NATIONAL OPEN UNIVERSITY OF NIGERIA

SCHOOL OF EDUCATION

COURSE CODE: EDT 732

COURSE TITLE: PREPARATION, UTILISATION AND INTEGRATION OF EDUCATIONAL MEDIA IN THE CURRICULUM.

COURSE GUIDE

EDT 732
PREPARATION, UTILISATION AND INTEGRATION OF EDUCATIONAL MEDIA IN THE CURRICULUM

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INTRODUCTION

EDT 732: Preparation, Utilisation and Integration of Educational Media in the Curriculum is a third semester, two credit and 700 level core course. It will be available for all students offering M. Ed. Educational Technology.

This course will expose you to understanding many of the concepts and theories in Educational Media and Curriculum. It will assist you to be able to apply these concepts and theories to the tasks and roles that you perform as a teacher, an educational technologist and a media consultant in the educational setting.

The course consists of 15 units, which include the course guide, definition of educational media, preparation of audio media, preparation of visual media, production of audio visual media, selection criteria for instructional media, utilisation of instructional media, integrating technology into the curriculum, curriculum organisation, participants of curriculum development, curriculum planning and implementation and foundations of curriculum development.

This course guide tells you briefly what the course is about, what course materials you will be using and how you can work your way through these materials. It suggests some general guidelines for the amount of time you are likely to spend on each unit of the course in order to complete it successfully.

It also gives you some guidance on your tutor-marked assignments, which will be made available in the assignment files. There are regular tutorial classes that are linked to the course. You are advised to attend these sessions.

WHAT YOU WILL LEARN IN THIS COURSE

The overall aim of EDT 732: Preparation, Utilisation and Integration of Educational Media in the Curriculum is to introduce you to various educational media, their utilisation and the integration of these media into the curriculum. The context in which educational media can be used will also be explained. Criteria for the selection and utilisation of media and the types of media will be examined. Curriculum organisation, development, planning and implementation will be discussed. Foundations of curriculum development will also be examined.

The understanding of preparation, utilisation and integration of educational media into the curriculum is vital because it serves as a

framework for the practice of education. From time to time, teachers and other stakeholders in the educational settings need to make decisions which will affect the quality of teaching-learning in our schools and such decisions include the use of appropriate media in the teaching-learning process.

During this course, you will learn about the factors to consider when choosing and using media. For maximum effectiveness you will also learn about the preparation and production of the discussed media.

COURSE AIMS

This course aims to give you an understanding of the meaning of educational media, what they are and how they can be prepared. It also aims to help you develop skills in the utilisation of these media and the necessary criteria needed for selecting media for classroom instruction. The need for curriculum planning and implementation is also aimed to make you know all that goes into developing a good curriculum for schools. All these will be achieved by aiming to:

- introduce you to definition, types and preparation of instructional media
- demonstrate skills in utilisation of media for instruction
- explain the integration of technology into the curriculum and also; explain the concept of curriculum organisation and implementation.

COURSE OBJECTIVES

To achieve the aims set out, the course sets overall objectives. Each unit also has specific objectives. The unit objectives are always included at the beginning of a unit; you should read them before you start working through the unit. You may want to refer to them during your study of the unit to check on your progress.

You should always look at the unit objectives after completing a unit. In doing so, you will be sure that you have followed the instructions in the unit.

Below are the wider objectives of the course as a whole. By meeting these objectives, you should have achieved the aims of the course as a whole. On successful completion of the course, you should be able to:

- define educational media
- mention the characteristics of media
- state the classification of media

- distinguish between the software and hardware aspects of educational media
- distinguish between the various categories of audio media used in education
- describe the instructional uses of each of the audio media studied
- describe how to make a good audio recording
- differentiate the following: overhead, opaque and slide projectors;
- mention the software needed for overhead, opaque and slide projectors
- describe how the software are produced
- distinguish between the various categories of audio visual media used in education
- demonstrate competence in the use of audio visual media
- mention the criteria for selecting educational media
- discuss the reasons for using media in education
- describe the preparation that are necessary for effective use of media for instruction
- describe the techniques for using radio in the classroom
- demonstrate competency in the use of radio and tape recorder for instructional purposes
- describe the basic processes of using projected media in the classroom
- describe the steps to be taken in using the following in the class: models, posters, specimen, charts, flash cards, chalkboard, marker board, etc
- describe the procedure for effectively utilising audio visual media in the classroom
- identify variables that are very important when organising the curriculum
- discuss the problems of curriculum organisation using a particular type of organisation
- identify the participants in curriculum development
- explain why it is necessary that curriculum development activists should extend to people outside the school system.

WORKING THROUGH THIS COURSE

To complete this course, you are required to read the study units, read set books and read other materials provided by the National Open University of Nigeria (NOUN). Each unit contains self-assessment exercises, and at a point in the course, you are required to submit assignments for assessment purposes. There is a final examination at the end of the course. The course should take you about 16 – 17 weeks in total to complete.

COURSE MATERIALS

Below, you will find listed, all the components of the course, what you have to do, and how you should allocate your time to each unit in order to complete the course successfully on time.

Major components of the course are as follows.

1. The course guide
2. Study units
3. References
4. Assignment
5. Presentation schedule

STUDY UNITS

The study units in this course are as follows.

Module 1 Preparation of Media

Unit 1 Definition and Types of Instructional Media
Unit 2 Preparation of Audio Media
Unit 3 Preparation of Visual Media (projected)
Unit 4 Preparation of Visual Media (non-projected)
Unit 5 Production of Audio Visual Media
Unit 6 Reasons for Use of Media and Selection Criteria of Instructional Media

Module 2 Utilisation of Audio Visual Instructional Media

Unit 1 Application of Instructional Media
Unit 2 Utilisation of Visual Media
Unit 3 Utilisation of Audio visual Media

Module 3 Integrating Technology into the Curriculum

Unit 1 Organisation of Curriculum
Unit 2 Participants in Curriculum Development
Unit 3 Curriculum Planning and Implementation

Module 4 Case Studies on Integration of Media in the Curriculum

Unit 1 Curricula Integration of Simulations in Neuroscience
Unit 2 Case Studies of Media Integration into the Teaching of Some School Subjects

Unit 3 Case Studies of Media Integration into the Teaching of Some School Subjects- NOUN's Experience

The first two units explain the important terms, concepts and meanings of instructional media, specifying the place of educational media and the various types of media used in educational setting. The next three units give insight and step-by-step procedures of preparation of various media for classroom instruction. The preparation of audio, visual (projected and non-projected) and audio visual media are discussed in detail.

The next unit explains the reason for use of media and criteria to be considered in selecting instructional media for classroom practices.

This is followed with four other units, which describe the creative uses of a variety of media, skills and basic utilisation plan for using media.

The last five units describe the place of technology in curriculum organisation, planning, developing and implementing curriculum with specific reference to what operates in the educational system in Nigeria.

ASSIGNMENT FILE

There are nine assignments in this course. The nine assignments consist of the following.

- How can you distinguish between the hardware and software of educational media?
- Describe the instructional uses of each of the audio media studied and describe how to make a good audio recording.
- Make a 15 minute audio recording on any subject of your choice.
- Develop a lesson of your choice and prepare at least four transparencies to aid your instruction (units 3 – 4).
- Briefly describe the instructional uses of each of the audio visual media studied and distinguish between the following audio visuals: (a) television, (b) video tape recording.
- What factors do you think can militate against effective use of projected media in your school?
- How will you get your students to make use of educational television programs?
- What are the main problems of curriculum organisation; discuss these problems using a particular type of organisation.
- Why is it necessary that curriculum development activities should extend to people outside the school system?
- List and discuss the four stages of intellectual development of the child as identified by Piaget.

TUTOR-MARKED ASSIGNMENT

There are nine tutor-marked assignments in this course. You only need to submit five of the eight assignments. You are encouraged, however, to submit all eight assignments, in which case the highest five of the eight marks will be counted. Each assignment counts 6% towards your total course mark in order for you to have 30%.

Assignment questions for the units in this course are contained in the assignment file. You will be able to complete your assignment from the information and materials contained in your reading, references and study units. However, it is desirable in all degree level education to demonstrate that you have read and researched more widely than the required minimum. Using other references will give you a broader viewpoint and may provide a deeper understanding of the subject.

When you have completed each assignment, send it together with a TMA (tutor marked assignment) form, to your tutor. Make sure that each assignment reaches your tutor on or before the deadline given in the presentation schedule and assignment file.

If for any reason, you cannot complete your work on time, contact your tutor before the assignment is due to discuss the possibility of an extension. Extensions will not be granted after the due date unless there are exceptional circumstances.

FINAL EXAMINATION AND GRADING

The final examination for EDT 732 will be of three hours' duration and have a value of 70% of the total course grade. The examination will consist of questions, which reflect the types of self-assessment exercises and tutor-marked assignments you have previously encountered. All areas of the course will be assessed. Revise the entire course using the time between finishing the last unit and sitting for the examination. You might find it useful to review your self-assessment exercises, tutor-marked assignments and comments on them before the examination. The final examination covers information from all parts of the course.

PRESENTATION SCHEDULE

The presentation schedule included in your course material gives you the important dates in the year for the completion of tutor-marked assignments and attendance at tutorials. Remember, you are required to submit all your assignments by the due date. You should guard against falling behind in your work.

ASSESSMENT

There are three aspects to the assessment of the course: there are the self-assessment exercises, second are the tutor-marked assignments; and third, there is a written examination. In tackling the assignments, you are advised to be sincere in attempting the exercises; you are expected to apply information, knowledge and techniques gathered during the course. The assignments must be submitted to your tutor for formal assessment in accordance with the deadlines stated in the presentation schedule and the assignment file. The work you submit to your tutor for assessment will count for 30% of your total course mark. At the end of the course, you will need to sit for a final written examination of three hours duration. This examination will also count for 70% of your total course mark.

COURSE MARKING SCHEME

ASSESSMENT	**MARKS**
Assignment 1 – 9	The tutor-marked assignments count for 30% of course marks
Final Examination	Examination counts for 70%
Total	**100% of course marks**

COURSE OVERVIEW

This table brings together the units, the number of weeks you should take to complete them and the assignment that follow them.

Unit	**Title of work**	**Weeks activity**	**Assessment (end of unit)**
1	Definition and Types of Instructional Media	1	Assignment 1
2	Preparation of Audio Media	1	Assignment 2
3	Preparation of Visual Media (projected)	1	
4		1	Assignment 3
5	Preparation of Visual Media (non-projected)	1	Assignment 4
6	Production of Audio Visual Media	1	
7	Reasons for Use of Media and Selection Criteria of Instructional Media	1	Assignment 5
x	Application of Instructional Media		

8	Utilisation of Visual Media	1	Assignment 6
9	Utilisation of Audio Visual	1	
	Media		
10	Organisation of Curriculum	1	Assignment 7
11	Participants in Curriculum Development	1	Assignment 8
12	Curriculum Planning and Implementation	1	Assignment 9
13	Curriculum Integration of Simulations in Neuroscience	1	
14	Case Study of Media Integration into the Teaching of some Key School Subjects	1	
	Case Study of Media Integration into the Teaching of some Key School Subjects: NOUN's Experience	1	
	Revision		
	Total		

HOW TO GET THE MOST FROM THIS COURSE

In distance learning, the study units replace the university lecturer. This is one of the great advantages of distance learning. You can read and work through specially designed study materials at your own pace, and at a time and place that suit you best. Think of it as reading the lecture that a lecturer might set you some reading to do, the study unit will tell you when to read your other materials. Just as a lecturer might give you an in-class exercise, your study units provide exercises for you to do at appropriate points.

Each of the study units follows a common format. The first item is an introduction to the subject matter of the unit, and how a particular unit is integrated with the other units and the course as a whole.

Next is a set of learning objectives. These objectives let you know what you should be able to do by the time you have completed the unit. You should use these objectives to guide your study. When you have finished the unit, you must go back and check whether you have achieved the objectives. If you make a habit of doing this, you will significantly improve your chances of passing the course.

The main body of the unit guides you through the required reading from other sources. This will usually be either from a reading section or some other sources.

Self-tests are interspersed throughout the end of units. Working through these tests will help you to achieve the objectives of the unit and prepare you for the assignments and the examination. You should do each self-test as you come to it in the study unit. There will also be numerous examples given in the study units, work through these when you come to them too.

The following is a practical strategy for working through the course. If you run into any trouble, telephone your tutor. Remember that your tutor's job is to help you. When you need help, don't hesitate to call and ask your tutor to provide it.

1. Read this course guide thoroughly.
2. Organise a study schedule. Refer to the course overview for more details. Note the time you are expected to spend on each unit and how the assignments relate to the units. Important information e.g. details of your tutorials, and the date of the first day of the semester will be made available. You need to gather all this information in one place, such as your diary or a wall calendar. Whatever method you choose to use, you should decide on and write in your own dates for working on each unit.
3. Once you have created your own study schedule, do everything you can to stick to it. The major reason that students fail is that they get behind with their coursework. If you get into difficulties with your schedule, please let your tutor know before it is too late for help.
4. Turn to unit 1 and read the introduction and the objectives for the unit.
5. Assemble the study materials. Information about what you need for a unit is given in the ''Overview'' at the beginning of each unit. You will always need both the study unit you are working on and one of your references, on your desk at the same time.
6. Work through the unit. The content of the unit itself has been arranged to provide a sequence for you to follow. As you work through the units, you will be instructed to read sections from your other sources. Use the unit to guide your reading.
7. Well before the relevant due date, check your assignment file and make sure you attend to the next required assignment. Keep in mind that you will learn a lot by doing the assignments carefully.
8. They have been designed to help you meet the objectives of the course and, therefore, will help you pass the exam. Submit all assignments not later than the due date.
9. Review of the objectives for each study unit confirms that you have achieved them. If you feel unsure about any of the objectives, review the study material or consult your tutor.

10. When you are confident that you have achieved a unit's objectives, you can then start on the next unit. Proceed unit by unit through the course and try to face your study so that you keep yourself on schedule.
11. When you have submitted an assignment to your tutor for marking, do not wait for its return before starting on the next unit. Keep to your schedule. When the assignment is returned, pay particular attention to your tutor's comments, both on the tutor-marked assignment form and also written on the assignment.
12. Consult your tutor as soon as possible if you have any questions or problems.
13. After completing the last unit, review the course and prepare yourself for the final examination. Check that you have achieved the unit objectives (listed at the beginning of each unit) and the course objectives (listed in the course guide).

FACILITATORS/TUTORS AND TUTORIALS

There are 17 hours of tutorials provided in support of this course. You will be notified of the dates, times and location of these tutorials, together with the names and phone numbers of your tutor, as soon as you are allocated a tutorial group.

Your tutor will mark and comment on your assignments, keep a close watch on your progress and on some difficulties you might encounter and provide assistance to you during the course. You must mail your tutor-marked assignments to your tutor well before the due date (at least two working days are required).

They will be marked by your tutor and returned to you as soon as possible. Do not hesitate to contact your tutor by telephone, e-mail, or discussion board if you need help. The following might be circumstances in which you would find help necessary.

Contact your tutor if:

- you do not understand any part of the study units or the assigned readings
- you have difficulty with the self-test or exercise
- you have a question or problem with an assignment with your tutor's comment on an assignment or with the grading of an assignment.

You should try your best to attend the tutorials. This is the only chance to have face-to-face contact with your tutor and to ask questions which

are answered instantly. You can raise any problem you encounter in the course of your study.

To gain the maximum benefit from course tutorials, prepare a question list before attending them. You will learn a lot from participating in discussions actively.

SUMMARY

EDT 732 intends to introduce the preparation, utilisation and integration of educational media into the curriculum to you. Upon completing the course, you will be equipped with the basic knowledge of the important concepts and types of educational media, as well as concepts, types and implementation of curriculum. You will be able to answer the following kinds of questions.

- What are educational media?
- Mention the characteristics of educational media.
- Mention the types of media.
- What are audio media?
- Mention types of audio media.
- How can you prepare audio-media?
- What are the instructional uses of audio media?
- How can you make a good audio recording?
- Mention the software needed for the following projectors: overhead projector, opaque projector and slide projector.
- What are visual media?
- Mention the various types of visual media.
- How can you produce visual media?
- Describe the techniques for using radio in the classroom.
- What are the basic processes of using projected media in the classroom?
- What are the basic processes of using non-projected media in the classroom?
- How can you use audio visual media effectively in the classroom?
- What is curriculum?
- What are the variables that are very important when organising the curriculum?
- What are the problems of curriculum organisation?
- Mention the participants in curriculum development.
- What are the specific roles of participants in curriculum development?
- What is curriculum planning?

- Why do some developing countries omit the pilot or trial testing stage of curriculum implementation?
- What are the things that should be made available for any curriculum implementation?
- Discuss the sociological foundation of curriculum development.
- Explain philosophical foundation of curriculum development.
- Discuss the psychological foundation of curriculum development.

Of course, the list of questions that you can answer is not limited. . To gain the most from this course you should try to apply the principles and concepts to your everyday life and practice of media use in educational settings.

We hope you enjoy your relationship with the National Open University of Nigeria (NOUN). We wish you success.

MAIN COURSE

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MODULE I PREPARATION OF MEDIA

UNIT 1 DEFINITION AND TYPES OF INSTRUCTIONAL MEDIA

CONTENTS

1.0 INTRODUCTION

In this unit, you will be exposed to the meaning and definitions of instructional media and also to the various types of instructional media. This is to enable you clear some doubts about what instructional media are and give you details of the various families into which instructional media are classified.

As a specialist in educational technology, you need this knowledge. You will no doubt enjoy reading through the unit.

2.0 OBJECTIVES

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

- define educational media
- list the characteristics of media
- state the classification of media
- distinguish between the hardware and software aspects of educational media.

3.0 MAIN CONTENT

3.1 Definition and Types of Instructional Media

The term media merely refers to a collection of materials and equipment that can be used effectively for communication. They include non-projected and projected; hardware and software; print and non-print; "little media" and "big media". Also, media can be seen as channels through which messages, information, ideas and knowledge are disseminated (Abimbade, 1997).

Whenever a collection of materials and equipment are used for teaching and learning so as to promote effective communication in a classroom setting, then, we refer to them as educational media. In other words, educational media may be defined as a collection of teaching-learning materials that constitute an integral component of an instructional or training process and are utilised in delivering educational information to the learners. Educational media are manipulated, seen, heard and talked about.

Educational media are used for individuals, small and large groups of learners. There is a need to emphasise that educational media are designed, prepared, produced, evaluated and utilised mainly to facilitate learners' understanding of the topics being taught. Basically, educational media are learner-centred.

Characteristics of Media

There are five main characteristics of media.

1. By nature, some are audio e.g. radio, loudspeaker, telephones, talking drum, human voice etc. Some are visual e.g. slides, transparencies, maps, charts, models, mock-ups etc. Yet, others are audio visual in nature, that is, they combine both sound and vision e.g. motion pictures and television.
2. Some are big while some are small or little. Big media are usually very complex, sophisticated and expensive. Examples include television, sound films, and computer-assisted instructions. Small media are less complex, less sophisticated and expensive. Examples are charts, slides, films, maps etc.
3. Some are static while some are dynamic. Examples of static ones include pictures, photographs and maps. Examples of dynamic ones are motion films and television.
4. Some are in the realm of mass media such as the press, radio and television.

5. Some are locally designed and produced by local classroom teachers while others are commercially produced by companies with the sole aim of maximising profit. Each has its merits and demerits.

While locally produced ones are designed to suit immediate classroom needs and cost less, the commercially produced ones may not suit immediate classroom use completely and they usually cost more.

It should, however, be pointed out that locally designed and produced media can become commercially produced if they are mass produced and have big network distributions.

Classification of Media

It is difficult, if not impossible, to undertake a watertight compartmentalisation of media due to the fact that some media materials do not lend themselves to any rigid form of classification. However, three systems of classification will be examined.

Under the first one, all forms of media are divided under two broad categories as follows.

- Print media, and
- Electronic or Technological media

Print media include textbooks, reference books, journals, newspapers, posters, bulletin, handouts and hand bills through which a man can acquire facts, information, knowledge, skills, principles and enlightenment.

Electronic media are simply information carrying devices which can be used for disseminating information. These could be sub-divided into two, namely: big media and small media. This form of classification looks rather simple, and if it is to be stuck to, many forms of media, which do not readily fall under any of the two, may be left out completely (Abimbade, 2006).

The second system of classification of media groups or forms of media falls under:

- realia
- print
- hardware, and
- software

Realia simply means real objects. Examples include car, dog, fly, specimen, chair etc.

Print media include textbooks, journals, newspapers, posters etc.

Hardware refers to the machines, equipment, tools or gadgets upon which the software will be transmitted. They can be used times without number, without damaging easily and when they do, they are usually repairable.

Software refers to materials that are not tangible. They are the consumables or the disposables. They wear and tear as they are used. They are relatively cheaper than the hardware.

The two (hardware and software) are indispensable. The table below shows examples of hardware and the software accompanying each of them.

S/N	Hardware	Software
1.	Audio cassette recorder	Contained in audio cassette
2.	Video cassette recorder	Contained in video cassette
3.	8mm film projector	8mm film
4.	16mm film projector	16mm film
5.	Slide projector	Slide
6.	Film strip projector	Film strip
7.	Overhead projector	Transparency

The third system of classification categorises all media under three broad subdivisions, namely:

- audio media
- visual media
- audio visual media

Audio media- these media carry sound alone. They are teaching and learning devices that mostly appeal to the sense of hearing. They include tape recorder, compact disc, records, public address system, talking drums, telephone and human voice.

Visual media-these are teaching and learning devices that mostly appeal to the sense of seeing only (pictorial ones). These can also be subdivided into two which are as follows.

Projected and non-projected visuals – the project visuals require electricity for projection, e.g. filmstrips, slides, transparencies, using their projectors. The non-projected visuals do not need light source and

these can be further divided into the two-dimensional and three-dimensional non-projected visuals.

The two-dimensional non-projected visuals have only length and breadth and these include posters, charts and other printed materials: textbooks, journals, bulletins etc.; while the three-dimensional non-projected visuals are those with length, breadth and height/volume and they include real objects, models, mock-ups, puppets, globes etc.

Audio visual media – another name for audio visual media is transmitted media. They refer to those instructional materials, which provide the learners with the opportunity of seeing and hearing at the same time. Examples are instructional or educational television, closed circuit television, computer etc.

SELF-ASSESSMENT EXERCISE

How can you distinguish between the hardware and software of educational media? Give five examples of each.

4.0 CONCLUSION

Educational media have become useful resources to both teachers and learners. The quality of teaching is being enhanced by the varieties and availability of the media. This unit has looked into what media is, types and characteristics of media and why they are used in the instructional process.

5.0 SUMMARY

In this unit, you have learnt the meaning, types, and characteristics of instructional media. You will recall that media is explained as "things that are used to make the teaching of any topic, concept or idea meaningful, be it in any form, can rightly be regarded as instructional media". However because, they are found in different shapes, forms and types, they are classified differently. Thus, we have audio, visual, audio visual, projected, non-projected, small, big, realia, specimen, diorama etc. representing different kinds of media.

6.0 TUTOR-MARKED ASSIGNMENT

i. Define the term "educational media".
ii. Briefly mention the characteristics of media.
iii. Explain the major classification of educational media.

7.0 REFERENCES/FURTHER READING

Abimbade, A. (1997). Principles and Practices of Educational Technology. Ibadan: International Publishers Limited.

Abimbade, A. (2006). Theory and Practices of Educational Technology. Ibadan: Spectrum Books.

Ajelabi, A. (2005). Essentials of Educational Technology. Lagos: Raytel Communications Limited.

UNIT 2 PREPARATION OF AUDIO MEDIA

CONTENTS

1.0 INTRODUCTION

In this unit, you are going through audio-media as one of the classifications of instructional media. You will find this unit useful as a teacher because audio-media are considered essential in an attempt by a teacher to bring about effective teaching-learning process.

In this unit also, you will get to know that there are different types of audio-media. The methods as well as the skills needed in the production of audio media shall be acquired by you in the course of going through this unit.

2.0 OBJECTIVES

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

- distinguish between the various categories of audio media in education
- describe the instructional uses of each of the audio media studied
- describe how to make a good audio recording.

3.0 MAIN CONTENT

3.1 Meaning of Audio Media

Audio media are forms of media that carry sound alone. They are teaching and learning devices that mostly appeal to the sense of hearing (Salawu, Afolabi, Adedapo and Adeyanju, 2006).

Audio media include tapes (tape recorders), records, radio broadcasts, language laboratory, compact disc (CD) player, laser disc player, stereo system, public address system, microphones, amplifiers, sound mixers, head phone, telephone, etc.

Audio media can be used for vocabulary practice, dictation, direct instruction and gathering of information from different categories of people. Audio media appeal to the ears. They present stimulating verbal messages to the learners. The illiterates and blind learners can easily learn from audio media. Audio media are cheaper to procure, readily available and versatile in application. The technical equipment required to record, playback or edit audio communications are easy to operate too.

Every teacher must be concerned about learner's listening skills – the physical ability to hear, the intellectual ability to profit from, and to improve upon the learning through listening and the ability to use the listening equipment (hardware) and materials (software) to the best advantage.

