



NATIONAL OPEN UNIVERSITY OF NIGERIA

SCHOOL OF ART AND SOCIAL SCIENCE

COURSE CODE: MAC 414

**COURSE TITLE: SCIENCE AND TECHNOLOGY
REPORTING**



**COURSE
GUIDE**

**MAC 414
SCIENCE AND TECHNOLOGY REPORTING**

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INTRODUCTION

Science and Technology Reporting (MAC 414) is a one-semester, three-credit unit course. It is designed to acquaint students with the knowledge, principles and skills of science and technology reporting.

The course highlights the general concept and philosophy of science and technology reporting, its importance in the contemporary society, the major challenges confronting it, as well as the blueprints to effective science and technology reporting in the society.

This Course Guide is designed to equip you with the necessary information about the content of the course and the needed materials for a proper understanding of the subject matter. There is also provision for tutor-marked assignments and students are advised to handle this with all seriousness.

COURSE AIMS

The main aim of this course is to introduce you to the fundamental principles, techniques and practice of science and technology reporting. It seeks to acquaint you with the requisite skills to report this special genre of journalism in view of the peculiarities and technicalities involved in science and technology and its increasing importance in the contemporary society.

The meaning, nature and importance of science and technology reporting shall be discussed. Barriers and blueprints to effective science and technology reporting in the contemporary society shall be highlighted. Sources of science and technology news, career prospects in the field shall be examined. The legal and ethical perspectives to science and technology reporting as well as the associated hazards shall be discussed; and some selected samples of science and technology writings shall be presented.

COURSE OBJECTIVES

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

- demonstrate the basic skills and principles of science and technology reporting
- explain where to source and how to write science and technology news/reports
- familiarise themselves with the peculiar hazards associated with science and technology reporting and how best to minimise them

- demonstrate knowledge of the pertinent legal and ethical issues involved in science and technology reporting.

WORKING THROUGH THIS COURSE

To benefit from this course, you are expected to read the recommended texts and other materials provided by the National Open University of Nigeria (NOUN).

The Self-Assessment Exercise (SAE) in each unit must be taken seriously. You are expected from time to time to submit assignments for on-ward and periodic assessment. There will be an examination at the end of this course.

COURSE MATERIALS

The major components of the course are:

1. Course Guide
2. Study units
3. Textbooks
4. Assignment File
5. Presentation.

In addition, you must obtain your copy of the materials. They are provided by NOUN. In some cases, you may be required to obtain your copy from the bookshop. In case you have any problem in obtaining your materials, you may contact your tutor.

STUDY UNITS

Module 1 Understanding the Concept of Science and Technology

- | | |
|--------|--|
| Unit 1 | The Meaning and Nature of Science and Technology |
| Unit 2 | The Meaning of Technology and the Relationship with Science |
| Unit 3 | Science and Technology in Societal Development |
| Unit 4 | Obstacles to the Growth of Science and Technology in the Third World |

Module 2 Reporting Science and Technology

- | | |
|--------|--|
| Unit 1 | Meaning and Importance of Science and Technology Reporting |
| Unit 2 | The Science and Technology News |

Unit 3 Barriers/Blueprints to Effective Science and Technology Reporting

Unit 4 Career Prospects in Science and Technology Reporting

Module 3 Gathering Science and Technology News

Unit 1 Sources of Science and Technology News/What to Look up for

Unit 2 Interviewing in Science and Technology Reporting

Unit 3 The Science and Technology News Beat

Unit 4 Writing Science and Technology News and other Reports

Unit 5 Styles in Science and Technology Writing

Module 4 Editing in Science and Technology Reporting

Unit 1 Meaning and Purpose of Editing in Science and Technology Reporting

Unit 2 The News Makers in Science and Technology Reporting

Unit 3 Important Hints in Editing Science and Technology Writings

Unit 4 Using Editing and Proof Reading Symbols in Science and Technology Reporting

Module 5 Contemporary Issues in Science and Technology Reporting

Unit 1 Legal Issues in Science and Technology Reporting

Unit 2 Ethics in Science and Technology Reporting

Unit 2 Hazards in Science and Technology Reporting

Unit 4 Samples of Science and Technology News and Reports

Each unit is accompanied by a number of self-assessment exercises which are drawn from the materials the student has already gone through. The exercises are designed to keep the student abreast of what he/she has studied from the course materials. If properly utilised, the excellent combination of self-assessment exercises with tutor-marked assignments will in no small measure lead to the achievement of the overall objectives of the course.

TEXTBOOKS AND REFERENCES

- Aligwe, H. N. (1999). *Techniques and Mechanics of Feature/Article Writing*. Enugu: J.T.C. Publishers.
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- Bruce and Douglas (1998). *News Writing and Reporting for Today's Media*. Boston: McGraw Hill.
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- Ewelukwa, B.N. (2004). *Introduction to Nigerian Press Law*. Onitsha: Maranatha Press Ltd.
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- Okoro, N. (2004). *Law, Politics and Mass Media in Nigeria*. Nsukka: Prize Publishers Ltd.
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- The Guardian*, (2013). 'UNIBEN Finds Cure For HIV/AIDS'. Tuesday, 8 January 2013.
- Ukwungwu, J.O. *et al.* (1997). *Science and Society; General Studies Approach*. Nsukka: University Trust Publishers.
- Wilkins, E.J. (1976). *An Introduction to Sociology*. Great Britain: Butler and Tanner Ltd.

ASSIGNMENT FILE

In the assignment file, you will get the details of the work you are expected to submit to your tutor for marking. The marks you obtain for these assignments will count towards the final mark you obtain in this course.

ASSESSMENT

There are two aspects to the assessment of the course. First are the tutor-marked assignments and second is the written examination.

In tackling the assignments, you are expected to apply information and knowledge acquired during this course. The assignments must be submitted to your tutor for formal assessment in accordance with the deadlines stated in 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 three-hour examination. This will count for 70 % of your total course mark.

TUTOR-MARKED ASSIGNMENTS

There are 22 tutor-marked assignments (TMAs) in this course. You need to submit all the assignments. The best four (i.e. the highest four of the 15 marks) will be graded. The total marks for the best four (4) assignments will be 30% of your total course mark.

Assignment questions for the units in this course are contained in the Assignment File. You should be able to complete your assignments from the information and materials contained in your textbooks, reading and study units. However, you are advised to use other references to broaden your viewpoint and provide a deeper understanding of the subject.

When you have completed each assignment, send it, together with the TMA form to your tutor. Make sure that each assignment reaches your tutor on or before the deadline given in the assignment file. If, however, you cannot complete your work on time, contact your tutor before the assignment is due to discuss the possibility of an extension.

FINAL EXAMINATION AND GRADING

The final examination of MAC 414 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 type of self-testing, practice exercises and tutor-marked problems you have come across. All areas of the course will be assessed.

You are advised to revise the entire course after studying the last unit before you sit for the examination. You will find it useful to review your

tutor-marked assignments and the comments of your tutor on them before the final examination.

PRESENTATION SCHEDULE

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

COURSE MARKING SCHEME

This table shows how the actual course is broken down.

Assessment	Marks
Assignments 1-21	21 assignments, best four marks of fifteen count at 7.5% (on the averages) = 30% of course marks
Final Examination	70% of overall course marks 100% of course marks

COURSE OVERVIEW

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

Unit	Title of work	Week's Activity	Assessment (End of Unit)
	Course Guide		
	Module 1		
1	Meaning and Nature of Science	1	Assignment 1
2	Meaning of Technology and its Relationship with Science	2	Assignment 2
3	Science and Technology in Societal Development	3	Assignment 3
4	Obstacles to the Growth of Science and Technology in the Third World.	4	Assignment 4
	Module 2		
1	Meaning and Importance of Science and Technology Reporting	5	Assignment 5
2	The Science and Technology News	6	Assignment 6
3	Barriers/Blueprints for Effective Science and Technology Reporting	7	Assignment 7
4	Career Prospects in Science and	8	Assignment 8

	Technology Reporting		
	Module 3		
1	Sources of Science and Technology/What to Look Up For	9	
2	Interviewing in Science and Technology Reporting	10	Assignment 10
3	The Science and Technology News Beat	11	Assignment 11
4	Writing Science and Technology News and Other Reports	12	Assignment 12
5	Styles in Science and Technology Writing	13	Assignment 13
	Module 4		Assignment 14
1	Meaning and Purpose of Editing in Science and Technology Reporting	14	
2	The News Makers in Science and Technology Reporting	15	Assignment 15
3	Important Hints in Editing Science and Technology Writings	16	Assignment 16
4	Editing Symbols for Science and Technology Writings	17	Assignment 17
	Module 5		
1	Legal Issues in Science and Technology Reporting	18	Assignment 18
2	Ethics in Science and Technology Reporting	19	Assignment 19
3	Hazards in Science and Technology Reporting	20	Assignment 20
4	Samples of Science and Technology News and Reports	21	Assignment 21
	Revision		
	Examination		

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 instead of listening to a lecturer. In the same way that a lecturer might set you some readings to do, the study units tell you when to read your set books or 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 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 units, you must go back and check whether or not 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 readings from other sources. This will usually be either from your set books or from other materials.

Reading Section

Remember that your tutor's job is to help you. So, when you need help, do not 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. Whatever method you chose to use, you should fashion out your own convenient schedule 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 course work. 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 almost always need both the study unit you are working on and one of your set books 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 unit you will be instructed to read sections from your set books or other articles. Use the unit to guide your reading.

7. Review the objectives for each study unit to confirm that you have achieved them. If you feel unsure about any of the objectives, review the study material or consult your tutor.
8. 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 pace your study so that you keep yourself on schedule.
9. 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 on what is written on the assignment. Consult your tutor as soon as possible if you have any questions or problems.
10. After completing the 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 this Course Guide).

TUTOR AND TUTORIALS

There are 12 hours of tutorials in support of this course. You will be notified of the dates, times and location of these tutorials, together with the name and phone number of your tutor, as soon as you are allocated tutorial group.

Your tutor will mark and comment on your assignments, keep a close watch on your progress and on any 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-tests or exercises

- you have a question or problem with an assignment, with your tutor's comments on an assignment or with the grading of an assignment.

You should do your best to attend the tutorials. This is the only chance to have face to face contact with tutor and to ask questions which are answered instantly. You can raise any problem encountered 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

MAC 414 is designed to acquaint you with the basic skills and principles of science and technology reporting and other pertinent issues in covering this special genre- journalism. Upon completion of the course, you would have known the following:

- The meaning of science and technology and the relationship between the two
- The meaning and importance of science and technology reporting in the society
- How to define science and technology news
- Barriers/blueprints to effective science and technology reporting
- Career prospects in science and technology reporting
- Sources of science and technology news/what to watch out for
- The meaning of science and technology news beat
- How to write good science and technology news and other reports
- How to edit science and technology writings
- Legal issues in science and technology reporting
- Ethics in science and technology reporting
- Common hazards associated with science and technology reporting and how to minimise them.



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COURSE**

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MODULE 1 UNDERSTANDING THE CONCEPT OF SCIENCE AND TECHNOLOGY

Unit 1	The Meaning and Nature of Science and Technology
Unit 2	The Meaning of Technology and the Relationship with Science
Unit 3	Science and Technology in Societal Development
Unit 4	Obstacles to the Growth of Science and Technology in the Third World

UNIT 1 THE MEANING AND NATURE OF SCIENCE

CONTENTS

1.0	Introduction
2.0	Objectives
3.0	Main Content
3.1	An Overview
3.2	The Meaning of Science
3.3	The Nature of Science
4.0	Conclusion
5.0	Summary
6.0	Tutor-Marked Assignment
7.0	References/Further Reading

1.0 INTRODUCTION

Science has become so important in our everyday life that there is hardly any aspect of human life that is not affected by it in one way or the other. This unit examines the meaning and nature of science.

2.0 OBJECTIVES

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

- define science
- explain the nature of science.

3.0 MAIN CONTENT

3.1 AN OVERVIEW

Science and technology have always played an important part in man's existence from time immemorial. Even though our ancestors may not have called their knowledge and skill by these names, when they made such decisions as choosing the best seasons to plant their yams, cassava and potatoes, they took into account the seasons, the weather, the amount of water available, the fertility of the soil, and other factors. This was simple science. When they dug the soil with a pointed stick or built paddy fields, this was technology.

Today, science and technology have become more complex as we learn more about our universe and develop ways of changing it. Science and technology today range from theoretical subjects such as physics to more practical subjects like medicine, agriculture and engineering.

There is a host of other fields such as physics, chemistry, zoology, marine biology, geology, ecology, medicine, psychology, mechanical and electrical engineering. The list is enormous and growing every day. Science and technology is too important for journalists to ignore.

3.1 The Meaning of Science

When we talk of the word "[science](#)" many things come to mind: a fat textbook, white lab coats and microscopes, an astronomer peering through a telescope, someone carrying out experiments in a laboratory, a naturalist in the rain forest, a long difficult mathematical equation scribbled on a chalkboard or the launch of the space shuttle, etc. Although all these images reflect some aspect of science, none of them provides a full picture of science because science has so many facets, and a complete view of science is more than any particular instance.

Etymologically, the word "Science" is derived from the Latin word "Scientia" which means "knowledge". It is an intellectual activity carried on by humans that is designed to discover information about the natural world in which humans live and to discover the ways in which this information can be organised into meaningful patterns. A primary aim of science is to collect facts (data). An ultimate purpose of science is to discern the order that exists between and amongst the various facts.

Science is the concerted human effort to understand, or to understand better, the history of the natural world and how the natural world works, with observable physical evidence as the basis of that understanding. It is done through observation of natural phenomena, and/or through

experimentation that tries to simulate natural processes under controlled conditions.

Science involves more than the gaining of knowledge. It is the systematic and organised inquiry into the natural world and its phenomena. It has to do with gaining a deeper and often useful understanding of the world.

Dauda (2008) cited in Nwabueze (2009) describes it as “the organised study of man and the universe by means of observation, measurement and experiment”. It is any systematic field of study which seeks for knowledge through experimentation, observation and deduction to produce a reliable explanation of phenomena in the world around us. In other words, science is concerned with seeking to know about the existing social and natural facts around us. Simply put, it is an inquiry into the unknown through the known.

The Academic Press Dictionary of Science and Technology defines science as:

1. The systematic observation of natural events and conditions in order to discover facts about them and to formulate laws and principles based on these facts.
2. The organised body of knowledge that is derived from such observations and that can be verified or tested by further investigation.
3. Any specific branch of this general body of knowledge, such as biology, physics, geology, or astronomy.

Awaeze (2011:103) quoting the Chambers 21st Century Dictionary (P.1257) further defines science as:

- The systematic observation and classification of natural Phenomena in order to learn about them and bring them under general principles and laws;
- A department or branch of knowledge or study developed through observation, classification, etc, e.g. chemistry, physics, biology, etc.
- any area of knowledge obtained using, or arranged according to formal principles e.g. political science, psychology, etc.
- Acquired skill or technique as opposed to natural ability.

To Wilkins (1976:11), science has to do with knowledge and all those things which we are certain, because they have been proved to be true

and constitute our stock of knowledge. Nwali (2011:103), however, argues that science is primarily concerned with the concepts and principles of:

- **Evaluation:** To form an idea, or pass judgment about the worth of something
- **Prediction:** To foresee, forestall or forecast
- **Experiment:** A trial carried out in order to test a theory, idea or suggestion or to discover something hitherto unknown
- **Explanation:** To make something clear or easy to understand
- **Measurement:** To determine size or volume, especially, in comparison with something of known size.
- **Classification:** The management and division of things and people into classes, groups or categories
- **Definition:** A statement of the meaning of a word or phrase or something
- **Description:** To say what someone or something is like
- **Observation:** To notice, or become conscious of something, to watch something carefully, to pay close attention to, examine or note.

A scientific process begins with observation of the objects or events in the physical world. This is to say that science cannot deal with things that cannot be observed. It is more concerned with a proper observation of phenomena that leads to generalisation of situations. However, generalisation can only be made with confidence only and only if such observation is made with enough or absolute confidence. This is followed by testing the generalisations through predictions to determine their accuracy and reliability. If the accuracy of the predictions subsists and remains widely accepted, it becomes a theory, and if the theory stands the test of time, it becomes a law. In science however, laws are not absolute because even the most cherished of it all are abandoned when new facts that contradict them emerge.

3.2 The Nature of Science

Science has a peculiar nature when compared with other methods of knowing or arriving at the truth. This is because science allows for testing the validity of its claims. Wikins (1976) observes that any study can be tested for scientific validity if:

- Its knowledge is reliable
- Its organisation and methods are valid, and
- The extent to which its knowledge is capable of being generalised.

Scientific nature deals with the qualities it can be identified and differentiated from other fields of study. The unique nature of science exposes the valued contents and ethics of the disciplines, thus, for an inquiry to have a scientific proof the basic tools which are imbedded in its nature must be present. These are scientific features that must form the structural foundation of any scientific endeavour. They include:

i. Science is Theoretical

A theory has to do with statements or propositions of people on a given phenomenon, which are subject to scientific verification and proof. A theory is an inevitable tool of any scientific enterprise. It is based on logic and systematic reasoning. This means that elements of a scientific theory are logically and systematically connected and form a solid foundation for a good scientific research. It is on the basis of an existing proposition (theories) that other people begin to discover the reliability of their own research findings.

ii. Science is Empirical

The term empirical or empiricism is derived from the Greek word *empeiria* which means experience or experiment. The belief is that all knowledge is ultimately derived from a sense of experience. The value of what you project as factual is determined by your experience concerning the phenomenon.

Empiricism has to do with established facts on an existing subject-matter. It deals with the real position of things, which are glaring, unhidden and practicable. It has to do with data, which are products of an inquiry into knowledge about phenomenon. Science by nature is empirical. This explains that knowledge is all about a particular subject-matter based on the existing data and as a result of observation rather than on mere speculations.

iii. Science is Verifiable

One of the reasons why people inquire into knowledge is to either prove or disprove a statement or claimed fact and establishes its validity. This means that in the scientific world, no statement, proposition or even theory is factual until such is confirmed. For instance, theories of great scientists like Isaac Newton and George Simon have undergone series of verifications and proof by other scientists.

iv. Science is Cumulative

This means that no findings in science are final and static. It means that existing theories in the field of science can be rejected or accepted by people. Their rejection is based on lack of proof of their validity, and their acceptance takes the reverse position.

v. Science is Predictive

Science is predictive in nature. Prediction refers to the ability to forecast or to tell what would happen in the future. This is possible in science through research and experimentations. A study conducted by a researcher and his/her experiences too could lead to valued propositions about the future.

4.0 CONCLUSION

Science is very important in every aspect of human life. It is the organised and systematic study which seeks for knowledge through the various methods of experimentation, observation and deduction to produce reliable explanations of phenomenon in the world around us. Science is empirical, theoretical, verifiable, predictive, and cumulative among other features or nature.

5.0 SUMMARY

This unit has explained the meaning of science. It has also identified and discussed the unique nature of any scientific inquiry.

6.0 TUTOR-MARKED ASSIGNMENT

- i. What do you understand by science?
- ii. Explain the nature of scientific inquiry.

7.0 REFERENCES/FURTHER READING

Awaeze, C.C. (2011). 'Science and Technology Reporting'. In: Nworgu (Ed) *Understanding Mass Communication Concepts and Applications*. Owerri: Ultimate Books.

Nwabueze, C. (2009). *Reporting: Principles, Approaches, Special Beats*. Owerri: Top Shelve Publishers.

Nweke, J.O. (2006). *Knowledge, Science and Technology in Society*. Enugu: New Generation Books.

Oguniyi, (1986). *Teaching Science in Africa*. Ibadan: Salem Media (Nig.) Ltd.

Wilkins, E. J. (1976). *An Introduction to Sociology*. Great Britain: Butler and Tanner Ltd.

UNIT 2 MEANING OF TECHNOLOGY AND ITS RELATIONSHIP WITH SCIENCE

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- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 The Meaning of Technology
 - 3.2 Relationship between Science and Technology
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

This unit examines the meaning of technology. This is important because opinions of people differ on the concept. The unit also discusses the relationship that exists between science and technology. The purpose is to enable us see reasons why the two concepts are usually identified together in many literature and public discussions including science and technology as a course in mass communication.

2.0 OBJECTIVES

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

- concept of technology
- relationship between science and technology.

3.0 MAIN CONTENT

3.1 The Meaning of Technology

The word “technology” was coined from the two Greek words “technie” which means "art”, “craft” or “skill” and “logia” which means “study of”. Technology thus refers to the ways of doing or making things. It refers to the making, modification, usage, and knowledge of [tools](#), [machines](#), techniques, [crafts](#), [systems](#), methods of organisation, in order to solve a problem, improve a pre-existing solution to a problem, achieve a goal or perform a specific function.

Awaeze (2011) defines technology as:

- The practical use of scientific knowledge in an industry and everyday life
- group, a body or knowledge e.g. engineering, medicine, etc
- The technical skills and achievements of a particular time in history of civilisation or a group of people (*Chambers Dictionary*, P. 1450).

The word "technology" can also be used to refer to a collection of techniques. In this context, it is the current state of human knowledge of how to combine resources to produce desired products, to solve problems, fulfill needs, or satisfy wants. It includes technical methods, skills, processes, techniques, tools and raw materials. When combined with another term, such as "medical technology" or "space technology", it refers to the state of the respective field's knowledge and tools. "[State-of-the-art](#) technology" refers to the [high technology](#) available to humanity in any field.

The use of technology by man began with the conversion of natural resources into simple tools. The [pre-historical](#) discovery of [the ability to control fire](#), increase the available sources of food and the invention of the [wheel](#) helped humans in travelling in and controlling their environment. Recent technological developments, including the [printing press](#), the [telephone](#), and the [Internet](#), have lessened physical barriers to [communication](#) and allowed humans to interact freely on a global scale. However, not all technology has been used for peaceful purposes; the development of [weapons](#) of ever-increasing destructive power has progressed throughout history.

Technology has affected [society](#) and its surroundings in a number of ways. In many societies, technology has helped develop more advanced [economies](#) and enhanced human comfort in various forms. However, many technological innovations have also produced unwanted by-products, known as [pollution](#), and deplete natural resources to the detriment of the [Earth](#) and its [environment](#).

