NATIONAL OPEN UNIVERSITY OF NIGERIA

SCHOOL OF EDUCATION

COURSE CODE: EDU 280

COURSE TITLE: AGRICULTURAL SCIENCE METHODS

COURSE GUIDE

EDU 280
AGRICULTURAL SCIENCE METHODS

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Content

INTRODUCTION

Agricultural Education Methods is a second year two (2) credit unit's degree course available to all students offering Bachelor of Science [B. Sc (Ed.)] Agricultural Education. It may be taken by students who wish to know more about Agricultural Science Methods.

Agricultural Education is a formal instruction in the science and art of agriculture and agricultural practice in organised institutions of learning. It is aimed at finding scientific solutions to practical farming problems. In global definition, education itself is the development of the whole man. Agricultural Education is an essential aspect of our educational set up because it educates youths of the tremendous opportunity in agro-business and exposes them to vast store of knowledge available for anyone contemplating big time agricultural farming.

Agricultural Science methods refer to how the whole process of instruction is expected to occur. To some teachers, methods of teaching refer only to planned activities involved in the presentation of agricultural teaching and learning activities. Agricultural Science methods highlight the obvious fact that the instructional process is a two-way communication process between the instructional agent and the learner.

2. THE COURSE

This course consists of modules which are subdivided in units. This course guide tells you briefly what the course is all about. What course materials you will be using and in addition. It also suggests some general guidelines for the amount of time you are likely to spend on each unit of the course in order to complete it successfully.

It gives you guidance in respect of your Tutor – Marked Assignment (TMA) which will be made available in the assignment file. There will be regular tutorial classes that are related to the course. It is advisable for you to attend these tutorial sessions. The course will prepare you for the challenges you will meet in the field of agricultural education.

Course Aims

This course aims to provide an understanding, appreciation and feelings for the teaching and learning (pedagogical approaches) of agriculture at the secondary school level.

Course Objectives

To achieve the aims set out, the course has a set of objectives. Each unit has specific objectives which are usually included at the beginning of a unit. You should read these objectives before you study the unit. You may wish to refer to them during your study of the unit to check on your progress. You should always look at the unit objectives after completing a unit. By doing so you would be able to locate your bearing and level of attainment of the objectives of the unit.

Below are the comprehensive objectives of the course as a whole. By meeting these objectives, you should have achieved the aims of the course as a whole. After going through this course, you should be able to:

Appreciate the concept of Agricultural Education.
Identify the basic principles and personal qualities of professionally qualified agricultural science teacher.
Enumerate the responsibilities and expectations of the teacher in the community.
Appreciate the significance and characteristics of teaching practice.
Appreciate the importance and appropriate instructional materials to be used in teaching.
Explain the instructional and behavioural objectives and other relevant skills for agricultural science teaching.
Identify and use the various teaching methods in agriculture.
Plan agricultural programmes in schools and be able to manage school farm.
Explain the concept of evaluation and its procedure in agricultural education programmes.

3. WORKING THROUGH THE COURSE

To complete this course, you are required to read each study unit of this study material and read other materials which may be provided by the National Open University of Nigeria. Each unit contains self-assessment exercises for this course and at certain points in the course you would be required to submit assignments for assessment purposes. At the end of the course, there is a final examination. The course should take you about a total of 17 weeks to complete. Below you will find listed all the components of the course, what you have to do and how you should allocate your time to each unit in order to complete the course on time and successfully.

I would advice that you avail yourself the opportunity of attending the tutorial sessions where you have the opportunity of comparing knowledge with peers.

The Course Materials

The main components of the course are:

1. The Course Guide
2. Study Units
3. References
4. Assignments
5. Presentation Schedule.

Study Units

The course is divided into Modules that are made up of units. The study units in this course are as follows:

Unit 1	Agricultural Education
Unit 2	The Teacher of Agricultural Science
Unit 3	The Tasks of Agricultural Teacher
Unit 4	Social Factors in the Teaching of Agriculture Science
Unit 5	Tools for Agricultural Science Teaching
Unit 6	Teaching Aids in Agriculture
Unit 7	The Teaching Learning Transaction in Agricultural Education
Unit 8	Teaching Techniques and Procedure in Agricultural Science
Unit 9	Teaching Methods in Agricultural Science
Unit 10	Planning and Managing School Agricultural Programmes
Unit 11	Evaluating Agricultural Education Programme

Unit 12	Agricultural Science Curriculum and Syllabus
Unit 13	Scheme of Work and Lesson Plan
Unit 14	Teaching Practice
Unit 15	Teaching Practice: Preparation and Implementation.

