the flat, a wood frame covered with soft materials (Muslim or canvas) or hardwall (Plywood or various types of fibreboard). The flat is generally used to stimulate walls. Other Scenic elements include columns, pedestals, platforms, doors, windows, and steps. Furniture, curtains, hanging pictures, lamps, books, desks, and telephones are considered the properties and set dressings. The properties used to make the set functional, such as tables, chairs are the set properties. Items handled by the performers, such as the telephone, are called properties. Pictures, indoor plants, sculptures everything used to dress up the set constitute the set dressings.

Depending on the type show, a set will have to simulate a real environment, such as a canteen scene, or simply provide an efficient and attractive working environment, such as an interview set. Whatever the purpose of the set, it must allow for good lighting, optimal camera angles and camera and microphone placement or movement, and smooth and logical action of the performers.

To produce a large number of vastly different programmes, from daily newscasts to complex television dramas, requires large prop and scenery storage areas. Otherwise, the support areas can be fairly simple.

The most important part of any storage area is its retrieval efficiency. All storage

areas should be clearly labeled, and the props and scenery put back in their designated place.

3.4 Makeup and Dressing Rooms

These support areas are commonplace in large production centers where soap operas or other daily series programmes are produced.

In smaller production centers, makeup and dressing are done wherever it is convenient.

4.0 CONCLUSION

The television studio because of its facilities and floor space can allow for the beginning and conclusion of any programme, without recourse to outside camera shots. Some studios even allow for drive-in and other complicated scenes.

5.0 SUMMARY

Studios are constructed according to the nature and complexity of programmes that will be produced in them. Because of the heat generated by the lights, there is the need for noiseless and powerful air- conditioning units that will make programme recordings bearable.

6.0 TUTOR-MARKED ASSIGNMENT

1 What has the advent of zoom lens done to camera movement?
2 What are the functions of studio monitor?

7.0 REFERENCES/FURTHER READINGS

Onabajo, Olufemi. (2004). *Introduction to Broadcasting.* Lagos: Gab. Concept Ltd.

UNIT 4 TELEVISION CONTROL ROOM

CONTENTS

1.0 INTRODUCTION

The television control room is where all the activities in the television studio are monitored. It also has gadgets for live and delayed transmission of all television programmes.

2.0 OBJECTIVES

At the end of this unit of study you should be able to:

i. Understand how the various video and audio inputs are selected, such that they make sense to the viewing audience.
ii. Identify the role of the switcher in the selection and sequencing video images from video sources.

3.0 MAIN CONTENT

3.1 The coordination function

The control room, a separate room adjacent to the studio, is where all the production activities are coordinated. Here, director, associate director, technical director, and a variety of producers and production assistants make the decisions concerning maximally effective picture and sound sequences, which are to be videotaped or broadcast live.

3.2 Programme control

This refers to the equipment the director needs to select and organize the various video and audio inputs so that the end result makes sense to the viewing audience. The programme control area of the control room is equipped with:

1. Video Monitors
2. Monitor speakers for programme sound,
3. Intercom systems, and
4. Clock and stopwatches.

Video Monitors

Even a simple control room holds an amazingly large number of video monitors. There is a preview monitor for each of the studio cameras and separate preview monitors for film chains, videotape recorders, and character generators or other special-effects devices. There is also a special colour preview monitor that shows the director and technical director the upcoming picture before it is punched up (put on the air) and the colour line monitor (also called master monitor or programme monitor) that is fed by the video line-out. If one does a live remote or is connected with a network, he needs at least two more monitors to preview the remote and network sources.

Finally, there is the off-the-air monitor – a regular television set that receives off the air what you are telecasting.

Speakers for Programme Sound

The production personnel in the control room, especially the director, must hear what audio is going on the air. The director has a volume control that can adjust the volume of the monitor speaker without influencing the volume of the line-out audio.

Intercommunication Systems

In addition to the all-important P. L. intercom that connects the director with all other members of the production crew, there is an additional intercom system called the P. A. (public address system), or simply the director's studio talkback. The studio talkback system allows the director to talk directly to the crew or talent in the studio when the show is not in progress. With the I. F. B. (interruptible foldback or feedback) system, the director and producers can talk to the talent while the show is on the air.

Clock and Stopwatches

Time is an essential organizing element in television production. Programmes are aired according to a second-by-second schedule called the log. The two timing tools for the director are the clock and the stopwatch. The clock indicates when a certain programme should start or finish.

The stopwatch is used for timing inserts, such as a 40-second videotape insert within a news programme. Most control rooms have a regular clock (with hands), a digital clock (showing time in numbers), and digital stopwatches that can run forward and backward. The advantage of a clock with hands is that one can look forward in time and, for example, actually see how much time left until the end of a programme.

The digital clock simply indicates where one presently is.

SELF ASSESSMENT EXERCISE 1
What is programme control in television transmission?

3.3 Image Control

Image control refers to the selection and proper sequencing of video images as supplied by cameras or other video sources. It also includes the control of video special effects. The main piece of image control equipment is the switcher, which is located right next to the director's position. Although the director and the person doing the switching (usually the technical director) are connected by P. L. intercom, the director often resorts to pointing and finger snapping to speed up the cues to the Technical director (TD). In some stations the director does his or her own switching, but that arrangement has more disadvantages than advantages. The C. G. (character generator) is also located in the control room. The C. G. operator can then call up the various preprogrammed titles or create new ones even during the show.

SELF ASSESSMENT EXERCISE 2
What is image control?

3.4 Audio Control

The audio control booth can be considered as a small radio station attached to the television control room. It usually houses the audio console and a patch bay, or patch board; audiotape recorders and cassette machines; CD player; cue and programme speakers; a clock; and a line monitor. Because the audio engineer must be able to work undisturbed by the apparent confusion and inevitable noise in the control room, the audio control booth has visual contact with the control room, through a large window, otherwise it is self-contained. The audio engineer listens to the director's cues either through the P. L. intercom or through a small intercom speaker.

3.5 Lighting Control

The lighting control board can be located in the control room or in a corner of the studio. The advantage of placing it in the control room is that the L. D. (lighting director) has close contact with other control room personnel. The lighting control operator is, as are all other production team members, connected with the director via P. L. intercom.

4.0 CONCLUSION

You will notice that television has both visual and audio qualities and the implication of this is that the audio console which we studied earlier under radio control room is also a main feature in the television control room.

5.0 SUMMARY

The television control room has four major functions which are achieved through a number of equipment located in it. They include programmer, image, audio and lighting controls.

6.0 TUTOR-MARKED ASSIGNMENT

Take a trip to a television studio and control room and answer the following questions.

i. Name 5 items that you can find in a television studio. ii. Identify 5 other items in the control room.