3.2 Relationship between Science and Technology

Technology is closely associated with science. The two concepts are related and they can be viewed as husband and wife who are naturally joined together as one flesh for the purpose of procreation and other functions (Nweke, 2006). As we human beings are the products of different marriage, so also artifacts are products of science and technology. Science produces ideas about the world around us while

technology brings those ideas into fruition through proper utilisation and application.

Technology centres on the process, strategies and methods that are useful in accomplishing human activities and ideas that are scientifically positioned. Broadly speaking, technology is an applied science. It is the use of scientific knowledge to develop and produce goods and services that are useful to man in the society. According to Ukwungwu, J.O. *et al.* (1997), the level of a nation's technology depends on the extent to which current scientific knowledge is put to practical use. This means that the degree to which a society or nation utilises her current scientific ideas will determine her level of advancement and development in science and technology.

Science cannot do without technology and technology cannot do without science. The two are interrelated and interconnected. They are to be coordinated by man in order to experience a functioning society. For instance, countries like Japan, Spain, Britain, United States of America, etc, may be classified as developed countries of the world today because of their advancement in science and technology. Their level of existence and operative mechanisms in science and technology becomes indices of measurements by others. It has been responsible for the stratification of societies or nations into the first, second and Third World nations. The level of a nation's scientific and technological development determines its placement.

We can therefore agree that that technology speaks of the realism of science. Technology is a machinery and equipment used as a result of scientific knowledge. It is knowledge about industrial methods. It is the practical instruments of life. The systematic application of scientific knowledge and the product of such application is technology. Technology therefore, is the practical utilisation of scientific ideas, which are wholly dependent on scientific principles or methodology.

4.0 CONCLUSION

In this unit, you have learnt that science and technology could be seen as two sides of the same coin. While science is concerned with man's understanding of the real world around him, technology has to do with the tools and techniques for carrying out scientific plans.

5.0 SUMMARY

This unit has examined the meaning of technology and the relationship that exists between science and technology. This we believe would enable readers see reasons why the two concepts are usually used

together in most public discussions and in any literature including this one.

6.0 TUTOR-MARKED ASSIGNMENT

- i. What do you understand by the term ‘technology’?
- ii. What is the relationship between science and technology?

7.0 REFERENCES/FURTHER READING

Academic Press. *Dictionary of Science & Technology*.

Awaeze, C.C. (2011). ‘Science and Technology Reporting.’ In: Nworgu (Ed.). *Understanding Mass Communication Concepts and Applications*. Owerri: Ultimate Books

Ukwungwu, J.O. *et al.* (1997). *Science and Society; General Studies Approach*. Nsukka: University Trust Publishers.

UNIT 3 SCIENCE AND TECHNOLOGY IN SOCIETAL DEVELOPMENT

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Contributions of Science and Technology to Societal Development
 - 3.2 Disadvantages of Science and Technology to the Society
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

Science and technology are very beneficial to mankind. However, they are not without their down sides. This unit examines the contributions of science and technology to societal development as well as the areas where they are detrimental to mankind.

2.0 OBJECTIVES

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

- identify and discuss the contributions of science and technology to societal development
- enumerate the disadvantages of sciences and technology in the society.

3.0 MAIN CONTENT

3.1 Contributions of Science and Technology to Societal Development

Science and technology play vital roles in modern society. Science allows us to understand the world we live in and the universe that surrounds us at a deeper level, whereas technology improves our standard of living and opens up new opportunities for exploration and communication that we can take full advantage of.

Science in particular has helped us to improve our understanding of life and how it works. Biology, chemistry and physics are the three major branches of scientific research which allow us to understand the Earth's

creatures, competition for life, the composition of various materials, and the laws of gravity and other forces. Aside from this, there are also the social sciences which enable us to understand human relationships and interactions through studies of the brain and cognitive processes.

Technology, on the other hand, continues to develop at a rapid rate as the world's population expands and connects like never before. Communication and interactions between people all over the world has improved as a result of advancements in technology, with mobile phone and emails allowing people from one hemisphere to communicate with individuals thousands of miles away on the other side of the globe. There have even been technological developments to improve our interactions outside of Earth in our wider solar system. Satellites and rockets have been developed, with the first lunar landing in history happening when Neil Armstrong, Edwin Aldrin and Michael Collins touched down on the surface of the moon.

Science and technological innovations have endowed man with substantial means of surmounting natural adversities and bringing about the most remarkable positive changes for a better and transformed society. These changes cut across every segment of man's life.

In the area of Agriculture, science and technology have assisted in the increase and stability of food production and preservation. Today, agriculture is mechanised. We now use tractors, threshers, winnowing machines, milling machines, cereal destoning machines, etc. for greater quantity and quality in food production. Through the discovery and application of fertilizers and pesticides, hybridisation and processing techniques, etc. food production and preservation have greatly improved.

In the economy, science and technology have been impactful in ensuring the stability of the sector. Today, there is a huge link between the degree of a nation's export and the level of her technology. If the level of exportation is higher than importation, economic growth is bound to occur. This indirectly improves the quality of life of the people.

In the health sector, science and technology have not failed to play leading roles. They have brought a lot of positive changes in the area. To start with, the traditional mode of curing diseases or sickness of different kinds has been upgraded through the use of modern scientific and technological equipment. This has brought to focus the concept of orthodox medicine; Orthodox medicine is a scientifically and technologically advanced medical process that is generally acceptable as a system of cure for various diseases and sicknesses.

In the transport sector, the impact of science and technology is so glaring. Man can now move on well-constructed roads in automobiles. Human beings can now fly like birds in aeroplanes. They can travel to the moon in rockets and even around the world in a matter of hours in satellites. Transportation through scientific and technological products is very significant since it helps the movement of people, goods, and services, from one place to another.

In the communication sector, you and I are living witness to what science and technology are doing. Communication has to do with the exchange of information, ideas, messages, etc, from person(s) to person(s). Come to think of what the world would be like without radio, television, books, newspapers, magazines, journals, novels, the Internet, the GSM, and most recently, the social media like Facebook, Twitter, YouTube and Blackberry Messenger. All these are products of science and technology.

With these gadgets, people can now talk with their fellows in any part of the world, no matter the distance, anytime any day just by pressing a button. In a matter of seconds, information about a given subject matter is networked globally. Communication helps in making people to be informed and educated about their environment.

Educationally, science and technology have assisted in improving the quality of education in many societies. In effect, they are dependable tools that have helped to increase the literacy level of some societies. Basic teaching aids like books, buildings, desks, chairs, benches, chalk, files, registers, computers and their accessories and millions of other equipments play valued roles in modern education. People can be taught even while they are in their houses, i.e. outside the school system. This is possible through media educational link programmes, which are usually done through the media. It can also be done through telephone communications or fax messages. Many institutions of higher learning organise distance-learning programmes. These are made workable because of scientific and technological appliances. Students no longer need to see their teachers face to face to receive lectures, submit assignments, project works, etc. this is closely related to research. Today, libraries are interlinked across the globe. With the internet and other online platform, research works are seriously facilitated, made more affordable, accessible and available.

Science and technology have helped in reducing manual-labour and manual production processes to more technical and machine production. Scientific and technological equipment in our industrial work sector have been responsible for a decrease in the problems associated with manual labour. These scientific and technological machines and other

equipment have made work very easy, and have led to the dramatic production in the cost of manufactured goods through mass production.

3.2 Disadvantages of Science and Technology to the Society

The positive impact of science and technology has been exhaustively discussed in the previous topic. This section shall now expose the weaknesses of science and technology in the society. To start with, the misuse of products made by science and technology has serious devastating effects on human society. In the transport industry, many lives and properties have been lost. The automobile fatalities, plane crashes, ship wreckages, and other kinds of accidents in our transport systems feature very prominently.

In our many industries, a lot is lost every now and then as a result of misapplication of these technologies. The problem of pollution is also linked to technology and industrial wastes, which contaminate the air, water and land. Pollution of human environment results in the spread of various diseases, depletion of the ozone layer and resulting to increase in global warming. There are also other industrial hazards. For instance, industrial machines have amputated many people, while some have lost other parts of their body to industrial accidents of different kinds.

In hospitals and other healing institutions, a lot of lives have been lost due to mismanagement of equipment. Some lives have been lost due to carelessness of medical experts in using medical equipment, in medical surgery, in drug administrations, etc.

Intensification of both intra- and inter- ethnic violence, communal, tribal and international conflicts are also fuelled by the products of science and technology like nuclear and biological weapons, chemical weapons and so forth.

Science and technology have also resulted in the decline of values and morals among youths and elderly people. In effect, we are talking about the rise in violent crimes like armed robbery, arson, rape, murder, and terrorism on local, national and international scales etc. The September 11, 2001, attack on the United States of America by the terrorists group Al-Qaida led by Osama-Bin Laden is a good example. That single attack killed more than 5,000 persons and destroyed property worth more than 8 billion U.S. Dollars. (Adibe and Odoemelam, 2013:2).

4.0 CONCLUSION

Our efforts in this unit have been to showcase the numerous contributions of science and technology to societal development. You

have learnt that science and technology have greatly enhanced every aspect of human life, ranging from agriculture to health, economy, politics, sports, education, information dissemination, media, etc. It also identified some of the negative consequences of science and technology in the society.

5.0 SUMMARY

This unit has identified and explained some of the major contributions of science and technology to societal development. It has also identified and x-rayed some of the negative consequences of science and technology in the society. However, it must be noted that most of these negative consequences result from abuse or misuse of these products of science and technology.

6.0 TUTOR-MARKED ASSIGNMENT

- i. Identify and explain the contributions of science and technology to societal development
- ii. What are the disadvantages of science and technology in the societal?

7.0 REFERENCES/FURTHER READING

- Adibe, K.N. (2013). "Newspaper Coverage of the Bombing of the UN Building in Abuja, Nigeria, by the Radical Islamist Boko Haram Sect and the Image Implication." Unpublished Ph.D seminar, University of Nigeria. Nsukka, Department of Mass Communication.
- Nweke, J.O. (2006). *Knowledge, Science and Technology in Society*. Enugu: New Generation Books.

UNIT 4 OBSTACLES TO THE DEVELOPMENT OF SCIENCE AND TECHNOLOGY IN THE DEVELOPING WORLD

CONTENTS

- 1.0 Introduction
- 2.0 Objective
- 3.0 Main Content
 - 3.1 Obstacles to the Development of Science and Technology in the Developing World
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

The advent of science and technology has brought tremendous advancement in the human society. Whereas the Western World could be said to have continued to benefit profusely from the innovation, this cannot be said of the Developing World where the development of such technologies are faced with myriads of obstacles. This unit examines those obstacles that hamper the development of science in technology in the Developing World.

1.0 OBJECTIVE

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

- identify the obstacles to the development of science and technology in the developing world.

3.0 MAIN CONTENT

3.1 Obstacles to the Development of Science and Technology in the Developing World

The development of science and technology in the developing world today has met serious obstacles. Some are internal while others external. Internal problems are those that have to do with the process of adaptation, advancement and adjustment of prevailing scientific and technological mechanisms, security, lack of capital and problem of debt management, the unstable nature of economic, political, educational and

socio-cultural environments, etc, all militate against the development of science and technology in the developing nations. Others include:

Technology Transfer

The inability of the developing nations to develop their indigenous science and technology and their insatiable appetite for goods manufactured by other nations contribute to their dependence on other nations. Most of these developing countries believe in technology transfer from the rich industrialised nation to their peril. Thus, they depend heavily on the importation of things like vehicles, aeroplanes, ships, trains, computers, cell-phones, machines of various kinds, clothes, beverages, processed food items, electronics and billions of other products of scientific knowledge. All these invariably work against the development of indigenous science and technology.

Brain Drain Syndrome

Generally, people migrate from one area or region to another in search of livelihood and those things they value to keep and preserve. They also migrate in order to acquire the required potentials, skills and other materials that help their survival and sustenance. Brain drain denotes the emigration of professionals, e.g. Teachers, Doctors, Lawyers, Accountants, Pharmacists, Agriculturists and other high-level administrators, highly skilled manpower and others, from one country, region or state to another. These people migrate en-masse on daily basis from their own countries into more advanced countries where their services are needed and valued. Many of them move from the developing nations to the developed nations. These are persons that otherwise would have helped in the development of the less-developed countries, but end up helping the already developed nations to the detriment of theirs.

Many of them leave their home countries to the Western World where they are welcome and their services valued. In essence, these people are perpetually colonized, irrespective of the fact that they seem to get what they could not get for their services in their countries of birth. It is a new form of colonialism.

Corruption and Leadership Problems

Corruption has been a major problem that has eaten very deep into the fabric of the national lives of virtually all developed world nations. It has rendered the foundations of development in many third world countries useless. To many of them, occupying a privileged position means granting one the license to steal with impunity, to loot

shamelessly, to ensure that the treasury is empty before being forced out of office. Embezzlement, misappropriation, mismanagement of State funds and converting public funds to personal use do not mean anything to them. Corruption comes in the form of laziness, bribery, theft, embezzlement and looting of public and private properties.

As a result of corruption in high and low places in most developing nations, development in the areas of science and technology that require a lot of investment becomes a mirage.

Political Instability

Political instability occurs whenever there is injustice, nepotism, greed and avarice in the political system of a country. Political instability retards economic, social and technological growth. Under this condition, anarchy, confusion and socio-political instability threaten the corporate existence of many nations. It is a threat to the solid foundation of a political system and works against scientific and technological development.

Lack of Funds/Poverty

The state of a nation's economy is a major determinant of its growth and development. According to Karl Marx, "a nation's economy is its social infrastructure." It is on it that every other structures rest upon. This means that without it, every other institution structure is bound to fail. In a state of poverty a nation lacks the necessary fund or capital to manage, maintain and sustain an established structure. Research and development is difficult under this state as there is little or no capital to sponsor research.

Many of the developing countries are even chronic debtors to the International Monetary Fund (I.M.F), World Bank and many advanced countries. They enter into loan agreements that are exploitative of the benefiting nation. It is also common knowledge that these borrowed funds find their way into private bank accounts and the purpose for which they were borrowed forgotten. Much of the loans are paid through the exportation of raw materials at very cheap rates. The prices of the raw materials are deliberately kept low by the manipulative tendencies of the imperialists. With these precarious situations, poverty has remained endemic in the third world nations and little or no attention is given to the development of science and technology.

Indigenophobia

The concept of “indigenophobia” was coined to reflect on the rejection of home made goods by citizens of developing nations due to fears over quality and durability. This is evident in the spread of indigenous technological products within and outside the borders of these nations. The fact remains that people of the developing nations make many goods and services available. These goods are valued artifacts which are products of their indigenous technology. Some products like shoes of varied quality, plates and cooking utensils of high quality like cooking and drinking vessels, cooking stoves, gas cookers, spoons, and electronic appliances like stabilizers, batteries and bulbs, textile products, woodworks and thousands of other products are locally manufactured in some nations of the developing world. But the citizens of these nations do not patronize these products effectively.

Most people in these nations prefer foreign- made goods to the ones manufactured domestically which compare favourably in quality if allowed to exist freely in the world market. It is even disheartening that some people from many developing world nations even find it difficult to admit that ‘they are citizens of such nations in international gatherings. Hatred for home- made goods and denying that one comes from his/her place of birth are unpatriotic and counterproductive because one can only help in the development of a place he/she is proud of.

Insecurity/Threat of Wars

The development of science and technology has been hindered by insecurity and threats of war in many developing countries. Many such nations are in constant squabble internationally and nationally. Within nations, there are ethnic or tribal wars. These wars are the products of colonialism. This is because, at the time Africa was partitioned, the contending world powers, mostly European nations, never considered the cultural boundaries and affinities of the people they pulled together as one nation. For instance, Nigeria is made up of more than 260 ethnic groups. At least three of these groups are large enough and have the potentials to stand and exist as different nations i.e. the Igbo, the Hausa, and the Yoruba.

These developing countries were forcefully partitioned. During the partitioning process, these giant ethnic groups were amalgamated as one Nigeria. This marked the beginning of crisis and unstable political and other socio-institutional problems. It marked the beginning of serious ethnic rivalries and endless wars, leaving little or no efforts towards technological development.

Cultural Barriers

Culture is a people's way of life. Some cultures in Africa constitute threat to the development of science and technology. This can occur when the people so concerned fail to be receptive to social changes, restructuring and reformation. In many instances, some scientific innovations have been stopped as a result of cultural barriers. For instance, scientific ideas in some cultures have not been developed because of the people's unwillingness to adjust to changes and conditions associated with such. In some areas, people have rejected the establishment of industries or factories because they do not have value for them.

Many development projects are wrongly sited as a result of cultural barriers and hitches even at this time of globalisation.

Illiteracy

Illiteracy is one of the obstacles to the development of science and technology in many nations of the world. This is because an educated child is the hope of his or her society. The future of his or her society depends on the child. Education is no doubt a good instrument of development at all levels. It helps to equip individuals with information about the prevailing conditions of their environment that are challenge-oriented. In the words of Good (1945), "an educated population is more receptive to new ideas and innovation and are able to deal with technology and modern culture".

Education enables individuals to develop their potentials, skills, capabilities and all norms and behavioural patterns that are of positive value in the society of his residence. This idea tells us about the need to have skilled manpower, which is very essential in determining the level of development in a given social environment. The societies of the developing world tend to lack adequate skilled manpower that will match their scientific and technological expectations, hence their low rating in the socio-economic development ladder.

4.0 CONCLUSION

The growth of science and technology in most of the Third World countries of Africa, Asia and Latin America today has met some serious obstacles. This has resulted in uneven development between these nations and the western world.

5.0 SUMMARY

This unit has identified the obstacles to the development of science and technology in the third world nations to include – technology transfer, brain drain, corruption and leadership problems, poverty, illiteracy, cultural barriers, discouragement, indigenophobia and lack of ready-made-markets.

6.0 TUTOR-MARKED ASSIGNMENT

Identify and explain the obstacles to the development of science and technology in the third world countries.

7.0 REFERENCES/FURTHER READING

Good, C.V. (1945). *Dictionary of Sociology*. New York: McGraw Hill.

Nweke, J.O. (2006). *Knowledge, Science and Technology in Society*. Enugu: New Generation Books.

MODULE 2 REPORTING SCIENCE AND TECHNOLOGY

- | | |
|--------|--|
| Unit 1 | Meaning and Importance of Science and Technology Reporting |
| Unit 2 | The Science and Technology News |

Unit 3	Barriers/Blueprints to Effectives Science and Technology Reporting
Unit 4	Career Prospects in Science and Technology Reporting

UNIT 1 MEANING AND IMPORTANCE OF SCIENCE AND TECHNOLOGY

CONTENTS

1.0	Introduction
2.0	Objectives
3.0	Main Content
	3.1 Meaning of Science and Technology Reporting
	3.2 Importance of Science and Technology Reporting
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1.0 INTRODUCTION

The continuous breakthroughs and increasing relevance of science and technology in the world today has made science and technology reporting one of the specialised areas of the journalism profession. This unit examines the meaning and importance of this new special area of reporting in the journalism profession.

2.0 OBJECTIVES

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

- explain the meaning of science and technology reporting
- discuss the importance of science and technology reporting to the society.

3.0 MAIN CONTENT

3.1 Meaning of Science and Technology Reporting

In our previous module, we defined science as field of study which seeks to know about the existing social and natural facts around us. We

also defined technology as the technical skills and achievements of a particular time in history of civilisation or a group of people. To report on the hand mean “to give account”, “to tell the story”, etc, and the purpose is usually to inform, educate entertain, persuade or mobilise.

From the above point of view, science and technology reporting could be said to be the account or story of scientific and technological developments in the world around us. It refers to the reportage of discoveries, advancements of achievements in the field of science and technology as well as explaining and interpreting their implications on the lives of the members of the society.

Nwabueze (2009:324) sees science and technology reporting as “the application of journalistic principles in conveying information about science and technology issues, topics and developments to the public through the mass media”. The author goes on to observe that it is that specialised branch of journalism which consists of the process of gathering newsworthy information about happenings in science and technology world, processing the raw information and presenting it to the public through straight news reports and features in the media.

To Nworgu and Nwabueze (2005:154), science and technology reporting is the reportage of breakthroughs in the field of science and technology and their unfolding implications on the lives of the public”. Such breakthrough could be new inventions or new discoveries, new uses of/improvements on existing inventions, etc.

Before recent times, this aspect of reporting in the journalism profession was not seen as a worthy area for a reporter to specialise in. But with the continuous massive breakthroughs in the field in recent times, it has become an interesting aspect of specialised reporting and several media organisations are beginning to venture therein to.

Today some newspapers and magazines are creating special pages to report happenings in the science and technology world, while some now specialise in reporting science and technology issues. Popular science and technology magazines and news sites include:

[21st century](#): This is a British online science and technology magazine, covering everything from genetics and nanotechnology, to cars and fashion.

[CNETNews](#): This magazine covers breaking news, features, and special reports on technology and its impact on e-business, finance, communications, personal technology, and entertainment.

[Discover Magazine](#): This magazine specialises on features, news, articles, current events and future views on technology, space, environment, health, and much more.

[IEEE Spectrum](#): This is a magazine for technology innovators, business leaders, and the intellectually curious. It explores future technology trends and the impact of those trends on society and business.

[InformationWeek](#): This is a business managing technology magazine, offering editorial commentaries, feature articles, and daily news.

[InfoWorld](#): This is a technology magazine for IT news, product reviews, best practices, and white papers covering security, storage, virtualisation, open source and more.

[Invention & Technology](#): This is a quarterly magazine dedicated to the history of technology.

[MIT Technology Review](#): This magazine's mission is to identify important new technologies, deciphering their practical impact and revealing how they affect and change people's lives.

[Mobile Magazine](#): This magazine covers news and reviews on mobile technology, including cell phones, PDAs, MP3 players, digital cameras, etc.

[OnWindows.com](#): This magazine provides news, resources and information about companies that provide enterprise technology solutions.

[Popular Mechanics](#): This magazine covers a variety of information on home improvements, automotive needs, electronics, computers, outdoors and fitness.

[R&D](#): This magazine provides news and information for the research and development community, including the annual R&D 100 awards.

[Red Herring](#): This magazine covers innovation, technology, financing and entrepreneurial activity and such like.