3.2 The Radio in the Classroom

By definition, radio is the transmission and reception of signals by means of electric waves without the use of connecting wires (Ajelabi, 2005). It is one of the most potent methods of mass communication.

Although radio is an integral part of the lives of Nigerians, many homes have and do listen to radio each day but many schools in Nigeria do not make use of radio in the classrooms. This is due to the absence of electric power, lack of suitable education programmes and cost (Oguntunse, 2005). At times, these programmes are not aired during the school sessions, but late in the afternoon or frequently in the evening.

Notwithstanding these, the potential of radio as an education medium is enormous. The teaching qualities of radio include immediacy, realism, the conquest of space and time, emotional impact, authenticity and inexpensiveness. If the radio programme is properly used in the

classroom, it can provide learners with information, increase discernment of social significance, develop desirable attitudes, increase appreciation of aesthetic values, stimulate interest in further study, as well as arouse learners to think and act.

3.3 Tape Recorders

Tape recorders do make instantaneous recording valuable. It gives the teacher and the learners opportunities to assess and approve all classes of oral work. It is useful in speech training, reading, composition, comprehension, drama, discussion, singing, poetry, music, dancing etc. Among the audio media (radio, CD, records and audio tapes), the only one where it is really practical for teachers and lecturers to produce their own materials is the audio tapes.

How is sound recorded on audio tape?

In the recording process, the first stage takes place in the microphone. Here, the incident sound waves cause a membrane of some sort to vibrate, and these mechanical vibrations are converted into a weak electrical signal whose amplitude follows the amplitude of the original sound. Next, record amplifier of the tape recorder, where it is increased in strength and (in most cases) also has its frequencies artificially enhanced in order to increase the signal to noise ratio in the final recording. The signal is then fed into the record head, an electromagnet that produces between its poles a magnetic field whose intensity varies in exactly the same way as the amplitude of the electrical sound signal.

In the playback process, exactly the opposite chain of transformation takes place.

3.4 The Equipment Needed for Audiotape Recording

Microphones- microphones come in various types, and like most other items of audio visual hardware, vary enormously in quality and price. Thus, when buying or selecting a microphone, it is important to choose one that is of a suitable type to do the job that one has in mind and is also of a quality that matches the rest of the equipment.

Microphones differ both in terms of the basic physical principles on which they operate and in terms of their directional characteristics. With regard to characteristics, we can distinguish four main types as follows.

Omni directional microphones are sensitive in all directions when suitably mounted and are suitable for recording group discussions.

Bi-directional (or figure-of-eight) microphones are sensitive in two opposite horizontal directions. They are suitable for recording interviews involving two people, with one on either side of the microphone.

Cardioids microphones are highly sensitive in one direction. They are not sensitive at all in the opposite direction and are suitable for recording a single speaker.

Gun (or rifle) microphones are highly directional in their sensitivity. They only pick up sound within a narrow cone and are suitable for picking up sound from a single source located some distance away.

Tape Recorders- these are of two basic types, namely: open reel recorders and cassette recorders. The former make use of detachable open reels as feed and take up spools, and generally need to have the tape threaded manually through the tape head and drive mechanism before use. The latter make use of sealed tape cassettes that contain both the feed and take up spools, and are loaded simply by fitting the cassette into place in the machine. Apart from this, however, the two types of recorders work in exactly the same way, and can be used to do more or less the same things.

3.5 How to Make a Recording

The way in which one sets about making a recording on an audiotape will obviously depend, to a large extent, on the nature of the material to be recorded and the purpose for which it is to be used (Bates, 1981). There are, however, some general rules that should always be observed.

Make sure that what you are recording is of the highest possible quality.
In most cases, the key to producing high quality original material is careful preparation both in terms of planning and writing the materials and in term of making sure that rehearsal is conducted before the final production.

Try to optimise the recording environment. The environment must be free from noise (extraneous noise). This background noise that is hardly noticed at the time a recording is being made can prove intolerable when the resulting recording is played back. Also, the environment should have appropriate acoustic properties.

Use appropriate equipment and materials

Use an external microphone (not one built into the tape recorder) of sufficient quality to do justice to the rest of the equipment – preferably one with directional properties suitable for the job you want to do.

Use the best tape recorder available, assuming it is suitable for the job in hand and bearing in mind that open-reel machines are generally much more suitable for making original recordings than cassette machines.

Use good quality tape of suitable grade and of sufficient length to give the required playing time at the tape speed you intend using.

Get the most out of your equipment and materials

Even if you buy the finest equipment in the market, you will only obtain good results if you use the equipment correctly. Thus, if you want to get the most out of your equipment and materials, you should:

- select a tape speed that is sufficiently high to produce the quality of recording you require
- set the recording level correctly. Some machines have a facility that allows this level to be controlled automatically. However, other machines require that the recording level should always be set manually
- use the ‘‘pause’’ control for starting and stopping the tape during recording rather than the “lay” and “stop” controls.

3.6 Presentation of Content on Tape

1. Introduce the subject of the tape from the onset.
2. Use conversational rather than textbook dictation.
3. Talk to the recorder as if you are talking to a friend.
4. Do not lecture.
5. Keep the tape short even if it is to be used by adult students.
6. You can also involve your listeners in meaningful learning activities, for example, you can supply a study guide or worksheet for use along with the tape.
7. Try to provide ample space for students to take notes while listening to the tape.

SELF-ASSESSMENT EXERCISE

i. Describe the role of recorded sound in education.
ii. Mention the various types of audio media used in education.

iii. Mention and explain the equipment needed for audiotape recording.

4.0 CONCLUSION

In this unit, you have learnt that the audio media are very useful teaching tools at all levels of education. Therefore, it requires adequate preparation in producing a quality and effective audio instructional media for teaching and learning.

5.0 SUMMARY

In this unit, you have studied the audio media as one in the broad family of educational media. You were also acquainted with a wide range of examples of audio media with their descriptions. In this unit also, you were provided with the technical details of how to package information in audio form for effective teaching-learning situation.

6.0 TUTOR-MARKED ASSIGNMENT

i. Describe the instructional uses of each of the audio media studied and describe how to make a good audio recording.
ii. Make a 15 minute audio recording on any subject area of your choice.

7.0 REFERENCES/FURTHER READING

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UNIT 3 PREPARATION OF VISUAL MEDIA (PROJECTED TYPES)

CONTENTS

1.0 INTRODUCTION

It is necessary and highly essential for any teacher wishing to teach for effectiveness to use instructional media during teaching-learning process. As important as instructional media usage is, preparation of such media precedes their usage. Instructional media can be made available through many sources. It can be sourced for through procurement, adaptation, loan from media centres or libraries, and through improvisation.

In this unit, however, emphasis would be placed on the skills and techniques needed in the production of the itemised visual media stated above.

2.0 OBJECTIVES

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

- distinguish between overhead, opaque and slide projectors
- mention the software needed for overhead, opaque and slide projectors
- describe how these soft wares are produced.

3.0 MAIN CONTENT

3.1 Preparation of Visual Media

Visual can be classified into projected and non-projected visuals.

3.2 Overhead Projector

The utilisation of overhead projector has made a tremendous impact among trainers and teachers since its discovery as projected visual equipment. This projected medium is a very valuable accessory to a programme of visual education. A powerful light in the body of the machine passes through the transparent glass as well as through the transparency being used. The image appears in the mirror above the machine, and in turn is reflected on the screen situated at the back of the teacher.

The equipment projects transparencies in either monochrome (black and white) or coloured. It can also project traces of mechanical or architectural drawings.

Advantages of the overhead projector

1. The image it projects is so bright that blackout is quite unnecessary
2. The teacher can write directly on the transparency with the overhead projector transparency markers as the object is being projected
3. Overhead projector enables the teacher to face his/her learners from the front of an illuminated room and project on the screen above and behind him
4. The teacher can write, sketch and erase as he is presenting his lecture
5. Transparencies can be prepared in advance and used at the discretion of the teacher with no dual operation
   Progressive disclosure can be easily achieved by simply covering that portion of the transparency which is not to be seen.

3.3 Preparation of Transparencies

Transparencies can be prepared in the following ways.

1 Writing or drawing directly on the transparency with a felt
2 pen
3 Photocopy
  Computer printing

3.4 Slide Projector

The slide projector is an opto-mechanical device to view photographic slides. The projector is an example of diascopic projection.

Transparent films which allows light to pass through them are used. The basic parts of a slide projector are as follows.

1. The lamp which is the source of light
2. The reflector which is a mirror that causes all the light from the lamp to be thrown in the forward direction
3. The condenser which concentrates the rays of light to the lens
4. The heat filter protects the film from too much heat
5. The projection lens inverts the image before magnifying and focusing it on the screen
6. The fan that cools the lamp from heat.

The use of a single slide, can vitalise an entire teaching session; one slide can make a topic or a lesson remain vividly in the memories of learners. Carefully selected slides or just one slide can attract attention, arouse interest, assist lesson development, test learner's understanding, review instruction, present the next lesson or subject and facilitate student-teacher participation. The versatility, easy means of selection, low cost and ease of preparing slides make them important teaching tools.

3.5 Production of Slides

Slide formats are of two types. These are the older 3½ by 4 inch slides and the newer 2 by 2 inch. The 2 by 2 inch is more popular and regularly used in educational settings.

Slides can be made with cellophane, etched glass, plain glass and photographic prints. Most of these materials may be purchased in any stationery store or photo shop. It may be in monochrome (black and white) or coloured.

All teaching slides are easy to produce. However, that of photographic type requires special ability, and, unless one has knowledge of photography and access to a darkroom, it would be advisable and less expensive to borrow, rent or purchase these slides. Notwithstanding, the teacher will find it valuable preparing or producing the slides that accompany his/her lecture.

Cellophane Slides – in order to produce cellophane slides, the following materials are required: 2 by 2 inch sheet of plain or coloured cellophane, a 4 by 4 inch sheet of carbon paper, two pieces of 2 by 2 cover glass, a typewriter and a binding tape.

At the onset, lay out the slide on a 2 by 2 inch of scrap paper. Be sure to leave half inch margin on all sides. Then fold sheet of carbon in half, and place cellophane in centre. Insert carbon and cellophane into typewriter and adjust machine for stencil position. Type the material on cellophane through the carbon. Remove cellophane and place it between two pieces of cover glass. Then, secure glass cover with building tape. With slide in correct position, place a thumb mark in lower left-hand corner. However, instead of using the typewriter, transparency marker (fine or medium tip) may be applied directly to the cellophane. In this case, it is suggested that one places the cellophane over the drawing or sketch, and merely trace it on the transparency.

Binding Slides – all permanent slides are to be made with two pieces of frames, held tightly with tape.

The followings are the directions you should follow for binding slides,

i Cut the tape
ii Place tape upon a flat surface with adhesive side on top
iii Holding the two pieces of frames firmly with all edges even, set one side in the centre of the tape, starting at one end
iv With firm pressure, roll the slide along the tape until all edges are covered
v Press down the edges of the tape on both sides of frame
vi Make corners even by folding one side under, and the other side over.

3.6 Filmstrip Projectors

The filmstrip is a continuous strip of film consisting of individual frames and pictures arranged in sequence, usually with explanatory title. The filmstrip is considered as one of the most potent type of instructional materials. The use of the filmstrip and the filmstrip projector in practically any learning situation will give satisfactory result. Each picture on the filmstrip can be readily projected on the screen for any length of time. Teachers and learners can then discuss the content as exhaustively as may be required. If used properly, the filmstrip will increase learner's interest, clarify lessons and save considerable teaching time.

3.7 Production of Filmstrips

With a good 35mm camera, a simple filmstrip can be made since it is merely a series of individual pictures arranged in a specific order on a strip of film.

When preparing the filmstrip, it is important that one should:

i prepare a script
ii plan each 'shot'
iii arrange each picture in the proper sequence
iv photograph each scene in the proper order
v store film in a filmstrip container, and
vi title and file each filmstrip on the tip of the container.

In order to plan and produce your own filmstrip, you need to:

1 decide the main purpose of the filmstrip, what it is to tell or explain
2 determine the audience to which the filmstrip will be shown as well as their attitude and experience level
3 plan the character of the presentation. Is it to be humorous, sober or informative?
4 outline the story or message.

3.8 Opaque Projector (Episcope)

The opaque projector is a predecessor of overhead projector. It is the simplest and least expensive of all various devices for projection purposes. It is designed to project any kind of non-transparent flat surface matter such as pictures, photographs, cartoons, drawings, magazine illustrations or other small objects. Solid objects are not excluded.

The machine operates with reflected light; the lamp illustrates the material and the image is reflected by a mirror through the lens to the screen. Its effectiveness is based on the reflective power of mirrors. A considerable amount of light is lost through the reflection process and therefore, the room in which the opaque objects are to be projected must be as dark as possible, although, the equipment may be used without complete darkness.

Advantages of the opaque projector

1 It can be used in teaching all school subjects involving printed tables, diagrams, charts, pictures etc
2 Solid objects like watches, coins, specimens, etc. may be projected thereby becoming larger
3 It is most suitable for instructional purposes because it is still projection and provides opportunity for close observations and discussion
4 It stimulates attention, arouses interest, clarifies information and helps learners retain knowledge for a longer period of time
5 It saves laborious hours of chalkboard writing and sketching
6 It can be used to introduce subjects/topics and it can present specific information, test knowledge and ability as well as review of instructional problems.

SELF-ASSESSMENT EXERCISE

i. Differentiate between the following
ii. preparation of transparencies and preparation of filmstrips
iii. filmstrip projector and opaque projector (episcope)

4.0 CONCLUSION

In this unit, you have learnt the skills and techniques needed in the production of the underlisted visual media.

- Preparation of visual media
- Preparation of projected visuals
- Preparation of transparencies
- Production of slides
- Filmstrip projectors
- Production of filmstrip
- Opaque projector (episcope)

5.0 SUMMARY

In this unit, you have learnt about the preparation of visual media, preparation of projected visuals and preparation of visual transparencies.
You are now conversant with the production of slides and filmstrips. Finally, you were exposed to the uses and advantages of the opaque projector (episcope).

6.0 TUTOR-MARKED ASSIGNMENT

i. Write short notes on each of the followings:
   a. preparation of visual media
   b. preparation of projected visuals
   c. preparation of transparencies
   d. production of slides
   e. filmstrip projectors
   f. production of filmstrip
   g. opaque projector (episcope).

7.0 REFERENCES/FURTHER READING

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UNIT 4 PREPARATION OF VISUAL MEDIA (NON-PROJECTED)

CONTENTS

1.0 INTRODUCTION

In this unit, you will learn the preparation of visual media (projected types). You will also learn the distinguishing factors between overhead, opaque and slide projectors. Mention will be made of the software needed for these projectors while describing how the software is produced.

2.0 OBJECTIVES

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

- distinguish overhead, opaque and slide projectors
- mention the software needed for overhead, opaque and slide projectors
- describe how the software is produced.

3.0 MAIN CONTENT

3.1 Non-projected 3-Dimensional Visuals

These are non-projected visuals that have length, breadth and height / volume. Examples of instructional media of this categorisation are models, specimen and diorama.

1. Model

Models are recognisable three dimensional representations of real things or abstract systems. They play useful role in a wide range of instructional situations (Fakomogbon, 1989). They are, however, particularly useful in three specific roles, namely:

i as a visual support materials in mass instruction
ii as objects for study or manipulation in individualised learning and
iii as construction projects for individuals, small groups or even the entire class.

The learners do not only see them but also touch them, examine them closely and operate them.

Models vary greatly in form, depending on the purpose for which they are designed. Models may be classified into three groups:

a. X-ray – used mainly to reveal internal construction, such as cross sectional or cut out model.
b. Solids – used mostly for their external features.
c. Workings – they show how things work. They are difficult to make and require the services of an expert.

Production of models

The ranges of methods available for making models for instructional purposes are enormous, but some of the following standard techniques are useful.

a. Use of commercially-available kits of parts, such as the ball-and-spring systems that are used to make models of molecules and the various types of tube-and-spigot systems that can be used to make models of crystals.
b. Use of construction systems such as ‘‘meccano’’ and ‘‘fisher’’ working models.
c. Use of inexpensive materials such as cardboard, hardboard, wood and wire to make up static models of all types (models of buildings, geometrical bodies, 3-dimensional shapes etc).
d. Use of materials like modeling clay and plasticine to produce realistic models of animals, anatomical demonstrations and so on.
e. Use of materials like Plaster of Paris and papier-mâché to produce model landscape.

2. Specimen

Specimens are small pieces, segments, parts or samples of the real object, or the materials used in their preparation.

Production of specimen

It is not necessary that one should produce specimens for teaching and learning. Large numbers of specimens may be obtained from local plants, stores or farms. Learners may even be encouraged to collect specimens. Generally, specimen as a term means a sample of objects. It is a true representative of a group of objects. Thus, in a biology class, we talk of specimen of type of bone, flower/plant etc.

3. Diorama

These are still-display systems that combine a three-dimensional foreground of model buildings, figures etc. with a two-dimensional painted background, thus creating a highly realistic effect.

They can be used in the teaching of the following wide range of subjects.

a. History, Drama, Religious Studies (representation of historical or dramatic scenes, stage sets, battles etc).
b. Architecture, Geography and Geology (representation of buildings, towns, landscapes, pre-historic landscapes and scenes etc).
c. Biology and Natural History (representations of plants or animals in their natural habitats).

Production of diorama

Although sophisticated dioramas of the type that are seen in museums can be extremely expensive, time consuming and difficult to make, it is perfectly possible for anyone possessing a little knowledge of graphic and artistic skills to produce highly effective displays (Ajelabi, 2005 and Abimbade, 1997 and 2006). They can be done in the following ways.

a. Make a semi-circular base of the required size out of the clipboard, hardboard, thick card or some other suitable materials;
b. Make a strip of thin white card of suitable height that is capable of extending all the way round the curved side of

the base, draw and/or paint the required background scene on this and fix it to the base (e.g. with drawing pins);

c. Build up any landscape required in the foreground using Plaster of Paris or papier-mâché, and paint this in the required colours, and

d. Produce or acquire materials that are required for the foreground and set them in a position; such materials can include model figures (cardboard, cut-outs, plasticine models etc). Model buildings, model trees, model ships, tanks or other vehicles, pieces of rock, and any other material that you feel will enhance the realism of the scene being depicted.

3.2 Non-projected 2-Dimensional Visuals

These are non-projected visuals that have only length and breadth. These include posters, charts, diagrams and flashcards.

1. Poster

Poster is designed to convey information vividly, attractively and economically. Poster may be anything ranging from simple printed announcement of a dance in the village hall to a complicated picture to persuade a reader to buy a product.

It is an effective means of putting across certain ideas such as safety habits of workmanship, courtesy and citizenship. Posters are either teacher-made or commercially produced. However, teacher-made posters are better. A good poster should possess the following qualities.

a. It is based on one theme and should be related to the specific topic
b. The poster should be plain, simple and direct. Viewers should not be left in doubt about the message
c. It should be colourful – (vivid, bold colours to draw attention and focus)
d. Large enough to be easily seen and understood at a glance
e. Brief captions are essential to clarify the meaning and
f. It must promote action.

Production of posters

In order to produce a good poster, the following materials are required: drawing pencil (HB) eraser, long and short rulers, cardboard papers, drawing papers, markers and poster-colours.

The systematic steps involved in the production are as follows.

a. Ensure or identify the topic to be taught. It must require the utilisation of a poster in order to present it in a meaningful form
b. Have an idea of what you want to do and have a clear objective
c. Make a working sketch on a drawing paper
d. Get the required materials
e. Present one central idea with a brief caption
f. Start the pencil work with:
    i. marking of border lines which should be one inch from the edge of the cardboard
    ii. block lettering of the title using the appropriate dimension. Calculate to ensure centralisation of the title
    iii. draw object boldly (using pencil) and ensure that it is centralised
    iv. paint the work in its real colour
    v. clean all the pencil work thoroughly
    vi. trial test it for proper visual
    vii. mount on the display board for classroom use.

2. Charts

A chart is one of the information-carrying graphic display materials that is utilised in a governmental, business and educational settings in delivering information. An important purpose of concepts which are likely to be difficult to understand if presented in oral or written form are usually illustrated through the use of charts. In other words, chart is used in the instructional programme as a means of breaking down information into a language that can be understood by the learners.

The following are the types of charts available.

a. Bar chart
b. Pie chart
c. Flow chart
d. Pictorial chart
e. Organisation / administration chart
f. Classification chart
g. Life chart

A good chart is expected to possess the following qualities.

a. It must be big enough to be seen by the whole class or group.
b. It must be simple. Complexity of situation and a comprehensive, detailed representation may lead to confusion.
c. It must be attractive enough to capture and hold the learners' attention.
d. The information must be accurate and authentic.
e. It should employ colour with discretion and
f. The title should be brief.

Production of charts

In order to produce a good chart, the following materials are required: drawing pencil (HB) eraser, long and short rulers, cardboard papers, drawing papers, markers and poster-colours.

The following are the systematic steps involved in the production of charts.

a. Ensure or identify the topic to be taught. It must require the utilisation of a poster in order to present it in a meaningful form
b. Have an idea of what you want to do and have a clear objective
c. Make a working sketch on a drawing paper
d. Get the required materials
e. Present one central idea with a brief caption
f. (Start the pencil work with:
    i. marking of border lines which should be one inch from the edge of the cardboard
    ii. block lettering of the title using the appropriate dimension. Calculate to ensure centralisation of the title
    iii. draw object boldly (using pencil) and ensure that it is centralised
    iv. paint the work in its real colour
    v. clean all the pencil work thoroughly
    vi. trial test it for proper visual
    vii. mount on the display board for classroom use.

3. Flash cards

A flash card is a small, compact card which is to be "flashed" before the entire class to explain an idea or information. The message that the card contains is brief, clear and to the point. It may be a picture, a written message or any other information.

Production of flash cards

Producing a flash card is very easy. A simple flash card may be produced by writing or printing the contents on a plain sheet of paper or cardboard. However, the production of a good, attractive and appealing flash card goes beyond this level. Good lettering should be applied. Block lettering is the best for preparing excellent flash card. If a picture is to be included, it must be well drawn, bold and beautiful.

The procedures are as follows.

a. Get the required materials like pencil (HB), eraser, short ruler, cardboards and markers ready
b. Prepare flash card roughly on a piece of paper
c. Rule grid lines (in centimeter), measure and rule space for each letter
d. Draw lines for each letter faintly with pencil so that it may be removed with an eraser
e. Construct letters in pencil
f. Trace with marker

Use attractive but contrasting colour of the writing material like the cardboard. Where pictures are involved, draw the pictures first, paint them and construct the letters below them.

4. Diagrams

Diagrams may range from lines showing the process of a product to a highly technical drawing of a thirty-storey building construction, or an illustration of how to operate certain appliances. Today, the use of diagrams is becoming increasingly important in our classrooms for teaching and learning.

Production of diagrams

a. Get the materials like pencil, ruler, compass, eraser etc.
b. Prepare diagram accurately to scale.
c. Make the title clearly visible.
d. Leave ample space between lines.

e. Present the diagram in simple form.
f. Make lines clear and eliminate all non-essentials,
g. Make it large enough so that all learners can see it.

3.3 Non-Projected Visual Displays

Non-projected visual displays are the backbone of the whole range of classroom visual materials. These visual displays serve a lot in the classroom setting. They require no electric power or light source. They are in various shapes, sizes and colours.

1. Chalkboard

The chalkboard is considered a part of the learning environment. The chalkboard is a piece of instructional material, which in the hands of the teacher, can be made to convey visual messages. The teacher makes his/her own impression on it.

It is the most commonly and generally accepted medium of visual instruction in the classroom, language laboratories and science laboratories. It is also one of the quickest, easiest and often the only means of illustrating an important point. It is an effective visual material that permits, contrasts and helps the learners in their note-takings.

Production of a chalkboard

Teachers or learners do not necessarily need to produce a chalkboard on their own. It is available everywhere and at a very low cost. Some are made of wood, hardboard, plastic, slate, glass or even painted wall. Also, it comes in a variety of colours – green, yellow, white, black etc.

2. Marker board

This board, which is also known as the whiteboard, is common in training rooms and is sometimes now fitted in teaching rooms. Appropriate felt pens, markers or crayons, are used along with it in as much the same way as the chalkboard.

It has, however, a number of advantages over the chalkboard.

a. There is first of all, none of the mess that always results when chalk is used.
b. Second, a wider variety of colours and tone strength can be used, and the resulting display is invariably sharper, better-defined and clearer than is possible using chalk.

c. Third, a marker board – unlike a chalkboard – can double as a projection screen if required.

It is strongly advisable to use only the types of marker pens that are recommended by the manufacturer of the particular board that one is using. This is to avoid difficulty in cleaning the surface properly so that ‘‘ghost’’ marks are not left behind.

Production of marker board

Marker board is available in audio visual shops at affordable prices. In addition, it comes in various sizes, so there may not be need to produce it, rather it could be acquired.