The first unit focuses on the objectives, philosophical background of agricultural education and agriculture as a profession. The second unit is concerned with the basic principles, roles and attributes of agricultural science teacher. The third unit deals with the responsibilities of the teacher in the classroom, fieldwork and the community. Unit four discusses social factors in the teaching and learning of agriculture.

Units 5 and 6 discuss the goals and objectives, instructional behavioural objectives and relevant skills for the teaching of agriculture. Importance, selection, characteristics and uses of instructional aids will also be highlighted.

Unit 7 will discusses the teaching-learning transaction in agriculture. In units 8 and 9, you will learn the teaching techniques in agriculture viz: questioning, learning via references, assignment among others and various methods of teaching agricultural science.

Units 10 and 11 focus on approaches to programme planning, planning and managing a school farm; and evaluation of agricultural education programme. It also deals with the significance, characteristics and procedure for effective evaluation of agricultural programmes.

Units 12, 13 and 14 deal with the curriculum and syllabus of agricultural science, scheme of work and lesson plan; characteristics, objectives and relevance of teaching practice in agriculture. Unit 15 also concerns with the preparation and implementation of teaching practice.

Each unit consists of one to two weeks work and includes an introduction, objectives, reading materials, exercises, conclusion, summary, tutor-marked assignment (TMA), references and other resources. The unit directs you to work on exercises related to the required reading. In general, this exercise questions you on the material you have just covered. Together with TMAs, these exercises will help you in achieving the stated learning objectives of the individual units and of the course.

Presentation Schedule

Your course materials give you important dates for the early and timely completion and submission of your TMAs and attending tutorials. You should remember that you are required to submit all your assignments by the stipulated time and date. You should guard against lagging behind in your work.

Assignment File

In your assignment file, you will find all the details of the works you must submit to your tutor for marking. The marks you obtain for these assignments will count towards the final mark you obtain for this course. Further information on assignments will be found in the Assignment File itself, and later in this Course Guide in the section on assessment.
There are many assignments for this course, with each unit having at least one assignment. These assignments are basically meant to assist you to understand the course.

4. ASSESSMENT

There are three aspects to the assessment of the course. First are self-exercises, second are the tutor-marked assignments and third is the written examination/end of course examination.

You are advised to be sincere in attending the exercise. In tackling the assignments, you are expected to apply information, knowledge and techniques gathered during the course. The assignments must be submitted to your tutor/facilitator for formal assessment in accordance with the deadlines stated in the presentation schedule and the assignment file. The work you submit to your tutor for assessment will count for 30% of your total course work. At the end of the course, you will need to sit for a final or end of course examination of about three hours duration. This examination will count for 70% of your total course mark.

Tutor-Marked Assignment (TMAs)

The TMA is a continuous assessment component of your course. It accounts for 30% of the total score. You are required to submit at least four (4) TMAs before you are allowed to sit for the end of course examination. The TMAs would be given to you by your facilitator and returned after you have completed them.

Assignment questions for the units in this course are contained in the assignment file. You will be able to complete your assignment from the information and materials contained in your reading your study units

and, references. However, it is desirable to demonstrate that you have read and researched more into other references which will give you a wider view point and may provide a deeper understanding of the subject.

Make sure that each assignment reaches your facilitator on or before the deadline given in the presentation schedule and assignment file. If for any reason you cannot complete your work on time, contact your facilitator before the assignment is due to discuss the possibility of an extention. Extention will not be granted after the due date.

End of course Examination and Grading

The end of course examination for agricultural science education will be about 3 hours' duration and has a value of 70% of the total course grade. The examination will consist of questions, which will reflect the type of self-testing, practice exercise and tutor-marked assignment problems you have previously encountered. All areas of the course will be assessed.

Utilize the time between finishing the last unit and sitting for the examination to revise the whole course. You might find it useful to review your self-test, TMAs and comments on them before the examination. The end of course examination covers information from all parts of the course.

Course Marking Scheme

Assessment	**Marks**
Assignment 1 – 4	Four assignment, best three marks of the four account at 10% each = 30% of course marks.
End of course examination	70% of overall course marks
Total	100% of course materials.

How to get the most from this Course

1) In distance learning, the study units replace the university lecture. 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 suits you best. Think of it as reading the lecture instead of listening to the lecturer. In the same way a lecturer might give you some reading to do, the study units tell you when to read, and which are your text materials or recommended books. You are provided exercises, to do at appropriate points, just as a lecturer might give you an in-class exercise.