[Small Times](#): This magazine provides features daily articles covering microelectromagnetic systems (MEMS), nanotechnology, and microsystems, with a business angle.

[Tech News World](#): This magazine offers real time technology news from around the world. Coverage includes hardware, software, networking, wireless computing, personal technology, and more.

In broadcast stations like the Discovery Channel, Discovery World and NaGeo Wild, are good examples.

Science and technology reporting could include news about:

- parliamentary activities such as bills, laws, deliberations, sub-committees and public hearing on science and technology matters
- science workers/teachers, their associations, unions, or groups, e.g. Science Teachers Association of Nigeria (STAN)
- science and technology businesses (including sale of science and technology equipment at small and large scale levels, local and international levels etc)
- science and technology beat reporters and their association
- science and technology-based NGOs, CBOs, and faith-based organisations. This includes news about science and technology-activities that are related to science matters. For instance, an environmental NGO could organize a protest against the sighting of a nuclear technology plant in a residential area
- workshops, seminars, and conferences in science and technology
- science and technology fraud, crime, impersonation, copyright etc
- special days on science and technology issues, topics, events, etc, examples include World Health Day, World AIDS Day, and Science Teachers' Day, etc. such special days are likely to yield science and technology stories.

3.2 Importance of Science and Technology Reporting in the Society

On a daily basis, breakthroughs occur in the human society. In the areas of science and technology, it is even a more regular thing. Hardly is there any aspect of human life that is not affected by this regular occurrence. Nwabueze (2011:239) believes that the entire human existence and mutual coexistence in any society are to a large extent, shaped by scientific activities or technology in the world.

It is therefore no surprise that people are always interested in knowing and hearing of new developments in the field of science and technology. They want to know the latest scientific breakthroughs or how the latest technological development would impact on their lives (Nwabueze, 2011:239).

Ordinarily, people would want to know the latest technological breakthroughs in education, health, sports, information and communication, banking, business, automobile world, military warfare, etc. This may include even happenings in local technology.

Nowadays, we hear the United States, Israel and the United Nations mount pressure on Iran and North Korea to halt their plan to acquire nuclear weapons. Although these stories are awash in the media, but many people do not even know what the Uranium Iran is accused of is all about. It is thus left for the media to explain to the people that Uranium is a substance used in developing nuclear weapons, and that nuclear weapons are weapons of mass destruction or weapons capable of destroying many or even wiping out the entire human race.

Such explanations are important because many people do not know what such technologies are and the reasons why it is detrimental to the world if Iran and South Korea succeed. This goes to show that science and technology is still an area where many members of the society are show enormous ignorance. This is incumbent on the media because they are the information purveyors in the society, and as such, they are expected to play the watchdog role of providing information, education, entertainment, etc, to the people, not only on political issues, economy, sports, etc, but indeed in every aspect of the human life, including in the new developments in science and technology.

To do this and do it efficiently and effectively require requires that science and technology reporting should be treated as a separate genre in journalism. This is in view of the peculiar technicalities involved in reporting science and technology.

Sometimes, the technicalities and complexities involved in science and technology reporting make it necessary that media houses employ services of scientists to cover specific areas in science after which the scientists give such reports the journalist who then give it the journalistic angle. Nwabueze (2011) drives this home when he observed that:

the essence of this is because a journalists does not have to be a scientists, neither does he have to read engineering to become a successful science and technology reporter, and that all a journalists needs is to master the art of applying journalistic principles in reporting about science and technology. He also needs to go some extra miles if he is to become a successful specialist in this field. He must develop special interest in reading and understanding issues and happenings in science and technology.

Specifically, science and technology reporting plays the following important roles in the society.

- **It facilitates socio-economic development:** This means that through science and technology reporting, people consciousness is awakened and their attention is drawn to science and technology issues that could contribute directly or indirectly towards social, economic and national development in general'
- Through science and technology enlightenments, the public become aware of trends in scientific and technological innovations and breakthroughs, including how these could be applied in enhancing various aspects of life and the society in general
- **It bridges the gap between science and society:** By this, we mean that through science and technology news reports, feature articles, news analysis, editorial comments and columns on science and technology issues people are brought closer to the society. By this, they get to know what otherwise would not have known as it pertains science and technology
- **It safeguards society from impending dangers:** This means that through science and technology reporting, society get to know vital information that safeguards them from certain dangers e.g. dangers of smoking, drug abuse, STIs such as HIV-AIDS, Lassa fever, under- age marriages, etc. They also highlight the benefits of certain virtues like exclusive breast feeding, personal hygiene, dieting, report on how to avoid certain sicknesses like cancer-prone activities, reports on the negative impact of certain technologies, etc.
- **Promotes education:** Science and technology reporting promotes education, especially science and technology education issues
- **Facilitates the growth of local technology:** Through media reports get motivated towards the growth and development of science and technology such as fabricating their own tools, preservation facilities for post-harvest storage, manufactured their own herbal drugs, adopted fallow method of farming for sustainable soil management, etc, and the media have continued to play vital role in the entire process
- **Science and technology reporting play Advocacy role:** Through science and technology reporting government attention is drawn to scientific and technological issues that require attention. This is done through constant reports, editorials, commentaries, features, documentaries, special reports and analysis, etc.

4.0 CONCLUSION

In this section, we have noted that the continuous breakthroughs and increasing relevance of science and technologies in the world today has made science and technology reporting one of the specialised areas of the journalism profession. We explained the meaning of science and technology as well as their importance.

5.0 SUMMARY

We defined science and technology reporting as the reportage of breakthroughs in the field of science and technology as well as their unfolding implications on the lives of the public. Such breakthrough could be new inventions or new discoveries, new uses of/improvements on existing inventions. We also enumerated some of the importance of science and technology reporting to include: it facilitates socio-economic development, bridges the gap between science and society, safeguards society from impending dangers, promotes education, facilitates the growth of local technology and plays advocacy roles, among others.

6.0 TUTOR-MARKED ASSIGNMENT

- i. Define science and technology reporting.
- ii. What role does science and technology reporting play in the society?

7.0 REFERENCES/FURTHER READING

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UNIT 2 THE SCIENCE AND TECHNOLOGY NEWS

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 What is Science Technology News?

- 3.2 Qualities or Characteristics of a Good Science and Technology News
- 3.3 Determinants of Good Science and Technology News
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References / Further Reading

1.0 INTRODUCTION

Breakthroughs in science and technology occur on daily basis. However, none of these breakthroughs become news until they are reported. This unit examines the meaning of science and technology news, what constitute science and technology news and qualities of a good science and technology news.

2.0 OBJECTIVES

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

- define science and technology news
- explain the qualities of a good science and technology news
- discuss the determinants of a good science and technology news.

3.0 MAIN CONTENT

3.1 What is Science and Technology News?

News means different things to different people at different place and at different time. For instance, two people are injured in a car wreck. Is that news or not? Well, to some people, places and time, yes; to other people, places and time, no. This shows that the definition of news is elusive, and it is the same with all kinds of news including science and technology news. A woman delivers a set of triplets. Is that news or not? Again, to some people, places and time, it is; to other people, places and time, it is not. Examples are endless.

A science and technology news could be:

- Something or developments in science and technology you haven't heard before
- Occurrences in the science and technology world, happy or sad; disturbing or entertaining

- What science and technology editors and reporters say it is.

Whatever, it is, news is an extremely complex term, and it is different things to different people. It is information, and today's media are in the information business.

What is news today might not be news tomorrow. What's news in one geographic area is not necessarily news in another. In a small town served by a community newspaper, a car accident with two injuries may be the biggest news of the day. In a large metropolitan newspaper, such an occurrence may not be reported unless the accident involves well-known people, or it might warrant a mention during a broadcast newscast if the traffic pilot gets dramatic pictures. Usually, it would take a major accident with fatalities to make the news in a big city.

The question then remains, what is science and technology news?

1. Science and technology news is the timely report of facts or opinions on science and technology issues that hold interest or importance, or both for a considerable number of people. The salient point of this definition is that no science and technology issue becomes news until it is reported. This implies that such news must have a human touch, human interest, and be of significance to a large number of people in the society. Interest is therefore a key word in the definition of science and technology news. It must be interesting to as many people as possible in the society, and to be interesting, it must affect people's lives.
2. It is anything about science and technology that interests you that you didn't already know.
3. It is any occurrence in science and technology that is important because of its impact on society; it is what people need to know and what they want to know.
4. It is every event in the science and technology world (idea or opinion) that is timely, which interests and affects a large number of people in a community and which is capable of being understood by them.
5. It is anything you did not know yesterday about science and technology.
6. It is what science and technology news editors say it is.

7. It is the immediate record of the most interesting, important and accurate information obtained about the things man thinks, says, sees describes, plans and does on science and technology.
8. It is the honest, just and complete story of science and technology events of interest that concerns the public.
9. Science and technology news is what is unexpected and unusual in the science and technology world.
10. What makes a good science and technology news now may no longer be seen as newsworthy in a few hours. This is because news is something new, new account of new events in the science and technology world. This is why editors not only in science and technology reporting but in all forms of media reporting always frown at yesterday's news and consider them as stale and no longer of interest to the public.

Generally, news for the morning newspaper is what happened yesterday, for the afternoon paper, it is what happened today, for a news magazine, what happened "this week" and for the radio and TV, what happened "a moment ago" (Ogunsiji, 1989).

In summary, for a given science and technology event or occurrence to become news, it must:

- be a recent (new) occurrence
- attract the interest or attention of significant number of people
- be reported and given account of; and
- be objective reports not opinions of or comment on what happened.

3.2 Qualities or Characteristics of Good Science and Technology News

Here, the big question is - what makes a science and technology news good? What are the characteristic, qualities or determinants of a good science and technology news? This is to say that a good science and technology news story must meet certain requirements. It is these features that distinguish such news from other forms of media writing.

They include;

1. **Accuracy:** A science and technology news story is accurate if all names, addresses, numbers, direct quotations, and indeed, all facts in the story are accurate or correct. This implies that a good

science and technology reporter must avoid guesswork or assumptions in his reports. He must be sure of his facts and figures to avoid unverifiable claims which could lead to legal actions.

2. **Objectively:** This implies that a science and technology reporter should present his readers with all sides of issues to enable them make well-informed decision. For such a news story to be objectives, it must not be laden with the reporter's views or biased opinions and prejudices. It must not be slanted or editorialised.
3. **Balance:** This is closely related to objectively. It means treating all sides of a story without showing any evidence of partiality or preferential treatment. It means giving equal attention and prominence to all sides of a story without any fear or favour. It is unethical to give undue prominence to the view of one of two parties to the detriment of the other.
4. **Currency:** Nothing is as dead as yesterday's news or a radio/TV broadcast of many hours ago. Such news story is stale and is no longer fit for human consumption. A new story is meant for immediate consumption of the readers. A delay for a moment in getting the story across to readers may make the story stale and renders it useless.
5. **Brevity, Conciseness and Clarity:** A good science and technology news story must be brief, clear and straight to the point. No ambiguity in language and idea is expected. Long stories make for difficult reading. Newspaper and magazine audiences share time between reading and attending to other pressing needs. This makes it imperative that such news must be as brief as possible because most readers do not have time to waste reading papers. In other words, for a science and technology news story to attract readers' attention, it must be brief, clear and simple from professional jargons.
6. **Simplicity:** A good science and technology news story must be simple and easy to understand. This is because; readers vary in level of knowledge and education. Again, not everyone even the highly educated is familiar with science and technological terminologies. Writing such news therefore requires simplicity of language and explanations of terms that are not frequently used in everyday life. A good science and technology reporter must therefore Keep It Simple and Short (KISS).

3.3 Determinants of a good Science and Technology News Story

This is also called “news worthiness” “news judgments”, “news criteria” or “news evaluation”. As we pointed out earlier, news is an accurate account of an event, although not all events are newsworthy. For any for any science and technology event or occurrence to be newsworthy, it must pass some of the following tests:

1. **Timelines:** News by its very nature must be fresh and not stale. Timeliness refers to the “newness” of the news. News is about recent events or occurrences. News is therefore evaluated based on how new and recent it is. The rule is always to bring a story up-to-date as much as possible.
2. **Proximity (Nearness or Closeness):** The nearer an individual is to the location of a news event, the more relevant the event becomes to him. Events occurring within one’s territory should be of greater interest than similar event outside the area. This is because people would be more interested in hearing of science and technology discoveries in their vicinity than of such in faraway places. This implies that foreign science and technology news should not be emphasised at the expense of local news as doing so would amount to what is called “afghanistanism” a term used to describe reporters who neglect newsworthy events in their neighbourhoods and focus on far away events. This is why many press releases, wire copies, handouts, etc, are usually re-written to give them local angles.

When we talk of proximity in science and technology reporting, there are two types of proximity:

- i. **Geographic proximity:** Events that happen in and around one’s environment or vicinity.
 - ii. **Psychological proximity:** This has to do with emotional or psychological attachments people have over news events or items no matter where it happens, e.g. issues about women, Africa, or blacks, would definitely make more news for those concerned.
3. **Prominence:** We are all aware that all men were created equal but some grew more newsworthy than others. Also, people differ because of their position in the society, because of their entertainment value, because of their social status or achievement or news potentials in them. Likewise all situations, events or discoveries are not of the same news importance: some are more important and newsworthy than others.

4. **Magnitude:** By magnitude, we mean broadness and numbers involved. An air crash that claims the lives of several hundreds of people is a better news story or more newsworthy than one that kills fifty. Same way, the discovery of new drugs that cure skin infection or provides relief to headache would definitely not receive the same attention as discovery of cure for HIV/AIDS would do.
5. **Human Interest:** Human interest stories are stories that concern people in any given situation and which can happen to anybody else, anywhere, anytime. Another name for human interest stories would be: “it could be me”, “It could happen to me”, “If I were such a person in such a situation, how would I have behaved about it?” Such stories arouse the feelings of sympathy. For instance, when an earthquake kills two hundred thousand people in Haiti, flood destroys lives and property in Southern Italy, when flood renders thousands homeless in India, a Tsunami kills one million people in Asia, when a congregation of worshippers is blown up in Maiduguri or when herdsmen slay women and children in a midnight raid in Jos. Human interest is therefore the concern and feeling of sympathy we show for what is happening to other people somewhere. Such stories as a plane and train crash, fire accident, nuclear disaster, ship-wreck, pogrom (organised massacre), war, earthquake, accident, locust plague, desert encroachment, are bound to evoke the feeling of awe or sympathy and emotional reactions from readers worldwide and are therefore, newsworthy.
6. **Impact/Consequence:** Many science and technology news stories are published or aired based on the impact on society and not necessarily the cause. The greater the impact, the more newsworthy it becomes.
7. **Oddity (Unusualness):** Ordinarily, news is about odd or unusual happenings. That’s why it is commonly said that when a dog bites a man, it is not news. But if a man bites a dog, it is unusual and therefore, newsworthy. This is because bad news is better news than good news in journalism. This is perhaps why a lead poisoning that kills two hundred children in Zamfara is more newsworthy than polio immunisation in Sokoto.

Again, such news as the first entry into the space, the first flight into the moon, the first heart and hip transplanting operation, are unusual happenings in life and are, therefore, newsworthy.

4.0 CONCLUSION

In this unit, we defined news from different perspectives; we also identified the qualities or characteristics of a good science and technology news as well as the determinants of a good science and technology news. It is believed that such knowledge would go a long way in guiding the science and technology news reporter.

5.0 SUMMARY

This unit has examined the meaning of science and technology news, the qualities or characteristics of good science and technology news as well as the determinants of good science and technology news.

6.0 TUTOR-MARKED ASSIGNMENT

- i. Define science and technology news.
- ii. What are qualities of good science and technology news?
- iii. Identify and discuss the determinants of good science and technology news.

7.0 REFERENCES/FURTHER READING

Adibe, K.N. (2010). "News Writing and Reporting." Unpublished Lecture Notes. Department of Mass Communication, Ebonyi State University, Abakaliki.

Ogunsiji, M.A. (1989). *Introduction to Print Journalism*. Lagos: Nelson Publishers.

UNIT 3 BARRIERS/BLEPRINTS TO EFFECTIVE SCIENCE AND TECHNOLOGY REPORTING

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Barriers to effective Science and Technology Reporting
 - 3.2 Blueprints to effective Science and Technology Reporting
 - 3.3 Tips for effective Science and Technology Reporting
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

In our previous modules and units, we explained what science and technology reporting is, as well as the meaning of science and technology news. In this unit, efforts are made to identify and explain those barriers and the blueprints to effective science and technology reporting.

2.0 OBJECTIVES

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

- identify the major barriers to effective science and technology reporting, and
- demonstrate practical measures to improve its effectiveness.

3.0 MAIN CONTENT

3.1 Barriers to Effective Science and Technology Reporting

Science and technology reporting face myriads of challenges in many developing nations. They include:

Inadequate research facilities

In most developing countries like Nigeria, it is hardly debatable that there are gross inadequacies in science and technology research facilities. In most cases where they are available, what we call state-of-the-art facilities are already obsolete and completely outdated in the

Western World. Under this condition, it is even difficult to have a breakthrough in science and technology that would be reported. You may recall that we earlier defined science and technology reporting as giving the account or telling the story of scientific and technological developments in the world around us; or the reportage of discoveries, advancements or achievements in the field of science and technology as well as explaining and interpreting their implications on the lives of the members of the society. This means that, to report science and technology, there must be newsworthy happenings in the area of science and technology. But this has been difficult as not many new breakthroughs or developments are recorded in science and technology research in the third world due to inadequate research facilities.

Information hoarding

This is another barrier to science and technology reporting in Nigeria. An average Nigerian is secretive, not always willing to disclose information. At many times, the persons involved are not willing to grant interviews to reporters on science and technological achievements, feats, discoveries or successes. Many attempts end up with such phrases as: “No comment”, “No idea”, “I don’t know”, “Off record”, “...Who pleaded anonymity”. This has in no little measure hampered science and technology reporting in the country.

Scarcity of well-trained science and technology reporters

Science and technology reporting is a new genre of journalism that requires special training to do well therein. At other times, many journalists are skeptical and sometimes afraid to venture into science and technology reporting due to the technicalities and the numerous hazards associated with this aspect of journalism. This has served as a barrier to science and technology reporting in Nigeria.

Illiteracy and ignorance of the importance of science and technology

Illiteracy constitutes a major hitch to science and technology reporting in Nigeria. News items are meant to be consumed by people, i.e. the readers, the listeners or the viewers. Meanwhile, a good number of the members of the public are not literate enough to read or understand science and technology writings. Again, a situation where majority of the population do not appreciate science the value of science and technology does not augur well for science writing in the country. This is indeed a major barrier to this genre of journalism in the country.

Poor database

The absence of adequate statistical data and information storage system has been a serious hitch to the development of science and technology reporting in Nigeria. By this, we refer to the dearth of reference materials such as professional journals, books, newspapers, magazines, library, newsletters, computers, internet services, among others.

Lack of basic amenities

Lack of basic amenities indeed hampers the growth of science and technology reporting in Nigeria. This is because, many of the science and technology news and information emanate from industries, companies, laboratories and institutions. These organisations depend on infrastructure to do well and *viz-a-viz* provide the needed information for science and technology reporting.

Endemic Poverty

This is another hindrance to the growth of science and technology reporting in Nigeria. This is so because most of these reports are written and packed to be sold to the members of the public. These are people whose larger percentage, according to the United Nations, lives below \$1 per day. With such standard of living, it is difficult to patronise science and technology writings. Without patronage, science and technology reporting suffers serious setbacks.

Inadequate ICT Facilities

In modern times, the business of news reporting has gone digital. Today, broadband and satellite technologies, among others have made media reporting quite different from what it used to be in the past. In reporting science and technology, it is even a more serious matter following the technicalities involved therein. Today, we have reporters that go into space along with the astronomers, those that go to sea alongside with the ocean divers, report sophisticated wars alongside the air force, the navy and all manner of scientific ventures. There is little doubt that reporting these areas requires some technologies which are not available in the developing world.

Systemic Corruption

The science and technology reporter in Nigeria today is not operating from the moon. He is in a society where the fabrics, according to Aliede (2005:136), are already overwhelmed by high levels of corruption everywhere. Such a reporter according to him can hardly be expected to

be a saint among sinners. Thus, he/she, just like his/her counterparts in other professions, wallows in all manner of corrupt practices forgetting to protect his/her calling.

3.2 Blueprints to Effective Science and Technology Reporting

To effectively report science and technology, the reporter should:

Build up a basic knowledge

Science and technology is a huge field, but each subject usually has some basic rules which govern it. If you understand these rules, you will be able to work out the rest of the topic, even though you will not understand all the details.

Read wide

Science and technology advance so quickly that you must keep up to date. Read articles on science and technology. Read books on basic science (encyclopedias are a good place to start). Avoid textbooks which are too complicated. Instead, look for books which explain their subject in simple terms for ordinary, non-scientific readers. Ask people expert in each field for advice on the best books for your needs - something clear and simple.

Make contacts

Get to know as many scientists and technologists as you can. They can give you advice on subjects you do not understand and, like any good contact; they will be a useful source of story ideas.

Do not expect an expert in one field to be able to help in another. Few electrical engineers, for example, will know what lymph glands do in the body. Make as wide a range of contacts as you can, across all the fields of science and technology.

Choose people who can give you:

- (a) Story ideas
- (b) Background information, and
- (c) The names of people you should ask for further details.

Try to establish at least one contact from each major scientific field (such as medicine, environmental science, agriculture and fishing, geology, engineering or any other fields which are especially important in your society). Keep in regular contact with them.

You can quote them in your stories if they are experts in the particular field about which you are writing, but it is better to go to the expert who is best able to give you the specific information you need.

Some scientists are better at explaining their work in simple terms than others. When you are researching a story, go to the contact most suited to your particular need. For example, one zoologist may be able to explain the background to a new development, but you may have to ask the head of the university department or the director of the research station for any official comments.

Do not forget that scientists often work in teams. If one member cannot help, another might be able to.

Technicians and laboratory assistants can be a very good source of story ideas, but do not rely on them for the official version of a story. If they give you a story idea, seek out the scientist concerned for details.

Build trust

Many scientists do not trust journalists. They may not think you are capable of reporting their work properly or they may have had a bad experience with journalists in the past. They may have been misquoted or seen errors in stories.