3. Flannel board

The flannel board (also known as felt board) is a stationary or portable surface covered with a rough, flannel-like cloth made from wool, cotton or hair, which is tightly stretched over a long backing of plywood, masonite or celotex. Shapes cut out of felt, flannel or similar fabrics will adhere to display surfaces covered with similar material. Also, various objects like pictures, magazines or newspaper ‘cut-outs’ graphs, drawings, text-materials and other illustrations with similar rough ‘‘flannel-like’’ backing are placed on the board. The objects on the board adhere to it without the use of thumb tacks, pins or tapes.

Production of flannel board

Although several companies produce both the flannel board and cut-out materials to use with them, teachers can make their own board without difficulty. It is inexpensive and easy to make. It can be produced in any shape or size.

The following systematic procedures should be adhered to in producing a flannel board.

Get the required materials which are:

a. a piece of mounting board of scolex or masonic of the desired size
b. a piece of heavy cardboard (as the base)
c. a piece of flannel of a neutral colour which should be four inches longer than the board
d. a roll of masking tape or thumb tacks for binding and
e. a thin sheet of metal wire screening (if magnet is also to be used)

The procedures for construction of a flannel board are as follows.

i Cut the base to the desired size
ii Cut the flannel, felt or suede, with at least four inches longer material by the sides, before attaching it to the board to make sure that it will hold objects placed on it
iii Stretch the cloth over the board. Fold corners on the reverse side of the board and attach securely to the back of the board with thumb tacks. Fold neatly at the corners
iv Plan to use board on the easel. If an easel is not available, hinge a piece of plywood to the back of the board in such a way that it will be possible to place the board on a desk or table.

4. Bulleting board

The bulletin board is a section of the wall (at times) made of some kind of composition material, upon which we tack notices and announcement and other materials of interest. It is a teaching display which is useful in all levels and fields.

Production of a bulletin board

The bulletin board may be purchased or produced by the teacher.
There are various types: soft wood, cloth, masonite board, fibre board or celotex. The size of the bulletin board will depend on the classroom. It may be attached to the wall. At times, an improvised board may be justified. A portable bulletin board can be easily moved from one section of the room to another.

5. Flip chart board

This constitutes a simple and highly effective method of displaying information to a class or small group. Such charts consist of a large number of sheets of paper, fixed to a support bar, easel or display board by clamping them.

Production of a flip chart board

Flip chart board is available for sale in all audio visual shops. The price is reasonable. Alternatively, one may contact a local welder to help in building one.

SELF-ASSESSMENT EXERCISE

i. What contributions can projected visuals make to your teaching?
ii. Describe how you can produce the following:
    a. slides
    b. filmstrips

4.0 CONCLUSION

In this unit, you have learnt about the preparation of visual media (projected types). You have also learnt the distinguishing factors among overhead, opaque and slide projectors. Mention was made of the software needed for these projectors and how the software is produced.

5.0 SUMMARY

Visuals generally form an important ingredient of quality teaching, this is because they permit effective development of cognitive, affective and psycho-motor skills. Visuals provide direct and purposeful experience, which form a solid foundation for learning.

6.0 TUTOR-MARKED ASSIGNMENT

Develop a lesson of your choice and prepare at least four transparencies to aid your instruction.

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UNIT 5 PREPARATION OF AUDIO VISUAL MEDIA

CONTENTS

1.0 INTRODUCTION

As a follow-up to your understanding of the production of visual media in unit 4, this unit is prepared to intimate you with the knowledge and the skills that you need to enable you prepare audio visual media. Recall that audio visual media are so called because they possess the features of audio media plus those of visual media simultaneously.

In this unit, you are going to learn about the production of a variety of specific media.

2.0 OBJECTIVES

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

- identify the various categories of audio visual media used in education
- describe the instructional uses of each of the audio visual media studied
- demonstrate competence in the use of each of the following audio visuals:
  - television

- video tape recording.

3.0 MAIN CONTENT

3.1 Preparation of Audio Visuals

3.1.1 Meaning of Audio Visuals

Audio visuals are those instructional materials which provide the learners with the opportunity of seeing and hearing at the same time (Salawu, Afolabi and Adedapo, 2006).

Examples are instructional or educational television, closed-circuit television, videotape recorders, multimedia projector, computer etc. Most people consider them as pieces of expensive equipment, and so they are not commonly used for teaching and learning.

Nowadays, schools, organisations and training centres incorporate the use of audio visual media in their presentations. This is because they are found to be versatile and easy to use (Kemp, 1983).

3.2 Television

Television is without doubt one of the most versatile audio visual materials ever developed. It can be transmitted over a long distance and its signals recorded and played back instantly. Its ability to convey an event ‘‘live’’ will have a profound influence upon what teachers and learners think and do in the future.

The television offers vitality and newness which attract attention, create interest and stimulate a desire to learn. Consequently, many progressive educators are using television as an educational tool (Ajelabi, 2006). It is now easily accessible for use in education not only via the over-the-air broadcasts, but also by means of closed-circuit and cable television system, all of which may be linked to the satellite. Other unique qualities of the television include concreteness, immediacy, variety, versatility, reinforcement of existing ideas and information. That apart, programmes are now available for watching on the screen via the video-cassette and video disc.

3.3 Preparation to Use Television Programme in the Classroom

There is the need to adequately prepare to use a television programme. All the physical factors should be adequately checked. This includes selecting the type of television set and size of the screen. However, this is determined by the size, shape and number of learners in the classroom. The larger the size of the screen of the television set, the better for a large number of learners to observe at one time.

There is the need to check the lighting, ventilation, seating and the television before the group convenes. With respect to lighting, total darkness is not necessary. Enough light should be provided so that learners can take brief notes on the broadcast programme.

3.4 Videotape Recorder

Many training establishments and schools make use of videotapes as well as video cassette recorders to record lessons and training session for later presentation. Videotape recorders are used effectively in teacher-training programmes for micro teaching sessions. They are equipped to dub, playback and edit (Ekere, 2001). With the advent of videotape recorder into the television industry, it has gradually revolutionised television viewing and production. Video sender also makes it possible to record classroom lessons and enables viewers to see it on the screen at the same time.

3.5 Production / Recording of Video Instruction

In a good production, the focus is on the teaching–learning goals. Distracting information or irrelevances should be avoided. There should be good sound, vision, perceived control matters that provide opportunities for learners to respond to what they are learning (and so get immediate feedback) and properly labelled information. Consequently, the teacher should be self-prepared for the task of making use of video instructional lessons (Ajelabi, 2005).

The following basic steps are to be taken to achieve effective recording of an instruction video production.

1. Start with an idea.
2. Express this idea in terms of clearly stated instructional objectives.
3. Write the script.

4. Build into the script opportunities for learner's participation and questions where appropriate
5. Before recording, make sure the environment is well lit.
6. The recording crew (technicians and cameramen) must be on ground to assist the instructor.
7. Next is the preparation for the recording.
8. Slide the camera/videotape recorder selector cover close so that it covers the tape running buttons.
9. Slide the operation on/off switch backward to turn the VHS movie on.
10. Insert a video cassette with the erasure prevention tap intact.
11. Set the white balance mode selection to auto.
12. Place VHS movie in the shooting position.
13. Grasp the handgrip and adjust the length of the grip belt with the tape closure to the size of your hand.
14. Attach the lens cap to the grip belt.
15. Press the start/stop button. The recording indication ''REC'' is displayed in the ''RUF'' and recording starts.
16. To temporary stop the recording (recording pause), press the start/stop button again.
17. To finish the recording, put the movie camera in the recording pause mode and then slide the operation on/off switch backward again to turn the VHS movie off.

3.6 Computer Assisted Instruction (CAI)

Commercially produced software packages are available in some subjects. However, one may need to design his/her own software package in teaching some school subjects or topics. However, there is a need to state that the computer software production is a team effort involving the system programmes or analyst and the instructional designer.

Stages in the production of computer programmes include:

a. functional specification of requirements
b. systems specification
c. programme specification
d. writing and testing of the programmes and
e. acceptance by user.

3.7 The Internet

The Internet is the base of information that we expect to revolutionise our society, and take man to a higher level of civilisation. It provides information on all aspects of human endeavours – politics, history, religions, culture, economy, education, etc. This is why the military, government, companies, organisations, parastatals, institutions and individuals input and output related information from the Internet.

Recall that you were introduced into many useful concepts and functions that you can perform through your Internet exposure in a related course in this programme. If you are in doubt, you would do well to go over the course content again.

3.8 The Multimedia System

This is the latest audio visual media that trainers and presenters now use for lectures and conferences, seminars and workshops. A multimedia system is combination of different but interrelated devices (audio and visual media) which are integrated into a structured systematic presentation. Multimedia computer system combines digital, video, audio, graphics, animation and text in a single delivery system. The devices work together cooperatively and interactively as a single medium to enhance the presentation of programmes.

Depending on the situation, it consists of a video/data projector, laptop or a micro-computer, microphones and a projector screen or television. The choice of media depends on the type of lecture or seminar to be presented. However, the most commonly used system includes – the computer, video/data projector and the screen. With reference to inaugural lectures, video camera, laptop, screen, remove control, laser pointer, microphones and electric power supply units are utilised.

3.9 Terminals of a Multimedia System

The projector has many terminals through which various signals are sent into it. They are as follows.

a. **Two audio signal terminals**: they are used for connecting the microphone for the purpose of sending in audio signals.
b. **Video signal terminals**: through these terminals, video signals are sent into the projector for appropriate action of converting them to pictures and focusing them on the screen.
c. **The laptop computer**: this is connected to the projector. It is used to send already printed instructions from the hard disc to the

projector. Pictures are also scanned into the laptop computer. These scanned pictures are, in turn, through the projector, focused on the screen.

d. **The video camera**: it is used to pick life pictures of the presenter and the audience. It translates pictures into electric signals which are eventually sent into the projector for the purpose of focusing on the screen.

e. **Remote control unit**: this device is used to control the programme of the presenter. Depending on the stage of the lecture and instructions given to the operator, the remote control is used to change from one signal channel to another. It can change from video signal to audio or printed signal.

SELF-ASSESSMENT EXERCISE

i. What potentials do the audio visuals have for teaching and learning in our schools?
ii. Explain the recording process of video instruction.
iii. Discuss the steps involved in the classroom preparation of television instructional programme.

4.0 CONCLUSION

The audio visuals are particularly useful for dynamic action processes as they occur in motion. They are appropriate for subjects which require adding visual association, visual identification and demonstration. They also provide factual information and can therefore be used for total teaching at all levels in virtually all subjects.

5.0 SUMMARY

In this unit, you have learnt about the various categories of audio visual media that are used in education. Such media include the television, videotape recorder, computer assisted instruction, the Internet and the multimedia system.

In addition, you have been provided information as to the uses of each of the mentioned audio visual media. You are expected to visit the Educational Technology Centre of the institution where your study centre is located or make a visit to any Educational Technology Centre with a view to familiarising yourself further in the usage of the mentioned audio visual media. In case you have problems as to how to locate one, feel free to ask your facilitator.

6.0 TUTOR-MARKED ASSIGNMENT

i. Briefly describe the instructional uses of each of the audio visual media studied and distinguish between the following audio visuals:
   a television
   b videotape recording.

7.0 REFERENCES/FURTHER READING

Ajelabi, A. (2005). *Production and Utilisation of Educational Media*. Lagos: Raytel Communications Limited.

Ekere, F.C. (2001). "Non-book Media for Effective Implementation of Universal Basic Education (UBE) Programme in Nigeria". *Nigerian School Library Journal*, Vol. 4 (1 & 2).

Kemp, J.E. (1983). *Planning and Producing Audio Visual Materials*. San Francisco: Chandler Producing Company.

UNIT 6 REASONS FOR USE OF MEDIA AND SELECTION CRITERIA OF INSTRUCTIONAL MEDIA

CONTENTS

1.0 INTRODUCTION

A course in Preparation, Utilisation and Integration of Educational Media in Curriculum could not be regarded as complete without a discourse on the reasons for recommending the use of educational media and the establishment of the selection criteria. This unit focuses on this aspect of the course. You will find it as interesting as ever.

2.0 OBJECTIVES

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

- mention the criteria for selecting educational media
- discuss the reasons for using media in education
- describe the preparations that are necessary for effective use of media for instruction.

3.0 MAIN CONTENT

3.1 Instructional Media: Definition

Educational media refers to a collection of teaching-learning materials that constitute an integral component of classroom instructional process and are utilised in delivering educational information to the learners (Balogun, 1995; Abimbade, 1997). It is learner centred.

3.2 Reasons for using Educational Media

According to Ajelabi (2005), the underlisted are some of the reasons for using media in teaching and learning.

- Educational media make learning to become real and concrete.
- By using educational media, learning effectiveness is increased as learners are more likely to retain and recall with ease a greater percentage of what they hear, see and manipulate.
- They help in focusing attention and motivating learners, when appropriate educational media are used to introduce, develop or conclude a teaching-learning session. Learners' interest is aroused and developed through the lesson.
- Educational media give learners the opportunity to learn at their own pace, rate and convenience – media cater for individual differences.
- Educational media help in magnifying or reducing objects for classroom use.
- They provide experiences that may not otherwise be available to learners.
- Educational media give chance for teacher participation in the design and development of meaningful curriculum.

3.3 Criteria for Selecting Educational Media

- Instructional objectives – this is one of the major determinants of selection. This is usually based on the topic to be taught. The instructional objectives are to be stated in behavioural, specific and measurable terms.
- Availability – before selecting any educational medium, one must be sure that such material or equipment is available and easy to purchase, borrow or produced.
- Cost – the financial implication of the educational media that the teacher wants to select is of topmost importance.
- Content accuracy – the educational media must present authentic, valid and current information or latest ideas.
- Suitability – the age, ability and character of the learners must be taken into consideration when selecting media for classroom use.
- Size of the class – if the number of learners is large, bold visuals should be used. This would lead to consideration of the size/dimension of the media to be selected. It may also make a teacher to provide for more of the media so selected. This is because, in a situation whereby the class is large, visibility factor

has to be given consideration. Thus, the question of quantity and quality set in.

- As for the quantity, the teacher may need to provide for media that will go round each of the learners in the class; whereas, as regards quality, it involves preparation of bold media to allow for all the learners in the class to view them.
- Operating facilities – the facilities for operating the equipment should be functional and available. Also, the teacher should be able to effectively manipulate the material or equipment for teaching and learning.
- Interactivity – learner-learner, learner-media, learner-teacher, and teacher-media interactions should be promoted as a result of using the educational media.

3.4 Media and the Instructional Process

For media to be effective in the instructional process, teachers must:

- be prepared ahead of time
- prepare environment e.g. light, electricity, air, ventilation
- prepare the class, arrange the seats so that there would be no hindrance in visualising objects that are displayed
- ensure the learners themselves are prepared for the learning experiences they are about to be exposed to.

SELF-ASSESSMENT EXERCISE

i. Mention and discuss five criteria for selecting educational media.
ii. Briefly discuss the reasons for using media in education.

4.0 CONCLUSION

It has been a long established fact that the use of appropriate media in instructional process is a must by the teachers. Therefore, no teacher that is to act professionally would have any excuse for non-utilisation of appropriate educational media in his/her effort to assist learners to learn. You are therefore, by going through this unit challenged to make sure that you make use of educational media in carrying out the task of teaching-learning process.

5.0 SUMMARY

Education and training processes are becoming more and more media-based in many parts of the world, making media-facilitated learning possible. However, the following must be considered in selecting media for instructional purposes: instructional objectives, cost, content,

accuracy, suitability, interactivity, teacher competency, operating facilities amongst others.

6.0 TUTOR-MARKED ASSIGNMENT

Mention and explain in detail five criteria you must consider before choosing any media for classroom instruction.

7.0 REFERENCES/FURTHER READING

Abimbade, A. (1997). *Principles and Practice of Educational Technology*. Ibadan: International Publishers Limited.

Ajelabi, A. (2005). *Essentials of Educational Technology*. Lagos: Raytel Communications Limited.

Balogun, T.A. (1995). *Instructional Material Resources: Technology and Methods*. Ibadan: Omolayo Press.

MODULE 2 UTILISATION OF AUDIO VISUAL INSTRUCTIONAL MEDIA

Unit 1 Application of Instructional Media
Unit 2 Utilisation of Visual Media
Unit 3 Utilisation of Audio Visual Media

UNIT 1 APPLICATION OF INSTRUCTIONAL MEDIA

CONTENTS

1.0 INTRODUCTION

The creative uses of a variety of media will no doubt increase the probability that students will learn more, retain better what they learn, and improve their performance of the skills they are expected to develop.

It should be noted however that just the use of media in instructional activities will in no way guarantee results in student learning if the media are not skillfully utilised (Hellyer, 1970).

In this unit, you will be introduced to the general basic steps in the utilisation of media, techniques for using radio in the classroom and the use of radio and tape recorder for instructional purposes.

2.0 OBJECTIVES

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

- explain the general basic steps in the utilisation of media
- describe the techniques for using radio in the classroom
- demonstrate competency in the use of radio and tape recorder for instructional purposes.

3.0 MAIN CONTENT

3.1 A Basic Utilisation Plan for Media

The basic plan for utilising educational media is to "prepare, present and follow-up". This simple formula involves five steps, as follows.

1. **Prepare yourself**: you need to preview the film, listen to the recording, sort through and examine pictures comprising a picture set. Study available guides, take notes during previewing and develop a plan to use the media. You must describe how you will introduce it, what you will do and ask your students to do during and after using it.
2. **Prepare the environment**: arrange necessary materials and equipment required for proper viewing or hearing. See that the equipment is on hand and properly set up.
3. **Prepare the class**: introduce the medium by making it clear why it is being used at the particular time, briefly describe what it covers, and stress what is important to be learnt from it. Tell learners what they are expected to do after using the medium.
4. **Use the medium/media**: show the film properly. Be sure that images are projected above the heads of viewers and that they are in proper focus. Be sure that the sound volume and tone are properly adjusted so all may hear. End the showing professionally.
5. **Follow-up**: after use, invite and answer questions about the presentation. Review the experience, perhaps give a test. Supervise learners' performance or demonstration of skills expected to be learned from the experience.

This simple, almost classic five-step procedure is sometimes recommended as the basic guide to media utilisation.

3.2 Utilisation of Audio Media

Classroom utilisation of radio programmes

According to Abimbade (1997), the techniques for using the radio in the classroom depend on the subject matter, class, number of learners in the class and the time allotted to the lesson. In order to effectively utilise radio programmes in our classrooms, you need to follow these steps.

a. **Secure a radio**: any radio set may be used as long as it receives the desired station and can be heard clearly by every learner.

b. **Secure advance notice of radio programmes**: in order to plan your lessons carefully, find out the dates and times of specific programmes by contacting the radio station.

c. **Secure advance information**: since it is almost impossible to preview a radio programme, it is essential that you secure all possible information about the programme before the broadcast.

d. **Arrange the class for listening**: it is not necessary that you should have a special room to use the radio. However, the room should have an acoustically treated, well ventilated, lighted with electric outlets and table for radio as well as other classroom facilities.

e. **Check the radio before the class meets**: test the radio and ensure that it is working by tuning in to the proper station. This should be ready before the class meets.

f. **Arouse learners' interest**: as an introduction, arouse learners' interest by telling them how they will benefit from the broadcast. The learners should know what to listen to and watch out for.

g. **Present the broadcast**: the learners now listen to the educational broadcast. The teacher may write the major points of the programme on the chalkboard during the broadcast. The educational media that relate to the purpose of the programme such as maps, charts, demonstration materials etc. should be on hand.

h. **Discuss the information given in the broadcast:** immediately after the broadcast, discuss the major points. Encourage each learner to participate in the discussion.

i. **Check the learners' understanding of the programme**: a test may be conducted to find out the extent by which the lesson was understood. A lengthy test is unnecessary.

3.3 Classroom Utilisation of Tape Recorders

The tape recorders as teaching tools have many uses. Tape recorders can accompany slides, filmstrips, or motion films. They can also be used entirely on their own. (Ajelabi, 2005).

The steps to be followed in their utilisation are the same as the radio programmes earlier discussed. You would be doing the correct thing by reflecting on the nine points earlier discussed. You can also go over the nine steps again.

SELF-ASSESSMENT EXERCISE

i. List the basic utilisation plan for media.

ii. What are the steps to be followed in classroom utilisation of tape recorders?

4.0 CONCLUSION

Audio media are very useful tools in the classroom. They require proper preparation for effective use. Audio media help to store and retrieve classroom interaction easily.

5.0 SUMMARY

In this unit, you have learnt the basic steps that are germane to media utilisation for instructional purposes. Attempts were also made to put forth cogent steps to be taken into consideration in using audio media like the radio and the tape recorder.

6.0 TUTOR-MARKED ASSIGNMENT

How would you promote the use of educational radio in your school?

7.0 REFERENCES/FURTHER READING

Abimbade, A. (1997). *Principles and Practice of Educational Technology*. Ibadan: International Publishers Limited.

Ajelabi, A. (2005). *Essentials of Educational Technology*. Lagos: Raytel Communications Limited.

Hellyer, W.H. (1970). *How to Choose and Use the Tape Recorde*r. New York: Morgan and Morgan.

UNIT 2 UTILISATION OF VISUAL MEDIA

CONTENTS

1.0 INTRODUCTION

This unit is a continuation of attempts at assisting you to acquire the necessary knowledge and skills in the application of educational media in a real life classroom situation.

The necessary steps to aid effective utilisation of visual media – overhead projector, slide projector, filmstrips, opaque projector, models, specimens, posters/charts, diagrams and chalkboard will be elaborately provided for your understanding.

2.0 OBJECTIVES

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

- describe the basic processes of using projected media in the class
- describe the steps to be taken in using the following in the class:
  - models
  - posters
  - specimens
  - charts
  - flash cards.

3.0 MAIN CONTENT

3.1 Classroom Utilisation of Overhead Projector

There are four major steps to be taken in order to make use of the Overhead Projector (OHP).

1. Arrange the classroom environment.
   a Get a projection screen and set it up in front of the class.
   b Place the projector on a suitable stand facing the screen.
   c Arrange the classroom seats for proper viewing of the projected information.
   d Ensure that there is electricity power supply for operating the overhead projector.

2. Test equipment and preview information on transparency.
   a Connect the OHP to the source of electricity supply.
   b Place the transparency on the horizontal glass surface on the OHP and switch on the equipment.
   c Focus the image on the screen by turning the focus knob which moves the projector's head upward or downward until the image comes into sharp focus.

If the upper part of the image is more enlarged than the lower part, the distortion is called keystone effect. Correct this by tilting down the screen a little or adjusting the projector head so that the light beam and the screen form angle 90^0.

Switch off the projector.

Present subject matter.

a When the learners are seated, switch on the projector and project only the topic.
b Briefly explain the objective of the lesson. If lesson notes are already available on transparency, project only the aspect being discussed and give the learners enough time to copy the notes;

The notes/information may be written on the transparency for the learners to read as the lesson progresses.

If an overlay transparency is being used, the layer at the base is first projected and discussed. The others are placed on it one at a time until the visual information is complete.

Carry out evaluation

After projecting all the transparencies, switch off the overhead projector. Handle it with care. Find out how much the learners have benefited from the lesson by asking questions, giving written tests or assignments.

3.2 Classroom Utilisation of Slide Projector

Before going to the class, check through the lesson plans and note specific spots where the use of slides would materially help in the improvement of the instruction. Record the type and number of slides required for the specific lesson. Check each slide and ensure that you know exactly what you will say or do with it. Then, arrange the slides in proper showing order. Set up the projector and the screen.

Next is the testing of the slide projector. Project a slide on the screen and check it for clarity, and centrality.

The next main stage is the presentation of subject matter on slides. After preparing the learners, the teacher should briefly state the problem to be solved. The slides and the instructions should be presented one step at a time in a logical and orderly manner. Proceed from the known to the unknown.

Immediately after the slides and information have been presented, the teacher should test for factual information. The test can be oral or written, but it should be brief, specific and to the point.

Review the lesson if you discover errors during testing. Do not hesitate to display the teaching slides again.

3.3 Classroom Utilisation of Filmstrips

At the onset, you should know the specific topic that could be clarified by the use of filmstrip. After this, you check all physical features in terms of the classroom, seating arrangement and projection. With reference to the classroom, there must be sufficient ventilation. Unrelated visual materials must be removed, electrical outlets must be working and ensure that there is no glaring light that may cause poor visibility.

The next major step is the projection of the filmstrip. The room should be darkened. The screen should be placed in a position where direct rays of outside light will not interfere. If possible, use a white screen. The projector must be placed high enough to extend over the head of the group.

Following this is the presentation of content on the filmstrip. This involves the same process (prepare learners, present film for instruction, apply teaching, test learners, review subject) as discussed under overhead and slide projectors.

3.4 Classroom Utilisation of Opaque Projector

First of all, you need to prepare the material to be used in the classroom ahead of time. A section of a newspaper, a photograph, a textbook, an actual three-dimensional object as well as many other opaque materials may be projected without special preparation.

Secondly, you need to arrange the classroom environment. Get the projection screen, and set it up in front of the classroom. Place the projector on a suitable stand facing the screen. Arrange the classroom seat for proper viewing of the projected information. Block out unwanted day light to ensure good projection. You also need to darken the room.