2) 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 to this is a set of learning objectives. These objectives let you know what you should be able to do, by the time you have completed the unit. These learning objectives are meant to guide your study. The moment a unit is finished, you must go back and check whether you have achieved the objectives. If this is made a habit, then you will significantly improve your chances of passing the course.

3) The main body of the unit guides you through the required reading from other sources. This will usually be either from your references or from a Reading section.

4) The following is a practical strategy for working through the course. If you run into any trouble, telephone your tutor or visit the study centre nearest to you. Remember that your tutor's job is to help you. When you need assistance, do not hesitate to call and ask your tutor to provide it.

5) Read this Course Guide thoroughly, it is your first assignment.

6) Organise a Study Schedule- Design a 'Course Overview' to guide you through the Course. Note the time you are expected to spend on each unit and how the assignments relate to the units. Important information, e.g. details of your tutorials, and the date of the first day of the Semester is available at the study centre. You need to gather all the information into one place, such as your diary or a wall calendar. Whatever method you choose to use, you should decide on and write in your own dates and schedule of work for each unit.

7) Once you have created your own study schedule, do everything to stay faithful 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.

8) Turn to Unit 1, and read the introduction and the objectives for the unit.

9) Assemble the study materials. You will need your references and the unit you are studying at any point in time.

10) As you work through the unit, you will know what sources to consult for further information.

11) Visit your study centre whenever you need up to date information.

12) Well before the relevant due dates (about 4 weeks before due dates), visit your study centre for your next required assignment. Keep in mind that you will learn a lot by doing the assignment carefully. They have been designed to help you meet the objectives of the course and, therefore, will help you pass the examination. Submit all assignments not later than the due date.

13) 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 materials or consult your tutor. When you are confident that you have achieved a unit's objectives, you can start on the next unit. Proceed unit by unit through the course and try to space your study so that you can keep yourself on schedule.

14) 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 the written comments on the ordinary assignments.

15) After completing the last unit, review the course and prepare yourself for the final examination. Check that you have achieved the unit objectives (listed at the beginning of each unit) and the course objectives (listed in the Course Guide).

5. TUTOR and TUTORIALS

There are 14 hours of tutorial provided in support of this course. You will be notified of the dates, times and location of these tutorials as well as the names and phone number of your facilitator, as soon as you are located a tutorial group.

Your tutor or facilitator will mark and comment on your assignments, keep a close watch on your progress on any difficulties you might encounter and provide assistance to you during the course. You mail

your tutor-marked assignment to your tutor before the schedule 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 facilitator by telephone, e – mail and discuss problems if you need assistance.

The following might be circumstances in which you would find help necessary. Contact your facilitator if:

- You do not understand any part of the study units or the assigned readings.
- You have difficulty with the self-test or exercises.
- You have a question or problem with an assignment or with the grading of an assignment.

You should try your best to attend the tutorials. This is the only chance to have face to face contact with your course facilitator and to ask questions which are answered instantly. You can raise any problem encountered in the course of your study. To gain much benefit from course tutorials prepare a question list before attending them. You will learn a lot from participating in active discussion.

6. SUMMARY

Agricultural Education is a course that intends to provide you with the concept and instructional methods. Upon completing this course, you will be equipped with the basic knowledge of the nature, scope, tasks of the teacher, principles and concepts of: teaching practice, instructional materials, teaching methods and techniques. Thus you will be able to plan programmes in agriculture and manage them. In addition, you will be able to answer the following type of questions:

What does agricultural education mean?
What are the responsibilities of agricultural science teacher?
Give examples of the expectations of agricultural teacher in the community.
Discuss the importance of teaching practice.
Of what significance are instructional aids in teaching?
Identify the various teaching methods commonly used in agricultural science.
Discuss the importance of programme planning in agriculture.
How do you manage school farm?
Discuss the concept of evaluation and its types in

agricultural education programmes.

Of course, the list of questions that you can answer is not limited to the foregoing lists.

We wish you success in the course and hope that you will find it both interesting and useful.

Wishing you the best of luck.

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CONTENT

MODULE 1

INTRODUCTION

UNIT 1 AGRICULTURAL EDUCATION

CONTENT

1.0 INTRODUCTION

The ever increasing population in many developing countries, Nigeria inclusive, has led to acute food shortages in spite of the available rich agricultural resources. Realising the problems of food shortage, the governments of most of the countries have embarked on agricultural

development programmes aimed at increasing food supply. Some of the programmes in Nigeria include: the teaching and learning of agriculture in formal school settings at the primary, secondary and tertiary levels, extending and teaching the farmers latest production technology in agriculture, Operation Feed the Nation (OFN), River Basin Development Authority (RBDA), National Land Development Authority (NALDA), Cassava Revolution and the use of biotechnology to obtain highly improved seeds and breeds of animals to mention but a few.