7.0 REFERENCES/FURTHER READINGS

Onabajo, Olufemi (2004) *Introduction to Broadcasting*, Lagos: Gabi Concept Ltd.,

UNIT 5 MASTERCONTROL IN TELEVISION

CONTENTS

1.0 INTRODUCTION

Master control is the clearing house for all programme material. It receives programme feeds from various sources and ensures that the right programme material with the right technical quality is put on air at the right time.

2.0 OBJECTIVES

At the end of the study unit, you should be able to explain.

i. What master control is
ii. The specific activities of master control.

3.0 MAIN CONTENT

3.1 What Is Master-Control

Master-control is the nerve center of a television station. Every second of programming that is seen on our home screen has gone through the master control room of the station to which we are tuned. Master control acts as a clearing house for all programme material. It receives programme feeds from various sources, and telecasts them at a specific time. The major responsibility of master control is to see that the right programme material (including commercials and public service announcements) is put on the air at the right time. Master control is also responsible for the technical quality of the programmes. This means that it has to check all programmes material being aired against technical standards set by the National Broadcasting Commission (NBC) and by a critical chief engineer. The specific activities of master control consist of programme input, programme storage, and programme retrieval.

3.2 Specific Activities of Master-Control

These include the following:

Programme Input
Programme material may come into master control directly from its own studios; from satellite or other remote feeds, such as a network show or a live telecast outside the studio; or in the form of videotape. The live shows are routed immediately to the transmitter for broadcast, but the bulk of the programme material (video-taped shows) must be stored before being broadcast.

Master control also puts together the various station breaks. A station break is the cluster of commercials, teasers about upcoming programmes, public service announcements, and station identifications that appear between programmes.

In non-broadcast production centers, master control means a room that houses the camera control unit (CCU), high-end video-recording equipment, special-effects equipment, large-capacity computers that perform a variety of production functions, and test equipment.

SELF ASSESSMENT EXERCISE 1
How does programme material come into master-control?

3.3 Programme Storage
All recorded programme material (videotape, films, and electronically stored still images) are stored in master control itself or in a designated storage room. Each programme is given a station code, or house number, for fast identification and retrieval. Although computer retrieval has introduced some commonality in terms, many stations have their own procedures and codes.

3.4 Programme Retrieval
Programme retrieval means the selection, ordering, and airing of all programme material. The programme retrieval is determined by the programme log which is the second-by-second listing of every programme aired on a particular day. The hard-copy log contains information necessary for efficient station operation. In general, the log identifies schedule time, length of programme, programme title, video and audio origin (video, network, live, or remote), and other pertinent information.

The programme log is issued daily, usually one or two days in advance. It is normally distributed in a printed form that may run into several pages. Most stations display the log on computer screens.

The master control switching area looks like the combined programme control and switching area of the studio control room. Master control has preview monitors for all studio cameras, videotape recorders, special effects, and network and other remote feeds, plus at least one off-the-air monitor.

Although all master control switching is done by computer, all master controls have a regular switcher which looks similar to the studio switcher. It is a fail-safe backup device. When the computer breaks down, the master control operator must take over and use the manual switcher for all on-the-air programme sequences. When all is going well, the computer switching will follow the sequence of events as

dictated by the programme log. The computer will also activate various playback operations. For example, it can start a specific VTR and switch the picture and sound on the air at the exact log time, change to still picture and roll a digital audiotape with the prerecorded announcer's voice, switch to another brief VTR insert, and then switch to the network programme. If the house number of the actual programme does not match the number as specified in the log, the computer will flash a warning in time to correct the possible mistake.

SELF ASSESSMENT EXERCISE 2

What determines programme retrieval in television transmission?

4.0 CONCLUSION

Without the master control all the activities in the studio and control room cannot be properly co-coordinated. There are a number of video and audio sources that have to be previewed and effectively combined before we arrive at the various programmes that reach our television sets at home or in our offices.

5.0 SUMMARY

Every programme that is seen on our home screen has gone through the master control room of a television station. Master control involves programme input, programme storage and programme retrieval.

6.0 TUTOR-MARKED ASSIGNMENT

1 What is master control in television broadcasting?
2 What are the 3 activities that master control is involved in?

7.0 REFERENCES/FURTHER READINGS

Lindhelm, R. D & Blum, R. A. (1991). *Inside Television Producing*. Boston: Focal Press.

MODULE 5 THE PRODUCTION PROCESS IN BROADCASTING

CONTENTS

1.0 INTRODUCTION

A producer is mostly concerned with preproduction planning and he takes care of all the production details necessary to move the initial idea to the actual production activities with precision and efficiency.

2.0 OBJECTIVES

At the end of the unit of study, you should be able to:

i. Know the duties of a producer
ii. Know what every programme proposal should contain.

3.0 MAIN CONTENT

In other to be maximally efficient and effective in the production process, the producer must take cognizance of the following:

3.1 Programme Ideas

Producers are expected to generate worthwhile ideas on demand and these ideas must be translated into effective video and audio messages. Ideas can be generated by members of the programmes department or programmes implementation committee through a series of brainstorming with the producer coordinating various thought processes. These ideas are then organized such that various elements and activities interact with one another to achieve the desired product. This helps the producer determine the people he will require, what they would do and the equipment necessary to produce a specific programme.

3.2 Production Models

These describe the flow of activities necessary to move from idea to the broadcast message and they help organize the production process as well as facilitate coordination of efforts. The two basic production approaches are represented by (i) the

cause-to-effect model which starts with a content expert who generates a programme idea which is then given to the production people who translate the basic idea into a radio or television programme; and (ii) the effect-to-cause model which starts with a basic idea and jumps to the desired communication effect on the target audience before deciding on the specific medium requirements that would lead to such an effect (production process).

SELF ASSESSMENT EXERCISE 1

What do production models describe?

3.3 Writing Programme Proposal

A programme proposal is a written document that shows what the producer wants to do. It briefly explains the process message (the message actually received by the audience) and the major aspects of presentation. Every programme proposal should contain

(a) The programme series title
(b) Objective of the programme (process message) (c)Target audience
(d) Programme treatment
(e) Desired distribution channel and time
(f) Tentative budget.

3.4 Preparing a Budget

An independent producer has to put cost to script, artistes, production personnel, studio and equipment rental, postproduction editing, tapes, special props, food, lodging, transportation, etc.

As a station producer, the normal personnel and equipment costs are usually included in the overall production budget and one only needs to list special costs such as overtime, expendable supplies, script and artiste fees. Dividing a budget into pre-production, production and postproduction categories gives a more workable breakdown of expenditure.

SELF ASSESSMENT EXERCISE 2

If you are asked to prepare a budget for a radio on television programme, what will be your inputs?

4.0 CONCLUSION

Every production process revolves round the producer and it is his knowledge and expertise of the preproduction planning that will help bring every broadcast programme into fruition.