Thirdly, test equipment and preview information. When the learners are seated, you have to inform them on how they will benefit from the instruction, what to look for in the illustration and what knowledge will be tested at the completion of the showing. Present each picture in proper sequence. Briefly still, show important points in each illustration.

Finally, you need to carry out evaluation. The learners should be able to explain each step. The results obtained will be used to correct errors. Objective or essay type questions may be set. Based on the result, you may need to show those that are pertinent again.

3.5 Classroom Utilisation of Models

Models are very useful for teaching and learning. To use model effectively, Ibe-Bassey (1992) as cited by Abimbade (2006), will involve the following steps.

- **Prepare learners**: allow an initial fiddling with the models. Let the learners have an in-depth examination of the models. The moment the lesson takes off, direct the learners' attention to the specific things to observe.
- **Present models:** present the models to the learners, one at a time, step by step, pointing out each important item or part in a logical, sequential order.

- **Apply knowledge**: after the model has been presented, it should be discussed immediately. Permit the learners to handle the models.
- **Test learners**: learners' application should be followed by either oral or written test. Their performances should be checked and errors should be detected.
- **Revise lesson:** all errors in performance, knowledge and attitude should be corrected, in a constructive manner. Do not hesitate to replay the model so as to clarify some points.

3.6 Classroom Utilisation of Specimens

Specimens are small pieces, segments, parts or samples of the real object, or the materials used in their preparation.

The utilisation of specimens, dioramas and the real objects (realia) follows the same steps as models discussed above.

3.7 Classroom Utilisation of Posters and Charts

Posters and charts may be used not only to decorate the classrooms that lack colour or paints of interest, but also to stimulate interest in the teaching and learning of school subjects.

A poster/chart may be used to:

i. introduce
ii. present and
iii. review the topic or subject.

Regardless of when the poster/chart is used, the following steps are essential.

1. **Prepare the learners**: you need to arrange the classroom before teaching.
2. **Present the poster**: the poster is an effective way of introducing a new topic. Display the poster on an easel in a conspicuous place in front of the classroom.
3. **Apply the information**: after a brief introduction, explain the purpose of the poster. Throw a spotlight on the poster. Present the steps in a topic. Each step or idea in a poster is to be carefully presented to the learners in proper order. Tell and show each step, if possible, correlate the poster with other visual materials.
4. **Test the learners**: before the end of lesson, remove the poster to avoid distractions. Ask the learners some questions immediately after this.

5. **Review the subject or problem**: if the test reveals misunderstanding, have a brief review by reading each step or idea to the learners.

3.8 Classroom Utilisation of Diagrams

The following steps are involved in classroom utilisation of diagrams.

1 Prepare the learners
2 Present the diagrams to the learners
3 Display the diagrams for them to see
4 Stand beside the diagram
5 Use a pointer to illustrate
6 Speak to the class
7 Test the learners
8 If need be, review the important points.

3.9 Classroom Utilisation of the Chalkboard

Effective use of the chalkboard does not come by accident, some planning and technicalities are called for. To effectively use the chalkboard, note the following steps.

1 Prepare materials on the chalkboard in advance of the class period so as to save the time of both yourself and the learners. Get everything you need for the chalkboard before the lesson. These include pieces of chalks, rulers, dusters, etc. Also, a series of drawing and sketches on the chalkboard should be prepared ahead of time.
2 Clean all the content on the chalk before use. Partition the board into two or three manageable parts depending on the size of the chalkboard. This will help in presenting your letters in a neat and orderly appearance.
3 Make the statement concise, brief and simple.
4 Print all captions and drawing on a large scale. The information must be clear and visible to all students/learners.
5 Use chalk of different colours for emphasis.
6 Erase all unrelated materials on the chalkboard because this may distract attention. Erase with duster not your palm.
7 The teacher must not stand or block the view of the learners. Stand to a side of the chalkboard and use a long pointer.
8 Avoid talking to the chalkboard, or talking and writing at the same time.
9 The chalkboard must be easily visible to every learner in the class. It must be in good light so that all work is seen without strain.

3.10 Classroom Utilisation of Flannel Board

Effective utilisation of the flannel board involves the following.

1. **Preparation**: it is important that adequate preparation be made before the class starts. The guide has to be developed and prepared; also material must have been cut out or procured. The teacher must ensure that all flannel board cards are arranged in the proper order and placed around the table so that they will be accessible easily. It is also necessary to rehearse the presentation to be certain that the materials can be covered within the time allotted.
2. **Presentation**: at the beginning of the lesson, it is essential and important to stress the purpose of the lesson and the importance of the use of the flannel board. The first few cards placed on the flannel board should arouse the interest of the learners.
3. **Application**: after the interests of the learners have been aroused, the teacher then presents the information step-by-step. The cards could be used in a dramatic way, but care should be taken so that each point is clearly presented to the learners as much as possible. The lesson and the guide could also be prepared to encourage group discussion.
4. **Evaluation**: it is also important to evaluate the effectiveness of the presentation. This could be done by giving short written test, an objective test or any other type as deemed fit by the teacher. This will help to determine the effectiveness of use of flannel board presentation.

3.11 Classroom Utilisation of Flip Chart Board

The use of flip charts can be done in two basic ways.

1 They can be used to display a succession of prepared sheets, which can be shown in the required order by flipping them into view from the back of the suspension system one by one. It must be noted that in using this method, the sheets should be clamped to the display system in reverse order of showing i.e. with the one to be shown last uppermost.

2 The second method can be displayed by revealing each successive sheet by flipping the previous one over the back of the suspension system out of the way. In this second method, the sheets should be clamped to the display system in the correct order of showing.

SELF-ASSESSMENT EXERCISE

i. Mention the basic steps involved in using the following in the class.
   a. Overhead projector
   b. Slide projector
   c. Models
   d. Posters / Charts

4.0 CONCLUSION

Visual media generally help to enrich our teaching, demonstrate things to learners and provide purposeful experiences which form solid foundation for learning.

You are now conversant with the steps to be followed for utilising visual media.

5.0 SUMMARY

This unit is a continuation of attempts at assisting you to acquire the necessary knowledge and skills in the application of educational media in a real life classroom situation. The necessary steps to aid effective utilisation of visual media – overhead projector, slide projector, filmstrips, opaque projector, models, specimens, posters/charts, diagrams and chalkboard were elaborately provided in the unit.

6.0 TUTOR-MARKED ASSIGNMENT

What factors do you think can militate against effective use of projected media in your school?

7.0 REFERENCES/FURTHER READING

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UNIT 3 UTILISATION OF AUDIO VISUAL MEDIA

CONTENTS

1.0 INTRODUCTION

This unit is designed to further sharpen your skill and knowledge of classroom application of audio visuals. You are expected to further digest the information and put it into practice whenever the opportunity arises. Welcome to another inspiring unit in the series.

2.0 OBJECTIVES

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

- describe the procedure for effective utilisation of audio visual media in the classroom.

3.0 MAIN CONTENT

Just like other family of media, there are established steps to be taken by the teacher in order to maximise the potentials of audio visual media.

3.1 Classroom Utilisation of the Television

The utilisation of television programme requires proper preparation. There is need for you to secure all the scripts and all other related printed materials that will be used for the broadcast.

This is essential because it will guide you and will also be of help to the learners in the follow up activities after the broadcast.

To obtain the best result, the following steps should be followed.

a. **Prepare the learners.** The interest of the learners should be aroused so that they will get as much as possible from the broadcast. Explain to them the important points to observe in order to gain the best of the broadcast.
b. **Present the television programme.** The television should be switched on at the exact time of the broadcast. Learners should note the important points during the broadcast and you should allow the learners to complete their notes.
c. **Discuss the subject/topic.** Immediately after the broadcast, the topic should be discussed. Each learner should be allowed to mention areas they didn't understand in the broadcast. It is important that you guide the discussion and also summarise the lesson.
d. **Test the learners.** There is a need to evaluate the learners in order to discover learners' weakness and errors on the televised subject.
e. **Review the topic.** There is need to review the televised topic briefly in order to correct all weaknesses or errors observed from the test. The television programme can be replayed if recorded.

3.2 Classroom Utilisation of Video Tape Recorder

The effective utilisation of video recorder involves the following.

a. **Prepare the class.** This involves arranging the seats and placing the equipment properly for optimum recording and viewing.
b. **Test equipment.** There is need to test and adjust the equipment before the programme starts. Everything should be in perfect working conditions.
c. **Presentation.** There is the need to introduce the topic, describe what the programme covers and stress the important things to be learnt from the programme. The presentation should be done on video and the learners should watch and listen attentively.
d. **Evaluate the learners.** The class teacher should arrange question and answer session for the learners after viewing the programme. Revision should be done based on the feedback of learners' assessment.

3.3 Classroom Utilisation of Computer Assisted Instructional Programme

In order to utilise the programme effectively, the following should be observed.

- All the sockets and systems to be used should be tested to ensure that they are in perfect working condition.
- Provision of enough pieces of equipment in a conducive atmosphere i.e. computer laboratory.
- The seats should be well arranged with each learner or a small group of learners facing the computer terminal.
- The teacher needs to explain to the learners what the topic is all about. There is also the need to motivate the learners to learn.
- Presentation. The topic is now presented via the computer. The teacher may be around to observe them and assist them if necessary.

SELF-ASSESSMENT EXERCISE

Mention and explain the procedure for effectively utilising television and video tape recorder for classroom instruction.

4.0 CONCLUSION

From the interaction with the content as presented in this unit, you must have further sharpened your skill and knowledge of classroom application of audio visuals. The expectation is that you will further digest the information and put into practice whenever the opportunity avails itself. Remember the saying – "practice makes for perfection".

5.0 SUMMARY

The procedures for effective utilisation of audio visuals were analysed. Audio visuals are very useful for enrichment and supplementary teaching.

6.0 TUTOR-MARKED ASSIGNMENT

How will you get your students to make use of educational television programmes?

7.0 REFERENCES/FURTHER READING

Butler, D. & Sellbom, M. (2002). "Barriers to Adopting Technology for Teaching and Learning". *Educause Quarterly*, 25 (2) pp. 22 – 28.

MODULE 3 BUDGETING AND FINANCIAL ANALYSIS

UNIT 1 BUDGETING AND USES

CONTENTS

1.0 INTRODUCTION

This Unit is designed to acquaint you with the meaning and concept of Budget. The types of budget, importance of school budget as well as budgetary process in education are discussed.

2.0 OBJECTIVES

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

- explain the meaning and concept of budget
- identify the various types of budget
- discuss on the various types of budget
- explain the importance of school budget

3.0 MAIN CONTENT

3.1 The Meaning and Concept of Budget?

The term "budget" is frequently used where disbursement of money is involved. Simply put, budget is a statement of financial plan over a

given period. Budgeting has been considered as an integral part of the planning process. It essentially involves translating goals and objectives as well as targets into financial plans.

According to Musaazi (1982), educational (school) budgets are financial plans aimed at translating educational (school) objectives into reality. In the same vein, Edem (1987) is of the view that a budget is a statement which describes how to finance the various educational objectives outlined for the year or a given stated period.

A careful analysis of the above and other conceptions of budget by other scholars point to the fact that a budget is a financial blueprint for the operation of an organisation, including the school system for the fiscal year. A budget is a means by which the planned objectives and targets are translated into a programme of action and in financial terms. Thus a school budget is an established financial standard needed to consciously guide the activities of a school administrator towards the attainment of the aims and objectives of the school, in a given fiscal year.

3.2 Types of Budget

The following types of budget can be identified in the educational system

(a) Line Item Budget
(b) Programme budget
(c) Performance Budget
(d) Zero-Base Budget
(e) Planning, Programming and Budgeting System (PPBS)
(f) Incremental Budget.

a) Line Item budget

This form of budget involves listing of specific items of revenue and expenditure on line-by-line basis. In this type of budget, revenue and expenditure plans for the current year and one or two preceding years are prepared in tabular forms. This type of budget which is predominant in most Nigerian schools, allows each department to continue with the implementation of existing programmes since it is backward looking in preparation. It also makes budget preparation and auditing easy. It also guides against misappropriation of fund. However, in spite of the above merits, line item budget is lengthy in preparation. In addition, it does not actually relate to specific projects or objectives (and targets).

b) Programme Budgeting

In this method of budgeting, provisions are made for the programmes to be executed. The budget will be made according to the functions, programmes and activities of each department in the school. To this end, a school budget will be classified into various departments. For instance, we may have Language department's expenditure, Vocational department's expenditure, Bursary department's expenditure, Science department's expenditure and so on. The purpose of this budgeting method is to show how funds are being spent on each programme of the school.

The table below shows Federal and State Governments' expenditure on education between 1990 and 1994

FEDERAL AND STATE GOVERNMENTS' EXPENDITURE ON EDUCATION, 1990 – 1994

YEAR	TOTAL EXPENDITURE (NM)	TOTAL EXPENDITURE ON EDUCATION IN CURRENT VALUE (NM)	EXPENDITURE ON EDUCATION AS % OF TOTAL EXPENDITURE	EXPENDITURE ON EDUCATION AS % OF GDP	EXPENDITURE ON EDUCATION IN CONSTANT VALUE (1958 = 100) (NM)
1990	99,550.3	7,345.5	7.3	2.0	2,507.0
1991	119,413.2	7,857.1	6.6	2.4	2,374.5
1992	178,782	11,310.7	6.3	2.1	2,364.1
1993	261,625	16,916.4	6.5	2.4	2,249.8
1994	191,604.8	22,045.5	11.5	3.2	1,367.2

Source: Annual Abstract of Statistics, 1995 Edition

1. Overall expenditure is the sum of expenditure at Federal and State levels.
2. State expenditure on education is assumed to be 25 percent of the total expenditure of the State and this was added to the published figure at the Federal level each year.
3. Composite consumer price index (combined rural and urban centres) published on page 340 of the Abstract of Statistics was used as a deflator

Also, this second table shows the budgeted total and educational expenditure at the Federal and State levels between 1982 and 1984 (in billion N)

BUDGETED TOTAL AND EDUCATIONAL EXPENDITURE AT THE FEDERAL AND STATE LEVELS, 1982 AND 1984 (IN BILLION N)

	1982	1983	1984
Total Expenditure	16.8	17.0	11.3
Educational Expenditure	3.2	3.5	2.1
Educational/Total	19.0%	20.6%	18.6%

Source: Federal Ministry of Education, Science and Technology, Planning and Development Division, Statistics Section.

The table above shows that educational expenditure accounted for close to 20 percent of the total budgeted expenditure during the three years shown in the table. The decrease seen in 1984 could be explained by economic decline and the emergence of a military government that clamped down on excessive spending. The period of the Second Republic was that of high expenditure on education in general. This was in the face of massive oil glut in the international oil market, resulting into a decline in oil revenue which is the major source of foreign exchange, gross mismanagement of the economy, deficit spending, high inflation as well as huge domestic and foreign borrowings. The problems were compounded by the high demands for education and the need to diversify the curriculum at both the secondary and tertiary levels, and to improve the quality of education.

The main advantage of programme budgeting is that it reduces the goals and objectives of the school system into specific operations and the method to accomplish them is determined. However, its problem is that it requires a sophisticated information system and a programme may take several years to be completed.

c) Performance Budgeting

This method of budgeting emphasises the performances of the work to be done. There are ways of measuring the achievement of each programme. It is possible to ascertain performance based on each unit of work. For instance, in construction of a laboratory block in a school, the budget would not only show the amount to be spent on the whole block, but also the amounts to be spent on foundation, setting of blocks, roofing, plastering and so on.

The advantage of this budgeting is that it is very informative and it makes the control of school fund easier. Its problem is that it requires elaborate account, data processing and a lot of paper work.

d) Zero-Base Budgeting

Zero-base budgeting unlike the line-item budgeting does not take cognisance of the previous year budget. It puts each programme under review every year and its costs are computed from the scratch, as if the programme never existed. This method of budgeting involves taking a fresh look at programmes and activities each year without considering the previous year budget.

Zero-base budgeting enables school administrator to allocate resources to programmes based on priority. Nevertheless, it is very expensive to implement and could make some school administrators exaggerate the benefits of pet projects in order to have them funded.

e) Planning, Programming and Budgeting System (PPBS)

This new approach to budgeting is concerned with identification of organisational goals in measurable terms and selecting the best programmes for achieving such goals. This method of budgeting enables an organisation to eliminate costly programmes that can waste resources, and also provide a means of making the cost-benefit analysis of each programme in relation to the pre-determined objectives.

Planning, Programming and Budgeting System helps a school administrator to identify and define the goals and objectives of the school, on the basis of which appropriate programmes are designed to achieve such goals and objectives. However, the problem of this budgeting system is that it tends to be too sophisticated for developing countries where there is lack of reliable statistical data and shortage of experts. Furthermore, the problems of defining and establishing priorities of objectives of the school system may be encountered as a result of value judgment which may not give room for objectivity.

According to Luthans (1977), PPBS is a control and decision-making process "that combines programme budgeting with system analysis". In other words, it is a system approach to programmed budgeting. According to Ayodele (2004), PPBS involves planning and budgeting for more than one budget period and with focus on socially determined goals. This new dimension to budgeting enables the organisation to identify its goals and determine the best programmes or activities to achieve such goals. PPBS ensures the elimination of costly and resource – wasting programmes. It also ensures a cost-benefit analysis of each programme or activity vis-a-vis the predetermined objectives. It should be noted however that PPBS tends to be too sophisticated for developing nations characterised by lack of reliable and timely data and shortage of experts.

f) Incremental Budget

This type of budget makes use of the information in the budget of the preceding year. In this wise, the budget of a particular year (t) is a function of the budget of the preceding year (t-l).

This is expressed mathematically as follows

$Xi = a\ Xt\text{-}l + Ut$

Where Xt = current year's budget

Xt-l = Preceding year's budget

a constant

Ut = random variable to cover unforeseen contingencies.

The value of Ut is assumed to be zero in most cases except under rigorous econometric assumptions and analyses.

3.3 Importance of School Budget

The role of school budget in school administration is indispensable. It is an instrument for planning and control in the school system. Budget serves as an instrument for planning because it specifies financial procedure through which the goals and objectives of the school system can be achieved. Programmes and policies designed to achieve the objectives of the school system are implemented through the operation of school budget. It serves as an instrument for control because it is an established standard against which the performance of the school system is evaluated. Through the operation of school budget, it is easy aims and objectives, through implementation of the various programmes budgeted for in a year. Problems connected with the inability of the school to implement some of the programmes budgeted for are also identified for appropriate actions to be taken.

School budget encourages teamwork among the staff as they work together to achieve common goals and objectives. Budget ensures the coordination of school activities by giving financial direction to the various activities and programmes being carried out with a view to achieving the school goals and objectives.

3.4 Budgetary Process in Education

A general budgetary decision making process as identified by Lacey (1989) and Adeogun (2004) includes the following steps:

a) Determination of overall levels of spending

This is the responsibility of the central spending level that also communicates the global ceiling to all cost/revenue centers/units. The individual unit/section programme costs/revenue for these centers are compiled, sent and aggregated.

b) Allocation of estimated available resources among sectors

Budget circulars are forwarded to cost/revenue centers on the basis of macro-economic forecasts and policy objectives. The cost/revenue centres will respond by sending their respective proposals showing current and capital components.

c) Response to budget circular

This entails negotiations among the various bodies involved in decision making on the budget. The non zero-based (incremental) approach is used to screen previous expenditure vis-a-vis proposed increases. It should be noted that most often than not, the line item budgeting which cuts across all programmes is employed.

d) Preparation of draft budget document

This involves adjustment, integration and harmonisation of requests, vis-a-vis the available resources, by a central body.

e) Approval of draft budget

This is the responsibility of the cabinet. This involves revision and modification several times during the cycle.

f) Preparation of final budget

This involves the preparation of concise summary with all detailed annexure by the budget office for legislative review and debate.

g) Consideration by the legislature (or similar body)

This involves the following activities:

- Consideration of budget framework;
- examination of detailed proposals at budget committee and sub-committee levels; and
- final preliminary session where the budget bill is passed into law.

h) Release of fund

This is the responsibility of the Ministry of Finance, which administers payment, in order to ensure that the control of flow of expenditures is adequately coordinated. Three basic methods are involved viz:

- Immediate release of the entire approved budget amount;
- release of funds against payment vouchers and / or receipts and
- periodic release of funds.

i) Implementation of capital expenditure

At this state, the Ministry of Finance should ensure that appropriate laws and regulations have been complied with before fund release. Implementation of capital/project expenditures involves the preparation of forecasts of expenditure for the fiscal year as well as determining the administration of bidding or contract procedures (due process).

j) Procurement

The central body should ensure uniform contract procedures. The procurement process (including advertising, cost evaluation, bid evaluation, negotiation with contractors and review of contractors' performance) should be properly administered and monitored by the spending agency. It should be noted that no contract is awarded without been sure of budgetary allocation.

k) Reporting

A periodic progress report and accounts should be prepared by the spending agency. These will then be consolidated and annualised by the Ministry of Finance (or the supervising Ministry).

l) Monitoring and evaluation

Two parties – Spending agency and the Ministry of finance, have specific roles to play at this stage.

(i) The Spending agency

- Periodically reviews actual expenditures.
- Analyses budgetary lags; and
- matches financial and physical progress.

(ii) The Ministry of Finance (i.e. the central monitoring body)

- Conducts periodic over - all progress review either independently or jointly with the spending agencies.
- Revises policies and objectives as and where appropriate in the light of the reviews done; and
- reallocate funds if and where necessary.

m) Cash management

The monitoring body (Ministry of Finance) should prepare an overall plan for cash management. This is to curb borrowing outside limits and to ensure that interest on loans is minimised. Excess funds should be submitted by the spending agency on time. In addition, process requests for funds should be done promptly and timely.

SELF–ASSESSMENT EXERCISE

i. Discuss the application of Zero-Base Budgeting to school finance.

4.0 CONCLUSION

Budgeting is critically essential in school finance. The importance could also be seen from the importance of school budget provided in this Unit

5.0 SUMMARY

The meaning and concept of budget, types of budget, importance of budget have been discussed in this Unit. All these among others are important elements in school finance.

6.0 TUTOR-MARKED ASSIGNMENT

Highlight the various importance of School Budget in Educational Administration.

7.0 REFERENCES/FURTHER READING

Adeogun, A.A. (2004). Economics of Education. Lagos: Joja Educational Publishers.

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UNIT 2 EDUCATIONAL COST AND FINANCIAL ANALYSIS

CONTENTS

1.0 INTRODUCTION

This Unit is designed to expose learners to the knowledge of education costs, concepts of educational costs, types of educational costs, cost analysis in education, educational cost/production function, factors influencing educational costs, uses of cost analysis in education and traditional control system are adequately discussed.

2.0 OBJECTIVES

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

- define education costs
- discuss the concept of educational costs
- enumerate the types of Educational Costs
- explain production function
- discuss factors which influence educational costs
- state the uses of cost analysis in education
- explain the traditional control technique

3.0 MAIN CONTENT

3.1 Meaning of Educational Costs

The ways in which costs are classified vary greatly. Costs can be measured and defined in many different ways. Indeed, the

classification of educational costs raises a lot of economic, financial, institutional and technical questions; such as what has to be sacrificed? When does money have to be paid? Who has to pay? And what is the function of the inputs? (Psacharopoulous and Woodhall, 1985). The answers to these complex issues and problems vary with regards to the various bodies or groups of individuals who take decisions regarding the various aspects of costs and revenue within the educational system.
There is, therefore, the need to map out the structural analysis of the various cost and revenue concepts using generally agreed descriptions as yardstick.

3.2 Concept of Educational Costs

Cost and expenditures cost, to a non professional, is narrowly defined as the money value incurred in the process of production. However, to the economist, cost involves not only money spent but also the alternative forgone in order to produce a given item or service. The Dictionary of Modern Economics (1985) defined cost as a measure of what must be surrendered or given up in order to acquire, obtain or produce an item.
On the other hand, expenditure is viewed as the amount of resources that are directly spent or expended on the procurement of goods and services.

Expenditure on education from the budgetary sense, therefore, is the monetary value of resources assigned to educational institutions during a given year. Nevertheless, this does not reflect the 'true cost' or "real cost" of education. The 'true cost' or 'real cost" of education is the alternative opportunities that have to be sacrificed or forgone in the process of providing education services. For example, the opportunity cost or real cost of building a new university is the alternative projects that are forgone such as health, road, telecommunication, building technical schools, primary schools, etc. Thus, "cost in education represents the value of all resources, in terms of money and sacrifice, in terms of money and sacrifice, used to accomplish an educational project" (page? 1988). Indeed, the inputs of education can be measured in terms of money of real resources that are used up in the educational process, such as time of students and teachers, and other staff and books, materials, equipment, and buildings, all of which have alternative uses.

3.3 Types of Educational Cost Analysis

Three groups of decision makers are involved in the production, consumption, or funding of educational services. These are as follows.

i. The institutions; as represented by schools at all levels.

ii. The households; as represented by private individuals and their parents.
iii. The society; as represented by the government at all levels.

It is on the basis of the above that cost in education falls into three broad categories: institutional costs, private cost and social costs.