You have to show that you can be trusted. It will help if you do some background research of your own before interviewing them, so that you can show you know the basic facts about their field.

It is not enough to tell them you can be trusted; you have to show it in every story that you write. If you make careless errors or do not keep a promise, you will lose their trust for ever.

Dig for the truth

Being friendly does not mean you have to believe everything a person says. Much of science is built on experiments and on trial-and-error. In many fields, a number of scientists may be working on the same topic, and may reach different conclusions. They are often competing against each other to be the first with a result. They may occasionally make big claims to show how important they are or to justify money being spent on their research.

Be especially careful about scientists who say their work will benefit mankind. In many cases it will, but in others it may not. For example, a scientist may tell you that a new drug will help people to relax, but he/she may not tell you that it increases their risk of getting cancer. The side-effects of science can be more damaging than the benefits from it.

Therefore, you must question their claims by asking probing questions. If you still feel unhappy about what you have been told, go to other experts in that field and ask for further information.

Be skeptical

Both science and journalism are based on being skeptical and questioning what people say. Galileo would never have proved the world was round by believing what most other scientists of his era were telling him. Bob Woodward and Carl Bernstein would never have exposed the corrupt Watergate Scandal if they had trusted the White House press denials. As a journalist with the power to influence people, you will be asked to accept at face value all sorts of claims.

Science and technology companies will offer you all sorts of free samples, advice and even prepared news stories to promote their products. They will disguise this by saying these are important medical breakthroughs. Always question their claims and always balance what they say by seeking and reporting opposing views. Drug manufacturers and research companies are increasingly offering television journalists ready-made and professionally-packaged news reports of a new medical breakthrough or wonder drug. In many cases they may be beneficial but a good journalist – like a good scientist – must always ask hard questions and inform readers and listeners honestly and fairly. Do your own work, even use some of the video footage if it is relevant – then go out and get alternative views to balance or moderate the claims.

Use simple language

In reporting science and technology, simplicity of language is necessary. This is because, the reports are not writing for experts alone, industrial in-house journal. He is writing for the entire public comprising mostly of people who do not know the scientific jargons or terms or languages used by those in the industry. This means that his job is to step down the high-level language of scientists to a level that all interested readers will understand. This means that scientific information must be translated for the understanding of the layman.

Summarise the process and make the report brief

A reporter does not necessarily need to begin a step-by-step report on how new surgical equipment was manufactured. This is because major breakthroughs in scientific research are usually long term affairs involving many-complicated procedures. The job of the science and technology reporter is to summarise the findings without omitting the important objects. This means that he must be able to say many things in few words. Get to the point but endeavour to leave out unnecessary details that would bore your audience.

Interpret as is necessary

In science and technology reporting, efforts should be made to step down the scientific or technological breakthrough to its implication to the lives of the ordinary members of the public. This is perhaps the sure way members of the public can benefit maximally from scientific stories. Of course, science and technology terms are technical and complicated to the ordinary man on the street. They do not want to know a new technology has been discovered, but how it will either improve their lives in the long or short run.

These and other blueprints would go a long way in guiding reporters in the area to excel.

3.3 Tips for Effective Science and Technology Reporting

Large news organisations often have reporters with some scientific education to specialise in writing about science and technology, but in smaller newspapers, radio and television stations, this task is left to general reporters. Whether you are a specialist or a general reporter, the following basic tips are crucial:

- Know that you are a bridge between the world of science and your community.
- Know that you do not need to know as much as the scientists to report science and technology. All you simply need is to be able to put the relevant parts of their knowledge into words which your audience can understand.
- Know that you do not have to understand the whole of any field of science yourself, but you must not write anything you do not understand. This is because, if you write something you do not understand, you risk making errors.
- Know that although the aim of scientists is precision, and the aim of journalists is simplicity, there should be no conflict between the two. You must be able to express the precise details of science accurately in simple terms. That is the real challenge of reporting science and technology.
- Know that most science and technology will have human applications. For every story, you must ask yourself: "How will this affect my readers, listeners or viewers' lives?" Your job is to describe in details for public benefit. Remember the criteria for what makes news and apply them.
- Know that some science, such as astronomy, has no impact on our everyday lives, but is interesting in what it tells us about our universe. The task here is to report it in an interesting and informative way.

- Know that you must always be accurate. Science is built on accuracy.
- Know that your readers, listeners or viewers usually trust science. Often, in fields such as medicine, their lives may depend on it. You should not alarm them by making sensational claims which may not be true.
- Develop, sustain and cherish interest in the world of science and technology
- Interpret facts/data with further explanations where necessary
- Be careful with scientific claims so that you do not lose credibility as not all claims are true.
- Remember to always double-check your facts. In journalism, it is commonly said “when in doubt, cross check; if still in doubt, check again; and if still in doubt, leave out”.
- Know that computer and Internet literacy is essential in science and technology reporting. Equip yourself.
- Know that knowledge of general and precision writing is essential
- Remember to add all other basic principles or tenets of journalistic reporting

4.0 CONCLUSION

Reporting science and technology is not as easy as other genres of journalism. This is as a result of some technicalities involved therein. This unit has identified and explained those barriers and blueprints to effective science and technology reporting. The unit also identified those vital tips for success in science and technology reporting.

5.0 SUMMARY

This unit has identified the major barriers that inhibit science and technology reporting in Nigeria to include: inadequate research facilities, information hoarding, scarcity of well-trained science and technology reporters, illiteracy and ignorance of the importance of science and technology, poor database, lack of basic amenities, poverty, inadequate ICTs facilities, endemic and systemic corruption among others. We also identified the blueprints to include: Building up basic knowledge of the concept, read widely, make contacts, building trust, dig for the truth, be skeptical, use simple language, summarise and make the report brief, among others.

6.0 TUTOR-MARKED ASSIGNMENT

Identify and explain the major barriers and the blueprints to effective science and technology reporting in Nigeria today.

7.0 REFERENCES/FURTHER READING

Adibe, K.N. (2010). *News Writing and Reporting. Unpublished Lecture Notes*. Department of mass communication, Ebonyi State University, Abakaliki.

Ogunsiji, M.A. (1989). *Introduction to Print Journalism*. Lagos: Nelson Publishers.

UNIT 4 CAREER OPPORTUNITIES IN SCIENCE AND TECHNOLOGY REPORTING

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Career Opportunities in Science and Technology Reporting
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

Many persons in our part of the world hardly see science and technology reporting as a profitable area to venture in. This is unlike the situation in the technologically advanced parts like the industrialised nations of the world. Be that as it may, this unit examines some fruitful aspects of science and technology reporting.

2.0 OBJECTIVES

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

- identify some career prospects in science and technology reporting.

3.0 MAIN CONTENT

3.1 Career Prospects in Science and Technology Reporting

In our society today, science and technology play crucial roles in human existence. This has made it imperative for every media organisation to have the science and technology desk or unit in its editorial section.

Science and technology reporting is no doubt, an aspect of journalism that has great prospects for anyone that chooses to venture therein. This is because, the area is relatively new when compared to other forms of specialised reporting, and media organisations out there are constantly in need of specialist reporters in the area to correspond for them. This is more so because, we are in the age of technological advancement and new breakthroughs are recorded even as you read this lecture series, and these discoveries and breakthroughs are issues that affect you and me.

The media as part of their basic function of informing, educating and entertaining society are duty bound to report these happenings in the public interest.

This increasing importance of this area of journalism has led increase in the number of special interest publications in science and technology in the news stand. You may be aware of the *PC World magazine*, the *I.T. & Telecom Digest* and many other health publications that discuss science and technology issues.

Interested specialist reporters, i.e. reporters that develop themselves (see our discussions in the previous units) in this area can take the opportunity to pursue a career in such special interest publications. They could also run science and technology programmes in broadcast media as we already have today in some stations like AIT, NTA and a few others. The programmes could run for 30 minutes or more, covering news and other reports in science and technology issues.

Again, specialist reporters could correspond for international media organisations. They could even work as freelancers in this field. They could work for science and technology based governments and non government organisations, faith based organisations of course some religious bodies are now fully involved in publishing.

Trained reporters in this field could also be employed by IT firms who publish newsletters and periodicals, health research institutions, and indeed, every science and technology establishment that publish newsletters, periodicals, among others. These and other fruitful areas in this branch of journalism goes to show that they area can never be overtaken by events, especially as newer discoveries and breakthroughs in science and technology are continuously made on daily basis.

4.0 CONCLUSION

From our discussions in this unit, it is clear that, although many persons may not see science and technology as a fruitful one to venture in, myriads of opportunities do exist therein.

5.0 SUMMARY

This unit has identified some of the career prospects in science and technology reporting to include:

- Interested specialists can pursue a career writing for special interest publications in science and technology

- Specialist reporters could correspond for international media organisations
- They could work for science and technology based government and non-government organisations, e.g. ministry of science and technology
- They can work in any science and technology outfits that publish newsletters, in-house journals or periodicals.

6.0 TUTOR-MARKED ASSIGNMENT

Discuss the career prospects in science and technology reporting in Nigeria today

7.0 REFERENCES/FURTHER READING

Adibe, K.N. (2010). *News Writing and Reporting. Unpublished Lecture Notes*. Department of Mass Communication. Ebonyi State University, Abakaliki

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MODULE 3 GATHERING SCIENCE AND TECHNOLOGY NEWS

Unit 1	Sources of Science and Technology News/What to Look up for
Unit 2	Interviewing in Science and Technology Reporting
Unit 3	The Science and Technology News Beat
Unit 4	Writing the Science and Technology News
Unit 5	Styles in Science and Technology Writing

UNIT 1 SOURCES OF SCIENCE AND TECHNOLOGY NEWS/WANT TO LOOK UP FOR

CONTENTS

1.0	Introduction
2.0	Objective
3.0	Main Content
3.1	Sources of Science and Technology News
3.2	What to Look up for when Sourcing Science and Technology News
4.0	Conclusion
5.0	Summary
6.0	Tutor-Marked Assignment
7.0	References/Further Reading

1.0 INTRODUCTION

There is a wide range of areas from which the science and technology reporter can source his/her stories. This unit identifies and explains such sources for your understanding.

2.0 OBJECTIVE

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

- identify the various sources a science and technology reporter can source for his/her reports.

3.0 MAIN CONTENT

3.1 Sources of Science and Technology News

Science and technology have come to stay with us. Hardly is there any aspect of the human society that is not affected in one area or the other. This has made sources of science and technology news quite ubiquitous. Ohaja (1994) believes that Curtis MacDoughall's example provides good insight to the fruitful areas to source science and technology news, and they include:

- News on facilities that enhance human comfort and aid relaxation, for example, advances in the entertainment industry, automobile, engineering, communication technology, among others
- News on facilities or procedures for improving health and extending life span, for example, advances in pharmaceutical research, cures for deadly diseases, surgical procedures, family planning, nutrition techniques and developments, industrial safety, pollution, and control. Here the depletion of ozone layer by industrial activities and implication to live also come in
- News on nature of the universe, for example, discovery of new planets, stars and elements eclipse, etc
- News on scientific waste, for example waste of natural resources, susceptibility to diseases, over population, among others
- At the local level, efforts being made by various state governments in Nigeria on waste management projects also fall in here
- Efforts in areas of gas flaring and gas turbine development, i.e. conversion of waste into useful materials belong
- News on scientific predictions, for example, the elimination of manual labour, control of elements, constructive use of nuclear energy, among others
- News on heroism, for example, bravery in bad health, sacrifices to research, among others. Some researchers have been bitten to death by poisonous snakes in the course of collecting venom from snakes for scientific research. Such stories fall under this sub-heading. Search for local examples as a way of encouraging researches in Nigeria. Such people could exist in the rural areas

without being recognised. It is the duty of a crack reporter in science and technology beat to fish them out and let the public know about them

- News on adventure, for example, hardship at the poles, in the jungle, on mountain tops
- News on the unusual, for example new intentions. You hear of people trying to fly across the globe in a balloon.

Nwabueze, (2011) further identified the following as sources of science and technology news:

- **Personal observation:** The reporter can decide to investigate and write on trends he/she observes on his/her own. It could be falling interest of students in science subjects/science-inclined education, increasing sale of substandard drugs, importation of outdated technology from abroad, etc
- **The mass media:** Special reporters can monitor the media for science and technology reports which they could follow up from different angles or for fresh development
- **Science and technology journals and academic publications:** They contain research results on various studies in the field of science and technology. The reporter is faced with the task of understanding the results and interpreting them to the audience
- **Press conferences/briefings:** Scientists and other stakeholders in the science and technology world could organise press conference to make the public aware of innovations and breakthroughs in these areas. Science and technology programmes of government and private sector bodies could also be disclosed through press conferences
- **Scientists/technologists of all kinds:** These include doctors, biologists, engineers, science professors, herbalists and IT experts. Interviews with these experts could be developed as stories or published/aired verbatim
- **Science research institutes:** Visits to such places could yield newsworthy stories
- **Organisations and establishments:** that are science and technology based, auto companies/vehicle manufacturers, Industries, and manufactures of all kinds

- **Institutions of higher learning:** Science schools and departments/faculties of science and technology in schools could yield interesting stories
- **Special sources:** This consists of inside sources who are always anonymous and confidential. They could reveal facts in strict confidence to journalists. These may be clues to exclusive stories which their companies are hiding. It could be that a particular company has stolen the copyright formula used by another company in manufacturing similar product. Facts for crucial investigative stories could be provided by inside sources
- **Science and technology ministries and parastatals at federal and state levels:** Regular visits to the public relations office of such organisations could be useful. Information could also be contained on their notice boards. Their PROs could have press releases that are newsworthy. A reporter can also stroll into some of the offices in such establishments, mingle with staff and make friends among them. Good stories could filter out based on such casual efforts
- **Government officials/legislators,** especially members of sub-committees on science and /technology, and related committees. These persons could speak on science and technology programmes, policies and plans of government
- **Science and technology workers' unions,** associations and professional bodies. The union of officials and members could have newsworthy views to air or they could be approached for information on science and technology issues. Some of the union activities could also be newsworthy
- **The Internet:** A wide range of information, database and websites on the Internet could be useful to science and technology reporters.

One can also get science and technology information from scientists, engineers, Technologists, Medical Doctors, Laboratory Scientists, Pharmacists, markets where science equipment are sold, relations of scientists, victims of science and technology-related disasters, victims of fake and adulterated or expired drugs.

3.2 What to Look Up for When Sourcing Science and Technology News

It is not every occurrence in the science and technology world that is worthy to be reported. Some are newsworthy while others are not. Also, the members of the public do not have all the time in the whole world to read everything about science and technology. This makes it imperative that a science and technology reporter must know what the audience would like and go for them. Some of such newsworthy areas include but not limited to any news:

- On intangible/unusual/mysterious feats
- On scientific predictions, for example, the elimination of manual labour
- On control of elements, constructive use of nuclear energy among others
- About hybrids between different species of plants and animals
- Emanating from other planets
- Concerning absolute cure of disease of any kind
- On advancement of local technology
- In the area of nuclear technology
- Emanating from science and technology research institutions
- From ministries of science and technology.
- On government programmes, policies, budget matters, etc on science and technology
- From governments, lawmakers, etc, about science and technological issues
- Emanating from workshops, seminars, and conferences on science and technology
- On fraudulent activities in science and technology
- About special days devoted to science and technology issues, e.g. world health day, world aids day, world environmental day
- About facilities or procedures for improving health and extending life span
- On technologies for increasing productivity, for example, fertilizer, crossbreeding, robots, mechanisation, among others.
- Concerning archaeological findings, discovery of fossils and remains of pre- historic creature
- On nature of the universe, for example, discovery of new planets, eclipse of the sun or moon, among others
- About scientific waste, such as waste of natural resources and susceptibility to outbreak of diseases
- From scientific bravery, exploit or heroism
- On breakthroughs in any sector of the society - agriculture, economy, education, health, sports, religion, engineering,

medicine and surgery, marine biology, building technology, animal science, plants, weather, water technology, solar energy, infrastructural developments, transportation, oil and gas, tourism, among others.

4.0 CONCLUSION

You have about various things to look out for while sourcing for science and technology news. This is important because reporting for science and technology is not the same as in the conventional reporting where everything happening around could make news.

5.0 SUMMARY

This unit has identified what to watch for while hunting for science and technology news. It is believed that knowledge of this discussion would go a long way in assisting both students of/and would-be science and technology reporters.

6.0 TUTOR-MARKED ASSIGNMENT

Enumerate the specific things to watch out for when sourcing for science and technology news.

7.0 REFERENCES/FURTHER READING

- Awaeze, C.C.(2011). 'Science and Technology Reporting.' In: Nworgu (Ed.) *Understanding Mass Communication Concepts and Applications*. Owerri: Ultimate Books.
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UNIT 2 INTERVIEWING IN SCIENCE AND TECHNOLOGY REPORTING

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Meaning and Types of Interview
 - 3.1.1 Meaning of Interview
 - 3.1.2 Types of Science and Technology Interview
 - 3.2 Arranging for the Interview
 - 3.3 Preparing for the Interview
 - 3.4 Conducting the Interview
 - 3.5 Guidelines for Asking Interview Questions
 - 3.6 Handling Hostile or Uncommunicative Sources
 - 3.7 Using the Telephone
 - 3.8 Using E-Mail
 - 3.9 After the Interview
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

Interview is one of the commonest means of sourcing information for science and technology reporting. This unit discusses the nitty-gritty of interviews in science and technology reporting.

2.0 OBJECTIVES

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

- define an interview
- identify the various types of interview
- arrange science and technology interviews
- prepare science and technology interviews
- conduct science and technology interviews.

3.0 MAIN CONTENT

3.1 Meaning and Types of Interview

3.1.1 Meaning of Interview

An interview is an exchange of information between a reporter and a source. It is one of the commonest methods of gathering information for news writing and reporting. Hardly is any news story written without facts from interviews in one form or the other. The interview is therefore indispensable in modern journalism. The primary purpose of interviewing a source is to get information on any issue as take. In modern science and technology reporting, interview is a very suitable method of digging into persons, issues and events and coming up with facts and figures which may otherwise be hidden from the public.

Interviews require patience, confidence and an uncanny ability to listen, participate, observe and absorb. Reporters must be able to ask questions and then listen to the entire response from the source.

An interview may be arranged, unarranged or abrupt. When it is abrupt, it requires no preparations, but when it is arranged, it is well prepared for.

3.1.2 Types of Science and Technology Interview

There are different types of interviews that a science and technology reporter may apply in sourcing for information. Some of them are:

- a. **Exclusive interview:** This refers to an interview granted to a reporter by a source without any invitation extended to any other reporter. It is exclusively conducted by a reporter without any other reporter participating in it. Whatever information disclosed during the interview is known only by the reporter who conducted the interview. This type of interview is booked for in advance.
- b. **Panel interview:** This type of interview is when a group of reporters comes together to interview a personality or a group of personalities.
- c. **Telephone interview:** This is an interview conducted on the phone. It is a non-face-to face interview. The main advantage of this kind of interview is that it saves time and perhaps cost.

- d. **Personality interview:** This is an interview conducted by a reporter with a view to gathering information concerning a person whose life's activities or discoveries, the reporter wants to write about. This type of interview is mostly conducted with a public figure or a celebrity. Like the exclusive interview, personality interview is booked for in advance with adequate preparation.
- e. **On-the-spot interview:** This type of interview is conducted on the scene of an event, e.g. it could be done in the laboratory where an important discovery is made.
- f. **Symposium interview or *vox pop* or voice of the people or public opinion interview:** This is an interview intended to generate public opinion on an issue of public interest. e.g. it could be about a new technology, say mobile phone; an epidemic, say HIV/AIDS; new medicine, etc.
- g. **News interview:** This is when the primary purpose of the interview is to elicit background information that will help to explain news events.
- h. **Group interview or news/press conference:** This is a forum of interaction or exchange of views between as many reporters as possible and the news source(s).

3.2 Arranging the Interview

The first step is to identify the subject of the interview. To do this rightly, you must have decided on the issue you are researching on. This would enable you make the right choice of the best person to provide answers to what you are probing into.

Once the preliminary research has been completed, it is time to set up the interview. Here are six guidelines to follow:

1. If the deadline is not tight, telephone or write to the person in advance to request the interview.
2. Identify yourself as a reporter, and name the organisation for which you work
3. Establish a time and place that are convenient for the person being interviewed.
4. Tell the person the general type of information being sought. There is need to reveal specific questions, and at least tell the source that you are doing a story on such and such and would like to ask him or her some questions. Also, tell the person approximately how long the interview will take.

5. Dress appropriately.
6. Be on time.

3.3 Preparing for the Interview

At this stage, the reporter gathers all necessary information on the subject and the interviewer. He/she then prepares the questions and arranges them in the order he/she wants it.

Before the day of the interview, a reporter could still go and remind the prospective interviews of the date time and venue of the interview. This could be done either face-to-face, through telephone or e-mail.

3.4 Conducting the Interview

On the day of the interview, arrive the venue on time, about fifteen minutes before the commencement of the interview. Announce your presence at the dot of scheduled time. As you go in, be very observant; watch everything around you. The reason for such careful observation is because before starting the interview, you can select one of those things you saw from the gate to the room and begin a conversation with in a very jovial way. This creates similes and reduces the tension of the moment, from there; you can start asking serious questions.

Throughout the process, listen and listen well. Allow the interviewee to do the talking while you do listening. Do not interrupt him/her with your opinion. Although you have written down your questions, you don't necessarily ask them in that order because his/her answers may warrant follow-up questions.

In that case, you could say, "Arising from what you just said,....." or you could say, " Please, permit me”Or, based on what you've just said,"

Again, there are questions interviewees may not want to answer. In that case, do not force him/her, but let him/her know that it is in the public interest and in his/her own interest too to answer such questions. If he/she still resist, forget it. After you have asked two or three other questions, present the same question the interviewee refused to answer in a different way , and there is a good chance that he/she will not know when he begins to answer.

Also, you should watch the emotional tone level (ETL) as the interview progresses. When the ETL is too high, you try to bring it down by

asking trivial questions. When it is too low, you raise it by asking sensitive and breath-taking questions.

If you are conducting the interview with a microphone, always hold the microphone yourself, otherwise the interviewee may take over the control of the interview. Holding the microphone enables you to moderate and control the interview.