5.0 SUMMARY

Pre-production planning involves the producer generating worthwhile programme ideas, emulating good production models, knowing how to write a good programme proposal, as well as being able to prepare a realistic budget.

6.0 TUTOR-MARKED ASSIGNMENT

i. How can a producer generate workable programme ideas?
ii. What are the essential ingredients of every programme proposal?

7.0 REFERENCES/FURTHER READINGS

Onabajo, Olufemi. (1999*). Essentials of Broadcast Writing and Production.* Lagos: Gabi Concept Ltd.

UNIT 2 THE PRODUCTION PROCESS

CONTENTS

1.0 INTRODUCTION

The actual production process includes many phases that sometimes progress in a logical and comfortable sequence.

2.0 OBJECTIVES

At the end of this unit of study, you should be able to:

i. List the production steps
ii. Name three postproduction activities.

3.0 MAIN CONTENT

3.1 Production Steps

(i) There is the need for an initial production conference which should be attended by the director, writer, art director, artistes and engineering supervisor and coordinated by the producer. This meeting is for the producer to present the objective of the programme series and invite comments on how the idea or script can best be translated into a radio or television programme.

(ii) The producer and the writer should meet to discuss whether the script generates the process message. If the process message requires an unusual production approach, subsequent meetings with the entire production team should be scheduled.

(iii) There is the need for final scheduling even if the producer had previously scheduled various facets of the production.

(iv) The producer is expected to file out facilities request' and this usually contains information concerning date and time of rehearsal, taping sessions and on-the-air transmission, name of director, title of production and all technical facilities such as cameras, microphones, lights, sets graphics, costumes, makeup, VTR, Audio tape recorder, post-production facilities and special production needs. It also lists the studio and control room needed and the location of the outside location if necessary.

(v) The producer should supply the traffic department with all pertinent information such as the title of the show, airdates and airtimes.

(vi) The Public Relations department should be properly briefed about the upcoming production for adequate publicity, so as to narrow the gap between the potential and the actual audience.

(vii) The producer hands over the production to the director who will conduct the necessary rehearsals and actual productions.

3.2 Postproduction Activities

These include:

(i) Postproduction editing
(ii) Feedback and evaluation
(iii) Record Keeping

(i) **Postproduction Editing:** It is usually the most expensive and time-consuming production phase. It is a means of selecting from the original videotapes or digitally recorded material those scenes that seem most pertinent and copy them in a specific order and this should be supervised by the producer. Editing can involve two editing systems.

(a) The linear editing system which normally requires two source Video Tape Recorders (VTR) that contain the original material recorded with camera and the record VTR which produces the final edit master tape.

(b) The non-linear editing in which all videotapes are transferred to a computer disk and the video and audio portions are edited in the manner of a word processing programme through calling up, moving, cutting, pasting and joining the various shots.

(ii) **Feedback and Evaluation:** There is the need to arrange a viewing date for the client and take notes on the recommendation for changes made by the client. Feedback from viewers can take the form of fax, phone calls, e-mail etc. The producer should try to gather as much feedback as possible in order to find out how close the

defined process message is to the actual one.

(iii) **Record Keeping:** The producer should put together a production book that contains important preproduction, production and postproduction records. Such a production book should contain the final programme proposal, production schedule, facilities request, production personnel, artistes, shooting script etc. Also he should file a cassette copy of the production for archival purposes.

SELF ASSESSMENT EXERCISE 1
Discuss the concept of feedback and evaluation in post production activities.

3.3 The Production Switcher

The switcher helps in selecting various video sources, such as video cameras, videotape and other special effects. It selects visuals from various video sources and join them through a great variety of transitions, while the event is in progress and creates room for instantaneous editing.

Any switcher whether simple or complex can perform 3 basic functions:

(i) It can select an appropriate video source from several inputs.
(ii) It performs basic transitions between two video sources.
(iii) It can create or retrieve special effects such as split screens.

Some switchers have further provisions for remote start and stop of equipment such as videotape recorders and can automatically switch the programme audio with the video. Each video input on a switcher has its corresponding button. If there are three cameras, then there are three buttons. If the video source of the switcher includes a videotape recorder and a character generator the number of buttons will be five.

The row of buttons is called a BUS and production switchers have many buses. Most basic switcher functions include:

(a) To cut
(b) To dissolve
(c) To superimpose
(d) To fade

The switcher should also allow one to see the selected video inputs or effects before they are punched on air. The row of buttons which sends everything punched up directly to the line-out and from there to the transmitter or video recorder is called the PROGRAMME BUS.

SELF ASSESSMENT EXERCISE 2
What is the duty of the production switcher?

4.0 CONCLUSION

It is important that the producer should keep the principal production steps in mind and also know what the post production activities are in order to produce good and enduring programmes at all times.

5.0 SUMMARY

The production process involves a number of production steps; so are the post production activities which include postproduction editing, feedback and evaluation, as well as record keeping.

6.0 TUTOR-MARKED ASSIGNMENT

1 Name 5 principal production steps that a producer should embark upon in order to produce a good programme.
2 Identify 3 post production activities.

7.0 REFERENCES/FURTHER READINGS

Onabajo, Olufemi. (2004). *Introduction to Broadcasting.* Lagos: Gabi Concept Ltd.

UNIT 3 MICROPHONES AND HOW THEY WORK

CONTENTS

1.0 INTRODUCTION

Microphones are very essential in both radio and television broadcasting and without them all activities in a broadcast studio will grind to a halt. Determining how good or bad a microphone is depends on its electronic and operational characteristics.

2.0 OBJECTIVES

At the end of the study unit, you should be able to:

i. Define a microphone
ii. Name 5 types of microphones and their uses.

3.0 MAIN CONTENT

3.1 What Is A Microphone?

The pick-up of live sounds is done through a variety of microphones. A microphone is an electro-acoustic transducer that converts acoustic energy into electrical energy. It is an instrument for measuring minute changes in air pressure. Microphones electronic characteristics include their sound generating elements and their pick-up patterns.

SELF ASSESSMENT EXERCISE 1

What is a microphone?

3.2 Classification of Microphones

All microphones transduce or convert sound waves into electric energy which is amplified and reconverted into sound waves by the loudspeaker. The initial conversion is accomplished by the generating element of the microphone. Because there are three major types of sound-converting systems, microphones can be classified into

i. Dynamic Microphones
ii. Condenser Microphones

iii. Ribbon Microphones

i Dynamic Microphones

These are the most rugged. They can be worked close to the sound source and still withstand high sound levels without damage to the microphone. They are ideal for outdoor recordings because they can withstand fairly extreme temperatures.

ii Condenser Microphones

They are much more sensitive than the dynamic microphones in that they are very sensitive to physical shock, temperature change and input load. However, they usually produce higher quality sound when used at greater distances from the sound source. Contrary to the dynamic microphone, the condenser microphone needs a small battery to power its built-in preamplifier.

iii Ribbon Microphone

They are similar in sensitivity and quality to the condenser microphones. Ribbon microphones produce more friendly sounds that are frequently preferred by singers. They are strictly used for indoor activities.