The teaching of agriculture is a strategy for increasing agricultural productivity on a long term basis. However, not all teachers of agriculture are competent. Many university graduates trained in specialized areas of agriculture accept teaching in secondary schools as a stepping stone to better jobs. Other teachers do not have adequate professional training. Competent teachers of agriculture in schools require technical knowledge in agriculture as well as good knowledge of teaching and learning processes – pedagogy. This course is designed to develop you professionally for the latter.

2.0 OBJECTIVE

By the end of this unit you should be able to:

Stimulate your interest in agriculture;
Enable you acquire basic knowledge of principles of teaching / learning agriculture;
Expose you to opportunities in agriculture; Equip you to become a professional teacher; Cooperate with the administration of your school;
Plan and manage agricultural activities in your school and community; and
Plan and execute teaching and learning activities in agriculture.

3.0 MAIN BODY

3.1 The concept of Agricultural Education

Agricultural Education is any form of formal training and education in agriculture. Agricultural science is a terminology often applied to the teaching and learning of the component sciences at the elementary and secondary schools' levels. The study and science of training and passing agricultural information to practising farmers is known as agricultural extension.

3.2 Philosophical Background of Agricultural Education in Nigeria

3.2.1 Traditional Methods

The history of agricultural education in Nigeria can be traced back to those olden days of traditional farming. Starting from childhood, children are trained through apprenticeship experience by their parents or relations. Apart from the acquisition of relevant traditional skills in tilling the soil, weeding and harvesting, farming apprenticeship also inculcate the spirit of discipline and endurance. Hence in many parts of Nigeria, the cultural heritage in agriculture is being passed from one generation to another through the informal apprenticeship system.

3.2.2 Developments

In the early 20th century the British Colonial government got committed to the task of improving agricultural resources in Nigeria by carrying out a range of research on crops, training of agricultural staff needed for research and extension. This commitment led to the establishment of five schools of agriculture in Nigeria between 1920 and 1960. These schools were located at Moor plantation in Ibadan. Others were located at Akure, Umudike, Zaria and Kabba. Later on a rural training center was established at Asaba.

The major objectives of these schools include the preparation of technical competent extension workers to help Nigeria farmers improve their production techniques. It was also recognized that the youths needed to be initiated into improved farming rather than to continue under the traditional apprenticeship system. This awareness led to the introduction of gardening and nature study into primary school curriculum as a way of improving technical agricultural education in Nigeria.

The inclusion of Gardening and Nature Study is primary school curriculum necessitated for the adequate supply of qualified teachers to man the courses at the primary schools and teacher training colleges. With the Nigeria independence in 1960 and people's awareness of the rapid improvement in Nigeria's agricultural resources, the various regional and later state governments in Nigeria introduced the teaching and learning of agricultural science in the secondary schools.

3.3 Agricultural Science Education in Nigerian Secondary Schools

The teaching of Agricultural Science education in Nigeria secondary schools was first initiated in 1967. The curriculum in agriculture was jointly developed by the Nigerian Educational Research Development Council (NERDC) and West Africa Examination Council (WAEC). The main objective of introducing the teaching of agricultural science include;

encouragement of students in the use of their hands;
the appreciation for the dignity of labour;
familiarity with biological processes and thereby instilling rationality in the students;
increasing self-sufficiency and self reliance in food production students to produce part of their food needs and improve their diet and thus minimize the cost of feeding in their secondary schools.

The number of years agricultural science is taught as a school subject varies from one school to the other depending on the administration of the school as well as the availability of teachers. Agricultural Science as one of the WAEC subject is taught theoretically and practically. The school farm or garden is often used as a means of providing practical experience for the students.

3.4 Agriculture as a Profession

Today, farming is a business, involving many scientific practices, which has become highly organized, specialized and mechanized. Production, management and marketing problems are becoming more complex and competition between farmers becomes keener each year. In order to be successful, the farmer must be able to assess problem situations quickly and make rational decisions, if necessary, with the help of professional teachers and/or extension staff.