Furthermore, when an interviewee answers a question “off-record”, it means he/she is giving you the information for your ears alone. It should not be reported. If he/she later sees the information in your paper or hears it in your medium, he/she loses confidence in you and your editor will not be happy with you because such interviewee might never allow you into his/her office again.

However, if you think that the information is in the best interest of the public, tell him why it should be reported. Explain to him/her an allay any fears; tell him/her there is nothing to lose.

Again, if you must cover an interview with photographs, let the interviewee know that you need photographs for it. If you must record the interview, let him/her know about it. When you are about to open the tape, let him/her know that you about to do so. This shows you are quite experienced in the job.

Note that even if you are using the tape recorder, do not stop writing; tapes may have a crack. Again, at the end of the interview, you should not hesitate to thank the interviewee, and assure him/her that you may call back if the need arises for further clarifications about issues raised in the interview.

3.5 Guidelines for Asking interview Questions

When a reporter asks the right questions, a source becomes a window to the news. On the other hand, if the reporter asks the wrong questions or not enough questions or does not know how to ask questions or gives up too early on a hostile or close-lipped source, his reports become shallow and the audience is the victims.

Bingham and Dillon cited in Bruce and Douglas (1998:153), offer the following guidelines for asking interview questions:

- Do your homework well: Know something about a source before trying to enter his or her personal life.
- Try to interview the person face to face: It is a lot easier for a person to respond to personal question when looking at another

person, rather than speaking to a stranger on the telephone or using e-mail.

- Interview in a casual setting: If a source is relaxed, he or she is much more likely to respond candidly to personal questions.
- Break the ice with general questions: Sometimes it is best to begin an interview without taking notes at all or without a camera or microphone. Talk about the weather or the setting for the interview. Ask questions such as age or address. Adding humour and making the source smile or laugh helps too. There is no need to open with a joke, but smiling broadly and making a comforting comment should help put the source at ease.
- If the interview is being taped, try not to turn the recorder on right away. Give the source a chance to feel comfortable first.
- Sometimes, it is easier to elicit a personal response by not asking a question at all. Instead of asking, “How did your son die?” it might be easier to say, “tell me about your son.” Let the source talk about anything. Let the interview ramble for a while. Then later, if the source missed out anything you are interested in, ask more specific personal questions.
- Preface the questions: Sometimes, a source is more likely to answer a personal question if it is prefaced with something like, “I’m sorry to bother you, but I have to ask you this question,” or “I know you are busy, but I’d like to ask you this question.
- Coax an uncooperative source: Some sources particularly public officials think that by saying “no comment” they can keep something out of the newspaper or off the air. If necessary, tell the source, “We’re going to use this story anyway, and your comments really will make it better.”
- Do not ask vague questions: Ask clear, concise questions that a source can understand quickly. A source is more likely to open up when the reporter is not confused or vague.
- Do not beat around the bush. Ask questions straight out.
- Avoid arguing: Reporters have the last say when they write.
- Listen. Let the person being interviewed feel that he or she is conversing with a friend rather than responding to a list of question from a reporter. A reporter so wrapped up in the eloquence of his or her own questioning may ignore what the other person is saying.
- Be open for any response. Remember that responses to questions tend to be signals for additional questions, some that a reporter might not have thought of while preparing for the interview.

3.6 Handling Hostile or Uncommunicative Sources

Not every source is cooperative, easy to talk to or ready to admit fault. Sources can be closed-lipped and say “no comment.” They may talk only “off the record”, which means that they do not want anything they say to be printed. They may be hostile, especially if they are asked to reveal something they do not care to share with the public. In these cases, it becomes the reporter’s responsibility to try to make the source open up.

If someone does not want to comment to the press, that is his or her right. No reporter can force a person to talk. Sometimes the reporter must simply give up on one source and look for another. In these cases, an audience must be told, for instance, “The PRO refused to comment”.

If a source will talk only “off the record,” the reporter should take notes and should try to convince the person to allow the information to be used. Sources cannot order a reporter to take information off the record. If they could, reporters would be at their mercy. Reporters violate no ethical principles of journalism if they ignore such a command, unless they have agreed before the interview to accept the information off the record.

Bruce and Douglas (1998:153) present the following possible ways to persuade sources to open up and to persuade them to go on the record or to keep them from becoming hostile:

- **Do not act like a prosecuting attorney:** Avoid hostile questions. Save the tough questions for the end of the interview.
- **Be sympathetic and understanding:** This does not mean that a reporter has to be on the side of the source while writing the story, however.
- **Reason with the source:** Tell the source that using a name or comment will make the story better.
- **Genuinely Try to Understand the Source’s Position:** For example, try to find a reasonable explanation for any charges against a source.
- **Repeat some of the damaging things that have been said about a source:** Often sources will open up to respond to charges against them.
- **Keep asking questions:** As long as the source does not end the interview, continue asking questions.
- **Have several questions to ask:** If the source does not answer the first one, ask the second. If the source does not answer the second question, ask the third, and so on.

3.7 Using the Telephone

Although there is no better alternative to face-to-face interview, but sometimes, circumstances may warrant the use of the telephone or e-mail. When telephones are used, here are some guidelines to follow:

- Identify yourself carefully and fully: This is especially important if you have never met the source. Remember, the person on the other end of the line cannot see you and will be hesitant to answer questions from a complete stranger.
- Speak slowly and clearly: You have to speak so that you can be understood. Over the phone, you have only your voice to persuade the source to talk to you.
- Do things to put sources at ease. For example, you might want to apologise for your tight deadline or for your inability to be there in person. Sometimes, it even helps to apologise for the sound of the computer keyboard as you take your notes.
- Ask brief question: It is easy for a source to forget a detailed question or not to understand it fully when it is asked over the phone.
- Put the telephone in a comfortable spot on your shoulder before the interview begins. It is best to practice writing and talking at the same time before you actually interview someone for a story. That way, you will not drop the phone or have to reposition it. Such fumbling may cause you to miss an important quotation, and it could make the source worry about your abilities as a reporter.
- Go over your notes as soon as possible after the interview to correct mistakes.
- Ask permission before you tape a telephone interview: Many states have laws forbidding a person to tape over the phone unless the other party gives permission. Be familiar with your state laws. Asking in advance will also let the source know that you are not trying anything underhanded and will prevent you from being in an embarrassing position if you have to admit that you are indeed taping the interview.

3.8 Using E-mail

Electronic communication allows a reporter to talk worldwide to anyone with an e-mail address. However, using e-mail requires:

- Identify yourself fully and let the source know the name of the publication.
- Give the source a rough idea of what the story is about.

- Keep the e-mail as brief as possible
- Let the source know the deadline.
- Ask the source if he will answer follow-up questions either in person, over the telephone or in another e-mail.
- If possible, confirm that the e-mail actually came from the source and not from someone else who has access to his e-mail.

3.9 After the Interview

The more a reporter and a source talk, the better the interview and the resulting story; therefore, the reporter should try to keep the interview going as long as possible. Questions should be asked until the source stops the interview. Remember that key points for the story are often made at the end of the interview when the source is fully relaxed; therefore, keep listening intently until the interview is indeed over.

At the end of the interview, thank the source and ask, “How can I reach you by phone or e-mail if I have additional questions while I am writing the story?” That will provide quick contact, if more information is needed later and will show the source that you are trying to be accurate. It also forestalls a request from the source to see the story before it is printed.

Under no circumstances should a reporter agree to show a source the story once it is written. People almost always want to retract or edit their statements once they see them on paper. If reporters are confused by something a source said, they should phone the person to ask for clarifications or additional information. There is no reason to take the story to the source.

Notes should be reviewed immediately after the interview to make certain that they are clear. Many reporters re-write their notes after interviews to fill in empty spots. If a recorder was used and it malfunctioned, call the source back immediately and set up another interview if it is as bad as that.

4.0 CONCLUSION

You have learnt in this unit, the meaning and types of science and technology interview, and how to arrange, prepare and conduct them. The unit has also discussed guidelines for conducting such interviews. Attempts were made to explain to you how to handle hostile and uncommunicative sources as well as the peculiarities in using telephone, and e-mail.

5.0 SUMMARY

Interview is indeed a veritable source of generating information for science and technology reporting. However, interviews require patience, confidence and an uncanny ability to listen, participate, observe and absorb. Reporters must be able to ask questions and then listen to the entire response from the source, and thereafter come up with worthwhile reports.

6.0 TUTOR-MARKED ASSIGNMENT

- i. What do you understand by an interview?
- ii. What are the various types of interviews?
- iii. Draw a blueprint on how you would arrange, prepare and conduct an interview.
- iv. What guidelines would you follow **when asking interview questions**?
- v. Explain how you would handle a hostile or uncommunicative source.
- vi. Distinguish between the telephone and E-Mail in science and technology reporting.

7.0 REFERENCES/FURTHER READING

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UNIT 3 THE SCIENCE AND TECHNOLOGY NEWS BEAT

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Meaning of Beat Reporting
 - 3.2 Importance of Beats in Science and Technology News Gathering.
 - 3.3 Types of Science and Technology Reporters
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

A beat is the specific area assigned to a reporter as his/her area of coverage. This unit discusses beat reporting in the context of gathering news for science and technology writing, and its importance.

2.0 OBJECTIVES

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

- science and technology news beat
- the importance of the beat system in science and technology reporting.

3.0 MAIN CONTENT

3.1 Meaning of Beat Reporting

A beat is a reporter's assigned area of responsibility. A science and technology beat, therefore, is the special interest area where a science and technology reporter is assigned, for the purpose of continuous coverage of science and technology news. A reporter assigned to a particular beat is responsible for the gathering of important information from such beats and reporting it to the public through his medium.

A reporter who covers a particular beat is called a special beat reporter. As a specialised reporter, he/she is "limited to some aspects of news coverage or to a particular beat" (Nworgu and Nwabueze, 2005:55).

When a reporter is assigned to a particular place, his/her job requires frequent visiting perhaps on daily basis to seek or hunt or sniff for information and writes and files such stories to his editor for onward transmission to his audience whether in print or broadcast.

In a general interest medium, science and technology could be regarded as a beat for a reporter to special on. However, in a science and technology special interest magazine like the PC World or a science and technology broadcast medium like the Discovery Channel, there could be several beats in science and technology reporting. In that case, a reporter may be assigned to specialised area in covering wild life, another in covering developments in a space centre (e.g. John F. Kennedy Space Centre, in the USA). One could be assigned to specialise in reporting developments or breakthroughs in medical research centres or health correspondent, agriculture, telecommunications, energy correspondents, oil and gas, etc.

Whatever the beat is, the method requires 3Cs, “Call, Cultivate and Comb”.

- i. **Call** means that you must be there to call on the most important persons in that office as you hunt for your information. This means mixing with high and low persons in your beat for gossips. Any important gossip or rumour becomes a clue that needs investigation.
- ii. **Cultivate** means that the reporter should build friendship at the beat. i.e. cultivating mutual relationships with people who will eventually serve as his/her sources of information.
- iii. **Comb** means that the reporter must regularly and carefully search every nook and cranny of the beat for news clues and news possibilities.

3.2 Importance of Beats in Science and Technology News Gathering Process

Beat reporting is very important in science and technology news gathering process in many ways. Some include the fact that it:

- enhances day- to- day work of the news medium by making news and other reports readily available
- boosts the quality and quantity of news items carried by a news medium
- leads to specialisation in the science and technology news gathering process. This is because the more a reporter covers a special beat, the more he/she becomes a specialist in the coverage of such beat.

- boosts the quality and quantity of news items because the news sources develops confidence in the reporter and gives him/her every information he requests.

However, the major problem with beat reporting is that the reporter may develop cronyism (possibility of showing bias towards your friends i.e. the tendency to protect your loved one) due to the friendship developed at the beat.

3.3 Types of Science and Technology Reporters

In our earlier discussion in this unit, we noted that beat reporters are reporters assigned to cover special beats. That implies that not every reporter is a beat reporter. It also means that reporters are of different types and kinds. Some of them to include:

- Specialised reporter:** This type of reporter has the sole responsibility of covering a special beat and nothing more. However, Nwodu (2006:89) believes that although a specialised reporter reports only his/her beat, this does not mean that if he stumbles into a juicy story that is outside his beat, he/she will not report it. It means that he/she devotes over 80% of his/her reportorial time and energy covering his/her beat.
- Roving reporter:** A roving reporter as the name implies is a reporter that roves around hunting for news. Unlike a general interest reporter, a roving reporter has no identified beat. He goes from one beat and event to the other. A roving reporter may in the process of roving about stumble into a very important scoop, which otherwise may be continuously hidden from the public.
- Freelance reporter:** A Freelance reporter is one who works for news medium or news media on part time basis. He/she is not on the pay list of the organisation, but receives allowances or commissions based on the number of stories he/she provides for the organisation.
- Investigative reporter:** This is a reporter whose job is to dig deep into issues and come out with facts on issues that otherwise would be hidden from the public. It involves a detailed in-depth examination, which usually takes a period of time.
- General interest reporter:** This type of reporter does not specialise on covering a particular beat or event. He/She covers any issue that is in the interest of the society no matter where it is emanating from. This type of reporter is often regarded as a

general interest reporter. This type of reporter is usually a person who is experienced in covering and reporting all manner of events.

4.0 CONCLUSION

This unit has discussed the meaning, the importance and the various types of beats that could be adopted in science and technology reporting. Beats are important in this type of reporting because they allow specific persons to report specific areas usually where they are best fitted for.

5.0 SUMMARY

In this unit, we defined a science and technology beat as a reporter's assigned area of responsibility to cover science and technology events. Beats are important in reporting science and technology as it enhances the day to day work of the news media by making news and other reports readily available, boasts the quality and quantity of news items carried by news media and as well leads to specialisation in the news gathering process, among others.

6.0 TUTOR-MARKED ASSIGNMENT

- i. What do you understand by a science and technology news beat?
- ii. What is the importance of news beat in science and technology reporting?
- iii. Explain the different kinds of reporters.

7.0 REFERENCES/FURTHER READING

Hodgson, F.W. (1984). *Modern Newspaper Practice*. London: Heinemann

Nworgu, K.O. & Nwabueze, C.D. (2004). *Mass Media Writing: Form and Style*. Owerri: Ultimate Books.

UNIT 4 RULES FOR SCIENCE AND TECHNOLOGY WRITING

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 General Writing Rules
 - 3.2 Specific Rules for Science and Technology Writing
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

Science and technology reporting is no doubt a special genre of journalism. This specialty has also made the writing rule distinct from those of other forms of media writings. This unit examines both the general writing rules and the specific writing rules for science and technology reporting.

2.0 OBJECTIVES

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

- general rules guiding mass media writings
- specific rules for science and technology reporting.

3.0 MAIN CONTENT

3.1 General Writing Rules

Generally, mass media writing is distinct from other forms of writing. This is because, when you write, you are writing for a large heterogeneous people that cut across different educational, cultural and geographical background. In science and technology writing, the task becomes more serious due to the various technicalities involved in genre of journalism. In medicine, for instance, the terms are technical and the language is uncommon. The same is the situation in engineering, oil and gas, power and energy, among others.

Be that as it may, the following general rules make easy the understanding of media writings:

- **Brevity and Conciseness:** This means that media writings are not long essays. They are brief, concise and straight to the point. No avoidable things should be included, and no unavoidable facts should be omitted.
- **Clarity and Precision:** Clarity, according to Summers *et al.* (1995:231) cited in Nwodu (2006) is “the quality of expressing ideas or thoughts in a clear way”. It is the ability of the writer to exact and make his/her points well understood.
- **Fact Not Fiction:** Media reports should be true accounts and not story telling. If it is news report, it should be the true accounts of what happened, where it happened, when it happened, who made it happen, why it happens and how it happened. Media writings should be factual because nothing erodes the credibility of a media organisation than misrepresentations of facts.
- **Use of Names or Identification:** This is another rule that must be taken very seriously in media writing. This is because names matter a lot in journalistic writing, especially in news writing. Every reader or listener would want to know not just what happened but also who was involved. It is very unprofessional to credit scientific inventions of Mr A to Mr B. the same way it is to attribute statements by Mr C to Mr D. Media writers should therefore ensure accuracy in name identification because there is a difference between Mr Ode and Mr Odeh, Madam Toyin and Madam Tosin.
- **Attribution:** Attribution simply means crediting information used in a story to the source of that information. All attributions should be correctly done.

In his book ‘The Techniques of Clear Writing’, Robert Cunnig, a former consultant to more than 100 daily newspapers, including *The Wall Street Journal*, and *United Press International*, developed what he called the 10 principles of clear writing: The principles, which are examined in his book are:

1. Keep sentences short, on the average.
2. Prefer the simple to the complex.
3. Prefer the more familiar word to the less familiar.
4. Avoid unnecessary words.
5. Put action into your verbs.
6. Write the way you talk.
7. Use terms your reader can picture.
8. Tie in with your reader’s experience.
9. Make full use of variety.
10. Write to express, not to impress.

3.2 Specific Rules for Science and Technology Writing

The language of science and technology is one of the main reasons why some journalists are afraid of reporting in this area. In many cases, it is like listening to a foreign language which you cannot speak.

However, the following rules could help you overcome most problems in science and technology reporting:

Understand the jargon

You have to understand scientific names and technical terms (sometimes called jargon) commonly used by scientists. It is these jargons that enable them to speak more accurately to one another about things they have in common. If a surgeon tells his/her assistant to cut "the big tube" during an operation, all sorts of mistakes could happen. Instead, the surgeon might talk about a patient's "aorta" or "vena cava". These terms are better understood by them but you and I may not understand.

That kind of language is acceptable between doctors and nurses, but your ordinary readers and listeners will understand better if your story refers to the aorta as "the main tube carrying blood out of the heart", and the vena cava as "one of the two main tubes carrying blood into the heart".

This shows that you must remember that you are the bridge between the scientists and the readers or listeners. Where possible, try to explain the jargons in the language your audience will understand. This requires that you have to understand the scientific terms yourself. Find out the simple meanings by asking the scientists concerned, or your contacts or look it up in a medical and other dictionaries.

However, sometimes, it is interesting and educative to include scientific terms in our reports, as long as they are explained immediately in words your audience can understand.

Use concrete words where possible

Generally, most people understand solid, concrete things which they can feel, smell, see, touch, taste or hear. This is because much of science is about ideas, where possible you should explain the scientist's abstract ideas in concrete words to enhance the understanding of your ordinary readers or listeners.

Do not overload with figures

It is advisable for science and technology reporters not to overload their stories with large numbers or lots of figures. In many cases, especially at the start of a story, you should round figures off to make them simpler to understand. For instance, 99,850 kilometers becomes "nearly 100,000 kilometres". This is especially important in the broadcast media where

audience do not have the opportunity to revisit the stories due to their transient nature, unlike the print which is permanent.

Write brightly

Bear in mind that your audience will not like long boring explanations. This is especially true in radio, where the listeners can quickly grow tired of concentrating on lots of facts and figures. So you should develop a bright style of writing. Keep your words clear and simple. Do not use too many scientific terms, ensure you explain those you must use.

Keep your sentences short and simple. Try to limit the important ideas to one (or two at most) per sentence. Enjoy the challenge. Write with enthusiasm and this will show itself in your stories.

Do not sensationalise

Sensationalism is when a reporter states something in such a strong and extreme way that it has an effect on people's emotions. Bad and amateur journalists sensationalise stories because they are more concerned with grabbing the attention of their readers or listeners than with telling the news accurately. There might be truth in what you write. Do not over exaggerate to draw attention.

Sensationalising science can often lead to harm by falsely provoking strong emotions such as hope or fear in readers or listeners. This is especially dangerous in fields such as medical research. Scientists researching a new drug will seldom claim that they have found a cure for a certain disease. They are more likely to say it is "a step towards a cure" or "a possible way of preventing the disease" or even "a way of reducing the symptoms". They do not want to raise false hopes. If you then write that "scientists have found a cure for cancer" or HIV/AIDS, it would raise the hopes of everyone with the disease and all their relatives. When they discover that they themselves cannot be cured, they will feel even worse than before your story.

Give background details

Not very many scientific or technological discoveries are by accident. Most are the result of work over time. Although discoveries may come suddenly, they usually come because a scientist is looking for something in that direction.

The job of a science and technology reporter is to place all developments in context. Explain how we got to the situation today. In a story about an AIDS drug, explain what scientists know about the disease and how many people it has so far killed, especially in your country or region. In a story about a new pocket computer, explain a little about the history of computers and how the new small version

compares with existing computers. When reporting the results of a study into water cleanliness, give some of the history of the project.

You need these kinds of background details in most stories, because they help your readers or listeners to understand what has happened and how important (or disappointing) the latest development is. The background details should be written as simply and clearly as the rest of the story. They should be kept as short as possible because your audience is mainly interested in the latest news, not in history.

Illustrate your story

Illustrating your stories helps bring your story alive. In newspapers and on television, pictures or diagrams speak more than a thousand words.

Diagrams should be simple and well-drawn. If you take a diagram from a scientific report, decide what details you need and leave out the rest (either cover them up or get your artist to re-draw the diagram in the style you want).

4.0 CONCLUSION

From our discussions in this unit, it is obvious that to do well in science and technology reporting, you must understand the basic principles of the field. It could be by having a basic scientific education, reading books and magazines about science and technology, taking interest in scientific and technological developments, establishing good contacts with experts who can help you with information, etc. Also, always try to write your stories with a human angle; remember the people who made the breakthroughs and the people who will use them, never write a story until you understand all the information you will need to use, do not take sides in scientific controversies - just report the arguments, use concrete images to explain abstract ideas, write brightly and simply, do not sensationalise and always think of the best ways of illustrating any story.

5.0 SUMMARY

This unit has explained the general writing rules as well as the specific rules for effective science and technology writing. It is believed that knowledge of these basic rules will go a long way in equipping both science and technology reporters in training and those already in the practice.

6.0 TUTOR-MARKED ASSIGNMENT

- i. Discuss the basic rules for media reporting.
- ii. What are the specific rules governing science and technology writing?

7.0 REFERENCES/FURTHER READING

Cunning, R. (2008). *The Techniques of Clear Writing*. Boston: McGraw Hill.

Nwodu, L.C. (2006). *Journalism Practice: News, Aesthetics, Ethics and Laws*. Enugu: Rhyce Kerex Publishers.