3.2 Pick-Up Patterns

Any type of microphone can hear sounds from all directions so long as the sounds are within its hearing range. While some microphones can hear sounds from all direction equally well, others hear sounds better when they come from a specific direction. The territory within which a microphone can hear well is called its pick-up pattern.

The **OMNIDIRECTIONAL** microphone hears sounds from all directions equally well. The **UNIDIRECTIONAL** microphone hears better in one direction – usually the front of the microphone than from its sides or back.

3.3 Operational Characteristics

There are microphones that are primarily designed and used for sound sources that are moving while others are used for more stationary sound sources. However, any of the mobile microphones can be used in a stationary position and the stationary microphones can be moved about if the production situation so requires.

The mobile microphones include Lavaliere, hand, boom, wireless and headset microphones. The stationary microphones include desk, stand, hanging, hidden and long-distance microphones. Once put into place and properly aimed at the sound source, the stationary microphones are not moved during the show or show segment.

Lavaliere Microphones

The Lavaliere microphone is probably the most frequently used on- camera microphone in television. It can also be fastened to clothing with a small clip. Its omnidirectional variety with a dynamic or condenser generating element is designed primarily for voice pick-up. Although the action radius of performers is still limited by the Lavaliere cable, the cable is so light and flexible that they can move quickly and relatively unrestricted in a limited studio area without having to hold a microphone or

worry about being properly followed by the boom microphone. Despite their small size and quality sound pick-up characteristics, they are durable and relatively immune to physical shock.

Lavaliere microphones are the most efficacious sound pick-up, device for all types of news shows, interviews that take place in one location, panel shows, drama and musical shows.

Hand Microphones

The hand microphone is handled by the performer and it is used in all production situations in which it is imperative for the performer to exercise some control over the sound pick-ups. In the studio or on stage, hand microphones are used by singers and by performers who do audience participation shows. Most importantly the hand microphone enables singers to exercise sound control through choosing that whose sound production suits their voice quality and style of singing. Because of frequent handlings, the hand microphone must be ruggedly built to withstand physical shock and be able to withstand rain, humidity, heat and extreme temperature change when used outside the studio. While some hand-microphones are built for outdoor use, others work best in the controlled studio environment.

Boom Microphones

When a production such as a dramatic scene requires that you keep the microphone out of camera range, one needs a microphone that can pick up sound, over a fairly great distance, while making it seem to come from close up and which keeps out most of the extraneous noises surrounding the scene. This is what the shotgun microphone does. It is highly directional and has a far reach with little or no loss of presence. Because it is usually suspended from some kind of boom or is handled with one's arms acting as a 'boom', it is called a boom microphone.

Wireless Microphones

Wireless microphones are used in production situations in which complete and unrestricted mobility of the sound source is required. They can be used to record a group of singers who jump around as much as they sing. They come as either hand or lavaliere microphones and their transmitters are built into the microphones themselves. Some models have a short antenna sticking out from the bottom of the microphone but most have the antenna incorporated into the microphone housing.

The receiving station of the wireless microphone system tunes into the frequency of the wireless transmitter and can receive the signals from as far as 330 metres under favourable conditions.

The wireless microphone works best in the controlled environment of a studio or stage. There, one can determine the precise range of the performer's movements and find the optimal position for the receiving station or stations. It is also quite useful in audience participation shows where the performer walks into the audience for brief unplanned interviews.

The Handset Microphones

They are built like ordinary intercom headsets except that they have high quality microphone attached. They are used in productions like sports reporting. The headset microphone isolates you sufficiently from the outside world so that one can concentrate on his specific reporting job in the midst of much noise and commotion, while at the same time keeping one's hands free to shuffle statistics, as well as grab people for interviews.

The headset microphone consists of a small omnidirectional or unidirectional microphone attached to earphones. One of the earphones carries the programme sound and the other carries the cues and instructions of the director or producer.

Desk Microphones

These are usually put on tables or desks. These stationary microphones are widely used in panel shows, public hearings, speeches, press conferences and all other programmes where the performer is speaking from behind a desk, table, or lectern. They are usually rugged and able to withstand physical shock. Dynamic omnidirectional microphones are generally used as desk microphones but if a high separation of sound sources is desired, unidirectional microphones are used as well. One of the special types of desk microphones is Pressure Zone Microphone (PZM) which operates on a different principle from ordinary microphones. Its chief advantage is that it can be used for the simultaneous voice pickup of several people with equal fidelity.

Stand Microphones

Stand microphones are used whenever the sound source is fixed and the type of programming permits them to be seen. The quality of stand microphones ranges from the dynamic hand microphones clipped onto a stand to highly sensitive condenser microphones used exclusively for music recording sessions.

Hanging Microphones

Microphones can be hanged by their cables over any fairly stationary sound source. Most often, hanging microphones are used in dramatic presentations where the action is fully blocked so that the actors are in a precise location for each delivery of lines. The actors are in a precise location for each delivery of lines. The actors have to make sure that they speak only within the 'audio pool' of the hanging microphone for them to be heard. Unfortunately the sound quality from hanging microphones is not necessarily the best. The sound source is always relatively far away from the microphone and if the person is not exactly within the sound pool (the pickup pattern) of the microphone, his or her voice is off-mic. They can pick the shuffling of feet and the rumbling of moving camera pedestals almost as well as the voices and their light cables might cause a hum in the audio pick-up. However, they are also popular in audience participation shows and are easy to set up and when in right positions produce acceptable sound.

Hidden Microphones

Sometimes you may have to hide a small lavaliere microphone in a tuft of flowers, or behind a table decoration. Whenever hidden microphones are used, it is usually difficult to place it in a position such that it will yield a satisfactory pick-up. Often one gets a marvelous pick-up of various noises caused by people hitting the table or moving their chairs, but only a poor pick-up of their conversation.

Long Distance Microphones

These are used in the field of sports coverage. The simplest way to pick up the sound in sports events such as lawn tennis is to place normal shotgun microphones at strategic positions and aim them at the main action. A single tennis game may have six or more microphones to pick up the sounds of the players, the judges and the crowd. A parabolic reflector microphone can be used to pick up sounds over fairly long distances. This consists of a small parabolic dish (similar to a satellite dish) that has an omnidirectional microphone facing inward right at its focal point. Thus, all incoming sounds are reflected toward and concentrated at the microphone.

The parabolic reflector microphone is often used to pick up voices over long distances such as the signals of the backmen during a football game or the enthusiastic chanting of a group of home-team fans.