1. Institutional Costs

These are costs incurred by the institutions (educational) in the process of carrying out their activities. These consist of capital costs (expenses on durable items: building, furniture, electricity and water installation, land, equipment etc) and current or recurrent costs (expenses on consumable items: teacher and non-teacher salaries and allowances, maintenance, books and stationery, transport, scholarships, etc).

2. Private Costs

These refer to the expenses by the individual students, their parents' guardians or their sponsors in the process of undergoing formal education. These consist of expenditures on tuition fees, books, accommodation, transport, uniform, etc. This is in addition to the opportunity costs of schooling in the forms of forgone productive contributions to family income and/or income earnings.

3. Social Costs

These refer to the costs borne by the society, represented by the cost incurred by the Federal, State and Local governments in the process of providing education for citizens. Technically, it is private cost plus institutional cost less the value of scholarship and tuition cost.

Longe (1982) provides a set of equations based on the above classification of cost of education thus:

Total cost (T) = P + S + U
Where:
Private cost (P) = (X1 + X2 + X3)
Social cost (S) = (P + U – X9 – X10)
Institutional cost (U) = (Q+R)
And where:
Current cost (F) = (X4+X5+X6)
Capital cost (Q) = (X7 + X8)
And where X1, X2....., X10 are variables:

X1 = School fees
X2 = Uniform expense
X3 = Transportation expense

X4 = Salaries
X5 = Supplies
X6 = Maintenance
X7 = Buildings
X8 = Equipment
X9 = Scholarships
X10 = Tuition fees

4. Direct and Indirect Costs

The direct cost of education is the amount of money expended in the production and purchase of educational services. It refers to the direct money expenditure on education by the private individuals (direct private cost), institutions (direct institutional cost) and the government (direct social cost). These costs include expenditure on books, transport, uniform, tuition, salaries and allowances of staff, equipment and building.

On the other hand, indirect costs of education are real costs or opportunity costs of education. They may be incurred by the private individual (student) who determines to undertake an educational programme, or by the government that decides to provide educational training programme for its citizens. Indirect private cost is the value of the income or earnings forgone by the student while in school, less the tax he would have paid if he had earned the income. Indirect social cost, on the other hand, is the value of the contribution of the students to the economy if he was working and this is measured by the gross income or earnings forgone by the student because he is in school. Thus indirect private cost is income forgone after tax, while indirect social cost is income forgone before tax.

5. Capital Costs and Recurrent Costs

Recurrent costs represent all expenditures on 'consumable' items, which bring immediate or short-term benefits and have to be regularly renewed, hence the term “Current Costs” or “Operating Costs”. Expenditures on personnel services and summable supplies that are rendered or used up within one fiscal year (book, stationery, fuel, etc) are current in nature.

On the other hand, capital costs involve expenditure on the procurement of durable assets such as buildings, equipment or land, which are expected to yield benefits over a long period. They relate to more durable items that render useful services over a long period of years if properly maintained (hence major repairs and maintenance are, strictly speaking, items of capital costs since they prolong the useful life of capital items).

The measurement of both capital and recurrent costs may be in term of actual or current prices, or in terms of constant price level. An analysis of educational expenditure trends, for example, may be concerned either with trends in actual expenditure or expenditure expressed in terms of constant purchasing power. This is necessary in order to give allowance for inflation/deflation.

3.4 Educational Cost Production Function

Cost function is a mathematical and/or graphical representation/description of the relationship between cost and the level of activity (output). In education, cost function shows the relationship between costs of education and the number of students enrolled or number of graduates. The analytical device of the cost function is used as a convenient way to represent the dependence of costs on output or scale and to illustrate the relationship among total costs, Average costs and Marginal costs.

Total Cost (TC)

These consist of the costs of all resources used at any particular scale of operation. In actual empirical studies, TC may refer to total recurrent expenditure, while in other studies; capital costs may be included in measuring. I

TC. In the same vein, total cost consists of the summation of fixed costs (FC) and Variable costs (VC); that is, TC = FC + VC.

Indeed, TC is a function of the level of output or scale of activity i.e. (TC = f (X). For example, it is obvious that a school with 500 pupils will incur greater costs than one with only 100 pupils. Likewise, a university department with 50 students will incur lower costs than one teaching 120 students in the same subject, *ceteris paribus*.

Fixed Costs (FC)

These are expenditures on items, which do not vary as output varies. These consist of expenditure on classroom, chalkboard, tables and desks. They include expenditure that must be incurred irrespective of pupil of student numbers, hence the term "set-up costs". For instance, at the construction stage of a school, the level of activity or output is zero but expenses have to be incurred on buildings and fittings which represent the FC, or "set-up costs". More so, a particular building in a school may accommodate varying number of students until the maximum capacity is reached. Whatever the number of students (who will eventually become the output) housed in such building, the cost will not change. However, the cost of maintenance is not included here since this could be done to the maintenance cost. Fixed cost is incurred

every year whether students are admitted or not. That is why it is also referred to as unavoidable cost.

Variable Costs (VC)

These are expenditure on items, which vary with output on the short run. Such items include chalk and stationery. The magnitude of VC obviously depends on the scale of activity. It should be noted that TC is to a larger extent included by VC than FC since the former changes as output changes. This also applies to the short run situation, where some factors are variable. Where the students' population rises, with no change in educational technology, more teachers will be needed for the additional classrooms to be created. The cost of employing more teaching personnel can be viewed as variable cost since it changes with enrolment.

Average Cost (AC) or Unit cost per Student

Average cost or Unit cost is the total cost of producing a given level (or annual rate) of output divided by the number of units of output produced. The unit cost per student is the total cost in a given period either for the whole system, or more likely, for some particular part of it, divided by the number of students in the same education category. In other words, it measures the cost of educating one pupil or student.

Stated mathematically: $AC = \frac{TC}{X}$

Where: AC = Average or unit cost
TC = Total Cost
X = number of students.

Marginal Cost (MC)

This is the change (either increase or decrease) in total cost resulting from changes in output by one unit. Marginal cost is the additional cost incurred when one additional student is enrolled, hence the term 'incremental cost'. Indeed, the MC of one unit of output is the extra expenditure incurred when one additional unit is produced and the result is a marginal increase in total output. The marginal cost of education is measured by the increase in TC which occurs as a result of increasing enrollment by one unit.

3. 5 Factors Influencing Educational Costs

According to Bowen (1980), a number of internal factors lead to variations in the cost of education

(a) Internal Factors: these affect staff recurrent cost, non-salary recurrent cost and capital cost.

i. **Staff Recurrent Cost:** this forms the major proportion of total current costs of education. It is influenced by average staff salary, student-staff ratio, academic-non-academic staff ratio and the average class size. Teacher qualification coupled with grade structure or level of salary will equally affect the average salary per teacher and non-teacher. Indeed, since education is labour-intensive, the pupil-teacher (staff) ratio and the level of teacher qualifications are both potent determinants of educational costs.

ii. **Non-salary Recurrent Costs:** these include expenditure on maintenance, such as electricity and water bills and cost of consumable items. This type of cost is equally influenced by factors such as changes in pupil-class ratio, the curriculum content and general inflation.

iii. **Capital costs:** these are affected by location of the institution, style or design of buildings, the classroom space allocation, the curriculum and inflation.

The relevance of this assertion to other countries outside the United States of America, however, will depend on the way in which institutions are financed. It is more likely to apply in countries, where, as in the United States, a large proportion of institutions are privately financed.

(b) External Factors: these include the variables outside the institutional set up, which are beyond the immediate control of educational authorities, and which determine the costs of education in the country. Some of these external factors have been identified by Coombs and Hallak (1972).

i. **The impact of inflation on Education:** this is usually associated with increase in the prices of goods and services. This factor has been found to be a major factor responsible for increases in educational expenditure in developing countries, and in Nigeria, in particular.

ii. **The impact of rising demand for education:** There are four main factors underlying this increase in recent times and they all have far-reaching effects on the internal costs of educational systems and on their cost – effectiveness. These are as follows:

1. The unprecedented increases in youth population. According to an IIEP study in Tanzania, by 1989 the cost of first level education was projected to eight times their level in 1968, consequent upon rapid population growth.

2. A 'revolution of rising expectations' of people on the role of education as the pathway to individual socio-economic and political advancement.
3. The widespread adoption of pupil policies aimed at 'democratising educational opportunities' leading to an increase in social demand for education.
4. The rapid expansion, upgrading and diversification of 'manpower requirement' due to technological advances in the economy, and a clear recognition of education's role in economic growth and technological break-through.

iii. Market Prices*:* these are associated with inflation. Changes in market prices have greater influence on costs of educational inputs such as books and stationery.

iv. Government Policy: significant changes in the cost of education may evolve consequent upon government policies on salary structure, enrollment and the curriculum.

v. The influence of external aid: External assistance from multilateral and bilateral channels, although forming a negligible proportion of total educational outlays, exerts considerable influence on education costs in developing countries. It may come in various forms: loans, gifts etc., with far-reaching implications. Indeed, over-dependence on it may portend trouble in the educational system because it may come through too late to be of maximum use. It may even come with stringent conditionality.

3.6 Uses of Cost Analysis in Education

The importance of cost analysis as a veritable tool for improving the performance and planning the future of any educational system cannot be overemphasised. The importance of education cost analysis in the planning, management and the general decision making process has long been recognised (Balderston 1974, and Fielden and Pearson, 1978).

The IIEP concluded that cost analysis could serve a variety of purposes in educational planning including the following.

i. Testing the economic feasibility of expansion plans, proposals or targets.
ii. Projecting future levels of educational cost.
iii. Estimating the cost of alternative policies of educational reforms or innovations.

iv. Comparing alternative ways of achieving the same objective, in order to select the most efficient or economic cost.
v. Comparing the profitability of alternative investment projects.
vi. Improving the efficiency of resource utilisation.

Fielden and Pearson (1978) gave their guide to the use of cost analysis, in the current economic climate, resources for education and training are becoming scarce. There will be increasing pressure from policy makers for cost reduction and increased "efficiency", and there is likely to be more resistance to providing extra resources for educational project. Educational staff will therefore need even more than before, to make the best use of the resources available, to examine carefully the full resource implications of any proposed new schemes, and to support their arguments with quantitative data whenever possible. Cost analysis can be a powerful aid to achieving these.

Longe (1982) employed the use of cost analysis to determine the optimum size of secondary schools in Oyo State, Nigeria. Ayodele (1999) and Babalola (2000) employed the use of cost analysis to determine optimum size in Ondo State University, Ado-Ekiti and the University of Ibadan, respectively.

Cost Control

In view of the fact that cost is greatly influenced by the size of output (or level of activity), technology and the prices of factor inputs, cost control will therefore involve manipulating these variables as much as possible. Since Average cost decreases initially with increase in output and rises at a given stage with increases in output, average cost can be controlled by extending output to the level of optimal operation of the plant. Thus, in the school system, increasing pupil-teacher ratio to the level that can be managed by the teacher without sacrificing efficiency can reduce unit cost.

Costs can also be reduced through improvement in organisation and method of production. Efficiency in the use of available resources will reduce wastes and reduce costs in education, although it is a labour intensive enterprise. Some areas of waste in Nigerian school system include: overuse of middlemen in purchases; external printing of stationery materials; overstaffing; waste of stationery; misuse of vehicles, servicing vehicles outside garages, inadequate arrangement for the repair and maintenance of instruments and equipment; waste of electricity and continued payment of staff who left the service (ghost workers). These costs and wastes can be reduced, at least, through effective planning, organising and controlling machinery. This is further explained by Ayodele (1999) when he stated that:

Although, the prices of factor inputs are outside the control of firms, they attempt to reduce the influence of prices through bulk purchasing, as well as employing less qualified and inexperienced personnel and training them on the job. Educational institutions can embark on central bulk purchasing of stationery instead of purchasing on departmental bases. They can also make use of direct labour in construction works in order to reduce costs. A more intensive use of buildings (especially during holidays) will reduce costs.

3.7 Traditional Control Technique

The Budget

A widely used device for managerial control is the budget. Indeed, it has sometimes been assumed that budgeting is the primary device for accomplishing control. As will be noted, however, many non budgetary devices are also essential. Primarily because of the negative implications of budgeting in the past, the more positive-sounding phrase, "profit planning" is often used, and the budget is then known as the profit plan.

Concept of Budgeting

Budgeting is the formulation of plans for a giving future period in numerical term. As such, budgets are statements of anticipated result, in financial term-as in revenue and expense and capital budgets, or in non financial term- as in budgets of direct-labour-hour, material physical sale volume, or units of production. It has sometimes been said that financial budgets represent the "dollarising" of plans.

Sometimes people do not understand how and why budgets must be based on plans. In fact, some enterprises, especially non-business enterprises, do attempt to develop budgets without it knowing the plans. But when they do so, money allocated to pay for people and their salaries, for office space and equipment, and for other expenses become a matter of negotiation between a top authority and the managers in an enterprise. The usual result is that funds are not rationally allocated on the basis of what is really needed to accomplish desired goals. Many of us have seen this kind of uncertainty and consequent "jockeying for position" in government and university budgeting. Only by having clear goals and action plans to accomplish them can anyone in a top position of authority know how much money is necessary to do what is desired.

Purpose of Budgeting

Through numerical statement of plans and breaking of these plans into components, than the consistent with the organisation structure, budgets correlate planning and allow authority to be delegated without loss of control. In other words, reducing plans to definite numbers forces a kind of orderliness that permits managers to see clearly what capital will be spent by whom and where, and what expense, revenue, or units of physical input or output plans will be involved. Having ascertained this, manager can more freely delegate authority to carry out the plan within the limits of the budget. Moreover, a budget, to be useful to a manager at any level, must reflect the organisational pattern. Only when plans are complete, coordinated, and developed enough to be fitted into departmental operations can a useful departmental budget be prepared as an instrument of control.

Dangers in Budgeting

Budgets should be used only as a tool of planning and control. Some budgetary control programmes are so complete and detailed that they become cumbersome, meaningless, and unduly expensive. There is danger in over-budgeting, through spelling out minor expenses in detail and depriving managers of needed freedom in managing their departments. For example, a department head was underrated in an important sales promotion because expenditures for office supplies exceeded budgeted estimates; new expenditures had to be limited, even though his total departmental expenses were well within the budget and he had funds to pay personnel for writing sales' promotion letters. In other departments, expenses were budgeted in such useless detail that the cost of budgeting of many items exceeded the expenses controlled.

Another danger lies in allowing budgetary goals to supersede enterprise goals. In their zest to keep within budget limits, managers may forget they owe allegiance primarily to enterprise objectives. The budget experts recall a company with a thorough budgetary control programme in which the sales department could not obtain information needed from the engineering department on the grounds that the latter's budget would not stand such expense. This conflict between partial and overall control objectives, the excessive department independence sometimes engendered, and the consequent lack of coordination, are symptoms of inadequate management, since plans should represent a supporting and interlocking network, and every plan should be reflected in a budget in a systems way.

A latent danger sometimes found in budgeting is that of hidden inefficiencies. Budgets have a way of growing from precedent, and the fact that certain expenditure was made in the past becomes evidence of its reasonableness in the present; if a department once spent a given amount for supplies, this becomes a floor for future budgets. Also,

managers sometimes learn that budget requests are likely to be pared down in the course of final approval and therefore ask for much more than they need. Unless budget making is accomplished by constant reexamination of standards and conversion factors by which planning is translated into numerical terms, the budget may become an umbrella under which slovenly and inefficient managers can hide.

There are many definitions of the term budget. Some people have defined budget as a total annual estimate of revenue and expenditure. According to Musaazi (1982), budget is defined as a financial plan through which educational objectives are implemented and translated into reality. Roe (1961) defined the educational budget as the translation of educational needs into a financial plan which is interpreted to the public in such a way that when formally adopted it would express the kind of educational programme the community is willing to support financially and morally for a one year period. According to Adesina and Fagbamiye (1988), a budget is the financial blue print for the operation of the school for the fiscal year. In its broadest sense, the term school budget means a plan for financing a school system for a given period.

Until recently, education was considered as subject beyond the scope of ordinary economic analysis. Moral and philosophical issues previously made the economist's tool rather blunt for the analysis of any investment in man and in particular that in education. The most popular of the reasons given for this shying away from investment in man is that, free men are first and foremost the end to be served by economic endeavour and therefore not property or marketable assets, while education is suggested to be part of the 'humanisation' process.

There is some truth in these and other reasons put forward but one equally faced with other truths of which the most relevant in any society and the unlimited demands being made on them. The resource constraint is the justification for subjecting education to economic analysis. For nations to develop their economy rapidly, education cannot be allowed to claim just any proportion of limited resources.

Importance of School Budget

School budget is very important because of the paid expansion of education services and facilities at all levels, and particularly the concern for quality education in our public schools, public expenditure for education have risen and will continue to rise considerably. As population increases more children will have to be educated. Additional facilities will have to be made available and existing ones improved. There will be demand for increased educational services and programme. There will be additional teachers with demand for quality education and consequently additional costs.

The ability to cope with the present and future educational needs requires information about and knowledge of budgeting. Also, the recognition of such educational problems provides the need for our principal to have more systematic and rational planning and budgeting procedure, for the public school within the total economic and social development.

Budget Preparation

In preparing the school budget, if the budget document is to achieve its purpose and be made effective, it should include: a statement of the broad philosophy, goals and objectives of the school, a statement of the history of the school, its achievements; existing educational programmes and proposed programmes for the fiscal year; summary of proposed expenditure and receipts; detailed breakdown of receipts and expenditure; and comparative analysis to show increases and decreases with brief explanations. In budget preparation, it is important to point out the unique responsibility of those who are to make final decisions regarding the budget of a school. In the first place, the magnitude of the budget, which sets some limits on the educational programme, is determined by political processes. Within the school budget as well, bargaining among groups and individuals at all levels of the organisation affects resource allocation. The budgeting allocations result from a compromise among the demands of the organisational units and the academic departments. One of the major functions of administration is to mediate among the groups which make demands, both within the organisation and in larger community.

Participation in budget preparation and administration should be widely diffused with a view to involving those close to the point of use. Grieder (Burton, 1998) stated that wide staff participation in appropriate connection is certain to culminate in better financial planning than would otherwise be the case. According to Grieder's view, wide staff participation in appropriate connection is certain to culminate in better financial planning than would otherwise be the case. According to Grieder, budgeting is not a one- man job, nor even a job solely for the budgeting making division of large city school system. In the end, all suggestions must be brought together, sorted out, and translated into financial terms before the final selection is made for incorporation in a proposed budget. The budget operation provides the supporting data, so essential in justifying budget request to the appropriate body i.e. the school board.

In administering the school budget, the primary concern is to ensure that the results achieved by the school system justify the financial outlay. The extent to which accurate financial forecast have been made can be seen when the budget is evaluated. The success of the school

budget should be judged by the extent to which its estimate of receipts and expenditure agree with the actual amount received and expended. The degree of consistency and accuracy can be determined by company evaluation reports of the current year with those of the two or three previous years.

Budgeting in Secondary Schools

The principal is the chief accounting officer. He prepares the budget together with the Bursar of his school. The Heads of Departments are also involved.

The budget preparation is based on the total enrollment of the school. The main source of revenue is the government grant to the school. Other sources of revenue include: charitable donations e.g. during Inter House Sport; Sales of farm products; launching ceremonies, harvest thanksgiving, cultural group performance; rent from school bus etc.

The Budget estimate for the school includes: estimated revenue, estimated expenditure and estimated surplus. The revenue estimate includes: Government recurrent grants, teaching staff salaries, non teaching staff salaries, rent subsidy, responsibility allowance, science inducement allowance, entertainment allowance, Games master allowance, leave bonus, NYSC allowance, overtime allowance and school running grant.

The expenditure estimate includes: personal emolument, allowances, running expenses and capital expenditure. The personal emolument includes: teaching staff salaries and non-teaching staff salaries. The allowances for both teaching and non-teaching staff include: rent subsidy, transport allowance, utility allowance, meal subsidy, responsibility allowance. Science inducement allowance, entertainment allowance, games master allowance, leave bonus, NYSC allowance and overtime allowance. The capital expenditure mostly includes: general agricultural project and seedings, technical workshop and laboratories equipment, equipping libraries with books and school fence project. The running expenses include: office stationeries, library, school examinations, water and electricity, Games and sports, general repairs of furniture, medical/first aid, clubs and societies, conferences and seminars, prizes, music materials, contingencies etc.

The importance of budgeting in the school is to assess the revenue for the school and to know the various sources of revenue. It is also to disburse the revenue according to regulations and to monitor the expenditure in executing school programmes.

The principal as the chief executive and accounting officer of the school, he has a lot of role to perform in preparing the school budget. He determines the running costs. He identifies the capital projects and votes money for the projects. The principal also presents the budget for approval to the State's Ministry of Education through the Local Government Education Authority or District.

The management of the school budget is very essential in meeting the objectives of its preparation. Revenue is spent according to approval of the budget. The subheadings are adequately controlled. Application for viament is made when necessary; that is the permission to transfer money from one sub-heading to the other.

SELF-ASSESSMENT EXERCISE

i. Briefly discuss "Budgeting in Secondary School"

4.0 CONCLUSION

The issue of costs in education is very important, such that their respective roles cannot be over-emphasized. This is another vital area of school finance.

5.0 SUMMARY

This Unit has discussed the meaning of education costs, concept of educational costs, types of educational cost, educational cost production function, factors influencing educational costs, uses of costs analysis in education and traditional control techniques. You can read more on these from the references provided.

6.0 TUTOR-MARKED ASSIGNMENT

i. List and explain the various types of Educational costs.

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UNIT 3 MANAGEMENT OF FINANCIAL RESOURCES

CONTENTS

1.0 INTRODUCTION

This Unit is designed to acquaint learners with the knowledge of resources in education. The types of resources and their respective roles in achieving the goals of education are discussed. Human resource and Personnel management as well as the major benefits of Employees' performance to Employers are also discussed accordingly.

2.0 OBJECIIVES

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

- explain the concept of resources in education
- discuss the various types of resources in education
- explain the term "human resources/personnel management
- discuss the major benefits of Employees' performance to Employers

3.0 MAIN CONTENT

3.1 Resources in Education

An education system consists of inputs that are subjected to a concesssion process in order to get desirable outputs. The inputs are the resources which facilitate the attainment of educational objectives and ensure effective teaching – learning processes at the school level. These resources include human, physical, finance, time and other resources. Finance or money appears to be the most important based on the assumption that once it is available, all other resources can be

purchased. It must however, be observed that human resources that will manage the money is equally important.

In economic terms, since these resources are always in short supply, then the need for their prudential and effectual, not lisahim be areas imperative, hence the need for resource management.

Adegboye (2004) categorised education resources under five major sub-headings as follows.

3.2 Types of Resources in Education

1. Finance: Money in its various forms, including local and foreign currency and letters of credit, etc.

2. Human Resources: Teaching personnel, including lecturers, teachers, non-teaching or ancillary personnel, consultants, resource persons, students and so on.

3. Instructional/Learning Resources:

i. *Audio-visual Aids:* Radio sets, audio cassette/tape recorders and audio tapes, record players and records, television sets, video assets and video tapes, slide projectors and slides, flip charts, filmstrips, etc.

ii. *Graphics:* Charts, posters, pictures/photographs, cartoons, graphs, maps,

iii. *Print:* Textbooks, supplementary readers, reference books, fiction books, newspapers, journals, magazines, etc.

iv. *Display Materials:* Chalk boards, flannel boards, magnetic boards, etc.

v. *Consumable materials:* Chemicals, specimens, reagents, writing materials, stationery, etc.

4. Physical Resources/fixed Assets:

i. *Land:* Site/land housing all the buildings/structures of any educational enterprise or organisation, including, in the cases of institutions, school farmland as well as sports and games fields.

ii. *Buildings:* classroom blocks, library buildings, office blocks, laboratories, workshops, hostel/dormitories, refectories/dining halls, staff residential quarters, assembly halls/auditoria, lecture theaters, etc.

iii. *Furniture and fittings:* classroom furniture, office furniture, hostel/dormitory furniture, staff residential quarters furniture.

iv. *Equipment:* laboratory and workshop equipment, agricultural science tools and implements, office equipment (e.g. typewriters, computers, duplicating machines, photocopiers, calculators, etc).

v. *Machinery:* workshop machines and tools, etc.
vi. *Vehicles:* motor vehicles, motorcycles, bicycles.
vii. *Electrical Infrastructure*: Overhead electrical conduction lines, meters, generating sets, air-conditioners and/or fans, sundry electrical fittings, etc.
viii. Water supply: Extensions to educational institutions and establishments, boreholes and/or deep wells, water tanks and plumbing pipe lines, etc.

5. Time: Measured in seconds, minutes, hours, days, weeks, months, years, decades, and centuries.

3.3 Human Resources/Personnel Management

People and their abilities, knowledge and skills are the human resources which are the determinants of the success or failure of every organisation. In the education sector, the teaching and non-teaching staff, their abilities, knowledge and skills are the key resources. Their management, which requires specialised skills, techniques and procedures, goes by different appellations such as human resources management, personnel management, personnel administration or simply the personnel function. These terms are used interchangeably in this chapter.