3.4.1 Qualifications Required

Training opportunities for various agricultural occupations exist in colleges of education, schools of agriculture and university faculties. The basic entry qualifications include passes in some science subjects at the General Certificate of Education (GCE) Ordinary Level or the West African School Certificate (WASC). Training lasts between two and four years in different occupations designed to equip the students with saleable skills.

Certificates obtainable in the field of agriculture include:

Ordinary National Diploma (OND)
Nigerian Certificate in Education (NCE)
Higher National Diploma (HND)
Postgraduate Diploma (PGD)
Bachelor of Science/Tech. (B.Sc., B. Tech.)
Masters of Science/Tech. (M.Sc., M. Tech.)
Doctor of Philosophy (Ph.D)

3.4.2 Careers in Agriculture

Opportunities for career development in agriculture are as many as the area of specialization. These include;

3.4.2.1Crop Production

Agronomy
Crop Protection
Horticulture
Crop breeding

3.4.2.2Soils and Surveying

Soil science
Farming planning
Soil ecology
Soil conservation
Fertilizer programming
Soil testing
Soil Physics/Chemistry
Pedology

3.4.2.3Animal Production/Fishery

Fish farming
Animal nutrition
Animal husbandry
Animal Pathology
Animal health

3.4.2.4Agricultural Engineering/Mechanization

Tractor driving
Tractor maintenance

Small equipment (spraying and tillage) mechanic
Farm mechanization
Building of farm structures

3.4.2.5Processing

Food Chemistry
Food engineering
Confectionery and preservation
Food administration
Catering and home management

3.4.2.6Research

Soils; crop production
Food manufacturing and marketing
Livestock; fisheries
Meteorology
Rural Sociology and extension

3.5 Types of Agricultural Education

Agricultural education can be classified into four types; namely

General type
Vocational type
Technical type
Professional type

3.5.1 General Type

This type of agricultural education has the objective of including agriculture in the general education of the students and it is not intended for them to make specific vocations or occupations. It is just simply to make it as part of their general educations. For instance, where students are taught how to grow plants and raise animals, identify and control insects.

3.5.2 Vocational Type

Here, the objective is to prepare students for a specific vocation in farming. This is often offered in agricultural schools where students are engaged in the actual farming. It is also intended for people who are

experienced in farming and who want to take farming as an occupation in the future.

3.5.3 Technical Type

The objective of this type is to prepare technicians for specific areas of agricultural occupations such as agricultural mechanization. It may include training technical experts in plant propagation or animal breeding. Sometimes this is equivalent in level to technical colleges and some colleges of education.

4.0 CONCLUSION

In this unit you have attempted to learn about the philosophical background of agricultural education, the introduction of agricultural science education to secondary schools and have found how you can take agriculture as a profession having spelt out some of the career opportunities that are abound in it.

5.0 SUMMARY

In this unit you have learnt that;

The inclusion of agricultural education in the curriculum of Nigerian educational system was a deliberative attempt to solve the problem of food shortage.
The introduction of agricultural education into Nigerian educational system dated back to the era of colonial governments.
Agricultural science education was introduced into secondary school through the joint effort of Nigerian Educational and Research Development Council (NERDC) and West African Examination Council (WAEC).
Agriculture is a profession with myriad of career opportunities.
Agricultural education are classified into general, vocational, technical and professional types.

6.0 TUTOR – MARKED ASSIGNMENT (TMA)

1. Mention some governments' efforts in the past to solve the problem of food shortage.
2. What are the objectives of introducing agricultural science education to secondary schools?
3. Mention TEN Career opportunities available to you in agriculture.

7.0 REFERENCES/FURTHER READINGS

Olaitan, S.O. (1984): Agricultural Education in the Tropics. Macmillan Intermediate Agriculture Series. Macmillan Publishers Ltd., London, U.K.

UNIT 2 THE TEACHER OF AGRICULTURAL SCIENCE

CONTENT

1.0 INTRODUCTION

The teacher represents the key element in any structural learning situation. He brings to the class a set of prior expectations, a particular level of knowledge of technical agricultural information and an ability to interact with the students. Teachers' knowledge of technical agriculture depends on formal courses and experience acquired in a particular subject area. It is the teacher himself who creates or moulds the learning situation and in a real sense creates a condition conducive to learning. Neither the brightly painted walls nor good instructional materials can turn a teacher with depressed disposition towards students into an effective instructor.

2.0 OBJECTIVES

It is expected that at the end of the unit you would be able to

identify your role as an agricultural science teacher;
imbibe the desirable personal qualities of a good teacher;
identify your likely problems as a beginning teacher.