SELF ASSESSMENT EXERCISE 2
When are hanging microphones used in broadcast production?

3.5 How Microphones Work

SOUND QUALITY
Semi-professional microphones do not have as wide a frequency as high quality microphones.

This means that high quality microphones can hear higher and lower sounds than the less expensive models.

The studio acoustics, the type and combination of instruments used and the aesthetic quality of the desired sound all play important parts in the choice and placement of microphones. Generally, rugged, dynamic omnidirectional or cardioids microphones are used for high volume sound sources such as drums, electric guitar, speakers and some singers, whereas ribbon or condenser microphones are used for the more gentle sound sources such as strings and acoustic guitars.

IMPEDANCE
Impedance is a type of resistance to the signal flow. There could be high or low impedance microphones. A high impedance microphone usually belong to the category of the less expensive and lower quality variety and works only with a relatively short cable. A low impedance microphone belongs to the high quality professional variety and can take up to several hundred feet of cable. If one must feed a low impedance recorder with a high impedance microphone or vice versa, an impedance transformer is needed. Many electric instruments such as an electric guitar have a high impedance output and for them to match-up with other low impedance equipment, they have to be routed through a ‘direct box’ – a box that contains the transformer like electronics that adjust

the high impedance signal to a low impedance one.

FREQUENCY RESPONSE
This refers to how high and low a microphone can hear: that is the ability of the microphone to hear extremely high and low sounds. A good microphone hears better than most humans and has a frequency range of 20 – 20,000 Hertz. Many high quality microphones are built to hear equally well over the entire frequency range, a feature called FLAT RESPONSE. High quality microphones generally have a high frequency range and a flat response.

3.6 Balancing Microphones and Cables

All professional microphones have a balanced output that is connected by 3-wire microphone cables to a balanced input at recorders and mixers. Two of the wires carry essentially the same audio signal and the third wire is a shield that acts as a ground. The balanced line rejects hum and other electronic interference. All balanced (three-wire) microphones and microphone cables use three-pronged connectors called XLR connectors. When working with semi-professional equipment, one may come across unbalanced microphones and cables that use only 2 wires to carry the signals; one for the audio signal and the other for the ground.

These unbalanced lines use a variety of two-wire connectors: the phone plug, the RCA phone plug, the RCA phono plug and the mini plug. The problem with unbalanced (2-wire) microphones and lines is that they are much more susceptible to hum and other electronic noise than the balanced microphones and lines. There are adapters that enable one to connect an XLR to the unbalanced connectors and vice versa.

3.7 Special Microphone Use in the Studio

In the controlled environment of the studio, the big boom is still one of the most effective ways of getting a high quality microphone close to the talent, while keeping it out of camera view. The operational difference between the ‘giraffe’ and the ‘big boom’ is that the big boom allows better sound pick-up and one can move the microphone much more quickly and smoothly and one can get much farther into the scene than with the giraffe.

The giraffe or tripod boom consists of an extendible horizontal boom arm that is mounted on a tripod dolly. The boom can be tilted up and down and at the same time rotate the microphone in the desired direction. The giraffe is advantageous in that it takes up relatively little studio space. It can be moved easily from one studio to another through narrow doorways because of its low height and narrow wheel-base.

3.8 Microphone Set Up For a Live Band

When setting up for live band, microphones are needed for the singers, drums and direct sound emitting instruments such as percussion and pianos as well as for the speakers that carry the sound of amplified instrument such as electric guitars or organs. The sound signals of electric instruments such as the electric bass or keyboard are often fed directly to the mixing console without the use of a speaker and microphone. This technique is called ‘direction insertion’ or direct input. When setting up microphones and speakers, one must watch out for multiple feedback or microphone interference. Feedback is the return of the total or partial audio mix from the mixing

console to the musicians.

4.0 CONCLUSION

Microphones generally can be put into any kind of use depending on their sound generating elements and their pick-up patterns. While some microphones can hear sounds from all directions equally well, others hear sounds better when they come from a specific direction.

5.0 SUMMARY

Microphones are electro-acoustic transducers that convert acoustic energy into electrical energy. Microphones can be classified into Dynamic, Condenser and Ribbon microphones. They can be omnidirectional or unidirectional. While some microphones are primarily designed and used for sound sources that are moving, others are used for more stationery sound sources.

6.0 TUTOR-MARKED ASSIGNMENT

i. Into how many types can a microphone be classified?
ii Identify 5 microphones and state their uses.

7.0 REFERENCES/FURTHER READINGS

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UNIT 4 THE TELEVISION CAMERA

CONTENTS

1.0 INTRODUCTION

The television camera works on the same basic principle which involves the conversion of an optical image into electrical signals that are reconverted by a television set into visible screen images.

2.0 OBJECTIVES

At the end of the unit of study, you should be able to:

i. Identify the three main components of a camera
ii. Identify the four major parts of a camera chain iii. Identify three types of cameras.

3.0 MAIN CONTENT

3.1 How It Works

All television cameras consist of three main parts. They include:

1 The LENS which selects a certain field of view and produces a small optical image of this view.
2 The CAMERA itself with its imaging or pick up device that converts the optical image as delivered by the lens into electrical signals.
3 The VIEWFINDER which shows a small video image of what the lens is seeing.

Television camera works on the same basic principle which involves the conversion of an optical image into electrical signals that are reconverted by a television set into visible screen images. The light that is reflected off an object is gathered by a lens and focused on the imaging or pick up device. The imaging device transforms the light into electrical energy called the video signal. The signal is then amplified and processed so that it can be reconverted into visible screen images. The colour camera works with light and needs the three additive colour primaries red, green and blue to produce all the colours seen on the television screen. Many modern television cameras also have small LCDs (Liquid Crystal Display) monitors about 2 inches to

4 inches in size measured diagonally. Some of these cameras do not have viewfinders anymore. These are generally the new digital type of cameras.

The BEAM SPLITTER in the camera consists of various prisms and filters that separate the white light into three light primaries – Red, Green and Blue, usually referred to as RGB. Because these prisms are all contained in a small block, the beam splitter is often called PRISM BLOCK.

However, most consumer camcorders that have only one imaging device for all three primary colours use a STRIPED FILTER to separate the white light coming through the lens into the three primary colours. In a colour camera, the principal electronic component that converts light into electricity is called the IMAGING DEVICE and it consists of a small solid-state device called CHARGE COUPLED DEVICE or CCD. The CCD contains horizontal and vertical rows of image-sensing elements called PIXELS. Each pixel is a discrete image element that transforms its specific colour and brightness into a specific electric charge. The electric charges from all the pixels are then transferred to a storage area and eventually become the video signals for the primary light RGB colours.

SELF ASSESSMENT EXERCISE 1

On what basic principle does a television camera work?