What is Personnel Management

According to Adegboye (2004), human resources or personnel management refers essentially to the activity concerned with getting people in the workplace to give their best toward the achievement of organisational goals. In more specific terms, human resources management is that aspect of the management process which deals with the policies, procedures and practices governing the recruitment, selection, training, promotion, compensation//remuneration and working conditions of people in an organisation. In the process of carrying out these, a lot of money is incurred.

The London Institute of Personnel Management (1963) saw Personnel Management as a responsibility of all those who manage people, as well as being a description of the work of those who are employed as specialists. It is a part of management which is concerned with people at work and with their relationship within an enterprise. It applies not only to industry and commerce, but to all fields of employment (quoted by Oshinebo, 1992, p.98)

Similarly, Beach identified personnel management as:

> *the activities of recruitment and employment; manpower planning, employee training and*

> *management development, organisation planning, organisation development, wages and salary administration, health and safety (at work), benefits and services, union-management relations and personnel research.*

Flippo (1983) viewed Personnel Management from the angle of Management, describing it as the planning, organising, directing and controlling of the procurement, development, compensation, integration and maintenance of the individual, organisational and societal objectives.

Adeoye (2000) exemplified the functions of a personnel department and the personnel manager as follows: recruitment, selection; training and development; job evaluation with salaries/wages formulation of manpower policies; provision of data for planning and decision making; co-ordination of performance appraisals; promotion of organisational communication; industrial relations; personnel research, health and safety administration, as well as administration of discipline.

Activities involved in Personnel Management

Arikewuyo (2006) identified the activities that are involved in Personnel Management to include the following.

i. Recruitment,
ii. training,
iii. performance appraisal,
iv. welfare and motivation,
v. compensation systems,
vi. organisational developing, and
vii. industrial relations, to mention but a few.

In similar view, Olagboye (2004) indicated that major activities of personnel management in education are roughly categorised into closely interrelated process and outlined in a rough segmental order to include the following.

i. Employment/Staffing
ii. Training and Development
iii. Coordination of Staff Performance Appraisals
iv. Transfers
v. Separations
vi. core Processes

1. Employment/Staffing: the term employment is used here to mean the same thing as staffing, which Gordon (1990) defined as the

formal process of ensuring that an organisation has qualified workers available at all levels to cater for its short and long-term objectives. Staffing is seen by Stoner and Wankel, (1986) as a continuing step-by-step process directed at ensuring that an organisation is supplied with the right workers, in the right positions, at the right time. Based on these definitions, staffing or employment is viewed here as comprising the following activities.

i. Job analysis
ii. Human Resource Planning
iii. Recruitment
iv. Selection and Appointment
v. Induction and Orientation

i. Job Analysis is the process of systematically ascertaining the skills and knowledge needed for the performance of specified organisational jobs, based on the tasks that make up such jobs.

ii. Human Resource Planning also known as manpower planning, on the other hand, involves the determination of the appropriate number of workers of different types and categories, with the required skills and knowledge that an organisation, say the school system, will need over a period of time ranging from one to two or even more years. Human resource planning in a ministry of education for example produces in practice, a schedule showing the number of additional personnel that will be required in succeeding financial years. The schedule is usually made part and parcel of the annual budget where it is known as the permanent or approved staff establishment (Olagboye, 2000a:14-24).

iii. Personnel Recruitment in Education and Cost Implications. In carrying out recruitment exercise to fill existing vacancies in Nigerian secondary schools, teachers' salaries, remuneration and retention among others which are essential factors in personnel management must be considered. According to Arikewuyo (2006), one of the most important functions of personnel management is the recruitment and selection of qualified staff into an organisation. Gomez-Mejia, Balkin and Candy (2004) described recruitment as the process of generating a pool of qualified candidates for a particular job, while selection is the process of making a "hire" or "no hire" desire regarding each applicant for a job. The process involves determining the characteristics required for effective performance and then measuring applicants on those characteristics. Ultimately, the aim or recruitment is to attract qualified job candidates. Perhaps

unqualified applicants need not be interviewed at all. Hence, in order to avoid waste of fund, recruiting efforts should be targeted solely at applicants who have the basic qualifications for the job. However, the more additional staff members are recruited into education, the higher the cost incurred.

Olagboye (2004) defined recruitment as all those activities that are directed at securing, in a cost effective way, an adequate supply of possible candidates or applicants to fill the additional positions needed by an organisation as determined through manpower planning. In the education sector, the candidates/applicants are usually located through advertisement in the media, visits to educational institutions and even by word of mouth. Recruitment is usually followed by the process of short-listing or picking from the total number of applicants, those who appear, from their application letters/forms, to be worthy of interview. The short-listed applicants are then invited for the interview.

Recruitment could be done both internally and externally. Internally, current employees may be encouraged to apply for higher positions within the organisation. Such internal recruitment gives staff the opportunity to move into the firm's that would require to be filled later. Recruitment could also be done eternally. In this case, openings may be advertised on both print and electronic media, as well as on the Internet.

Recruitment could also be done through some consultancy and employment agencies. This could be effective, particularly when the organisation is searching for an employee with a specialised skill. One major advantage of the employment agencies is that they often seek for candidates who are presently employed, and not ones looking for a new job, which indicates that their current employees are probably satisfied with them. The recruitment process also involves the selection of the right caliber of staff. This also involves a series of steps through which job applicants must pass in order to be hired. Each stage probably reduces the total number of prospective candidates until the right candidate(s) is employed.

iv. Selection and appointment: Selection is the process of choosing from the short-listed candidates (after their interview) those most likely to be suited for the job at hand, by assessing their personnel specifications against the results of job analysis (job specification) through either or both of psychological testing and selection interview. The selection process ends with

choosing from the selection field the candidates adjudged to be the most suitable, based on their relieve performances at the interview and/or psychological testing. In Nigeria, the selection process may ultimately involve the application of the principle of geographical spread in terms of local, state or federal character.

In selection, preliminary screening of candidates may be carried out. This involves going into records, data sheets, curriculum vitae, and so on. Testing may also be introduced and this involves the examining of human resources for qualities relevant to performing available jobs. Some of the tests usually used in the selection of employees are: aptitude, achievement, vocational interest and personality tests. It behooves the Personnel Manager and the organisation to determine the type of test that is relevant to the kind of recruitment, they want to make.

Some form of oral interview is also adopted after the candidates might have passed the earlier tests. The selection interview enables the organisation to find out more about the applicant and vice versa. It provides opportunities for conversation between the applicant and the organisation. The negative consequences of poor hiring decisions according to Gomez-Mejia et al (2004) are very grave. Such poor decisions are likely to cause problems as unqualified workers may require closer supervision and direction. They may also require additional training and still not reach the required level of performance.

The selection process is usually followed by the issuance of letters of appointment to the selected candidates by the Personnel Management Department. The appointed personnel are next deployed to take up the positions for which were recruited in the first instance.

v. Induction and Orientation: The activities by which new employees are introduced to the job, the organisation and other employees and provided with information on the organisation in order to integrate them as quickly and effectively as possible are usually referred to as induction and orientation. Though, the two terms induction and orientation are often used synonymously, induction is more often used to describe the ceremony by which newly qualified professionals such as accountants and medical doctors are usually officially admitted into the profession. On the other hand, orientation in the education sector, according to Olagboye, (1989:329), is the systematic organisational effort aimed at assimilating newly appointed personnel in order to minimise their problems, and to maximise their contribution to

the quality of the work of the organisation (such as the school or school system) and the achievement of organisation goals. In essence therefore, orientation in the education sector is the introduction of newly appointed staff to the objectives, policies and practices of the education enterprise and to their position and tasks as workers in the enterprise, with a view to easing their entrance into it. Thus, the purposes of orientation, among other things, are to:

a. assist new employees in adjusting smoothly to the organisation and the job;
b. provide specific information to new employees on the organisation (e.g. educational institutions, parastatals, etc.), their job or tasks in it and the performance expected of them, their colleagues, clients and so on;
c. show new employees the workplace, including the available facilities (for example, classrooms, laboratories, libraries, sports and games fields, equipment, instructional aids, etc.)

It has been suggested that newly appointed staff for the school system be first given post-recruitment orientation at the ministry of education, TSC, SPEB and LGEA levels before their deployment to the schools. A second and more elaborate post-deployment orientation which will take into consideration local conditions, to be organised under the direction and supervision of individual school administrators, should then follow at the school level (Olagboye, ibid).

It is worth noting that the orientation which fresh Youth Coppers go through before their formal deployment and commencement of service has the general characteristics described above. It is however focused on smoothly transiting coppers from the protected life in higher institutions to the realities and practicalities of working life and labour market, as well as integration into the various communities to which they will be posted.

2. Personnel Training and Financial Implications

It may not just be enough to recruit the qualified staff, it is also necessary to ensure that the members of staff are given the necessary training. This also varies according to the job specification of every worker. Training, according to Certo (1997) is the process of developing qualities in human resources that will enable them to be more productive and thus contribute more to organisational goal achievement. The purpose of training is essentially to increase the productivity of employees by influencing their behaviour. It should be

emphasised however, that the training given to employees varies in type and extent and according to the nature and skills of the jobs involved, as well as the experience of the employees concerned. According to Makinde (1992), the Personnel Manager collects information in the area of the training through discussions with other heads of departments and other documents available in the organisation. Ojofeintimi (1992) also sees the aim of training as to equip individuals with the necessary skills to enable them to find employments, to gain promotion and to have reasonable expectation of redeployment in the event of their being made redundant.

The first step in the training process is the determination of training needs. It involves the information or skill areas of an individual or group that requires further development in increasing the productivity of that individual or group. It should also be noted that the training of organisation members is typically a continuing activity, to the extent that even employees who have been with the organisation for some time and who have undergone initial orientation and skills training need continuous training to improve their skills. After determining the training needs of the workers, the Personnel Manager now designs a training programme aimed at meeting those needs.

Training of the employee begins with the orientation programme. Orientation is the process of informing the employees about what is expected of them in the job and helping to cope with the stresses of transition (G0mez-Mejia et al, 2004). Orientation therefore, involves introducing and guiding the new employees to the organisation and the various units. It is important that new employees become familiar with the company's policies, procedures and performance expectations.

Training of workers could be done formally. This may be done in various ways, such as through evening classes; revision courses for examinations of professional bodies, sandwich / part-time courses in Universities and training institutes, as well as through a sponsored full-time course in tertiary institutions. On-the-job-training is commonly used by more organisations. These may involve attending workshops, conferences and seminars that are related to the employee's job. Oshinebo (1992) further suggested the following as different methods of on-the-job training.

a. Coaching, i.e. the trainee is put under the guidance of an experienced employee who shows the trainee how to do the job.
b. Job rotation, i.e. the trainee is given several jobs in succession so as to gain experience on a wide range of activities.
c. Temporary promotion, i.e. an individual is promoted into his/her superior's position whilst the superior is absent, due to some

reasons. This gives the individual a chance to experience the demands of a more senior position.

d. Assistant to, i.e. a junior officer with good potentials may be appointed as assistant to another top officer.

In this way, the individual gains experience of how the organisation is managed at the top. Committees, i.e. training might be included in the membership of committees to enable them to gain and understanding of inter-departmental relations. It is however, suggested that management should evaluate every aspect of a training to determine if it meets the needs for which it was designed.

3. Performance Appraisals

Performance appraisal or evaluation is the systematic process of assessing the present performance of workers in their jobs and of making forecasts, based on the results, about their future performance with a view to assisting organisational decisions on promotion, upgrading, training and transfers.

Even after the workers have been recruited, selected and trained, the job of Personnel Manager is not yet over. The staff needs to be appraised and evaluated from time to time. McGregor (1972) provided the following reasons for performance appraisal:

i. To provide systematic judgments to support salary increases, promotions, transfers, demotions or terminations.
ii. Provide a means of telling subordinates how they are doing and of suggesting needed changes in behaviour, attitudes, skills or job knowledge
iii. To allow subordinate know where they stand with the boss; and to furnish a useful basis for the coaching and counseling of individuals by superiors.

In addition, Makinde (1992) provides the following reasons for performance appraisal.

i. To improve the management of staff resources by helping employees realise and fully utilise their potential while striving to achieve organisational goals.
ii. To provide Managers the information necessary for decision-making in several areas of Personnel Management (e.g.) promotion, training, discipline and so on.

Gomez-Mejia et al, (2004) further opined that most organisations conduct appraisal for administrative and / or development purposes. Administratively, performance appraisals are used whenever they are

the basis for a decision about the employee's work conditions, including promotions, termination and rewards. Developmental uses of appraisal, which are geared towards improving employees' performance and strengthening their job skills, include counseling employees on effective work behaviours and sending them for training.

The question of what to appraise in any worker varies from one organisation to the other; as well as from job to job. Thus, the appraisal of a classroom teacher may be different from that of a University lecturer. However, most public sector organisations in Nigeria base their appraisal criteria on the following: foresight; penetration; judgment; oral expression; relations with colleagues; relations with public, acceptance of responsibility; reliability under pressure; drive and determination; application of professional/technical knowledge; output of work; quality of work; punctuality and so on.

3.4 Benefits of Employees' Performance to Employers

In a study, Cardy and Carson (1996) examined the benefits of performance from the perspectives of the employer were enumerated as follows.

i. Despite imperfect measurement techniques, individual differences in performance can make a difference to company performance.
ii. Documentation of a performance appraisal and feedback may be needed for legal defense.
iii. Appraisal provides a rational basis for constructing a bonus or merit system.
iv. Appraisal dimensions and standards can help to implement strategic goals and clarify performance expectations.
v. Despite the traditional focus on the individual, appraisal criteria can include teamwork and the teams can be the focus of appraisal.

On the other hand, the employees viewed the benefits of performance appraisal as follows.

a. Performance feedback is needed and desired.
b. Improvement in performance requires assessment.
c. Fairness requires that differences in performance levels across workers be measured and have an effect on outcomes.

vi. Assessment and recognition of performance levels can motivate workers to improve their performance.

The measurement of appraisal varies from one organisation to the other. In addition, numerous techniques abound in literature for measuring and appraising staff. Whatever the instrument or technique used, the Personnel Manager must ensure an unbiased and fair judgment of all staff, irrespective of sex, age, status, ethnic or religious affiliation. It is by so doing that the goals of performance appraisal will be achieved.

Wages and Salary Administration

A staff expects to be paid for the job done at a particular point in time. One of the major tasks of the Personnel Management is to ensure that the staff are paid their entitlements as and when due. This may be in form of salary, fringe benefits, personal emoluments, retirement benefits, pension allowances, welfare packages, and so on. As a matter of fact, experience has shown that one of the major causes of conflict between the employer and labour is the question of salary and conditions of service. Adeoye (2000) further asserted that an effective salary administration has many well-defined goals, some of which are as follows.

i. Provision of a systematic determination of equitable compensation for the workers.
ii. Control of salary costs by the organisation.
iii. Reduction in staff turn-over.
iv. Motivation of staff to enable them to perform at an optimum level with the provision of financial and non-financial incentives; and
v. Promotion of employee-employer's relations.

Thus, wages and salaries' administration is aimed at attracting workers, retaining the good and productive ones, as well as motivating them for higher productivity. No doubt, a good salary structure helps to retain any workforce. Makinde (1992) contended that to do this effectively the Personnel Manager must take into consideration four major components of a salary structure. These are: the job rate which relates to the importance attached to the job; payments associated with the encouraging the employees or groups, by rewarding them according to their performance; personal or special allowances associated with such factors as scarcity of particular skills or categories of employees, long service; and fringe benefits, such as holidays with pay, pensions and so on.

4. Transfers

In the context of the public and civil services of the country, the term transfer, which is a function of personnel management, generally refers to the approved movement of an employee from one office or job, position, department, ministry or even service, to another. In general

terms, transfers serve one or more of the following purposes:

i. giving employees wider job experience as part of their development;
ii. filling vacancies as they arise;
iii. keeping promotion ladders open in order to keep employees interested in the job;
iv. moving poorly performing employees to other jobs as an alternative to separation.

Outside of these fundamental purposes which transfers serve in personnel management, certain compelling reasons make the transfer of personnel a necessary and regular exercise in the administration of the school system. Some of these reasons include, among others the need:

i. to correct over staffing/under staffing in schools;
ii. to adjust the staffing position in schools as may be occasioned by enrollment decreases or increases in some schools;
iii. to diffuse tension in schools experiencing deterioration in inter-personal relationships;
iv. to relocate troublesome or poorly performing personnel for reassessment and further observation;
v. to relocate personnel who have stayed for too long in a school and whose productivity may be diminishing;
vi. to meet legitimate requests for transfer by personnel.

Forms of Transfer

There are three common forms of transfers: material transfer, promotion and demotion. Lateral Transfer is the approved movement of an employee from one position or office to another at the same level, which may or may not be accompanied by changes in duties or remuneration. For instance, school heads and teachers in public primary and secondary schools are in practice usually moved from one school to another from time to time. Other forms of lateral transfer in the public education sector include in-cadre transfers or conversions such

Promotion

Promotion is an approved movement of an employee from a lower to a higher position in the hierarchy which is usually accompanied by an advance in salary, status and authority. Promotion may or may not be accompanied by a change in duties and responsibilities such as in the case of a classroom teacher who is promoted from, say, Education Officer Grade II on GL 08 to Education Officer Grade 1 on GL 09. All employees in the public education sector who fall within the field of selection for promotion, i.e., those whose appointments have been

confirmed, who are not under any disciplinary action and who have spent the required number of years on their current posts, are normally put forward for consideration for promotion at each promotion exercise which, by the provision of Decree 43 of 1988, is undertaken twice each year.

The variables upon which promotion is based were reduced to quantifiable criteria weighted into a maximum of 100 by the decree referred to above initially, the variables comprised performance/APER scores (50), Interview (30), Additional Qualification/Examination Passed (15) and Relative Seniority (5). These criteria were later in 1995 reduced to three: Interview (65), Performance/APER scores (30), and Relative Seniority (5).

The weight of each of these criteria has since then varied over time, such that by 1998 it had become: Interview (70), Performance/APER scores (20) and Relative Seniority (10). Based on a 1998 guideline issued by the Federal Civil Service Commission, the overall pass mark for promotion is 60% in all cases (FRN, 1988, 1995, 1998).

Demotion is the approved movement of an employee from a higher to a lower post in the hierarchy, usually as a result of recommended disciplinary measure. Demotion is usually accompanied by a reduction in salary, status and authority and may also involve a change in duties and responsibilities of the demoted employee.

5. Separations

The various personnel management departments in the education sector are responsible for processing the separation or disengagement of educational personnel from the service. By separation or disengagement is meant that process by which an employee leaves or relinquishes his job. Five common forms of disengagements/separations are:

1. Retirements
2. Terminations/Discharge
3. Dismissals
4. Resignation/Withdrawals
5. Deaths

1. Retirement may be voluntary, i.e. at the instance of the employee or it may be involuntary, that is, at the instance of the employer. Voluntary retirement describes the process whereby an employee on his own volition opts to stop working at his job in the service either because he has attained the retirement age of 60 years or

because he has put in a maximum number of 35 years as prescribed by the relevant public service rules. It could also be because the employee may be retired by his employers for a verity of reasons.

2. Termination is the process by which an employer disengages an employee from service for reasons of re-organisation, unsatisfactory performance or some other reasons. Such an employee may or may not be entitled to gratuity. By gratuity here is meant the lump sum of money which is paid to an employee disengaging from service. If the appointment terminated is temporary, the worker will normally be paid a month's salary in lieu of notice. If however it is a permanent and pensionable appointment, the pension rules will apply.

If the worker qualifies for pension, then his letter of termination of appointment will serve in place of a notice of retirement letter. Pension refers to the sum of money which is paid monthly to a public service worker who has retired from service.

Discharge from public service is similar to termination of appointment, except that it is only applicable to a non-pensionable appointment in which the appointee has been adjudged to9 be general unsuitable for further productive tenure.

3. The process by which a public service employee is separated from his job with no benefits as a result of proven misconduct after due process is known as dismissal. Once a public service worker has been dismissed, he forfeits every entitlement that would normally have been due to him otherwise. An employee could also leave public service by resignation or withdrawal of service. Resignation of appointment means giving up a job at one's own volition especially when the appointment is still temporary or on probation rather than permanent and pensionable. In resigning, the worker must give a month's salary in lieu of notice if he has served less than five years, in which case he is not qualified for gratuity.

4. Withdrawal of service is the term used to describe the voluntary disengagement of public service worker whose permanent and pensionable appointment has been confirmed and who has served for up to five but less than ten years. Such a worker is qualified for a year's salary as gratuity on withdrawal. Finally, a worker may, singularly, exit from an active service, by way of death.

Welfare of Workers

The welfare of the workforce in an organisation is another major task of the Personnel Manager. Various studies have shown that a worker who has access to many welfare services within the organisation could be highly motivated. The purpose of Welfare Services, according to Ojofeitimi (1992) is to:

i. Provide personal advice and assistance to individuals; and
ii. Encourage a positive relationship between the individual and the organization by providing extra security and comforts.

Among the welfare services that could be provided by an organisation for its workers include: adequate retirement and pension scheme, medical services for workers and their dependants counselling services a recheck or nursery school for staff children; official cars, end of year bonus and so on.

Also Okunola (1990) summarised the social responsibilities, which all employers owe to workers as:

And in a study, Akinola (1995) established that occupational welfare programmes in work organisation lead to job satisfaction with positive externalities on workers' efficiency, productivity and commitment. For the teaching profession, Taal (1995) quoted Coomb as asserting that if teaching and learning are the beginning and the end of the educational process, then all matters that bear on the welfare, professional development and effectiveness of the teacher must be of prime importance. But in another study, Arikewuyo (200) discovered that teachers in Nigeria considered their salary; instructional facilities, transportation and accommodation as well as staff performance appraisal as fairly adequate. The teachers however, felt that medical facilities were not available at all for their welfare.

All these point to the fact that welfare of staff is very germane in every organisation and any organisation that neglects staff welfare, cannot get higher productivity from the labour force.

Industrial Relationship

This is another tough task of the Personnel Manager. The establishment of an excellent and cordial relationship between the Management and the workforce arguably is a major assignment. Basically, industrial relations deals with everything that affects the relationship between workers and employers, from the time an employee joins the work organisation until he leaves the job, Fajana (2000). The Manager should be in a vantage position to create a good communication link between the organisation and the workers. Excellent industrial peace in

an organisation would ensure increased production and high level of productivity among workers. It is the responsibility of the personnel Manager to ensure that regular negotiations and collective bargaining mechanism exist in the organisation in order to reduce conflict. In order to ensure industrial peace in the organisation, Ojofeitimi (1992) suggested as follows:

The Personnel Manager and his staff must communicate in depth with representatives of organised labour,..... must make sure that proposed changes in conditions of employment are communicated to the Union reps, and the provision of enough time to enable the Union leaders to seek the employees' attitude to the proposed change. The Union reps have to be encouraged to bring their recommendations concerning changes in conditions of employment to the attention of the Personnel Management. The economic prosperity of the enterprise, its future employment plans, whether the news is good or bad, should be communicated to the Union leaders. Above all, the Personnel Management have the responsibility of inculcating in both the employees and management a healthy respect for the other's viewpoint and a desire to take whatever course of action is in the best interest of the employees and the shareholders. If the organisation is a member of an employers association, then, the Personnel Manager should represent the organisation as the activities of the Association (pp: 84-85).

SELF- ASSESSMENT EXERCISE

i. Identify and discuss the activities involved in Personnel Management

4.0 CONCLUSION

Resources in Education are very scarce. So, the available ones need to be effectively and efficiently managed to achieve the goals of education.

5.0 SUMMARY

The chapter tried to examine the elements of Personnel Management. It discussed the definitions and concepts of Personnel Management, as well as the major functions of Personnel management and the personnel department. This list is however, not exhaustive. The functions of the Personnel Manager are very many. These include: Control and audit functions, industrial research, personnel records management organization, development and career planning. It behooves every Personnel Manager to study these functions properly so that the goals of the organisation may be achieved.

6.0 TUTOR-MARKED ASSIGNMENT

i. Discuss extensively on the essential benefits of Employees' Performance to Employers.

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MODULE 4 FINANCING HUMAN MANAGEMENT IN EDUCATION

UNIT 1 HUMAN RESOURCES AND HUMAN CAPITAL

CONTENTS

1.0 INTRODUCTION

This unit examines the concept of human resources and human capital with emphases on the definition of human resources and human capital, classification of labour force, importance of human resources, human capital, meaning of human capital formation and means of human capital formation. The units objectives are stated below to acquint the learner's with what they will learn in this unit.

2.0 OBJECTIVES

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

- explain the concept of human resources and human capital
- explain the classification of labour force
- state the importance of human resources

- discuss human capital formation
- explain the means of human capital formation

3.0 MAIN CONTENT

3.1 Definition of Human Resources and Human Capital

Harbison (1973) defined human resources as the energies, skills and knowledge of people which are, or which potentially can or should be applied to the production of goods and services. In the same vein, Tobias (1969) defined manpower as people, humanity and society with all its aspirations, needs, and capacities. The total population of a country constitutes its human resource potential. Thus, Nigeria had human resource potential of 55.7million in 1963, based on that year's national population census, and 88.9million in 1991 based on the year's population census.