UNIT 5 STYLES IN SCIENCE AND TECHNOLOGY WRITING

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 Meaning of Style in Science and Technology Reporting
 - 3.2 Types of Style in Science and Technology Reporting
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

One major determinant of a good science and technology writing is the writer's style of writing. This unit discusses style in media writing as it concerns science and technology reporting.

2.0 OBJECTIVES

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

- explain the meaning of style in science and technology reporting
- discuss the various types of style available to a science and technology writer.

3.0 MAIN CONTENT

3.1 Meaning and Types of Style

In the general term, style means fashion or trend. It is a particular way of doing things; a way somebody does what he does, writes what he writes, and says what he says. Summers et al (1995:1437) define style as “a particular way of doing something designing something, or producing something especially one that is typical of a particular group of people”.

As a journalistic term, it simply means distinctive ways of writing news, editorials and sundry journalistic writings (Nwodu, 2006 :). According to Aligwe (1999:185), “Style is the peculiarities about the rhythm of a writer's work resulting from diction and sentence construction”.

Emphasis on style in science and technology reporting is perhaps due to the many technicalities involved in the area.

3.2 Types of Style in Science and Technology Reporting

Generally, there are two types of styles. They are formal style and informal style.

Formal style: Formal style is the style used in writing classical English. It emphasises a serious tone, purity and dignity of expression, elevated diction but usually expressed in long sentences yet interesting because of generous use of punctuations in the right places to achieve simplicity and precision. Formal writing style shows mastery of the language. It is common with people of high education who write serious things with dignity. It is called “Queen’s English” or “Classical English”.

Informal style: Most writings today are informal. They are used in everyday usage with respect to correct grammar. Sometimes: it adds colloquialism, dialect, even slangs but the writer should be conscious not to slip into sub-standard writing such as unconventional sentence structure and annoying Americanisms.

Individual style: There is what we call “individual style”. Every writer has a style. When we read several writings or works of some authors and compare their types of writing, we begin to see differences in their approaches to writing. But the surprise is that no author is likely to be able to describe his or her style, rather it is the reader that identifies the author’s style.

Some writers use serious expressions, some use suspense, some use proverbs. Some other writers use satire (ridicule) sarcasm, vituperation. Other use solecism euphony and elegance. All these are in order to create effect on the readers.

We also have other forms of style such as:

Complex style: This type of style as the name sounds is complex. It uses ambiguous language in the believe that some audience members are easily thrilled with ambiguous words and sentences. This type of style must not by any means be used in science and technology reporting, this is because science and technology reporting is already an ambiguous area, any additional ambiguity would make it more complicated.

The Simple style: This is the direct opposite of the complex style. Simple style of writing makes for easy reading and enhances easy comprehension. Journalists are often encouraged to adopt this style. This is perhaps the best style of media writing, especially for science and

technology writing. Nwodu (2006:) believes that the simple style performs the following functions:

- It makes room for smooth, convenient and pleasurable reading
- It emphasises the use of easy-to-understand (simple) vocabularies, which help to carry greater percent of the audience members along regardless of their differential educational levels.
- It creates room for brevity in writing by ensuring that every vocabulary, diction, syntax phrase, imagery and sentence length is not only simple and short but also plays significant function in the overall sentence structure.
- It creates room for clarity in writing by ensuring that the message of communication is properly conceptualised, articulated and communicated to the audience members in a manner that will enhance easy understanding of the message idea.
- It encourages precision in writing by ensuring that the intended message idea is precisely in tune with the message idea communicated and understood by the audience members.

Humorous style: This type of style uses funny, amusing, humorous style to communicate important messages. Most writers that use this style of writing are usually naturally endowed with high sense of humour. Aligwe (1999:188) cited in Nwodu (2006) observes that:

the objective of humorist is to achieve relaxation and amusement in his readers. He helps his readers relax frayed nerves. He leads them to the rich treasures of fun and amusement concealed in so-called sad subjects. There can be fun in war. There can be amusement in oppression. There can be laughter in suffering. The humorous stylist is skilled in making the heavy loads of life light on his readers.

Flowery style: Here, the language is made very colourful, beautiful and well embellished with appealing images. This type of style takes the form of prose. The language is simple; it is narrative and makes use of proverbs, figures of speech, etc.

The journalistic style: Journalism writing combines both formal and informal style. In most cases, however, it makes use of formal style in the sense that it is usually aimed at the average readers.

A newspaper is not a textbook or a material for attention of professionals. It is for anybody who can afford it.

Newspapers and magazines are such that once bought by one person can circulate to many secondary readers. But sometimes some newspapers

and magazines have particular audiences. So it is for the writer to know the style that suits his/her audience.

We say in journalism that “News is sacred, and opinion is free” That means that news writing is more serious writing than the feature. The individual feature writer has the right to use his peculiar style, yet we find nowadays that much news writing is sensational writing.

News is primarily meant to provide information and interpretation. In opinion writing, editorials are very serious writing. It is educative, instructive, interpretative, argumentative and persuasive.

Argumentation appeals to the sense of reason. Persecution appeals to the emotion. Thus, unlike news, unlike editorials, feature writing and column writing use the free style. Free style means individual style.

Some journalists however, carry informalities to the extreme and degenerate from the pathos to, turning informal writing to substandard writing. This type of writing turns educated people away. This is why some educated people do not treat journalistic writings with much significance, but see many as sensational writers who sacrifice truth and seriousness to falsehood. Young journalists who believe that they are being creative by writing to impress and sensationalise, afflict the reader with what is called “Journalese”

4.0 CONCLUSION

The choice of writing style is an important consideration in science and technology reporting. This is so because science and technology reporting is a special genre of journalism that requires simplicity if the language must be understood by those it is meant for.

5.0 SUMMARY

This unit has examined the meaning and types of science and technology writing. We defined style as fashion, trend, a particular way of doing things; a way somebody does what he does, writes what he writes and says what he says. We also identified the various types to include: formal style, informal style, simple style, complex style, journalistic style, humorous style, flowery style, among others.

6.0 TUTOR-MARKED ASSIGNMENT

- i. Define style in the context of science and technology reporting.
- ii. What are the various types of styles?
- iii. Which style would you recommend for science and technology reporting and why?

7.0 REFERENCES/FURTHER READING

- Aligwe, H. N. (1999). *Techniques and Mechanics of Feature/Article Writing*. Enugu: J.T.C. Publishers
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- Summer, Della *et al.* (1995). *Longman Dictionary of Contemporary English*. England: Longman Group

MODULE 4 EDITING IN SCIENCE AND TECHNOLOGY REPORTING

- Unit 1 Meaning and Purpose of Editing the Content in Science and Technology
- Unit 2 The News Makers in Science and Technology Reporting

Unit 3 Hints on Editing Science and Technology Writings

Unit 4 Using Editing and Proofreading Symbols

UNIT 1 MEANING AND PURPOSE OF EDITING IN SCIENCE AND TECHNOLOGY REPORTING

CONTENTS

- 1.0 Introduction
- 2.0 Objective
- 3.0 Main Content
 - 3.1 Meaning of Editing in Science and Technology Reporting
 - 3.2 Purpose of Editing in Science and Technology Reporting
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

Editing is very important in any genre of media writing. This is so because not all that are written are accurate and harmless to the human society. This unit discusses the meaning and purpose of editing in science and technology reporting.

2.0 OBJECTIVE

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

- explain the meaning and purpose of editing in science and technology reporting.

3.0 MAIN CONTENT

3.1 Meaning of Editing in Science and Technology Reporting

When we talk of editing, we refer to the process of checking the reporter's copy to make it suitable for publication and, where possible, to improve it. Those assigned to such responsibilities are called editors.

There is hardly any copy that does not require some sort of editing. This is because no matter how accurately and well written a story may seem, editing could still strengthen the language, correct wrongly spelt words, and reduce unacceptable length of an article to acceptable length and/or make the article easier to understand:

Virtually all materials which arrive for publication require editing. In the editing process, most editors are concerned with:

1. The length of the story – In the media, there is usually deficit of space and air time i.e. for the print and broadcast respectively. Also, the length of time and space for each programme and content are usually predetermined. Thus, if a story is too long or too short editing takes care of that in the process of editing.
2. The style of the story - Whether formal or informal, flowery or humorous, complex or simple; is it written in first, second or third person pronoun?
3. Balancing the content of the story - This is done to ensure harmonisation of opinions and facts.
4. Structuring and restructuring of the content – This has to do with the sequential arrangement of the story from the lead (introduction), to the middle or body and the conclusion.
5. The Clarity of the story - This is another serious concern of editors. Here, the task is usually to ensure that the stories are understood by those they are meant for. Thus, most editors edit to make the story simple and understandable by an average reader, listener or viewer.

Editing helps to avoid publication of confidential materials. It enables editors or sub-editors to take care of errors including those that bother on the law, ethics, grammar or structure. It also helps to avoid publication of materials placed on embargo. These are materials that are not supposed to be published before a particular date or period of time.

3.2 Purpose of Editing in Science and Technology Reporting

In explaining the meaning of editing in our last sub-heading, we delved a little into few reasons why we must edit or reports whether it is for the print or for the broadcast. Here, we will now take them further.

There is no doubt that the procedure for editing a story varies from one editor or news medium to another, however, one common thing is that all copy-reader has the primary aim of making the story look brighter by tightening up all loose and blocking loopholes in the story.

Ogbuoshi (2010:215) identified the following reasons for editing:

- i. To eliminate libelous materials and errors of fact.
- ii. To remove all kinds of typographic errors
- iii. To remove clichés or tired expression
- iv. To make sure the copy is in line with the editorial policy of the publishing organisation
- v. To remove or replace ineffective adjectives or adverbs
- vi. To improve the style of the original copy
- vii. To remove misleading statements, slangs, and grammatical errors
- viii. For the purpose of writing headline or titles for the story or copy
- ix. Reducing a long article to acceptable length
- x. Cropping photographs that will go with the story
- xi. Indicating type sizes and typefaces
- xii. The editor is responsible to writing outlines and performing many other activities that will help the printer to give a perfect printed story.

Other closely related reasons for editing a copy may include:

- For proper punctuation
- For conformity with the medium's own house style's spelling, including capitalisation, ascription of titles, etc.
- To avoid duplication of facts
- To cross check wrong spelling
- To fill up omissions
- To checkmate layout inconsistencies
- To correct typographical errors.
- To conform to patterns
- To conform with legal and ethical stipulations.

Editing for the media is no doubt a daunting task. Meanwhile it is even a more serious matter when it has to do with editing science and technology writing. This is because this is one area where many people are not very familiar with, and this makes the job of the editor more challenging and tedious too. This makes it very imperative that one who edits science and technology writings need to have experience in the job. He must know the lexicon and the professional jargons in the field. He

must be armed with the various editing tools including an up-to-date dictionary in the various aspects of science and technology he/she is editing at the particular point in time.

The editor must ensure that the layout is balanced by considering such things as the unity, contrast, and the general aesthetics of each planned or laid-out page. The strict copy fitting is also done to ensure that the materials fit into the spaces allocated to them on the relevant pages.

4.0 CONCLUSION

Editing is basic to every piece of media writing. In science and technology reporting, it is even a more serious matter because science and technology by their very nature are technical. Editing refers to the process of checking reporter's copy to make it suitable for publication and, where possible, to improve it. Editing enables editors or sub-editors to take care of errors including those that bother on the law, ethics, grammar, structure, etc.

5.0 SUMMARY

This unit has examined the meaning and purpose of editing as it concerns science and technology reporting. Editing in a simple term is making a unsuitable copy suitable for its purpose. Editing is important in media writing, but much more important in science and technology reporting due to the peculiarities and technicalities involved in this aspect of journalism.

6.0 TUTOR-MARKED ASSIGNMENT

- i. What is editing?
- ii. Why is editing necessary in science and technology reporting?

7.0 REFERENCES/FURTHER READING

Ogbuoshi, L.I. (2010). *Understanding Newspaper Management and Production*. Linco Enterprises Ltd.

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UNIT 2 THE NEWS MAKERS IN SCIENCE AND TECHNOLOGY REPORTING

CONTENTS

- 1.0 Introduction
- 2.0 Objectives
- 3.0 Main Content
 - 3.1 The News Makers in Science and Technology Reporting
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

Many people who are not in the media industry always wonder how it is possible for newspapers, magazines and even the broadcast media to publish and broadcast as often as they do. Perhaps what many do not know is that every edition of a newspaper or magazine and every programme produced in the broadcast media is a collective efforts of many professional men and women who work assiduously and collectively for the attainment of one goal – getting the paper ready for their readers or getting the programmes watched on TV or heard on radio by their viewers and listeners respectively. This unit reveals those involved in the entire process as well as what they do.

2.0 OBJECTIVES

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

- identify the news makers in science and technology reporting, and
- explain the responsibilities of the news makers in science and technology reporting.

3.0 MAIN CONTENT

3.1 The News Makers in Science and Technology Reporting

In a full-fledged science and technology media outfit, getting the news ready is usually a product of collective efforts of many professionals. Among them are journalists, engineers, craftsmen, artists and administrators. They perform different functions using the principles of division of labour.

The Reporters

The reporters write news stories. They report the events. They provide the core of news stories that are published in the papers and those aired in the broadcast. A good reporter is great asset for his/her news medium. The reporter is the first gatekeeper in the editing process. This is because he/she has to make the initial judgment as to what constitute news and on which facts to base the news story.

His/her primary function is to cover news events assigned to him/her by his/her boss. He/she goes on assignments, gathers facts, writes the stories and files them to the newsroom. He/she is always mindful of the deadline. He/she knows that his/her best companion when writing a news story is a dictionary. Before submitting his/her stories to his editor, he/she first edits them properly.

The Sub-Editor

He edits news stories and casts headlines. He/she also assists in page planning and works on the sub desk under the supervision of the Chief Sub-editor. He/she must be a good news writer and a good editor. Such a person needs to have had previous experience in reporting; this is because a person who does not know how to write a good story cannot edit a badly written one properly.

He/she must be able to spot weak areas in a story, identify wrongly spelt words and grammatical errors as well as badly constructed sentences. Ogunsiji (1989) observes that the primary goal of the sub-editor is to create a good story out of a badly written one, and that for him/her to achieve that goal, he/she must be able to write well and show evidence of a complete mastery of the correct use of editing symbols.

The Chief Sub-Editor

He/she is the head of the rim desk. He/she is the link between the rim desk and the news editor. He is the boss for all the sub-editors that work on the rim desk. He/she edits news stories, casts headlines and helps in planning the page. He/she assigns duties to the sub-editors. He/she supervises the sub-editors when editing news stories. He/she solves any problems of sub-editors and gives general directives.

It is his/her duty to go through all the stories edited by the sub-editors working under him. He/she corrects any mistakes found in stories already edited by the copy readers. As the head of the rim desk, all the sub-editors are supposed to learn from him and take orders from him or her. He/she must have worked for several years as a reporter before being made a sub-editor.

The News Editor

This person is the key to the operation and nerve centre of any media outfit. He/she is the number one man in the newsroom and is the link between the editor and the news staff and the sub-editorial staff. He/she decides what events should be and covered and gives directives on how certain stories should be written.

The Picture Editor

The picture editor is in charge of pictures. He/she has then final say in deciding pictures to be used and must have the ability to determine good and suitable pictures to be used.

He/ she edits pictures and makes assignments for the photograph staff. As the head of the photographic section in the editorial department, he/she receive pictures both from staff and freelance photographers and works with the news editor, chief photographer and layout editor to get the pictures into the paper in the appropriate sizes and positions.

Ogunsiji (1989) observes that the picture editor, in selecting pictures for publication, uses certain criteria such a (a) action pictures (b) pictures that are technically good i.e. sharp in focus, have snap, colour, tone and are well lit and (c) pictures that say something.

The Features Editor

This is the head of the features section of his newspaper. He/she writes and co-ordinates the section. He/she is in charge of all feature articles meant for publication in his paper and casts headlines for feature articles earmarked for publication and works in collaboration with the layout editor in page planning for the articles. He/she is a member of the Editorial Board of the newspaper.

Proof Readers

These are those who check the mechanical accuracy of stories and correct mistakes if any. They use proof reading symbols in the process.

Cartoonists

They draw cartoons. Most cartoons are usually designed to create humour and entertain readers, yet they pass important message.

The Layout Editor: The layout editor is in charge of the overall layout of the newspaper. The size, the typeface, the length and breadth, etc

The Editor: The editor is usually the final last gatekeeper in most media outfits. He/she is the head of the editorial department and all staff in the editorial department are directly under his control. He/she lays down editorial polices.

As the final gatekeeper, he/she has the final say on everything that goes into the paper. He/she can kill a story which he considers unsuitable for publication in his paper. He is held responsible for everything that appears in the newspaper.

Ogunsiji (1989) gave the following as the qualities/attributes of a good editor:

He/she must:

- be intelligent
- be a motivator
- have a good command of English
- be aware of the importance of his job
- have a sense of humour
- have a wealth of experience in journalism
- have a nose of news
- be a good team worker
- be creative and dynamic
- have a perfect knowledge of media laws and their defences
- possess the ability to control others
- have good manners
- be a good policy-maker
- have a college education
- have experience in the newspaper industry, including reporting and editing
- be well-read, in both fiction and non-fiction
- be familiar with the news and its background
- be quick and thorough when editing copy
- Have a healthy skepticism that leads to the questioning of information in stories and a desire to release no story with unanswered questions
- be familiar with the rules of grammar, with punctuation and spelling and with style
- appreciate good writing and knows what to do with it
- be able to listen to the rhythm off a story
- have an orderly and well-balanced mind, which implies judgment and a sense of perceptive and proportion
- knows the laws of libel, privacy and copyright
- have a team spirit.

4.0 CONCLUSION

Getting the news and other media contents and programmes for the public to read, hear or watch is definitely not a one-man job. It is a collection of efforts different persons ranging from the reporters to the

editor, sub-editor, chief editor, news editor, pictures editor, features editor, proof readers, cartoonists, layout editors, etc.

5.0 SUMMARY

This unit has identified and explained the news makers in a news medium. It also identified some of their requisite qualities. Among them, they must be intelligent, versatile, experienced, creative, dynamic, know the media and laws, have team spirit.

6.0 TUTOR-MARKED ASSIGNMENT

- i. Identify and discuss the news makers in science and technology reporting
- ii. What are their qualities?
- iii. What jobs do they do?

7.0 REFERENCES/FURTHER READING

Ogbuoshi, L.I. (2010). *Understanding Newspaper Management and Production*: Linco Enterprises Ltd.

Ogunsiji, M.A. (1989). *Introduction to Print Journalism*. Lagos: Nelson Publishers.

UNIT 3 IMPORTANT HINTS IN EDITING SCIENCE AND TECHNOLOGY WRITING

CONTENTS

- 1.0 Introduction
- 2.0 Objective
- 3.0 Main Content
 - 3.1 Important Hints in Editing Science and Technology Writing
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

Often times, many reporters shy away from science and technology. This is because many of them see the area as perhaps the most difficult to report. This unit gives some helpful hints that could go a long way in guiding both students and practitioners of science and technology journalism.

2.0 OBJECTIVE

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

- cite some useful hints in editing science and technology writing.

3.0 MAIN CONTENT

3.1 Important Hints in Editing Science and Technology Writing

In editing (not only science and technology writing), it is imperative that the following hints identified by Ogbuoshi (2010:231) are taken into considerations:

- a. The purpose of editing a copy is to ensure brevity, clarity and readability. The sub-editor must eliminate all grammatical errors, clutter words (redundant and ambiguous words) in the copy.
- b. The fact of a story must not be altered.
- c. Libelous and seditious statements must be guarded against
- d. The story must be made to conform to your paper's house style
- e. A sub-editor is free to reconstruct a sentence, change words, kill, merge or reduce the size of a paragraph.

- f. Since the sub-editor is not the last gatekeeper, he/she has no right to kill an entire story; at best, he/she can order the reporter concerned to re-write the story.
- g. Subject to the news hole available, a copy reader has no constraints in lengthening or reducing the length of any story, as facts are not twisted.
- h. Only experienced reporters should be made sub-editors or editors for safe and dependable editing.
- i. Editing is not a lazy person's job.
- j. Pencils must be handy at all times when editing news stories.

In addition to the hints listed above, readers may be interested in going through the following *New York Times* operations as listed by Crowell in Ogbuoshi (2010:231):

- 1. Check the grammar: The story may say, "Having jumped the gun, the fine race he ran was just wasted effort". But the race, of course, did not jump the gun. The dangling modifier is an old enemy.
- 2. Make your copy conform to the paper's style: If it is "500 fifth Ave. in one place and "500 5th Avenue" in another, the reader will wonder why paper cannot make up its mind. A good rule is to be consistent.
- 3. Watch out for libelous statements: If the story says murder when it should say suspect, and the defendant is later acquitted, he will sue. Another good rule: Be fair as well as accurate.
- 5. Test for news value
- 6. Cut the story if necessary: Sometimes stories are just the right length, but sometimes they are too long for what they have to say or because they will not fit the allotment of space in the paper.
- 7. Write the headline: The head has to attract attention, tell the news, grade it, sell it and dress up the page, No headline can with all five of these goals, but the writer should try for them. He must not settle for a pedestrian label or prosaic resume of the new in the headline.

4.0 CONCLUSION

Editing science and technology writing is a daunting task that requires special guideline if it must be done well. This unit has examined those vital hints that would make for easy and better editing of science and technology writing.

5.0 SUMMARY

This unit has enumerated some important hints in science and technology reporting. Knowledge of these hints would definitely be of immense benefits to both students practicing science and technology journalists.

6.0 TUTOR-MARKED ASSIGNMENT

Enumerate 10 useful hints in editing science and technology writings.

7.0 REFERENCES/FURTHER READING

Ogbuoshi, L.I. (2010). *Understanding Newspaper Management and Production*. Linco Enterprises Ltd.

Ogunsiji, M.A. (1989). *Introduction to Print Journalism*. Lagos: Nelson Publishers.

UNIT 4 USING EDITING AND PROOF READING SYMBOLS IN SCIENCE AND TECHNOLOGY REPORTING

CONTENTS

- 1.0 Introduction
- 2.0 Objective
- 3.0 Main Content
 - 3.1 Editing Symbols for Science and Technology Writing
 - 3.2 Proof Reading Symbols for Science and Technology Writing
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

Editing and proof reading are made easy through the help of some symbols. This unit examines the various editing and proof reading symbols used in editing and proof reading.