3.1 The Camera Chain

A high quality studio camera is connected by a cable to a wall outlet. This cable connects the camera to a chain of equipment necessary to produce quality pictures. The major parts of such a camera chain are:

1 The actual camera called the CAMERA HEAD because it is at the head of the chain.
2 The camera control unit or CCU.
3 The sync generator that provides the synchronization pulses to keep the scanning of the various pieces of television equipment in step.
4 The power supply.

Each studio camera has its own CAMERA CONTROL UNIT (CCU). The CCU performs two main functions which are that of a set-up and control. During set-up, each camera is adjusted for the correct white balance, the proper contrast range between the brightest and darkest areas of a scene and the brightness steps within this range. In order to find out whether the camera is properly adjusted and performs at an optimal level, the Video Operator (VO) can use the WAVEFORM MONITOR also called the OSCILLOSCOPE; which translates the brightness steps and contrast range into a visible signal; the vector scope which translates the white balance into a visible signal; and the monitor of the CCU. Sometimes when the actual operational controls are separated, from the CCU, then we speak of a REMOTE CONTROL UNIT (RCU) or an OPERATION CONTROL PANEL (OCP). The actual CCUs may be located in a master control room, while the OCPs are in the studio control room. This arrangement allows the video operator to do the initial camera set up in master control, then sit in the control room with the production crew and maintain optimal picture quality according to the technical standards and aesthetic requirements of the

production.

The **SYNC GENERATOR** produces electronic synchronization pulses that keep in step the scanning in the various pieces of equipment such as cameras, monitors and videotape recorders.

A **GENLOCK** provides various pieces of studio equipment with a general synchronization pulse called **HOUSE SYNC**. Through the genlocking process, the scanning of video signals is perfectly synchronized, it allows you to switch among and intermix the video signals of various cameras and/or videotape recorders without the use of additional special digital equipment.

The **POWER SUPPLY** generates the electricity (direct current) that drives the television equipment. In a studio the power supply converts the Alternating Current (AC) to Direct Current (DC) power and feeds it to the cameras. The camera cable feeds all the CCU functions to the camera and transports the video signals from the camera back to the CCU.

3.3 Types of Cameras

According to Zettl (1996) cameras can be classified into three groups. Studio cameras including high definition television cameras (HDTV).

1 Electronic News Gathering/Electronic Field Production Cameras (ENG/EFP) and camcorders.
2 Consumer or small format camcorders.

The above classification based on primary production function does not necessarily determine their exclusive use or relative quality, because studio cameras are frequently used in the field and field cameras such as the portable ENG/EFP cameras are used in the studio.

i Studio Cameras

This term is used generally to describe a high quality camera that is so heavy it cannot be maneuvered properly without the aid of a pedestal or some other type of camera mount. Studio cameras are used for various studio productions such as news, interview and panel shows or for daily serial dramas. The obvious difference between the standard studio cameras and other varieties is that studio cameras can function only as part of a camera chain, whereas other camera types can be self- contained and capable of delivering a video signal to the Video Tape Recorder without any other peripheral control equipment. Studio camera bring about better picture quality.

HIGH DEFINITION TELEVISION CAMERAS (HDTV) deliver pictures of superior resolution, colour fidelity and light and dark contrast and uses high quality charge-coupled device (CCD) as its imaging device. What gives the HDTV camera the edge over the highest quality standard studio camera is the increased number of scanning lines. The more the scanning lines the more detail one can see in a picture. What makes the HDTV rather inconvenient and especially expensive is that all elements of the video system including the camera must be high definition. The HDTV was developed primarily to replace the film camera in motion picture which

has an aspect ratio (the width to height proportions of the TV screen and therefore of all television visuals) similar to that of the motion picture screen.

The HDTV is a highly specialized television system that cannot presently be used for everyday broadcast but for many fields of non- broadcast applications such as electronic film production, medical and other educational research and the production of commercials.

ii Eng/Efp Cameras And Camcorders

These cameras are portable and are usually carried by a camera operator or put on a simple tripod. They are also self-contained and hold the whole camera chain in the small camera head. With their built-in control equipment, ENG/EFP cameras are designed to produce high quality video signals or visuals that can be recorded on a separate videotape recorder (VTR), a small VTR that is docked with the camera or a built-in VTR. The camera is called CAMCORDER when docked with a VTR or a built-in VTR. The ENG/EFP camcorders operate on the same basic principle as the small format consumer model, except that the video-tapes are of higher quality. Also the automated features of the consumer models have been incorporated into the professional camcorders in order to make it possible to produce acceptable visuals in drastically changing conditions without having to readjust the camera.

CONSUMER (SMALL-FORMAT) CAMCORDERS

Here the camera and the VTR are built as a single inseparable unit. Most consumer camcorders have a single-chip imaging device and similar automated features such as auto-focus and auto-iris which regulate the incoming light. Some of these camcorders use ½- inch videotape and others the smaller 8mm (a little more than $_{1/4}$ in.

SELF ASSESSMENTEXERCISE 1

What gives the High Definition Television Camera the advantage over the highest quality standard studio camera?

3.4 Operational Elements and Control

In studio cameras, most operational controls are on the Camera Control Unit (CCU) panel. However, in ENG/EFP Cameras and other small format camcorders, all the switches and buttons are on the cameras themselves so that they can be got ready and kept operational during the entire shoot. Nevertheless the following operation features need some mention.

(a) Power Supply: All studio cameras receive their power from a special Direct Current (DC) power supply which is part of the camera chain. Most professional camcorders run on a 12-volt battery which is clipped on the back of the camera. Consumer camcorders have lower voltage batteries that are also clipped on the back of the Camera – VTR unit. Household AC Current can act as substitute source of power with the use of an adapter. The camera battery can supply continuous power for up to two hours and up to four hours with newer thinner and lighter batteries. All portable camcorders display some kind of warning signal when the battery charge is getting low. In order to avoid running out of power during a shoot,

it is advisable to routinely replace the battery after 40 minutes or so of recording.

(b) Camera Cable: When requesting cable runs, one need to know which cable the camera can accept and how long a cable run that is needed.

Multicore cables have the most limited reach of about 200ft or about 6oo meters, which are generally enough for all studio work and many standard remote (outside production) telecasts. Multicore cables can carry a great amount of information without any adapters.

The Triaxial Cables and the Fiber-Optic Cable have much greater reach and are also thinner and considerably lighter than the multicore cables. While Triaxial Cables allow for a maximum distance of 5000 feet (about
1,500 meters), a fibre-optic can reach up to 3000 meters or about 2 miles.

(c) Connectors: When in the studio, the camera cable is generally left plugged into the camera and to the camera wall jack. However when using a camcorder in the field, one needs to connect cables from the camcorders to some other external equipment such as monitor feeds, audio recorders etc. Most professional video equipment use BNC connectors for video coaxial cables and XLR or phone plugs for audio cables. Consumer equipment usually use RCA phone for video and mini plugs for audio cables. UHF connectors are probably still in use in older video equipment.