3.2 Classification of Labour Force

Potential labour force: These are the people who are within the working age, which currently refers to the 15 – 60 year age group in Nigeria and 18-65 year age group in some developed countries. Thus, the quantity of the potential labour force changes overtime due to some factors, which include changes in the working age. Potential labour force statistics is useful for planning socio-economic development.

Active Labour Force: The active labour force includes all those within the relevant age range, who are able and willing to work regardless of whether or not they are employed. This implies that those unemployed who are looking for work are very much in the active labour force. To obtain the active labour force, we subtract from the potential labour force four categories of people as follows.

i. Full-time house wives not engaged in remuneration activities
ii. People who are physically and mentally incapacitated
iii. Students and full-time trainees
iv. Persons who, for any reason, are not interested in work.

Actual Labour Force: This refers to the actual number of people that are really engaged in productive activities. The "under-age" and "over-age" i.e. the children below the age of 15 and the retired people who engage in productive activities should be added to active labour force to get actual labour force.

3.3 Importance of Human Resources

1. Availability of skilled manpower is a pre-condition for modernisation in general and economic growth in particular

2. The quality of labour in terms of brainpower, technical expertise, scientific, disposition, and effective utilisation determine how other resources (capital goods, finance and natural resources) could be effectively used and what the results would be.
3. Capital and natural resources are passive agents of development. Only human beings are the active agents since they alone are capable of accumulating capital, exploiting natural resources and building political and social organisations.

Late President John F. Kennedy of United States of America in 1963 had this to say, "Manpower is the basic resource. It is the indispensable means of converting other resources for mankind's use and benefit. How well we develop and employ human skills are fundamental to decide how much we will accomplish as a nation. The manner in which we do so will moreover, determine the kind of nation we become".

This is a general pointer to the words of Harbison (1973), which go thus:

> "…human resources, not capital nor income, nor material resources constitute the ultimate basis for the wealth of nations. Capital and natural resources are passive factors of production, human beings are the active agents who accumulate capital, exploit natural resources, build social, economic and political organisations and carry forward national development. Clearly, a country which is unable to develop the skills and knowledge of its people and to utilise them effectively in the national economy will be unable to develop anything else".

Manpower refers to both the quantity of people and their skill-content acquired through education, training and experience.

Manpower in the economic sense, is the managerial, scientific, engineering, technical, craftsmanship and other skills which are developed and employed in creating, designing and developing organizations, managing and operating productive and service enterprise and economic institutions" (Yesufu 1962).

3.4 Human Capital

Irving Fisher defined capital as any stock existing at a given time that yields a stream of services overtime, all flows of "income" therefore being the product of some item of "capital" whose value is calculated by capitalizing the income flow by an appropriate discount rate.

Karl Marx in Das Kapital argued that all capital consisted entirely of labour that had been expended in the past. According to him, capital was nothing more than stored-up labour from the past.

Samuelson (1964) defined a capital good as an input, which is itself the output of the economy. Capital goods therefore represent produced goods that can be used as factor inputs for further production. Thus, an important notion of capital is that it has to be produced, and some factors of production – land, labour and some capital themselves have to be employed for this purpose.

How do these definitions relate to human capital? Samuelson expatianting further on the concept of human capital noted that the process of education consists of investing in people, thereby making them more productive factors of further production. As he explained, when you see a medical school graduate, you are in a certain sense looking at a chunk of capital or at an economic production factor that is partially capital. Extending this line of reasoning, Mikeshell (1968) observed that when we begin to think in terms of human capital and investment in man, the improvement of man becomes not only objective, but the principal means, of expanding and enriching social product.

The "capital value of man" is the stock of capital embodied in people. These are investments that human beings make in themselves to improve their quality. Education, on the job training, health, migration and some other activities are means whereby investments in human beings are undertaken. The consequences of education in the sense of skills embodied in people may therefore be viewed as human capital which is not to say that people themselves are being treated as capital. Maintenance and improvement of skills may be seen as investment in human beings.

Smith (1976) provided a justification for resources put into education and investments that yield benefits both to the individual and the society, by drawing an analogy between man and machine that an educated man may be likened to an expensive machine. He included all acquired and useful abilities of the inhabitants of a country as part of capital. According to him, "The acquisition of such talents by the maintenance of the acquirer during his education, study or apprenticeship, always costs a real expense, which is capital fixed and realised as it were in his person". Such "costs of a real expense" do provide returns. Again as rightly observed, it is no accident that educated people tend to earn more than those without education, without the promise of some monetary return from education roughly comparable to the ordinary profits of an equally valuable capital, the supply of educated people would eventually dry up.

He went further to differentiate between private and social returns to education by saying that "these talents as they make a part of his fortune, so do they likewise of that of the country. Among other classical economists who appreciated the concept of human capital were David Ricardo and Alfred Marshall. Ricaro (1817) noted that workers' outputs vary according to the level of acquired and natural capabilities and that their rewards vary accordingly. Marshall (1890) accepted Adam Smiths analogy that the acquisition of skills by man might be likened to an expensive machine. Marshall, thus, viewed education "as a national investment", and according to him "the most valuable of all capital is that invested in human beings.

3.5 Means of Human Capital Formation

The following activities are identified for improving human capabilities:

1. Formally organised education at the elementary, secondary and higher levels such as polytechnics and universities
2. On the job training including apprenticeship, system organised by employing institutions or the old style (indigenous) apprenticeship system undertaken through craftsman
3. Study programmes for adults that are not organised by firms, including extension programmes notably in agriculture adult/continuing education and literacy classes. These are self-improvement efforts pursued through reading or learning information from others
4. Health facilities and services broadly conceived to include expenditures that affect life expectancy, strength and stamina and vigour and vitality of people. In essence, better Medicare, nutrition, accommodation, and environment can affect human capabilities.
5. Labour market information, which can be purchased to show where there are job opportunities and career prospects can enhance labour mobility
6. Migration of individual and families to adjust to changing job opportunities. As Schultz (1962) observed, "Migration is also treated in this way because analytically a misplaced resource is equivalent to a less productive resource properly located. Hence, the expenditure incurred in order to relocate geographically can enhance labour productivity
7. Better organisation of work, creation of appropriate attitude and incentives and better management of people
8. Importation of skilled labour from abroad through various ways such as technical assistance, hiring of expatriates or consultants and immigration

9. A family can increase its investment in children by increasing the number of children (quantity) or by increasing the resources invested in existing children (quality). As observed by Ojo (1985), a family's preference usually affects the type or quality of its children. Thus, when children enter school at the age of six, significant differences exist in their levels of verbal and mathematical competence. Such differences reflect variations in inherent ability and the amount of human capital acquired before children enter school. The stock of human capital acquired by children is due, in turn to varying inputs of time and other resources of parents, siblings and the children.

4.0 CONCLUSION

Human Resources and Human Capital are important areas in school finance. A lot of capital expenditure is invested on Human resources for efficienct realization of the goals of education. More money is needed to train teachers on-the-job for more qualifications and experience, to organize seminars and workshops for them and to service their promotions among others.

5.0 SUMMARY

Human capital formation or human resource development is the process of acquiring and increasing the numbers of people who have the skills, education and experience that are critical for the socio-economic development of the country. Human capital formation is, therefore, associated with investment in human beings and their development as creative and productive resources. It covers not only expenditure on education and training but also the development of attitude towards productive activities.

6.0 TUTOR- MARKED ASSIGNMENT

Discuss the major classification of labour force.

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UNIT 2 RESOURCE ALLOCATION IN EDUCATION

CONTENTS

1.0 INTRODUCTION

This Unit is practically designed to enable the learners have knowledge of resource allocation in education. The learners are expected to have detailed knowledge of such areas as the concepts of resource allocation in education, types and relevance in education of resources as well as factors affecting resource allocation in education.

2.0 OBJECTIVES

At the end of Unit, you should be able to:

- discuss in details, the concept of resource allocation in education
- explain the types and relevance of educational resources
- explain the factors affecting resource allocation in education

3.0 MAIN CONTENT

3.1 Concept of Resource Allocation in Education

In Economics, resources are scarce and limited in relation to human wants, since these resources have alternative end uses. Price mechanism under a condition of perfect competition usually secures an optimum allocation of resources. Considering these facts, education can be viewed as an individual want, a merit want or a social want. Education as a private/individual want can be seen as a commodity, which an individual demand because of its utility. Education as a merit want can be defined as want which could be serviced through market forces or price mechanism. Education as a social want can be defined as those services, which may not be required by individual personally, but nobody is excluded from it.

According to Kelly (1992), price mechanism can only be an effective means of allocation of resources in conditions of perfect competition, where there are many sellers and many buyers and where the market is free for all to enter without any hindrances. In the real world with respect to goods and other services, perfect competition rarely exists, and so with regards to education we can hardly expect such situation to be exception rather than the general rule.

Looking at education exclusively as a private/individual want, (though this may not be right), there may still be the need for public policy to be called into play in order to help the price mechanism to adjust supply and demand because of a number of reasons. If the demand for education is so high and the supply is limited in terms of schools available in an area, the agency providing the service is entirely on Government needs to build more schools or provide subsidy to private proprietors in order to reduce the price of education. In this way, government would have interfered with the allocation of resources to the benefit of the people.

According to Ojo (1985), the other reason why government may have to interfere with the provision of education is because of its social implication. If education is regarded as a private want, it is left to the market forces of supply and demand to determine those who can purchase it. It is likely that the price will be prohibitive to many people. This situation is likely to lead to social dissatisfaction amongst the generality of the population. Another factor arising from this is that those who provide education facilities might artificially create high price of education. Proprietors of schools provide one additional facility or the other to justify incessant increases in the fees charged in private schools. Depending on the elasticity of demand and easiness of entering into the line of production, prices of such goods will be high and so monopoly profit is earned. The point being made is that, condition of perfect competition is unlikely to exist with respect to education so as to permit price mechanism to perform the function of an efficient allocation of resources.

Olagboye (2004) explained that government could by direct official control of prices and services that are related to education, or through fiscal measures, influence the efficient allocation of resources to education. Education received in this manner can be regarded as a merit want. From analytical point of view, there are convergent points in considering education as a merit want and as a social want. However, lines of demarcation can still be drawn between them. This presents some implications for educational policy makers to ask certain questions, at certain point in time. Is allocation of funds to education not being disappropriately made to the detriment of other sectors of the economy?

3.2 Type and Relevance of Educational Resources

Olagboye (2004) identified the types and relevance of educational resources as follow:

Education Resources: are the sum total of the input that goes into the education system. They are all the things that are used directly or indirectly for the purposes of supporting, facilitating, influencing or encouraging transmission or acquisition of knowledge, competence, skills and know-how. Essentially, they are used for and as well aid the education and training of the learners. Educational resources include: financial, material, physical, human, symbolic and education resource centres.

Financial Resources: these are the monetary inputs available for and expended on the education system. These are usually referred to as expenditure on education.

Physical Resources: These include buildings, classrooms, laboratories, libraries, hostels, administrative staff offices, technical equipment, reprographic equipment and other physical plant like machines, vehicles, computer sets, typewriters, duplicating and photocopying machines.

Material Resources: These refer to usable and consumable facilities like time, programmes, policy issues, curriculum, textbooks, maps, timetable, furniture, lesson notes, diaries, registers, chalk, chalkboard, electricity, stationery, biros, pencils, and others.

Human Resources: These refer to students, teachers, administrative staff, supervisory staff from the ministry of education, guidance counselors, school managers and others.

Symbolic Resources: These refer to things that go into the educational process to fashion out trained or educated people which include not only human and material resources but also policies, ideas and information package or knowledge system consisting of universal principles, theories and skills that are the same everywhere.

Education Resource Centres: These include audio-visual aids centres, language centres, media resources centres, public libraries, science and mathematics resources centres which are vital aid to the teaching learning process.

Resource Allocation: Allocation of resources is the distribution of resources to all sectors of the economy according to sectoral needs.

Resource allocation in education refers to how the available resources are distributed among the different levels of education and within each system of education. That is, how resources are allocated to primary, secondary and tertiary institutions. The primary motive of resource allocation is to achieve high level of efficiency. Of a high level of efficiency is to be attained in the economy, constant reallocation of resources must occur in response to changes in human wants, in the kinds and quantities of response available and in the available techniques of production. In developing the principles of resource allocation, let us first discuss the concept of resources and then consider the conditions of resource allocation leading to maximum efficiency in resource use, and finally examine certain factors that prevent resources from being correctly allocated.

The Conditions of Maximum Welfare: For resource allocation to yield maximum contribution to welfare, the value of marginal product of the resource in any one of its uses must be the same as its value of marginal product in all of its other uses. For example, if a worker employed on a farm contributes at the margin N20,000 worth of farm products annually to the economy's output, and that an identical worker employed in a construction firm can contribute N30,000 worth of products annually to the economy's output. If a worker was switched from farming to construction, there would be a net gain to consumers N10,000 worth of product. Obviously, some consumers or workers can be better off without making anyone worse off.

Transfer of resources from lower value of marginal product uses the higher value of marginal product, it always yields a welfare increase and maximum welfare results when these transfers have been carried out, its value of marginal product is the same in all its alternative uses.

Resource Markets: When the price is used to allocate resources, the concept of a resource market becomes important. Resource market depends on the nature of the resource under consideration and on the time span relevant to the problem at hand. Within a given time span, some resources are more mobile than others and consequently, their markets tend to be larger. In a private enterprise, economic system resource, prices serve the function of directing the allocation of resources.

Only under pure competition in product market and resource market will resources automatically be allocated so as to maximise real net national product or welfare. Under pure competition, a mal-allocation of any given resource causes its values of marginal products in different employments to differ from each other. Consequently, employers for whom its value of marginal product is higher bid resources away from

those for whom its value of marginal product is lower. Transfer of resource units from lower to higher value of marginal products used to increase the contributions of the resource to welfare. Its maximum contribution occurs when value of marginal product of the resource is the same in all its alternative uses. Therefore, no incentive will exist for further transfers to be made.

With some degree of monopoly in product markets, a resource will be re-allocated among its alternative uses until its price is the same in all of them. However, where employers are monopolists in some degrees, they employ those quantities of the resources at which their marginal revenue product equals its price. Marginal revenue products of the resources will be the same in alternative employments. Differing product demand elasticities cause values of marginal products of the resource to differ in alternative employments. Thus, the resource does not make its maximum contribution to net national product.

3.3 Factors Affecting Resource Allocation in Education

a. **Population of the school:** The school enrolment is one of the factors that influence resource allocation. The number of students in a school will determine the number of teachers to be employed, the number of classrooms needed and the amount of grant to be given.

b. **The type or the nature of the school:** The quantity and quality of resources made available to a school is influenced by its nature. A school offering general arts and social science subjects will attract less resource than a school that is comprehensive, technical and vocationally oriented. Also the amount of resources allocated to primary, secondary and tertiary institution varies in terms of quantities and qualities.

c. **The curriculum:** The number and types of subjects offered in the school also determine the number of staff, physical and material resources to be provided.

d. **The philosophy of the government:** A government that is interested in the development of individual citizens for the removal of illiteracy and development of manpower will devote more resources to education.

e. **The state of the economy:** A country that is economically strong, viable and has interest in education tends to allocate more money than a country that is economically poor.

f. **The degree of importance or the value attached to education:** Where education is seen as the major avenue by which the economy can develop and grow, more resources tend to be allocated by both the private and public stakeholders.

4.0 CONCLUSION

For optima realisation of the goals of education, adequate knowledge of resource availability for use in education by educational planners and administrators is necessary. This will enable them do proper allocation of the available resources to achieve efficiency of productivity.

5.0 SUMMARY

Where employers have some degrees of monopoly, but there is no resource differentiation, a resource will again be reallocated until its price is the same in alternative employments. But a monopolist employs the resource up to the point at which marginal product equals marginal resource cost. Different monopolists may face resource supply curves of differing elasticities. And, if so, marginal resource cost will be different for each even though all pay the same price per unit for the resource. With equilibrium allocation of the resource achieved, marginal revenue products differ. The usual case will be that differences in values marginal product also occur, and the resource will not be making maximum contributions to net national product.

Non-price impediments to correct allocation of resources include ignorance, sociological and psychological factors and institution restrictions. In some instances, the achievement of non-economic value may be of more importance to society than correct resource allocation. Direct interferences with the price mechanism by the government are by private groups which may prevent resources from being correctly allocated in some cases. In other cases, they may not lead to adverse effects.

6.0 TUTOR-MARKED ASSIGNMENT

i. What are the factors affecting resource allocation in education?

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UNIT 3 EDUCATION FINANCE AND ECONOMIC WELFARE OF PERSONNEL

CONTENTS

1.0 INTRODUCTION

This Unit introduces the learners to the knowledge of education and economic welfare of Personnel. It covers such areas as the concept of education and economic welfare, the concept of marginal productivity, factors affecting earning differentials, the concept of income distribution and the issue of cost-benefit in education is also discussed.

2.0 OBJECTIVES

At the end of Unit, you should be able to:

- explain the concept of Education and Economic Welfare
- explain the concept of Marginal Productivity
- discuss the factors that affect Earning Differentials
- enumerate the concept of Income Distribution
- explain the issue of cost-benefit in Education

3.0 MAIN CONTENT

3.1 The Concept of Education and Economic Welfare of Personnel

According to Adegboye (2004), Economic welfare is an issue, which has exercised the minds of economists for quite a long time. Many economists starting from Adam Smith, Mill, Davenport Marshall etc. in

one way or the other emphasised this aspect of the discipline. In specific terms, what is meant by an economic welfare? The answer is not as simple as it would appear and there is not a consensus amongst economists. However, to be precise, the term implies three things namely, increase in incomes, how these increases are distributed in the economy and cost-benefit resulting from investment. Each of these issues involve economic welfare and how education could help in maximising such welfare shall be examined. It is however, to be noted at the outset that these three issues, although for analytical reasons can be discussed separately but are in practice inter-related. For example, an investment on education which increases income may have the effect of helping to redistribute income in favour of human capital, and the cost-bearing may be positive in relation to the expenditure.

Increase in income is one of the positive indices of measuring the welfare of an individual and the community in general. Thus, countries whose per capital income are high are the rich and industrial nations of the world, while those with low per capital income are the poorer and less developed ones.

The concept of income has four elements and these are derived from four sources. First is income or earnings from labour in the form of salaries and wages. Secondly are the returns from entrepreneurship and investment known as profit. Thirdly, are interests from fixed investment on bonds and debentures. And fourthly, are rents from properties – land, building etc.

3.2 The Concept of Marginal Productivity

Olagboye (2004) stated that in economics, the concept of marginal productivity theory of labour tries to show that, a business will only hire an additional input of labour if returns from such labour contribute to production more than its cost. In other words, an entrepreneur will only engage an additional labour, if the productivity from such labour is worthwhile, taking into account what he pays for the labour. This concept for one labour force can be generalised for the whole of the economy.

This marginal productivity theory is not an easy one to establish in practice. Although in general, it tries to show that what labour, i.e. human capital, is paid as a result of its output, yet there are other factors which influence reward to labour other than its productivity per se. Such factors include qualification, power of trade unions, motivation, relative scarcity of particular labour, as well as government policy on wages and salaries. We look at these issues and the extent that education can or cannot influence them.

The marginal productivity theory tries to explain why there are earning differentials based mainly on output of labour. Thus, an unskilled labour will earn less than a skilled one because skilled labour is more productive than an unskilled one. Thus, a primary school leaver with no additional skill invariably earns lower than a secondary school leaver because it is assumed that the latter will be more productive than the former. Similarly, those with higher education earn more than the lower ones. Because of this, it is easy to see the importance of education in increasing the earning capacity of the possessor of such education. But in this regard, account will have to be taken of training teachers on-the-job, which to the employer may even be rated higher than the qualification (or paper qualification as is sometimes sarcastically referred to). This in part explains why somebody with less formal education, but who is trained on the job may even earn higher than somebody else with higher formal educational qualification but no training on-the-job. However, from our point of view, it is proper to regard this on-the-job training as a form of education, which has helped in increasing the marginal productivity of labour. Thus, education, whether formal or on-the-job training,increases the earning of the possessor, and hence the general welfare of the worker.

Marginal productivity theory, difficult as it is to apply in practice, is not sufficient to explain the causes of earning differential. Therefore, the issue of qualifications needs consideration. This tries to modify the Marginal Productivity Theory of labour. It attempts to show that it is qualification, and not the output of labour, that in most cases determines reward to the holder. By mere possession of a certificate, somebody is paid higher than the other person by virtue of the paper qualification and not necessarily because of what the person can produce.

3.3 Factors Affecting Earning Differentials

In Nigeria it appears to us that too much emphasis is placed on this certificate or qualification criterion in determining what the possessor is paid. Little attention is paid to productivity (Adeoye, 2000). For instance, some people are of the view that a holder of the Nigerian Certificate of Education (NCE) is in many cases, a more competent teacher in secondary schools and teacher training colleges than somebody with an Honours degrees, but with no teaching certificate. Yet, an NCE holder is paid less than a degree holder who has no teaching qualification. There are other examples of this kind. This type of differential earning and the social attitude of people holding one kind of qualification or the other, is, in our view and in part responsible for scrambling to acquire paper qualifications in this country. So those not academically fit to acquire it sometimes resort to examination malpractices in order to obtain the qualifications. However, in spite of the weaknesses of qualification criterion as an objective factor in

determining productivity of labour, it tends to prove our hypothesis, that education in general, of which qualification is an attestation, helps to increase the earning of the possessor.

Another factor, which can have an impact on earning differentials, is motivation. This motivation can be infused on labour by the management. This can be by having goals set by the management and making the workers try to attain such goals and objectives. By getting the workers motivated they can be made to produce more. Such motivation can be inculcated into them through incentives by management to labour attaining the objectives set for them. Such incentives could be rewarding hardworking staff through promotion, increased earnings or further training in order to qualify for higher status in the establishment.

Another factor which can and does influence returns on labour is the power of trade unions and pressure groups. When trade unions are very powerful, they can increase the earnings of their members above what they could earn, given the concept of the marginal productivity theory or even with the qualifications of the members. This can happen especially when the employers are not themselves organised in the form of Employers' Association.

There is no doubt that experience from many countries has shown that workers in unionised establishments have tended to earn more than those working in establishments where trade unions do not exist or are weak. Generally, trade unions have succeeded in many countries in raising wages or earnings above what they would have been, had they not exercised such pressures. The powers of trade unions however are not without limit in this regard. If unions push their demand for more wages too far, employers may cut down on the number of employees and so reduce labour costs. Employers could also try to reduce labour cost by installing more mechanised means of production and this will further cause unemployment. In Nigeria, the influence of organised labour is not as powerful as in more developed countries nor is the leadership as able as in the more advanced countries. Secondly, there is great control of trade unions. Most of them were established under a decree enacted by the last military regime. It is true that in the last year or two under the new democratic constitution, they were freer than they were during the previous thirteen years of military administration, when strike was even banned. Thirdly, where as in Nigeria, the rate of unemployment is very high, the powers of trade unions are more limited. People would rather prefer to be paid less than to be unemployed. At any rate, unions in this country do not yet generally exercise a closed door system in their organizations, whereby only unionised workers can be employed.

Another factor which affects earning, is the relative scarcity of particular kind of labour. This has nothing to do with marginal productivity of that labour. If a particular labour group says teachers are scare as compared with lawyers in relation to their demand, it follows that teachers will earn more relative to lawyers. This has nothing to do directly with productivity, qualification or education in general. It is simply a question of the law of supply and demand. Of course, it can legitimately be argued that a situation of this nature is a function of education and that price mechanism is simply operating here. Put another way, it can be argued that the educational institutions are producing adequate number of teachers to meet their demand and teachers' earnings have to be higher than those of lawyers. In order to correct this relative scarcity of teachers and to reduce their earnings, from whatever angle it is viewed, it is still reasonable to argue that this in itself is a function of education.

Finally, government policy on wages and salaries has an impact on returns from labour. The government could as a policy fix a maximum wage for various categories of employment. With such minimum wages, other wage/salary structures follow, each trying to maintain its earning relativity. The point here is that such wage/salary policies may not be arrived at as a result of productivity of labour. When the Nigerian Federal Government early in 1980 fixed a minimum wage of N100 per month, other salary structures both in the public and private sectors of the economy had to be readjusted by employers. Also, later in 1981 and as a result of industrial actions resorted to by the Nigerian Trade Union Congress in the course of their demand for minimum wage of N300 a month, the Federal and State Governments were further obliged to raise the minimum wage from N100 to N125 a month.

3.4 The Concept of Income Distribution

Distribution of income has been emphasised as one of the basic concepts of economics. This is another way in which returns of various factors of production such as salaries/wages, profits, interest rates and rents are shared amongst the population. Some economists argue that the more equitably incomes are distributed in a given society, the more stable that economy would be. In other words, this school of economic thought is of the view that one of the causes of instability in any economy is an uneven share of national income. Another school of thought, however, regards the question of income distribution as not an economic one, but rather as political and therefore normative. This school further contends that to try to equalise income distribution does not promote economic efficiency and may indeed inhibit it and that it does not provide sufficient incentive for hard work, risk and entrepreneurship.