2.0 OBJECTIVE

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

- identify, understand and use the various editing and proof reading symbols.

3.0 MAIN CONTENT

3.1 Editing Symbols for Science and Technology Writing

Editing symbols are simply symbols used in the editing process. They are signs that indicate corrections to be effected in a given writing. Some are used to indicate omission of words or letters. Very many others are used to show typesetters which letters should be set in uppercase or lowercase and which words should be spelt out or abbreviated.

Meanwhile, it is possible that some individual media organisations might have created different editing symbols for their private use, but the general or common editing symbols that have been in existence and universally adopted for use over the years include:

Symbols	Meaning	Example	Corrected Example
	Capitalize	Jimmy London wrote Call of the wild.	Jimmy London wrote Call of the Wild.
	Lowercase (Don't Capitalize)	Jack is the hard-working sled dog in the Novel.	Jack is the hard-working sled dog in the novel.
	Delete (Take Out)	This goat he had a strong will to live.	This goat had a strong will to live.
	Insert (add) a letter or a word	she would not be defeated by his life of toil.	She would not be defeated by his life of toil.
	Insert punctuation	If Jimmy was not so strong, he would have died.	If Jimmy was not so strong, he would have died.
	Spelling error	Jerry, the wheeler dog, nipped and snarled at Buck.	Jerry, the wheeler dog, nipped and snarled at Buck.
RO	Run-on sentence	RO Spitz was Jack's main threat each dog wanted to be the leader.	Spitz was Jack's main threat; each dog wanted to be the leader.
CS	Comma splice	CS Two dogs fought, it was a dramatic struggle.	Two dogs fought. It was a dramatic struggle.
Frag.	Sentence fragment	Frag. Used his incredible strength to defeat his rival.	Buck used his incredible strength to defeat his rival.
	Start a new paragraph	He then was truly the lead dog. Another important character...	He then was truly the lead dog. Another important character...
	End punctuation needed	Two dogs fought to earn the position of leader.	Two dogs fought to earn the position of leader.
	Change word order	The two strong dogs fought over the bone.	The two strong dogs fought over the bone.
[word choice]	Choose a better word	The dog [nibbled] ferociously on the bone.	The dog chomped ferociously on the bone.

3.2 Proof Reading Symbols for Science and Technology Writing

Proof reading is the process of removing the errors contained in the proofs of the original writing. It performs similar functions as editing symbols but with a significant difference. The proofreader uses proof reading symbols in checking the errors and inadequacy while the copy editor uses the editing and is a tidying-up stage, where such things as grammar and punctuation are checked. Some of these things may already have been checked at the editing stage, but proof-reading gives a final check on them all. The proof readers cross-check for, and mark out all mistakes – wrong spellings, grammar, typographical errors, quotations, punctuations, etc – for correction.

Proof-readers also play a key role in the process of printing. In publishing houses, they are called copy editors. Smith (1989:56-66) enumerates the functions of a copy editor and they include checking legibility, consistency, spelling transliteration, punctuation, abbreviations, grammar, clarity and style, factual accuracy, legality and properly.

After proofreading and corrections, the obtained copy is called the original copy. This (original) will be sent to the graphic section who prepares a dummy on its own on receipt of the original(s) from the composition department. The major proof reading symbols include:

LC	=	set in lower case
C	=	Capitalise letter
Sm.caps	=	set in small capitals
Wf	=	wrong font
bf	=	set in bold face
lf	=	set in light face
tr	=	transpose word in the line
//	=	align type vertically
//	=	leave some space
Eq.//	=	equalize space
=	=	Indent number of em guads shown
Ls	=	letter space
Is	=	Push down a space which prints as a mark
X or (X)	=	Imperfect type or Broken typography
Stet.	=	Leave it as it is (.) or (X) = Period
”		Quote
Sp.	=	Spell out
1/m	=	Use one-em dash
//	=	Begin paragraph
No.//	=	No paragraph
-30-	=	End of it.

4.0 CONCLUSION

Editing and proof reading are central activities in every news medium. There are signs used to indicate corrections to be effected in a given writing. Some are used to indicate omission of words or letters; others are used to show typesetters which letters should be set in uppercase or lowercase and which words should be spelt out or abbreviated.

5.0 SUMMARY

This unit has examined the major editing and proof reading symbols used in the news media. Knowledge of these signs and symbols are no doubt very important for the science and technology reporters and editors alike.

6.0 TUTOR-MARKED ASSIGNMENT

List any 10 editing and proof reading symbols respectively, and interpret their meaning.

7.0 REFERENCES/FURTHER READING

Ogbuoshi, L.I. (2010). *Understanding Newspaper Management and Production*. Linco Enterprises Ltd.

Ogunsiji, M.A. (1989). *Introduction to Print Journalism*. Lagos: Nelson Publishers.

MODULE 5 ISSUES IN CONTEMPORARY SCIENCE AND TECHNOLOGY REPORTING

Unit 1	Legal Issues in Science and Technology Reporting
Unit 2	Ethical Issues in Science and Technology Reporting
Unit 3	Hazards in Science and Technology Reporting
Unit 4	Selected Samples of Science and Technology News and Reports

UNIT 1 LEGAL ISSUES IN SCIENCE AND TECHNOLOGY REPORTING

CONTENTS

1.0	Introduction
2.0	Objectives
3.0	Main Content
3.1	Meaning of Law
3.2	The Need for Law in Science and Technology Reporting
3.3	Laws Regulating Science and Technology Reporting in Nigeria
4.0	Conclusion
5.0	Summary
6.0	Tutor-Marked Assignment
7.0	References/Further Reading

1.0 INTRODUCTION

The human society is not a lawless society. It is usually guided by a plethora of laws. The media constitute a vital aspect of the society; this makes it imperative that our discussions on science and technology reporting will not be complete without reflecting on aspects of law that influence media practice in the society. This unit examines those laws and how they affect science and technology reporting.

2.0 OBJECTIVES

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

- explain the meaning of law
- prove the need for law in science and technology reporting
- identify the various laws that guide science and technology reporting in Nigeria.

3.0 MAIN CONTENT

3.1 Meaning of Law

It was Apadorai who once observed that the life of men is generally characterised by two facts: every man desires to have his own way, to think and act as he likes; but man cannot always have his own way, because he lives in a society where one man's meal is another man's poison. Therefore, since one man's desires conflict with those of others, the interactions and relationships among members of society have to be governed by some rules and regulations commonly referred to as law.

Law is a set of laid down rules and regulations that govern or regulate human actions. It is the established norms to which actions conform or should conform.

Law could be looked at from different perspectives. You may have heard people talk of the laws of logic, the laws of the sciences, e.g. gravity, friction, etc, the laws of public communication, the laws of nations or international law. In the context of our discussion in this unit however, law is taken to mean "a body of rules or principles enacted and enforced by the society via the instrumentalities of courts in the administration of justice. Akaniro (1997:3) cited in Okoro (2004:1) that, for such laws to be effective, they must be backed by sanctions in the event of the command being disobeyed.

3.2 The Need for Law in Science and Technology Reporting

The importance of law could better be appreciated when one imagines a lawless society. A lawless society in our perspective is a society where there is anarchy; and anarchy on the other hand is a state of society where there is no government, no supreme power, and is characterised by lawlessness or political disorder. In such a society anyone can kill, maim, steal, assault, rape and commit any offence without being punished. In such a society, citizens live in fear and uncertainties; and there is general break down of laws. Such a state characterised by hunger, fear, injustice, murder, poverty, destruction of lives and property, general insecurity, wickedness and backwardness.

Categorically, law performs the following functions in a society:

- **Regulation of human conduct**

Laws are meant to regulate human conduct in the society. This is because all humans are not orderly. In an orderly society, there may be no need for law because people would automatically be guided by

morality, religious beliefs and ethical control. But it is however unfortunate that in the society, all human beings are not orderly. There are people who in the process of satisfying their happiness infringe on others'. This makes it imperative for the existence of law in the society to regulate human conduct. It is therefore the fear of sanctions attached to disobedience to the law that help in the regulation of social life. This is because law exists for the primary purpose of promoting and protecting the interest and happiness of the greater number of persons in the society.

- **Reconciling individual interest with that of the society**

Every society has interests to protect. Every individual too has interests to protect. When these different interests meet, there is bound to be clash of interest. This makes it imperative that that individual interest must be balanced with the welfare of the society for the good of all. In other words, law should work for the greater good of the greater number of the members of the society.

- **Laws are used to initiate changes in the society**

The human society is dynamic. By this, we mean that changes take place in our society on daily basis. There are changes in the economy, politics, agriculture, education, sports, etc. Most of these changes are initiated and legitimised by law. This means that law could be seen as a catalyst for dynamic and general advancement in our society.

- **Laws are used to make and amend laws in the society**

We had earlier established that where there is society, there is law. This is because the human society is not a lawless society. Meanwhile, laws are not permanent. Sometimes, needs to make new laws or amend old existing ones arise. When such is the case, stipulations of the law becomes the source of power to do so. Etc.

3.3 Laws Regulating Science and Technology Reporting

Laws that regulate various societies are usually all-encompassing. Hardly do we see any aspect of human society that is not governed by one law or the other. In science and technology reporting, and indeed, media reporting in general, the following laws exist to check the activities of those that find themselves therein:

- **The official secrets Act:** This is a law meant to act as a check against the publication of highly confidential information or documents that may weaken or limit the integrity of any

government and by extension threaten the security of the state. This law forbids anyone in custody of secret or official documents, such as policy decisions, contracts and actions of government and security information, from recklessly divulging them to the public, especially to an enemy. The Official Secrets Act arises because of the concern that freedom of expression should not be allowed to pull down a legitimate government. This is to say that freedom of expression should go with responsibilities.

The media believe that it is their duty to provide citizens all information they need to know, including government policies and activities without reservations or restrictions. Governments on the other hand believe that they would perish if they have no secret.

It is in pursuit of secrecy of certain information listed as classified document that gave rise to the official secret acts. A classified document is one clearly marked out as not to be disclosed to the public and of which the disclosure to the public would endanger the security of the nation.

- **Obscenity:** This is the law that forbids anyone from making public any material that has the capacity or tendency to corrupt the minds of those hands they would fall into. It forbids anyone from publishing or using of sexually offensive language or behaviour, especially in a book, play or film. A media portrayal of issue or individual can therefore be obscene if it deals with sex, in a most lewd, vulgar, unacceptable and irresponsible manner that offends public sensibilities and morals.

The Obscene Publications Act came into law in Nigeria in 1961. The act defines obscene articles as “ any publication or broadcast which has the tendency to deprave and corrupt persons who are likely to read, see or hear the mater contained or embodied there in”. The aim of the act is to promote and protect public good and morals. They law seeks to ensure that the press and other instruments of communication do not expose members of the public to materials that can corrupt their minds.

Defence of obscene publication

Section 4(2) of Obscene Publications Act of 1961 provides possible defence for a journalists or any person arraigned before a magistrate court on grounds of violation of the act.

The defence therefore lies on the ability of the charged to prove beyond reasonable doubt that he/she did not examine the content of the material

branded obscene and that he/she had no reasonable cause to suspect that the act is applicable to the material in question. Section 4(3) clearly states that, except where the summons is consented to by a critical court of law that has jurisdiction over such matters; the accused is at liberty not to respond to the summons.

- **Law of sedition**

This is any form of communication that tends to poison the minds of the public against the government of the day. It is any communication that has the tendency to defame any government in power and by extension, incite members of the public to embark on mass action against the government.

Any publication or communication that provokes or has the tendency to provoke public hatred or protest or mass action against the government of the day constitutes sedition. In such situations, drastic actions are usually taken against the masterminds of such publication or communication including those who promote and circulate them.

Here in Nigeria, many news media had been closed down in the past for reason of government's disturbance over their news contents. In many of those cases, the governments have relied heavily on the law of sedition for the justification their actions.

Conditions under which a publication can be viewed as seditious

The Criminal Code Acts, CAP 77, Laws of the Federal Republic of Nigeria 1990, stipulate that a word or publication can be viewed as seditious if:

- a. seditious in its intent regardless of the purpose
- b. it exposes the person of the president or a state governor or the government of the federation to hatred or contempt or both.
- c. capable of inducing or inciting Nigerian citizens and other resident in Nigeria to violate established laws of Nigeria and attempt or seek by unlawful means, to procure the alteration of any other matter in Nigeria.
- d. it create a climate of discontent and acrimony among Nigerian citizens and others resident in the country.
- e. it encourage hostility between different tribes or population classes in Nigeria.

However, it must be noted that courts in Nigeria, including the court of Appeal have struck down the sedition laws as being colonial laws that are inconsistent with independence and democracy.

Copyright law

Copyright law is another legal issue a science and technology reporter needs to know as he goes about in his/her daily practice. Copyright is the right of an author or originator of a creative work to reap the benefits accruing to his work by exercising maximum authority or control over the reproduction, distribution and commercialisation of the work for a given period.

This law forbids anyone from copying, recording or dubbing of someone's work or any form of intellectual property without due acknowledgement to the copyright holder.

Proof of copyright infringement

Anyone making use of copyright infringement laws must prove beyond reasonable doubts that:

1. He/she has the exclusive right of ownership of the work in question.
2. Show in clear terms the specific aspect of the work for which an action on copyright is brought, where copyright subsists.
3. Establish the fact that his/her copyright was actually infringed by the defendant.

Defence of Copyright

Baran (1999:388) cites the following defenses as open to any person arraigned before the court on account of copyright violation:

1. The use does not in any way decrease the commercial value of the original work
2. Use is in the public interest, such as an author's use of line drawings of scenes from an important piece of film.

This does not mean that journalists are not free to cite other person's works, but must ensure that:

- The portion of the work quoted or copied does not run into many paragraphs or pages.
- Your intention is to provide background information to what you are talking about.

- The portion of the work quoted or copied is duly credited to the originator or creator of an idea. To present the idea in a manner that will suggest that the journalist is the creator of the idea tantamount to copyright violation.

Contempt of court

The Black's Law' Dictionary (6th edition) cited in Ewelukwa (2004:145) defines contempt of the court according as:

Any act which is calculated to embarrass, hinder or obstruct court in administration of justice, or which is calculated to lessen its authority or its dignity, committed by a person who does not act in willful contravention of its authority or dignity, or tending to impede or frustrate the administration of justice or by one who being under the court's authority as a party to a proceeding willfully disobeys its lawful orders or fails to comply with an understanding which he has given.

The definition goes to show that it is a grievous offence to comment on, publish or broadcast in opinion on a matter that is pending in the court in manner that will adversely influence the decision of the court. This is because the administration of justice requires that judges should weigh the veracity of the evidence before them from rational and objectives rather than emotional and subjective point of views.

Thus any publication or pronouncement that is likely to poison or bias the objectivity or rationality of the court will be viewed as a deliberate attempt to pre-empt the court and misled the judge. Hence, such act is contemptuous under the law.

Invasion of privacy

This law seeks to preserve individual rights to privacy. This law is anchored on the fact that every individual has boundaries within which other individuals should be excluded.

The argument is that everyone has the fundamental right to privacy of which no one should interfere without permission

Law of defamation

Defamation by simple definition is a spoken or written statement which tends to lower one's reputation in the estimation of right thinking members of the society. The common interest in law of defamation therefore is to protect the reputation of individuals from being unjustly messed up before the eyes of right thinking members of the society. The

essence is to guard against unnecessary and possible avoidable character assassination.

In the Nigerian Defamation Law of 1961, any spoken or written word is considered defamatory if it does any or a combination of the followings:

- a. Has the tendency of lowering the estimation of a person in the eyes or minds of right-thinking members of the society.
- b. Exposes a person to hatred, contempt and public ridicule;
- c. Causes other people to shun or avoid a person;
- d. Injures a person in his/her trade, profession or office.

Defamation law is therefore aimed at protecting the reputation of people in the society from being injured by the members of the society through the organs of mass media or interpersonal communication. Defamation is divided into two distinct but related categories, which are Slander and Libel.

When the defamatory matter is in permanent form, it constitutes libel; but when it is in transient form, it constitutes Slander.

Defense defamation (Libel and Slander)

A reporter charged for defamation of character may use any of the following defences:

- a. **Unintentional defamation:** Unintentional defamation is defamation done in error. The essence of the apology therefore is meant to retract the damage caused the victim by such erroneous publication. Defense of unintentional defamation also covers vendors. Their plea therefore will be that they were ignorant of the fact that materials they circulated were libelous.
- b. **Truth:** A suspect may plead not liable based on the justification that what he/she said or wrote is truth and nothing but the truth.
- c. **Public interest:** A suspect may plead not guilty before the court on the ground that what he/she wrote or said is in the best interest of the greater number of the public.
- d. **Fair comment:** This is another defence open to a journalist involved in libel a suit. A suspect could defend him/herself on the basis that his/her comments were fair and non injurious.

4.0 CONCLUSION

Law is very important in every aspect of human life. This is because without law, the society will be in a state of anarchy and lawlessness. This unit has examined the meaning and importance of law, as well as the various laws that regulate science and technology reporting and the mass media in general.

5.0 SUMMARY

In this unit, we have defined law as a set of laid down rules and regulations that govern or regulate human actions; or established norms to which actions conform or should conform. We have also identified the importance of law to include:- regulation of human conducts, reconciling individual interest with that of the society, laws are used to initiate changes in the society, etc. we also identified some of the laws to include – official secret, sedition, obscenity, copyright, privacy, contempt of court, defamation, etc.

6.0 TUTOR-MARKED ASSIGNMENT

- i. Define law.
- ii. Justify the need for law in science and technology reporting.
- iii. Identify and discuss the laws that regulate science and technology reporting in Nigeria.

7.0 REFERENCES/FURTHER READING

- Ewelukwa, B.N. (2004). *Introduction to Nigerian Press Law*. Onitsha: Maranatha Press Ltd.
- Okoro, N. (2004). *Law, Politics and Mass Media in Nigeria*. Nsukka: Prize Publishers Ltd.

UNIT 4 ETHICS IN SCIENCE AND TECHNOLOGY REPORTING

CONTENTS

- 1.0 Introduction
- 2.0 Objective
- 3.0 Main Content
 - 3.1 Ethics: A Conceptual Overview
 - 3.2 Some Ethical Issues in Science and Technology Reporting
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

In addition to having the knowledge of media laws, the knowledge of media ethics is also important in today science and technology reporting. This is because, beyond the universal media laws, there are still moral issues and decisions that confront media workers as they do their media work from day to day. This unit examines those ethical issues that border on science and technology reporting.

2.0 OBJECTIVES

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

- define ethics
- explain the code of ethics for Nigerian journalists
- discuss these ethical issues in science and technology reporting.

3.0 MAIN CONTENT

3.1 Ethics: A Conceptual Overview

The natural man is both rational and instinctual. Man, therefore, is said to be ethically guided only when he/she is able to suppress his/her instincts and behave in a manner considered to be rational within a social group. This suppression of the instinctual aspect of man for morality sake is what is known as ethics.

Explicitly put, ethics is the moral philosophy or science that determines what is right or wrong in a social context, (Nwodu, 2006:134.) The same author cites Summer *et al.* (1995:466) as saying that “ethics is a moral

rule or principle of behaviour for deciding what is right and wrong”. However, Merrill (1975) puts it succinctly:

Ethics is a nominative science of conduct, with stipulated guidelines, rules, principles and codes that are designed to lead individual to make moral decisions.

The implication is that morality is at the core of ethical discourse-cum-practice. In the context of ethics therefore, the acceptance or otherwise of human attitudes and behaviours; actions and inactions; and overall conducts can be based on relative moral uprightness or otherwise of such conducts. This explains why a given act can be said to be ethically right or wrong, good or bad, responsible or irresponsible, logical or illogical; socially acceptable or unacceptable, and moral or immoral (Nwodu, 2006:134).

3.2 Some Ethical Issues in Media Science and Technology Reporting

The ethical issues facing today’s media reporters in the country have been how to strike a balance between personal/organisational interests with societal interests. In balancing these conflicting interests therefore, it is imperative that science and technology reporters reflect on the code of ethics for Nigerian journalists.

1. **Truth and honesty:** An ethical media manager is required to use his medium to project issues truthfully. The problem with this however is that absolute truth is only an ideal that does not exist. If absolute truth in news reporting requires that journalist should report all happened without prejudice and bias; then reporting an aspect of event in preference to other aspect can hardly stand as the truth. Thus, perhaps, the best an ethical journalist can attain is to be objective in reporting issues even when such report is likely to affect his personal interests. Again, this is an ideal that only exists in the mind. Objectivity as ethical principle therefore demands that journalist should eschew his subjective views and personal biases in reporting issues that affect public and even private interests.
2. **Privacy:** Both media laws and ethics recognise the importance of privacy. There is a limit to which people can spy into the affairs of others. Individual’s right and privilege to privacy is therefore a valuable asset that should be guided jealously.
3. **Confidentiality:** A media person is expected to keep the names of his informants secret. Maintaining the confidentiality of the source of information, especially one obtained on deep background is an essential pedigree of journalism practice.

4 Personal interest versus public interest

In a depressed economy like ours where media workers are poorly remunerated, the ethical question has remained, should a reporter accept gratifications (brown envelop) in order to publish or kill a story that is of public interest because of personal desire to make ends meet? Or should a journalist kill a damaging but factual story involving his relative (or close associate) or publish and damn the consequences in defense of public interest to know? This is indeed not a question to answer in a hurry. Thus, it has remained one area where individual interest is at a serious war with public interest

3.3 Code of Ethics for Nigerian Journalists

In 1978, the Nigerian Press Organisation adopted the Nigerian Press Code of Ethics. It was the three media bodies: the Nigeria Union of Journalists (NUJ), the Nigerian Guild of Editors (NGE) and the Newspaper Proprietors Association of Nigeria (NPAN) that got together and formulated the Code of Ethics.

The code is talking of a right attitude to guide them towards the practice of this profession: what ought to be done and what should not be done with a view to establishing good conduct and morals among those practicing the profession.

The code specifies the following:

Editorial independence: A mass communicator should be a person of sound mind who can quickly take the decisions of the news to give to his audience.