(d) Viewfinder: This is a small television set that shows the visuals the camera is getting. Studio cameras usually have a 7-inch viewfinder that can be switched and tilted so that the cameraman can see what he is filming, even if he does not stand directly behind the camera. Most viewfinders are monochrome (one sees only black and white edition of what he is shooting). Unless converted to the studio configuration, all ENG/EFP cameras and camcorders have a small $1^{1/2}$ – inch high resolution (a measurement of the finest picture detail that can be seen) monochrome viewfinder. It is shielded from outside reflections by a flexible rubber eyepiece that can be adjusted to one's eye.

Many viewfinders also act as important communication systems showing the status of certain camera and production functions even when the camera is in operation.

(e) Tally Light and Intercom: The tally light is a big red light on top of the camera that signals which of the two or more cameras is punched on the air. The light indicates that other cameras are free to line up their next shots. There is also a small tally light inside the viewfinder hood that informs the camera operator when the camera is on the air. Camcorders do not have an external tally light. The red light inside the viewfinder serves as an indicator that the camcorders are recording.

The INTERCOMMUNICATION CHANNELS are especially important for multicamera productions because the director and technical director have to coordinate the cameras' operations. All studio cameras and several high-end field cameras have at least two channels for intercommunication – one for the production crew and the other for the technical crew. Some studio cameras have a third channel that

carries the programme sound.

(f) Filter Wheel: This is located between the lens and the beam splitter. It normally holds two neutral density and some colour correction filters. The neutral density filters reduce the amount of light transmitted to the imaging device without affecting the colour of the scene. The colour correction filters compensate for the relative bluishness of outdoor and fluorescent light or the relative reddishness of indoor light and candlelight.

4.0 CONCLUSION

The purpose of studying television cameras is to determine the use to which they can be put at varying times. Essentially cameras are used to frame production shots to reveal visual images as clearly as possible and to present them so that they can convey meaning and energy.

5.0 SUMMARY

A television camera consists of the lens, the camera itself and the viewfinder. The camera chain is made up of the camera head, the camera control unit, the sync generator and the power supply. Types of cameras include studio cameras, electronic mass gathering cameras and small format camcorders.

6.0 TUTOR-MARKED ASSIGNMENT

1 Name 3 main parts of a camera and state their functions.

2 What 4 items constitute a camera chain?

7.0 REFERENCES/FUTHR READINGS

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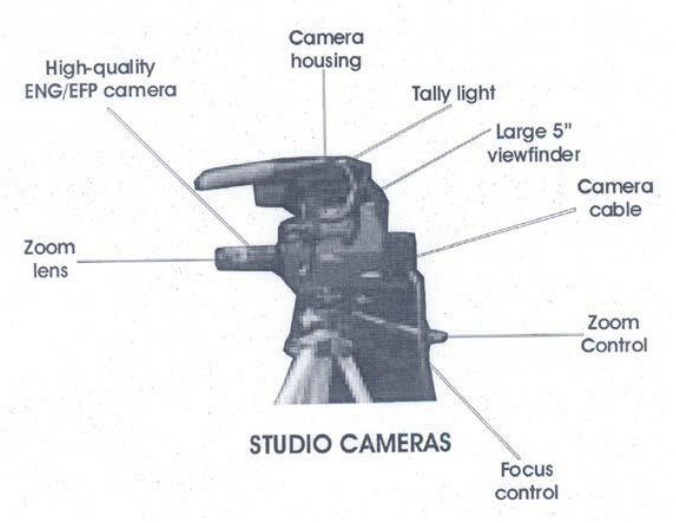

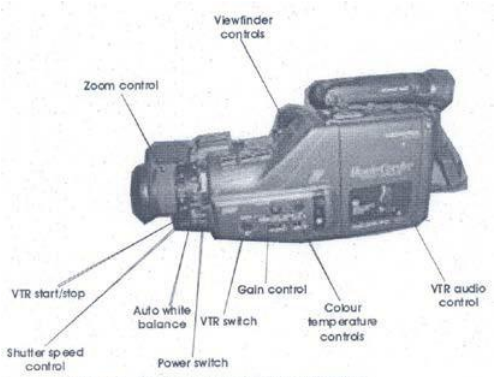

TYPICAL CAMCORDER CONTROLS

UNIT 5 STUDIO PERSONNEL CONTENTS

1.0 INTRODUCTION

Studio personnel in broadcasting organizations are involved in the production and transmission of programmes for radio and television. They can be referred to as `above the line and 'below the line' production personnel.

2.0 OBJECTIVES

At the end of the unit of study, you should be able to:

i Identify those who constitute above the line and below the line production personnel.

ii Discuss the roles of at least five key studio personnel.

3.0 MAIN CONTENT

3.1 Above-the-Line Production Personnel

These include people who are mainly engaged in non-technical activities. They include writers, directors, artistes and the various production assistants. In large productions they may include executive producers, field and studio producers, production managers, script editors and costume designers.

The **WRITER** interprets the process message (message actually received by the audience) into a broadcast presentation and translates it into a radio or television script.

The **DIRECTOR** translates the script into specific video and audio images and suggests whether it would be a field and/or studio production and in case of television whether, it will be a single or multicamera production.

The **ART DIRECTOR** suggests appropriate set designs and graphics that will give the show a specific look or will develop a preliminary story board for a commercial. The overall visual style must satisfy the requirements of the process message as well as the director's perception of the overall show design.

3.2 Below-the-Line Production Personnel: They include people who operate equipment or supervise such activities. They include studio managers, technical directors, cameramen, audio technicians, lighting directors, floor managers, videotape editors, character generator operators etc.

3.3 The Director

The director is one who translates ideas into effective pictures and sounds and he assumes various roles in the course of programme production.

In the role of an artist, a director is expected to produce visuals and sounds that effectively convey the intended message clearly and with style. He or she should be versatile in how to look at an event or a script and quickly recognize its essential quality and be able to select and order those elements that help to clarify, intensify, and interpret it for a specific audience. Since the director deals with a variety of people who approach production from different perspectives, he needs to assume the role of a psychologist so that he will be able to deal effectively with a producer who worries about the budget, technicians who are primarily concerned with the technical quality of pictures and sound, temperamental artistes and strong-willed designers. He gives the technical crew helpful instructions on how to use production equipment to achieve his communication goal. He is in charge of coordinating. Production details and processes which help artistes achieve peak performances.

The more effort a director spends in pre-production planning, the more efficient and reliable his directing becomes in the actual production phase. He should understand the purpose for a programme and its intended effect on a specific audience, the production method, the production team and communication, scheduling and script formats. Proper marking of the production script will aid greatly the director in directing from the control room or on location. A well marked script will help him remember various camera and artistes positions and make his directing less arbitrary.