3.0 MAIN BODY

3.1 Basic Principles

3.1.1 The Term Teaching

The term teaching encompasses the ideas of helping to develop a desire to learn; having a dedication to passing information to others; being aware of the needs of your students and helping them to achieve them. It also includes knowing where to find required information and communicate these in an effective manner to the students, and acting as a catalyst in developing ideas. Teaching could be said to be an attempt to help some one acquire skills, attitudes and knowledge.

3.1.2 The Teacher

A successful teacher is one who teachers effectively, making use of his acquired professional experience. He presents information, giving instruction and organizing materials for pupils in the learning process. He has goals, worries; fears; frustrations and satisfactions related to his/her job, and reacts emotionally to pupils, colleagues and others. The teacher assesses pupils' progress and carries out a variety of activities that are characteristic of the institution that is called the school.

3.2 The role of the Teacher of Agriculture

In defining the teacher's role, it should be stated that the function of the teacher in the classroom is to help his pupils acquire skills in different subject areas.

The role of the teacher of agricultural science can be observed through the following ways;

1. He imparts skills in his subject's discipline and to use the various ways and means to aid his pupils to learn how to employ their talents to acquire the skills the teacher wishes them to have.

2. He relates with the community particularly in the area of land acquisition for the school farm and in input acquisition.

3. He also assists the community to solve some problems facing the farmers.

4. As the manager of the school farm, s/he may be responsible for the sales and distribution of the school farm products.

5. In schools, the agricultural science teacher may also double as the labour master who sees to the maintenance of the school environment.

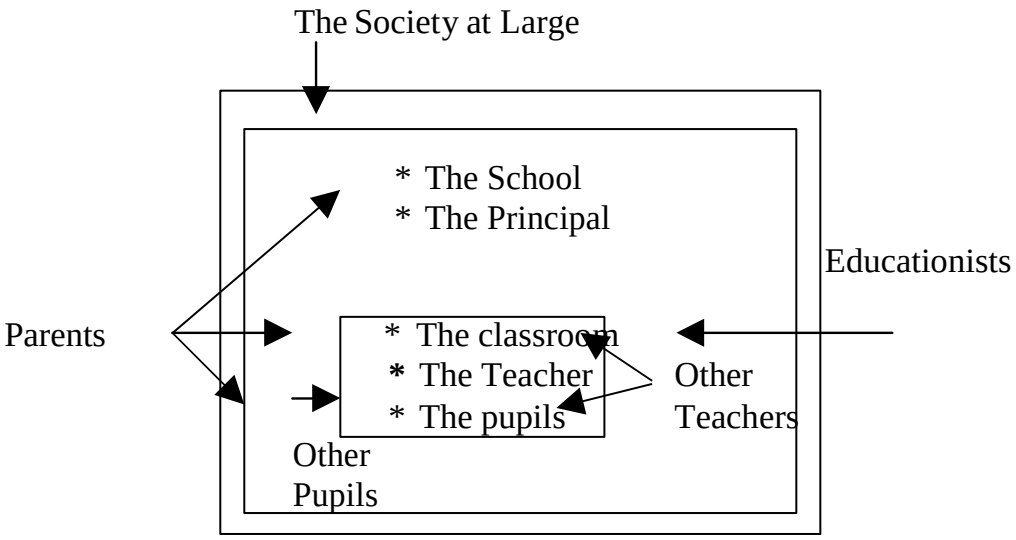


Fig. 3.2.1: The Teacher's Role set within and outside the School.

3.3 Personal qualities of Agricultural Science Teacher

3.3.1 Farming Experience

Experience or training in agriculture is achieved by being raised or reared on a farm by parent farmers or having taken agricultural science in the secondary school.

3.3.2 Rural Mindedness

Teachers of agriculture are generally expected to cultivate rural mindedness, that is empathetic to rural people and their farming activities.

3.3.3 Character and Personality

The teacher must maintain a high ethical standard while enjoying good relationships with colleagues and pupils.

3.3.4 Confidence

The teacher must have absolute self-confidence to teach successfully. This requires careful preparation of lessons before hand so that he can impart his knowledge efficiently.

3.3.5 Appearance

The teacher of agriculture should dress neatly as other members of staff and encourage his/her pupils to keep classroom and tools clean and tidy.

3.3.6 Dedication to Duty

The teacher of agriculture unlike other teachers is engaged in full time teaching activities, that is, if something happens to the chicken or any other livestock kept in the school farm any time of the day, the teacher may be called upon.