Accuracy and fairness: A mass communicator should be accurate and truthful in all his publications and should also be fair so as to earn the public confidence; trust and reliance.

Privacy: The journalist should keep the source of his/her information private. He/she is also to respect the privacy of individuals and their families. He/she should be barred from publishing such information for the consumption of the public except where there is the good intention to expose crime, anti-social conduct, such others as cultism, profaning the society, misleading publications on public health, safety and morality.

Privilege of non-disclosure:

There should be confidentiality of the source of any information obtained by journalists where the giver of the information does not want a disclosure.

Decency:

The journalists by his profession are to be decent in every area of his life and conduct. A journalist should ensure that any publications found to be incorrect are corrected through publication of same in concept of the fact.

Non-discrimination: The journalist should not discriminate against any person, group, sex, or religion in all his dealings.

Reward and gratification: A journalist should not give or accept bribe in order to publish or suppress information, neither should he accept patronage or gratification or any type because this will affect the society's expectation on him of an unbiased, accurate and fair report of people and events.

Violence: All acts of violence such as murder, robbery terrorist activities, etc, are anti-social and smacks of criminality and in consequence, a journalist should not publish any work to glorify them but only to condemn them. A journalist should employ persuasion in obtaining information from people.

Children and minors: The privacy of children and minors with regard to their crimes and sexual offences and the like should not be exposed to the public in any form by the journalists. The courts also try young persons in camera or in chambers but not in the public.

Access to information: In gathering information a journalist should be open and honest except where conventionally he/she is permitted to do otherwise for public interest.

National interest: A journalist should use his knowledge education and position to enhance good government, national unity and interest for law and order and public good. In fact he is expected to show an appreciable level of patriotism in the practice of his profession.

Social responsibility: A journalist should be dynamic and a catalyst in the promotion of democracy, fundamental human rights, global understanding and unity and peace among nations.

Plagiarism: A journalist should avoid in all its ramifications plagiarism or piracy of other people's works used by him/her in a publication in accordance with required nationally and internationally conventions.

4.0 CONCLUSION

This unit has identified ethics as a very essential element in science and technology reporting. This is because, without it, media workers would continue to take wrong professional decisions and actions. This has thus discussed the different which the media need to know in other to achieve professional integrity.

5.0 SUMMARY

In this unit, we have explained the meaning of media ethics and some major ethical issues in the contemporary science and technology reporting.

6.0 TUTOR-MARKED ASSIGNMENT

- i. What do you understand by ethics?
- ii. Identify and explain some pertinent ethical issues in the contemporary science and technology reporting.

7.0 REFERENCES/FURTHER READING

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UNIT 3 HAZARDS IN SCIENCE AND TECHNOLOGY REPORTING

CONTENTS

- 1.0 Introduction
- 2.0 Objective
- 3.0 Main Content
 - 3.1 Hazards in Science and Technology Reporting
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

Every profession has its hazards which the professionals must be prepared to face at any time and at any place. Newsmen all over the world share an identical burden and face similar hazards in the process of carrying out their traditional duty of gathering and transmitting information. This unit examines the common hazards associated with science and technology reporting.

2.0 OBJECTIVE

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

- explain the common hazards associated with science and technology reporting.

3.0 MAIN CONTENT

3.1 Hazards in Science and Technology Reporting

Hardly is there any profession in the world without its peculiar hazards. In the media industry, newsmen all over the world share an identical burden and face similar hazards in the process of carrying out their traditional duty of gathering and transmitting information to the public. Some of the hazards have little consequences, while others are grievous.

- **Snubbing**

A science and technology reporter may be snubbed by the ever-busy scientist, technologist or any potential news source when he/she makes his/her approach. Sometimes the source may even become aggressive, hostile or uncooperative. However, when such happens, the reporter

should not get annoyed or snub back. Rather, try and establish a rapport with the hostile person concerned and if all efforts fail to make him/her see reason, then the reporter may have to look for another source.

- **Threats, intimidations, harassments, beating and other forms of maltreatments**

At several instances, newsmen face all sorts of threats, intimidations, harassments, physical assaults and all manners of maltreatments in the process of news gathering and news reporting. Sometimes, the assaults come from the police or other law enforcement agents, touts, organisational security men etc. Still fresh in the mind is the brutal assault of a Channels Television reporter at the Lagos State University Teaching Hospital, Ikeja, Lagos, in an attempt to take shots of the remains of the DANA plane crash victims.

- **Law suits and jail terms**

In our previous units, we discussed the various laws that regulate science and technology reporting. One of such laws is defamation (libel and slander). Often times, reporters are given false information and, as we stated earlier, any story based on false information could lead to a reporter being charged to court for libel or slander. Publication of libelous and seditious statements or obscene objects may earn a journalist a jail term. This makes it imperative that a reporter should not always rush to the editorial room with a story whose facts have not been thoroughly substantiated. Also, he/she as a matter of serious importance take time to study should and get acquainted with the constitutional provisions governing laws that regulate media practice in the land.

Similarly, many journalists have been charged to court or jailed for refusal to divulge source of information when asked to do so by a judge, labeling it contempt of court.

- **The ultimate price (death)**

Many journalists have paid the ultimate price in the process of gathering and disseminating information for the public. A reporter may get killed or seriously injured while performing his/her duty. Dele Giwa was killed by letter bomb. Mr Enenche of Channels TV was killed by gunmen while reporting live in Kano in 2012. Many die in a motor accident, plane crash or ship wreck while doing their assignments. Many journalists lose their lives while covering wars in Lebanon, Afghanistan, Iraq, Libya, Syria, Mali and even northern Nigeria.

In recent times, kidnapping of journalists and attacking and bombing of media houses are also becoming frequent. All these threatening hazards pose a serious challenge not only to budding reporters, but indeed to the media industry at large.

In addition to the above, a science and technology reporter specifically may also fall victim to these other hazards identified below:

Fire

In science and technology reporting, the risk of fire is very high. Fire can break out in a laboratory when a science and technology reporter is covering experiments. It could be as a result of chemical reactions during experiments, flammable liquids such as gasoline if they come close to a source of fire, such as a Bunsen burner. When such is the case, both those conducting the experiments and those covering it become victims.

Chemicals

The chemicals that are used in a laboratory can cause harm to anyone around the area, especially strangers or visitors such as invited media persons that are not very conversant with their modus operandi. This includes the danger of the chemicals splashing into the eyes during demonstrations, inhaling of such chemicals are also very dangerous to human health, etc.

To reduce the risk, media men who enter laboratories with scientists should wear safety goggles, long sleeves and lab coats to minimise their vulnerability because some of the chemicals, such as iodine and hydrogen fluoride, are very poisonous.

Electricity

Electricity is used in many appliances in the media. However, those who report science and technology seem to be most vulnerable. It poses a potential hazard of short circuiting if negative and positive wires come into contact. This can happen if workers accidentally pour water or other liquid into the electricity sockets. This can lead to damage to the electrical system or even cause a fire. Hot plates require special precautions, as a hot plate that is turned on looks the same as one that is turned off. Another hazard posed by electricity is electrocution. If the electric wiring system is faulty, workers may come into contact with live wires. To reduce the chances of these accidents occurring, there must be proper enlightenment on proper handling of electricity and electric gadgets. There should also be frequent inspections of the electric wiring system so that any faults can be detected before an accident occurs.

Again, reporters are often attached to astronomers, geologists, the navy, the mariners, soldiers, and all sorts of scientists and technologists. As

such, any hazards to which these categories of professionals are prone are also received by reporters covering their activities.

Adibe (2012) identified other areas where a science and technology reporter could suffer serious hazards in the process of covering them:

- Sea, ocean and coastal hazards;
- Landslides and debris flows hazards;
- Earthquake hazards;
- Volcanic hazards;
- [Tsunamis](#), coal mine subsidence, [abandoned metal](#) related hazards,
- Other hazards (e.g., Glacial and snow hazards, Wildfires hazards, and medical geo-hazards).

4.0 CONCLUSION

Hazards are in every profession and science and technology reporting is not in any way an exception. This implies that beginners in this area should not allow these challenges to deter them; rather, what is required is precautions in order to minimise these risks to the barest minimum. This is particularly important because experiences show that these hazards cannot be totally eliminated, but carefully managed.

5.0 SUMMARY

This unit has discussed the common hazards associated with science and technology reporting. They range from mere snubbing to threats, intimidations, harassment, beating, fines jail terms or even the ultimate price (death).

6.0 TUTOR-MARKED ASSIGNMENT

Identify and discuss the peculiar hazards associated with science and technology reporting in our contemporary society.

7.0 REFERENCES/FURTHER READING

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UNIT 4 SAMPLES OF SCIENCE AND TECHNOLOGY NEWS AND REPORTS

CONTENTS

- 1.0 Introduction
- 2.0 Objective
- 3.0 Main Content
 - 3.1 Sample 1: UNIBEN Finds Cure for HIV/AIDS
 - 3.2 Sample 2: Nigerian Scientists Develop Fuel-less Generator
 - 3.3 Sample 3: Nigerian Scientists Discover Pharmaceutical Potential of Insects
 - 3.4 Sample 4: Experts, Stakeholders, Challenge Media on Science and Technology Reporting
 - 3.5 Sample 5: News in Brief: TV Watching Linked to Low Sperm Count
- 4.0 Conclusion
- 5.0 Summary
- 6.0 Tutor-Marked Assignment
- 7.0 References/Further Reading

1.0 INTRODUCTION

In this course, our efforts have been to explain in clear terms the nitty-gritty of science and technology reporting. That, however, may not be complete without practical illustrations to serve as example to beginners in the field. This unit therefore, presents some examples to serve for that purpose.

2.0 OBJECTIVE

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

- write good science and technology news and reports.

3.0 MAIN CONTENT

3.1 Example 1: UNIBEN Finds Cure for HIV/AIDS

Prof. Isaiah Ibeh of the University of Benin, on Tuesday announced the development of a new drug that can ‘cure’ HIV and AIDS. Ibeh, who is the Dean of the School of Basic Medical Sciences of the university, confirmed to reporters in Benin that the drug had undergone “series of successful tests”.

According to him, research on the project was started in 2010 and culminated in the development of “Deconcotion X (DX)–Liquid or Bioclean 11 for the cure of HIV and AIDS”. “The existing retroviral drugs are intervention drugs for the management of AIDS but our new discovery is a possible cure,” he assured.

Prof Ibeh said, “We are at the threshold of making history, in the sense that we seem to have with us something that will permanently take care of what over time seems to have defied all solutions. We are talking about the latest discovery of an oral drug made from plants extraction in Nigeria for the possible cure of the pandemic HIV and AIDS virus.

“We have tried to look at the product first; its toxicological analysis and discovered that it has a large safety margin. “This means that if animals or human beings are exposed to it, they will not suffer any serious harm at all from the exposure. “It also helped us to know the quantity we can conveniently give to animals and will feel secure that nothing untoward will happen.

“We have also done the bacteriological analysis on it, after which we looked at its effect on the virus and the result was quite revealing and refreshing.”

Ibeh also said that the drug had been exposed to series of medical examination both in Nigeria and in the USA. He added that the drug had performed well on patients with the HIV virus and had shown evidence of total restoration of damaged tissues.

“The result showed an increase in the body weight of the individual administered with DX. The body weight was statistically significant when compared with the control group.”

He said that further tests were being conducted to determine “at what point will a patient become negative after being administered the drug?”.

“This verification is necessary because it is what is used to measure whether infection is still there or not. So we need to know the siro-convention time. But preliminary results showed that of the five latest patients orally administered with the drugs, our findings are that up to seven months, three of them were siro negative while two were sill faintly positive.”

Prof Ibeh is appealing for support from the Federal Government and relevant bodies to assist the university with equipment and other resources to sustain the research.

Guardian, Tuesday, 8 January, 2013

3.2 Example 2: Nigerian Scientists Develop Fuel-less Generator

A team of Nigerian scientists has developed a generator, which does not use fuel and made with almost 100 per cent locally sourced materials.

The device, known as “Fuel-less Electricity Generator,” was demonstrated at a one- day workshop in Osogbo on Saturday.

The News Agency of Nigeria (NAN) reports that the workshop was organised by M-K Technology Nig. Ltd, Ibadan.

One of the organisers of the workshop, Akinyefa Ajibola, a computer scientist, said he and other scientists developed the machine.

He said there had been some efforts in the past to develop the machine but the team only had a breakthrough in December 2009.

According to him, it is a feat by the scientists aimed at tackling the problem of electricity supply in the country.

Ajibola called for a positive response from the government to enhance the mass production of the machine.

“Unlike the existing electricity generating sets the device has no side effects. It does not fume and is noiseless.

“It can also be used 24 hours non-stop, using dry cell batteries but it needs some rest once in a while to enhance its lifespan,” he said.

On the marketing, Ajibola said the company would need some capital to enable it to begin standard packaging of the product for public use.

“We don’t sell the product now, we only train people to do it themselves but we may manufacture it for commercial purposes if the capital is there,” he said.

Two participants at the workshop, Messrs Babatope Lawal and Adeyemi Olu, lauded the initiative and advised the government to encourage the scientists.

Source: All Africa – www.allafrica.com

Source: *Information Nigeria* (Retrieved on 13 February, 2013).

3.3 Example 3: Nigerian Scientists Discover Pharmaceutical Potential of Insects

Team of Nigerian researchers has found what could be described as the 'good' in edible that may broaden the range of nutritional choices for most homes and raw materials for pharmaceutical purposes.

In a study published in the online edition of *African Journal of Pharmacy and Pharmacology* February 2009, the team, from the Department of Biochemistry, Ambrose Alli University, Ekpoma, Edo State, extracted oils from four species of insects consumed mostly in the southern part of Nigeria and found that they have pharmaceutical potentials.

The study, authored by K. E. Ekpo, A. O. Onigbinde and I. O. Asia found that all the four insects produced a clear golden yellow or light yellow and odourless liquid with a low solidification value (10-14_C) and high iodine value, which is an indication of the degree of non-saturation of the insect oil. The insect oils under consideration were also observed to contain a high amount of unsaturated fatty acids (51.02, 62.12, 65.61 and 61.10 for MB, IBL, OR and RP respectively) which explains the liquid state of the oils at room temperature.

"Nutritionally, a high level of saturated fatty acids in food might be undesirable because of the association of saturated fatty acids with incidences of *atheriosclerotic* disorders," the team wrote, adding that the presence of essential fatty acids such as *linoleic linolenic*, and *arachidonic* acids further points to the nutritional value of these insects and larval oils.

They extracted oils and analysed fats from *Rhynchophorus phoenicis* also known as the African palm weevil, and *Oryctes rhinoceros* (Raphia palm beetle) larvae, which were obtained live from Ilushi (on the bank of River Niger) in Edo State, Nigeria. They also used *Imbrasia belina* larvae, obtained from Ogbomosho in Oyo State and *Macrotermes bellicosus* (winged termite) obtained during their nuptial flight at Ekpoma, Edo State. The various species of insects used were identified at the Entomology Department of Nigeria Institute for Oil Palm Research (NIFOR), Benin City, Nigeria.

"These values when compared with that observed in oils which have been considered to be of high quality and of much use in pharmaceutical industries suggest that these insect oils may have pharmaceutical potential," the team stated.

A breakdown of the study shows that the level of non-saturation in these insects and larval oils is higher than that for palm oil and coconut, a situation the team says probably explains why they contained very high iodine number, low solidification values and liquid nature of the oils at room temperature.

Oils from the larvae of raphia palm beetle (*Oryctes rhinoceros*) recorded the highest level of non-saturation of 65.61 percent while the winged termite had the least level non-saturation of 50.02 percent.

The team points out that some species of insects are eaten, as a delicacy in Nigeria, while some are used for traditional medical practice, yet there is very little information on their chemical composition.

"In order to be able to accurately evaluate the nutritional and pharmaceutical potential of these "delicacies," it is necessary to carry out detailed analyses of the insects concerned in order to determine their constituents," they wrote in their introduction.

The present study was undertaken to provide data on the lipid composition of four popular insects consumed in southern Nigeria as a pre-requisite for the subsequent evaluation of the pharmaceutical potentials of these insect oils.

All live insects and insect larvae used for the study were used within 12 hours of collection. Solvents and chemicals used in this study were mostly of the analytical reagent grade and were obtained from E. Merck (Darmstadt, West Germany), May and Baker (Dagenham, Essex, England), Sigma Chemicals Company (St. Louis, Missouri, U.S.A).
_Source: *Information Nigeria* (Retrieved on 13, February, 2013).

3.4 Example 4: Experts, Stakeholders, Challenge Media on Science and Technology Reporting

Technology information can effectively impact national development only when it is properly and effectively communicated to all.

That was the position of experts in science, information, and communication technology industry at one-day workshop for science and ICT journalist in Nigeria.

The permanent secretary Federal Ministry of Science and Technology, Hajiya Rabi Shuaibu Jimeta who led discussants at the workshop, which was organised by the National Office for Technology Acquisition and Promotion (NOTAP) observed that "despite the huge potentials of our National Innovation System (NIS), the Nigerian public have been

critical about the contribution of Science, Technology and Innovation (STI) to national development.”

According to Jimeta, who was represented by the Director General of the Institute of Industrial Research, Oshodi, (Mrs.), Gloria Nwakego-Alemoh the cause of the criticism was the inadequate reportage of events and development in the sector adding that the ministry is aware of the challenge hence it is seeking vibrant partnership with the media.

She said that the recently unveiled policy needs the media to create the desired impact, “so that our nation which is blessed with huge human and material resources can join the league of industrialised nations of the world in the shortest possible time.”

She noted: “Though scientists and research institutions are important sources of information and knowledge for the improvement of lives, it is the properly disseminated information and effectively communicated knowledge that can be useful to the individual, the policy maker or the community.”

Director General of NOTAP, Dr. Umar Bindir disclosed that the agency has the mandate to strategically promote STI with the aim of sensitising the stakeholders on the processes for technology identification, assessment, acquisition, adaption, transfer and domestication.

He noted that the workshop is an institutional reform for the media; saying that the maiden editor was held in 2006 while the previous one was held in Abuja.

In a paper communicating science and technology to policy makers, the methodologies, chief public relations officer, NOTAP, Mr. Adokiye Dagogo-George, while highlighting further some challenges in reporting science and technology said that for a scientist to communicate to non-scientist, he must do so in the language the latter would understand for the former to obtain the desired results saying “this is where the media comes in; specifically, science communicators.”

According to him, “the science communicator is a gate keeper standing in between the scientist and the beneficiaries of his R&D results and policy makers who determine his source of sustenance.”

He stressed that “It naturally follows that the science communicator must not only work to understand the immediate and long-term objectives of an S&T project but must also understand the psychology of the policy maker without whose good support in terms of resource allocation, the scientist would not make much progress.”

He explained the fact that Nigeria's first communication satellite deorbited did not defeat the long term objectives of the space project; adding, ". Perhaps, even Science communicator were looking only at the immediate returns from *Nigcom Sat 1* and that was why there were no concerted efforts from the media to enlighten the public on the long-term benefits of the project to encourage its initiators and justify government expenditure on it. Nigeria's space programmes, I must state, are products of Technology Foresight and should be commended."

Dagogo-George stressed that poor reporting of STI caused by lack of formal training for Scientists with regards to effective communication, lack of formal training for science journalists and inadequate funding for STI popularisation.

On the methodologies to adopted, he suggested the three major functions of the media which to inform, create awareness, to educate, that is, to impact knowledge and develop the mind, and to entertain adding that science cartoon can be used effectively in communicating S &T issues.

He also said that in gate-keeping, the media has a responsibility in facilitating creative consciousness in pursuit of progress and development in society while also transforming Science and Technology issues into interesting news items.

"For a communicator to succeed in carrying out the functions of informing, educating and entertaining, he must produce interesting and understandable reading, listening or viewing. The communicator should not only communicate in order to gain a bye-line and earn a wage but should also communicate to be read, listened to, understood or communicate to control the actions of his audience, that is, the agenda-setting", he noted.

He further said, "If the audience loses interest while going through a news item, they quickly go to the next article, switch to the next station, put down the publication, turn off the set or even worse, read, listen or view without really being interested and miss the point. This leads us to a formula for effective communicating of S&T issues interesting reading."

According to Dagogo-George, to achieve interesting the report must be produced by someone who is versed and interested in what he is writing adding, "When a reporter writes from the realm of his interest or develops interest in any assignment he is given, he will go the extra-mile in producing an interesting reading. If he does not have interest in what

he is writing and is not capable of developing one in a given assignment, it is doubtful if he can produce an interesting reading.”

He added that it is important for the subject matter to be interesting or for the reporter to have the ability in making the reader to be interested in it to achieve interesting reading. While tasking the media on the choice of material for interesting reading he said the reporter must proceed to the unknown through the known noting, “For one to write to gain the reader’s interest, one may have to proceed through a thing of interest that is common to man.

The Compass Newspaper, Monday, 31 December, 2012.

3.5 Example 5: News in Brief: TV Watching Linked to Low Sperm Count

Men who watch a lot of television have lower sperm counts than those who don’t watch any, researchers report February 4 in the *British Journal of Sports Medicine*. Sperm count is an informal term that refers to the concentration of sperm in a given volume of semen.

Researchers gave questionnaires to 189 healthy young men and analysed their semen. Respondents who watched more than 20 hours of TV per week had 44 percent lower sperm counts than those who didn’t watch any. The team, led by Audrey Gaskins and Jorge Chavarro of the Harvard School of Public Health, also found that men who spent the most time doing moderate to vigorous physical exercise had 73 percent higher sperm counts than did the men who were least active.

While the findings don’t spell out an explanation for these differences, the authors cite the broad physiological benefits of exercise. But certain exercises such as bicycling have been tied to low sperm counts. Cooler scrotal temperatures have been linked to a higher sperm count, and sedentary positions have been linked to higher scrotal temperatures.

Science News Magazine, February, 2013

4.0 CONCLUSION

This unit has demonstrated to you how science and technology stories are presented. You are therefore, advised to study these patterns of presentation as this would go a long way in guiding you on how to write stories of your own.

5.0 SUMMARY

This unit has presented some good examples of science and technology news and feature reports to serve as example for you.

6.0 TUTOR-MARKED ASSIGNMENT

Write a publishable science and technology report on any topic of your choice.

7.0 REFERENCES/FURTHER READING

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