A director needs a floor plan and this helps the director to visualize various shots and interpret those shots into major camera positions and camera traffic. It also influences and sometimes dictates how he carefully works out movement and actions by the artistes and all mobile production equipment. It is the duty of the director to carefully examine the facilities request to ensure that the equipment requested for are sufficient and appropriate for the planned production.

3.4 Associate Director

He or she assists the director during rehearsals and on-the-air performance or taping sessions. He gives all standby cues in complex studio shows and presets the camera by telling the camera operators on the intercom the upcoming shots or camera moves. In elaborate field productions, he or she may direct run-throughs (rehearsals) for each take and this gives the director a chance to stand back and observe the action on the field

monitor. He is responsible for the timing of programme segments and the overall show during rehearsals as well as during the actual production.

SELF ASSESSMENT EXERCISE 1
What are the duties of an Associate Director in broadcast productions?

3.5 Production Assistant

The job of a production assistant varies from duplicating and distributing the script to calling around for specific properties (furniture and other objects used for set decoration) and welcoming the artistes or taking notes for the producer and the director. When in the field, he or she keeps a field log of all production takes and this helps in locating the right material during post-production.

3.6 The Floor Manager

The floor manager coordinates all activities on the floor (studio or on- location site) and relays the cues from the director to the artiste. Before production, he or she overseas and help the floor crew in setting up scenery, placing set and hand properties, dressing the set and putting up displays. He is responsible for removing the set and properties or restoring the remote production site to its original condition.

The floor manager should keep the following in mind when managing a floor:

(i) Obtain a detailed floor plan and properties list and check with the art director and programme director about any special features or changes.
(ii) Get a marked script from the director so as to anticipate artiste and camera traffic.
(iii) Make sure that the teleprompter works.
iv Establish and maintain a rapport with the artistes and guests before, during and after production.
(v) If production is shot in segments for postproduction or editing, pay special attention to continuity of artiste's appearance, positions and major moves.
(vi) During rehearsals, deliver all cues as though you are on air and when cuing, position yourself such that you are visible to the artiste.

3.7 Make-Up Artist

All make-up are used to enhance appearance, to correct appearance and to change appearance. The various purposes for applying cosmetics require different techniques. Enhancing someone's appearance calls for the least complicated procedure. This can be achieved through a foundation that covers minor skin blemishes and cuts down light reflections on an oily skin. Water-based cake makeup foundationsgenerally referred to as pancake are preferred over the more cumbersome grease-based foundations called pan stick.

Correcting someone's appearance is slightly more complicated and changing an actor's appearance may require involved and complex makeup methods.

Most minor productions require only makeup that enhances the appearance of a performer but more complicated makeup ~such as making a young actor look 80

years old is left to the professional makeup artist.

All makeup rooms have large mirrors so that artistes can watch the entire makeup procedure. Adequate, even illumination is very important and the colour temperature of the light in which makeup is applied must match or be closely approximate to that of the production illumination.

SELF ASSESSMENT EXERCISE 2

Discuss the different techniques that can be used by the make-up artist in applying cosmetics to enhance, correct or change appearance.

3.8 Clothing and Costume Designer

In small station operations and most broadcast productions, the designer is concerned mainly with clothing the performer rather than costuming the actor. The performer's clothes should be attractive and stylish but not too showy. This is because television viewers expect a performer to be well dressed, but not overdressed. Largely, the type of clothing a performer wears should depend on his or personal taste and the type of programme he or she is participating in and the setting of such a programme. Since television has the tendency to put a few extra pounds on the performer, slim dresses and rather closely tailored suits look more attractive than heavy horizontally striped material and baggy dresses and suits. Textured materials often look better than plain on television, but the costume designers should avoid patterns that have too much contrast or are too busy.

Clothing should be made more interesting on camera not by choosing a detailed cloth texture but by adding decorative accessories. Clothing colours chosen for a particular programme should harmonize with the set which is the arrangement of scenery and properties to indicate the locale and/or mood of a show.

3.9 Set Designer

A set designer must know what the show is about before designing a set. This he does by liaising with the programme producer or director for his concept of the show.

Sets form scenery that makes programmes appear realistic. A set should be designed in such a way as to allow for optimal camera movement and camera angles, microphone placement, boom movement, appropriate lighting and maximum action by the performers and actors. A television set can be made up of standard set units, hanging units, platforms and set pieces.

STANDARD SET UNITS consist of softwall and hardwall flats and a variety of set modules. A set module is a series of flats and three- dimensional set pieces whose dimensions match whether they are used vertically, horizontally or in various combinations.

SOFTWALL FLATS are background units consisting of a lightweight wood frame covered with muslin or canvass, while hardwall flats are made of stronger material such as pressed fibre board or plywood.

Softwall flats are easy to handle, assemble and brace. They can be easily stored and they do not take up much room.

HARDWALL FLATS are much sturdier and are preferred for more ambitious television productions. They are usually built for specific shows and remain set up for the length of the television series, e.g. News or interview sets.

HANGING UNITS are supported from overhead tracks or the lighting grid and they include:

i The **CYCLORAMA** – a continuous piece of canvas stretched along almost all studio walls.

ii **DROP** – a wide roll of canvas with a background scene painted on it.

iii. Drapes and Curtains which should be translucent enough to let the back light come through without revealing scenic pieces that may be in the back of the set.

PLATFORMS are elevation devices which are 6 or 12 inches (15 or 30 cm) high and are sometimes called risers. Some 6-inch platforms have 4 casters, so that they can be moved around.

SET PIECES are important scenic elements which consist of freestanding three-dimensional objects such as pillars, sweeps, folding screens, steps etc. The set designer must also ensure that properties (props) and set dressings that will give the recording environment a specific look and style are incorporated into his set designs.

PROPS are of three types:

(a) Stage Props which include the common type of furniture and other items constructed for a specific purpose such as news desks, lecterns or panel tables.

(b) Set Dressings which are a major factor in determining the style and character of the set. They include such items as draperies, pictures, lamps, flowerpots, sculptures, indoor plants etc.

(c) Hand Properties consist of all items that are handled by the performer or actor during the show and they include dishes, telephones, radio and desktop computers.

4.0 CONCLUSION

Studio personnel include those who engage in technical and non- technical activities and without them the various studio equipment cannot be operated, neither can programmes be produced on radio or television.

5.0 SUMMARY

Studio personnel are those who are involved in above the line and below the line productions. They include studio producers, production managers, script editors and costume managers. Others are studio managers, technical directors, floor managers, audio technicians etc.

6.0 TUTOR-MARKED ASSIGNMENT

i. Name 5 above the line and5 below the line production personnel. ii. Outline 5 duties of a floor manager.

7.0 REFERENCES/FURTHER READINGS

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