3.3.7 Correct Attitude

The teacher must adopt the right attitude towards work, colleagues, pupils and the community. He should cooperate within the school, accept criticism and praise alike and work for the benefit of the school rather than for personal interests.

3.4 Problems of Beginning Teachers

3.4.1 Teaching as profession

Experience has shown that not everybody can teach, hence, the need for teacher training. An agricultural science teacher has a lot of contacts to make with other people unlike teachers in other disciplines.

3.4.2 School Organisation and Administration

A teacher is exposed to different administrations, (such as bad or good principals) has interaction and relationship with other teachers, etc.

3.4.3 Transition from the Institution of Study to the School System

When students are in school, regardless of their ages, they behave as children but when they are out of school, they need to behave responsibly. There is also a task of being able to apply what is learnt in the school to real life.

3.4.4 Relationship with Pupils

The success of a teacher depends on his relationship with the students. If it is cordial one enjoys the teaching profession. The teacher should not be the cause of a strained relationship between him and his pupils. The teacher should be interested in his pupil's problems.

3.4.5 Relationship with Fellow Teachers

There may be conflict between the agricultural science teacher and colleagues because of the exigencies of some agricultural activities. The teacher should refrain from open criticism of others and should avoid dabbling into the school politics.

3.4.6 The Teacher and Community

The teacher should be ready to associate with community members in which the school is located. Sometimes give professional advice to community farmers.

4.0 CONCLUSION

This unit has enabled you to understand who is a teacher and infact who a teacher of agriculture is. You are now aware of your roles as a teacher of agriculture and the expected personal and professional qualities you must possess.

5.0 SUMMARY

This unit has acquainted you with

what the definition of teaching is
the fact that a successful teacher is one who teaches effectively
the roles of the teacher of agriculture to include inculcation of skills to pupils, relating with the community members, managing the school farm and the school's environment.
The problems that are likely to be faced by the beginning teacher.

6.0 TUTOR – MARKED ASSIGNMENT (TMA)

1. Mention three Roles of the teacher of agriculture.

2. List five qualities of an effective teacher.

3. Mention five areas of conflict expected of a beginning agricultural science teacher.

7.0 REFERENCES/FURTHER READINGS

Laogun, E.A. (1981): Teaching Agricultural Science, Macmillan, Nigeria.

Olaitan, S.O. (1984): Agricultural Education in the Tropics, Macmillan Publishers, London.

UNIT 3 THE TASKS OF THE TEACHER OF AGRICULTURE

CONTENT

1.0 INTRODUCTION

This Unit will expose you to the tasks ahead of you as a teacher of agriculture. Like every other profession, teaching agriculture places on you some responsibilities which are measures of your effectiveness both within the classroom and outside it.

2.0 OBJECTIVES

At the completion of this unit you should be able to

prepare for and implement your lesson plans,
carry out field projects,
evaluate your teaching exercise,
teach your pupils manipulative skills, and
work efficiently with the community where you find yourself.

3.0 MAIN BODY

3.1 Classroom Teaching

3.1.1 Lesson Planning

Experience has shown that the most effective teachers are those who develop lesson plans and use them. There is no one best teaching plan type. The type of teaching plan developed will depend on the problem and the general plan of teaching. A well developed lesson plan should be flexible and complete enough for a substitute teacher to use in carrying out assigned activities/episodes. When preparing your lessons, you should put into consideration;

the objectives of he lesson (cognitive, psychomotor affective)
time available for the lesson
ability of the students
entry behaviour of the students
size of the class (if it is not too large for instance, you can use demonstration method)
facilities available in terms of space and teaching materials.

A good lesson plan that you can prepare and use must comprise of the following components;

problem area or the concept to be taught,
objectives of the lesson
procedure:

(i) opening procedures or routine activities
(ii) introduction and linkage of old and new lessons
(iii) development of the lesson

instructional materials,
testing or evaluation (summary)
assignment, and
references

3.1.1.1 Why Teachers Need a Lesson Plan

Reasons why you need to prepare your lesson plan are to enable you:

allocate your time effectively,
systematically present your facts,
prevent errors of teaching,

effectively hand over to a substitute teacher if you will be absent,
meet your stated objectives,
prepare adequately for instructional materials,
command the respect of your pupils,
be in firm control of the class situation, and
use it as the best teaching aids

3.1.1.2 A Hypothetical Example of a Lesson Plan

Date: 7/6/2006
Name of School: Government Secondary School, Ondo
Class: JSS 2A
Number in Class: 40
Average Age: 13
Number of Period/Time: One (1) period of 40 minutes
Unit: Maintenance of Soil Fertility
Problem Area: Cover Cropping
Objectives: At the end of the lesson, students should be able to:

(i) identify five cover crops
(ii) state the function of cover crops in soil fertility

Instructional materials: Textbook, chalk board, five different types of cover crops.
Procedure:

(i) routine activities
(ii) introduction, motivation and revision
(iii) development of the lesson

Step I – definition of cover crops or what is cover crop
Step II – teacher presents cover crops and name them, state their functions.