It is not right to regard returns on factors of production and how they are divided as non-economic issues for they indeed are. Promoting human capital is more likely to enhance greater welfare. Gross inequalities in wealth could be a source of social instability which could disrupt the smooth working of the economy. However, the idea of pushing it too far cannot be supported as this could thwart efficiency in hardwork and desire to take risk.

Having established the reasons why distribution of income can justifiably be encouraged, how education can help in promoting this and thereby the general welfare will be put in further perspective. Education is one of the surest instruments of promoting the welfare of the citizens. It helps the individual to realise his full self and so climb the social ladder, sometimes from the bottom. This is all the more possible if education is free or provided or subsidsed by the government. It thus enables an individual who otherwise could not have afforded it to realise his potentiality to the maximum. This will increase his earning potential as well as his social standing. This is why education is sometimes regarded as a worthwhile investment and hence are justification for government expenditure on it at all levels.

In order to assess the correct impact of education, it is necessary to categorise expenditure on it as to whether these are consumption or investment expenditure. Generally, education at primary and post primary school levels can be regarded as consumption of good or service. Therefore, it could be argued that expenditure on it is a consumption one. However such education enables the individual who benefit from it to be literate, but does not endow him with any skill and expertise at that level. In that circumstance, it might not enable him to climb the social ladder. On the contrary, it might even make him to be disillusioned, especially if he is not sufficiently qualified to obtain a worthwhile employment. While this may be true, it must not be forgotten that by such general education, the individual has got the basic intellectual exposure and equipment which might enable him improve further. His position in life is not static and depending on his ability and ambition, he may progress higher socially and economically. Many people with such limited educational backgrounds have scaled higher in this and other countries.

However, it is the skill-based and higher education that may markedly help to increase the earnings of an individual and uplift him socially. Expenditure on education of this type can be said to be an investment. The cost of such education could be expensive; hence, it is subsidised by the state or in some cases offered free. However, the private sector of the economy should contribute to the funding of education at this level since it benefits the output from it.

Judging from the Nigerian experience, education is regarded in general as an important factor for analysing the pattern of income distribution. Those Nigerians who made the first contact with European Christian converts or as traders, were the first to acquire formal western education and this has the tendency of perpetuating itself. This in part explains the disparity in the level of education attainment across the states of Nigeria. Most of the highly placed members of the society are those who had this advantage or those whose forefathers had it. Generally, the higher the level of education, the more likely the disparity in income and social status between those who had acquired it and those who had not. It is in realisation of these factors that governments in Nigeria within the last few years have accepted education as a serious investment of helping to promote the welfare of the citizens. Hence, highly subsidised and sometimes free educational system is regarded as one of the cardinal principles of the Nigerian social order. It is contained in the Nigerian Constitution of 1979.

3.5 The Issue of Cost-Benefit of Education

It is widely agreed that in the discussion of the welfare of economists, the cost-benefit analysis of any given expenditure must be assessed. Cost-benefit as defined *by Prest and survey* "is a practical way of assessing the desirability of projects, where it is important to take a long view (in the sense of looking at repercussions in the further, as well as the nearer future) and a wide view (in the sense of allowing for side effects of many kinds on many persons, industries, regions etc) i.e. it implies the enumeration and evaluation of all relevant costs and benefits. This simply implies the ratio of cost to the benefits. If the output ratio is higher than the cost, then the effect is said to be positive, if less, it is negative.

The important elements in cost-benefit analysis can further enhance the understanding of this concept. These are the desirability of the expenditure, the cost, the output (benefit) and the side effects. These issues, though different, are inter-related particularly with respect to expenditure on education. One of the issues of cost-benefit analysis is the desirability of the investment in education.

Investment in education is generally considered as desirable, because of the crucial role that education plays, not only in helping to develop an individual who has acquired it, but also the impact of education on the society at large. Education helps the individual who has acquired it to a fuller self-realisation by enabling him to develop his potentials. This enhances his social status than would have been the case had he been an illiterate. The higher the level of education acquired, the greater is this advantage to an individual possessor. Besides, it helps him to improve

his income the more if the education acquired is a functional one. From the point of view of the society, investment in education is also considered desirable, because its wider positive effect on the economy by helping it, diffuses knowledge and to foster more economic development.

The other element to be considered in cost-benefit analysis is cost. At this point however, it is important to note that cost includes all expenditure in education such as salaries of teachers and those connected with educational administration at all levels. It also includes expenditure on education buildings as well as those on teaching aids such as equipment, books etc. Similarly, costs in economic terms include opportunity costs, i.e. costs in the alternative investments and expenditure. For instance, funds voted for education could, in the alternative be spent on industrial development, infrastructural facilities such as roads, bridges (etc.) or in any other sectors of the economy.

SELF-ASSESSMENT EXERCISE

i. What is the relevance of income distribution to school finance?

4.0 CONCLUSION

It is necessary to mention that expenditure on education has been escalating in this country, as in most other countries. While this is so, it must however, be pointed out that expenditure on other sectors of the economy, such as administration, defence (etc) has also been rising. So, this rise in cost is not peculiar to education alone. It is equally true that control of public expenditure on education is weak, especially as it is largely public sector expenditure. Here again, this is not peculiar to expenditure on education alone.

Generally, control in public expenditure is weak and there is therefore the need for greater control of it. Output in relation to cost is the end product of the educational system namely, the primary school, secondary school and tertiary educational institution graduates. We must also include the side effects, because investment in education is with social and productivity expenditure. For instance, if a girl attended school, what she learnt in form of hygiene, cleanliness, health and child care may be passed on to the community or parents who could gain from her knowledge. In other words, we should not confine our discussion of the output to the direct beneficiaries.

5.0 SUMMARY

We see that education has some influence in determining earning from human capital, and hence, in increasing the welfare of workers in general. But other factors such as trade unions, pressure groups, relative scarcity of labour and government's income policy tend to modify such influences. It is also important to note that cost-benefits analysis of any given expenditure in education must be assessed from time to check waste or under spending. More so, it should be carefully noted that if the output ratio is higher than the cost, the effect is said to be positive and if less, it is negative.

6.0 TUTOR-MARKED ASSIGNMENT

i. Discuss with relevant examples the factors affecting earning differentials.

7.0 REFERENCES/FURTHER READING

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UNIT 4 COST EFFECTIVENESS, EFFICIENCY AND PRODUCTIVITY

CONTENTS

1.0 INTRODUCTION

This Unit is designed to expose the learners to the topic "Cost-Effectiveness, Efficiency and Productivity". The major areas of concern here include the Concept of Cost-Effectiveness in education, cost-benefits Analysis, the issue of Efficiency and Productivity. The objectives of the unit as stated below have specifically provided what you will learn in this Unit.

2.0 OBJECTIVES

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

- explain the concept of Cost-Effectiveness in education
- explain the issue of efficiency in education
- discuss the issue of productivity in education
- explain the issue of cost-benefit in Education

3.0 MAIN CONTENT

3.1 The Concept of Cost-Effectiveness in Education

Effectiveness deals with the achievement of the objectives of an institution bearing in mind the institutional definition and dynamic nature of those objectives. Measurement of effectiveness will also take into account the attainment of the goals of the society and the community which the institution serves.

According to Adegboye (2004), Cost effectiveness analysis therefore investigates the relationship between institutional expenditure and the accomplishment objectives of that institution. It may however, be difficult to compare the cost of an educational programme, especially when the concept of opportunity cost is involved. Also, some educational objectives can be unquantifiable and the measurement of the achievement and such objectives may involve value judgments.

3.2 The Issue of Efficiency

The word 'efficiency' is an evaluative term. When it is used, a favourable disposition towards describable tasks, aims and functions is expressed. In literature, there are two classifications of efficiency: the mechanical model and the economic model. The concept of mechanical efficiency arises mainly from considerations in physics and mechanics. Efficiency in this context is given by ratio of energy input to output. Efficiency in education refers to the capacity of the system to turn out graduates with minimal wastage. It has been observed that the concept of efficiency can be used in several contexts in education. The different meanings with which it can be used in education conclude the following:

1. efficiency of the total expenditure of education as an alternative to other welfare or non-welfare activities.
2. efficiency of the allocation of a given national budget on education over its different parts such as primary, secondary and higher education.
3. effiiciency of expenditure within a section or levels of education.
4. efficiency of expenditure within a level, measured in terms of the actual output, that is, trained people produced.

3.4 The Issue of Productivity

This according to Olagboye (2004) refers to the relationship between immediate costs and cummulative benefits. The term production refers to the process of transformation of one kind of goods or service to another. When the transformation of input into output is good and efficient, the system is described as being productive. Education can be viewed as a productive activity combining various inputs of capital and labour to transform one set of outputs into another (say primary school leavers into secondary school graduates).

SELF-ASSESSMENT EXERCISE

i. What do you understand by the term "Cost Effectiveness and productivity in education?

4.0 CONCLUSION

The issues of Cost-Effectiveness in education, efficiency and productivity are major tools that can be considered when dealining with school finance matters. Therefore, that proper handling will lead to optima realisation of educational goals.

5.0 SUMMARY

The issues of Cost-Effectiveness in education, efficiency and productivity allow economists and educational planners the opportunity to compare with other alternative investments. This is because it provides different alternative methods of assessing the investment in education before a final decision is taken by the stakeholders of education. Also, education is said to be productive when various inputs of capital and labour are used to transform one set of outputs into another.

6.0 TUTOR-MARKED ASSIGNMENT

i. Discuss extensively on the issues of efficiency and productivity in relation to school finance.

7.0 REFERENCES/FURTHRE READING

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UNIT 5 MEASURES FOR REDUCING UNIT COSTS OF EDUCATION AND OTHER USES OF COST ANALYSIS IN EDUCATION

CONTENTS

1.0 INTRODUCTION

This Unit discusses the concept of cost reduction in education, uses of cost analysis in education, types of data needed for cost analysis, recurrent and capital costs analysis. The objectives of the Unit as stated below have specifically provided what you will be exposed to, in this unit.

2.0 OBJECTIVES

At the end of the Unit, you should be able to:

- explain the concept of cost-reduction in education
- discuss the uses of cost analysis in education
- explain the types of data needed for cost analysis
- enumerate recurrent and capital costs analysis
- explain cost recovery in education

3.0 MAIN CONTENT

3.1 The Concept of Cost Reduction in Education

Before any measure for reducing unit cost is adopted, the school environment or the setting should be considered. The following strategies according to Adeoye (2000) and Ojo (1985) have been tried in different education setting to reduce cost.

1. Use of physical, material and human resources fully. This could mean increased class size, teacher's load, student/teacher ratio and reduction of wastage in the utilisation of school resources.
2. Adoption of distance learning and forms of non-formal educational techniques.
3. Employment of low-cost teachers – E.g. fresh graduates from colleges of education and universities who will earn lower than more experienced and long-serving teachers.
4. Improvising educational materials instead of using commercial ones, as commercial ones may have to be imported with large sum of money, whereas, improvised ones can serve similar purposes.
5. Bulk purchasing of education inputs. This reduces cost as discounts are given rather than going to the market to buy in pieces at retail prices.
6. Embarking on self-help projects. For instance, students in technical colleges can be used to construct building and design equipment. Students can also be used to clear school compound (instead of employing more support staff).
7. Capital cost (a component of unit cost) can be reduced by constructing simple but functional buildings, merging institutions etc.

3.2 Other Uses of Cost Analysis in Education

There are three major uses of cost analysis. These include:

1. **To assist in planning:** Cost analysis and estimations provide the required data for rational planning. The estimation of diferent costs for programme alternatives assist planners to choose the most efficient way of achieving objectives. It is possible to cost an educational project, a national education plan or out of school distance learning strategy.
2. **To help control activities:** Institutions can control their activities with the use of cost analysis and accounting system. Cost comparison between school, colleges and universities with identical programmes can provide educational administrators the much needed guidance for efficient operations.
3. **To justify request for funds:** Cost analysis provides information on the amount of funds needed by educational administrators. It specifies the resource needs in a given year in a manner desired by those responsible for educational financing.

For a specific educational programme, cost analysis informs the school

authorities about:

a. the total cost to be incurred;
b. economic feasibility of the programme
c. the short and long run costs to be incurred, and
d. how the cost burden would be shared.

3.3 Types of Data Needed for Cost Analysis

Tsang (1988) identified the following data needs for cost analysis:

a. **Data on educational costs:** These include institutional costs and household costs. The former can be categorised into direct and indirect costs. These should be obtained for different levels of government, and in current and constant prices
b. **Data on quantities of education:** These cover data on educational inputs and outputs like enrolments, graduands, repeaters, drop-outs, teaching and non-teaching staff (showing their age, experience and qualifications) and physical inputs.
c. **Data on educational prices:** They are data on prices of the resources used in education e.g. salary and allowances for staff, prices of material resources etc. The information is useful in calculation of price indices and estimation of costs.
d. **Data on educational norms:** These cover data on standard practices in educational institutions like pupil/teacher ratio, average class size and so on. They are important in the calculation of recurrent and capital costs of education
e. **Socio-economic data:** These refer to data on national income and its growth rate, public expenditure, cost of living price indices, saving rate, etc.

3.4 Recurrent And Capital Costs Analysis

Recurrent cost: Current or recurrent costs are those costs incurred on inputs whose services do not exceed one fiscal year. Included in this category are costs on personnel services (e.g. academic and non-academic staff) and other consumable items like stationery that have to be purchased every financial year. Since such costs are borne yearly, they are also referred to as recurrent or operating costs. Where such costs have been expressed in monetary terms, they are referred to as current expenditure.

Items under recurrent cost or expenditure include the follwoing:

- personnel emolument estimates i.e. salaries and allowance of staff

- rent allowance, motor basic allowance, service teacher's alowance, and overtime allowance for non-teaching staff.
- local transport and travelling allowance.
- office and general expenses covering such items as telephone bills, postage, newspaper etc.
- vehicle maintenance and running cost.
- first aid materials, art materials game and sport, maintenance of school buildings, library expenses, and bank charge.

Capital cost: This is the cost of purchasing durable assets whose life span extends beyond one fiscal year. The costs of physical facilities like buildings, equipment e.g. typewriter, vehicles etc, are examples of capital cost (or expenditure when they have been expressed in monetary terms). The magnitude of the capital cost at the time they are incurred needs not surprise educationists. When such costs are spread over the life span of the assets, they become a modest component of the annual total cost of education.

Items under capital cost include cost of large scale capital projects in the school. They come up rarely and they involve larger amount of money. These include the costs of erection of new buildings, classroom blocks, administrative blocks, library, hostels, staff quarters etc. Because of the large amount involved, it requires adequate planning.

3.5 Cost Recovery In Education

In examining strategies for addition sources of revenue for education on the part of the government, two important areas can be explored.

1. Government should reallocate larger percentage of its existing budget to education. This can be done through reallocation of money from defence and administration which always take the lion share of the national budget
2. The second method is to increase fiscal effort in the area of taxation. This can be done by bringing delinquent taxable adults into the mainstream of taxation such that total volume of revenue from this source can increase. More tax instruments can be earmarked for education use.

Other methods of cost recovery include:

a. **Private funding of education:** What readily comes to mind here is the payment of 'user charges' in form of fees. This is predicated on the fact that education confers private benefits. The advantages in this form of financing are that (i) it reduces the costs of education to government (ii) it cuts down on the demand

for education by individuals, (iii) it increases the funds available to education institutions.

b. **Student Loans:** This option has always been suggested to bring relief to educational finance. But while the option is very attractive in theory, it has limited practical application. The first decree on loan arrangement was Decree 25, 1972. There was another Decree 21 of 1976 on the same subject matter. Efforts made so far in this country had run into difficulties because of the problem of loan recovery from borrowers.

The major advantages of student loans are as follows.

i. It enables students to have access to financial resources for their education.
ii. The fact that students pay for their education will make them to work harder and complete their programme at the appropriate time
iii. t may help to reduce repetition and drought rates.
iv. It increases equality of access such that the poor who would not have enjoyed higher education could benefit from it.
v. It reduces dependence on government funding of education. Government can therefore have more money for the lower level of education.
vi. Equity is more assured as those who benefit from higher education and who would enjoy higher than average income in the future, are made to pay for it rather than being subsidised by the taxpayers.
vii. Demand for higher education might increase.

Private Provision of Education. The argument in favour of are as follows.

i. Right of individuals and groups to have choice in education.
ii. Efficient consideration of educational matters
iii. Relieving government of the heavy burden of funding education.

Community Financing of Education: The form of community support varies. Among these are: contribution of cash and labour for building, injections of money and effort for specific purpose, collective provision of basic recurrent costs e.g. maintenance costs.

Internally Generated Funds: with a growing squeeze in government budget, each educational institution should design means of generating revenue from within. Among these are: endowment, various types of enterprises in the school environment, charges for using school facilities, sales of farm products, contribution by the PTA, alumni

associations, donation from groups, associations and individuals in society.

Payroll Taxes from Employers to Finance Education: The rationale for this is that the employers of labour in the private sector largely consume the product of education. Without directly paying for this, the economy is subsidising them. In order to make them pay something for the provision of education, Decree 7 of 1994 was promulgated. By this, registered companies are made to pay 2% of their profits hypothecated for education. This is expected to be shared by all levels of education in the ratio of 50:40:10 for higher, secondary and primary education respectively. The amount going to tertiary education is expected to be shared in the ratio 2:1: respectively to universities, polytechnics and colleges of education. With the growth in Nigerian economy in the future, substantial amount can be realised from this source.

Payment Vouchers: There was a proposal made by Professor Milton Friedman of the University of Chicago in 1955 on the financing of education in Chicago. He indicated that government involvement in the maintenance of minimum standard and financing of education could only be justified by the presence of external economies of consumption of educational services. According to him, there is no reason why the state should have a monopoly over the provision of education.

For this reason, government can finance its own share of education by giving parents vouchers of a specified amount per pupil per year to be spent on approved educational services from institution of their choice. In a milder fashion of the model parents who choose to send their kids to private schools are entitled to a sum equal to the estimated cost of educating a child in a public school. The sum however must be spent for education in an approved school. Advantages of this proposal are as follows.

i. Parents will have a choice with respect to the type and quality of school attended by their children.
ii. Market forces will improve technological efficiency of education such that inefficient schools will be forced to close, while the good ones will expand to the optimum size.
iii. The salaries of teachers can be determined by market forces rather than be regulated by official fiat.
iv. Parents who choose to send their kids to private schools would not have to pay twice on education since they have already made their contribution to the provision of social services by the tax they pay.

Graduate Tax: Graduates of tertiary education can be made to pay graduate tax as a surcharge for the public education they receive. This may be used in place of the loan arrangement that must be paid.

4.0 CONCLUSION

Cost reduction methods in education are necessary to guide against wastages in education. Cost –Benefits Analysis can be likened to the dividends of efficiency and productivity.

5.0 SUMMARY

The measures for reducing unit costs of education have been discussed alongside the uses of cost analysis in education. Also, the types of data needed for cost analysis, recurrent and capital costs analysis as well as cost recovery methods in education have been extensively explained. These among other areas can be explored by the government, private individuals and educational policy makers and implementers when dealing with the issue of school finance.

6.0 TUTOR-MARKED ASSIGNMENT

Critically analyse the major uses and types of data needed for cost analysis in education.

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UNIT 6 ANALYSING COST BEHAVIOUR

CONTENTS

1.0 INTRODUCTION

This Unit exposes the learners to the knowledge of Cost Behaviour in education. Here, the typical behaviour of cost analysis in relation to the identification and assessment of "cost drivers" are clearly discussed.

2.0 OBJECTIVES

At the end of they Unit, you should be able to:

- explain cost behaviour analysis in education
- discuss the factors determinig cost levels in education

3.0 MAIN CONTENT

3.1 Analysis of Cost Behaviour in Education

It is clearly helpful to understand what things cost, even when comparisons can be made with the costs of similar programmes elsewhere. However, it is more valueable to the manager to understand why things cost what they do, why costs appear to differ among similar programmes, and how costs might be influenced. This requires an anatomical examination of resource utilisation' and an understanding of 'cost behaviour, (Tsang, 1989:58). The analysis of cost behaviour typically involves the identification and assessment of 'cost drivers', i.e. those factors which determine cost levels and changes in these.

3.2 Factors Determining Cost Levels in Education

Firstly, the idea of cost drivers can be used to analyse factors which determine the costs of different patterns of staff deployment to the

curriculum. An example of this is the so-called 'Pooling Committee Formula' in further and higher education (DES, 1987). This states that:

$$SSR = \frac{AGS \times ALH}{ASH}$$

SSR is student staff ratio
AGS is average group size
ALH is average lecturer hours
ASH is average student hours

This formula shows that if an institution wishes to reduce its unit teaching staff costs (in effect, increase it's SSR) it can do this only by adjusting one or more of the other variables in the equation. It must increase group sizes on average, ask or require lecturers to teach more hours or reduce the average number of hours students are in class, or it could follow some combination of these strategies. Alternatively, the formula shows that if there is a wish to reduce group sizes without increasing staffing levels, the opportunity costs of doing this must be an increase in ALH, a decrease in ASH or some combination of these. These principles have been used to explain differences in college unit costs (Audit Commission, 1993), and to inform internal resource allocation models (Burton, 1998; Jones, 1986). They can also be used to show how both colleges and universities have significantly reduced their unit costs over a period of years through a process of 'decremental drift; the steady dilution of the teaching resource through reductions in average student hours, and increases in class sizes and lecturer teaching hours. Similar approaches are used to analyse staff deployment in schools, focusing on average class size, the teacher contact ratio and the pupil-teacher ratio (Davies, 1969).

Secondly, cost analysis can be used to explore a wider range of factors affecting costs than staff deployment patterns alone. Thus, a study of resource provision for pupils with moderate learning difficulties, which found wide cost variations for pupils with broadly similar levels of need (Crowther, Dyson and Millward, 1999) suggested that a number of factors were at work, including:

- different forms of special school and mainstream provision;
- differential use and deployment of learning support assistants;
- different policies about class size;
- differential deployment of special educational needs coordinators (SENCOs) and middle and senior managers in relation to pupil needs;
- costs and deployment of support services such as educational psychologists;
- differences in transport costs.

They concluded that many of the differences identified 'would, on the face of it, appear to be unacceptable' and they recommended that much more work needs to be undertaken in relation to both the costs and effectiveness of different patterns of provision, if efficiency and equity in resource use are to be ensured.

Thirdly, cost analysis can be used to explore the likely consequences of quite fundamental changes in the technology of educational provision (Rumble, 1997). For example, the decision to replace a traditional course for a large number of students with one based on open learning must take account of the very different cost profiles of the two models. The major costs of traditional provision arise from the teacher time required for face-to-face teaching – a cost which varies with student numbers. Open learning seeks to substitute many of these costs by specially designed teaching materials. This is likely to reduce variable costs considerably. However, the costs of staff time spent in developing the materials – a fixed cost – may well be substantial.

Finally, analysis of cost drivers can be used to help inform resourcing decisions. For example, the requirement for LEAs to develop 'transparent' formulae to fund their schools under local management schemes has led to a number of analyses, which have attempted to move away from traditional, incremental costing assumptions and to explore the organisational drivers which actually determine resource needs of schools. For example, Kelly (1992) explored the concept of 'activity-based staffing' through which staffing needs are determined on the basis of 'professional judgment about the amount of teacher time which is necessary to provide a satisfactory educational experience for pupils in each age group. Thus, assumptions about maximum class size and about the amount of non-teaching time necessary to undertake different kinds of duties necessary to support teaching and to manage the school, led to the derivation of staffing requirements which could be translated into financial costs. Such analyses have the potential to make much more explicit the resource requirements for compulsory education. However, they suffer from a limitation which is common to many attempts to model costs on the basis of educational 'needs'. They typically lead to the conclusion that current resourcing levels are inadequate; and, in the absence of any independent evidence on the relationship between additional resources and learning outcomes, it is not easy to use them to justify increased expenditure at the expense of other sectors when public sector budgets are tight (Yarnit, 1994).

SELF- ASSESSMENT EXERCISE

i. Examine the major determinants of cost levels in education

4.0 CONCLUSION

In this Unit, we have learnt about cost behaviour in education and how it is calculated. Its uses are also explained with relevant examples. We can see from the discussion in this Unit that adequate knowledge of cost-behavior and its analytic techniques are necessary when dealing with the issue of education finance.

Similarly, the decision to increase the number of students in a programme using traditional methods also needs careful analysis. In this context, staff costs are, in fact, 'semi-variable'. In other words, they increase in steps rather than continuously as student numbers increase. Thus, the additional costs of expansion depend on whether further students can be fitted into existing classes. If so, incremental costs will be very low; if not, they will be considerable as new teaching groups will need to be created.

5.0 SUMMARY

In each of these cases, an understanding of cost drivers provides information which can facilitate the effective planning and management of resource provision. It can offer the opportunity to achieve higher levels of 'cost efficiency', for example by changing curriculum staffing patterns or by utilising economies of scale. What it cannot do on its own, however, is to answer more fundamental questions about the relative value of particular patterns of resource deployment. To achieve this, more comprehensive conceptual frameworks are necessary.

6.0 TUTOR-MARKED ASSIGNMENT

i. Discuss with relevant examples analysis of cost behaviour in education

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