Closure:
(i) summary
(ii) evaluation

Home work
References

3.1.2 Implementation of Lesson Plan

The teacher of agriculture needs to implement carefully what he has planned. Implementation of a lesson plan involves

Asking questions
Using examples
Using illustrations
Establishing appropriate frame of reference

3.1.2.1 Asking Questions

The first question should usually be relatively simple and related to pupil's interests or to the basic fundamentals of the topic. Questions should be distributed throughout the whole group of pupils. Do not call the pupil before asking the question because it can embarrass the student and because others may not pay attention to the intended question. Ask the question, pause, ask for volunteers to answer the question. You may encourage some students by names, wait for an answer, evaluate the answer, react to the answer (reward or otherwise).

3.1.2.2 Using Examples

Examples may be oral, visual, tactile, olfactory or gustatory. They should usually proceed from the simple to the complex and as far as possible be interesting to the pupils. Above all they should be relevant and meaningful. Appropriate examples are always necessary; they aid retention of facts and information.

3.12.3 Using Illustrations and Analogies

Illustration simply means explaining. Something within the experiences of knowledge of the pupils in that so it can help the students to make new concepts or new experiences became clearer. When you illustrate, you help the pupils form a visual and mental image of what is being taught. Analogy is a type of comparison or contrast used to make an emphatic point. Analogy should be clear and related to the topic.

3.1.2.4 Establishing Appropriate Frame of Reference

A student's understanding of the material of the lesson can be measured if the material is organized and taught from the several points of view. These "points of view" are also called frames of references. The use of several frames of reference broaden the general view of understanding more completely than it is possible will only one.

3.2 Field Project Work

Farm experience or student farm projects form an integral part of agricultural education. The teacher of agriculture is a key person in the

development of pupil's projects as he supervises their activities and assists them in making decisions directly related to the success of their projects. It is his/her task to encourage pupils to use the most productive agricultural methods, while persuading them to discard those traditional practices which have been superceded. It is the task of the agriculture teacher to set up work, programmes for the school. The agriculture teacher role in organising and assisting the pupils with their farm projects is one of the most important and satisfying aspects of his job. It results in a close relationship being formed between pupil and teacher from which both derive enormous benefit.

3.3 Teaching manipulative skills

Pupils should be made to realize that manipulative skills are essential aspects of the course being taught and they should be given every opportunity to practise them.

3.3.1 Handling or Kinesthetic Skills

This refers to the senses located in the muscles, tendons and joints. These are stimulated by bodily movements and they direct and control the motor skills. Manipulative skills cannot be acquired merely by looking or listening. The pupil must physically carry out the task and then practise it. Handling skills includes the use of hoes for tilling, assemblage of parts of a wheel barrow, pruning etc.

3.3.2 The Role of Observation

Observation is very important in the development of attitude and manipulative skills. Visual observation of certain operations, such as castration of animals or ploughing with a tractor, is vital. Observation also plays an important role in forming a concept of what a finished product looks like and assisting in the evaluation or assessment of an on-going project and providing information for improvement.

3.3.3 Procedure for Teaching a Manipulative Skill

For you to teach manipulative skill, you should follow the following guidelines:

determine before hand the abilities that are to be learned by the pupils,
encourage a strong desire in the pupils to possess manipulative skill,
theoretically teach the pupils,
demonstrate the procedure for the pupils to grasp,

allow the pupils to perform the operation by themselves,
give the pupils further exercise,
give opportunity to the pupils to evaluate their achievement

Activity A

(i) Why does a teacher need a lesson plan for his teaching?

(ii) Differentiate between illustration and analogy

3.4 Working with the Community

The teacher of agriculture must be in constant touch with the community in which the school is located. He should participate in a variety of community activities to project the image of agriculture among the people, such as:

attending meetings of the Parent/Teachers Association (PTA),
assisting in organizing community projects
providing advice to local farmers
attending meetings of local farmers union

4.0 CONCLUSION

This unit has enabled you understand the steps involved in classroom teaching such as preparing and implementing lesson plan. The tasks of the agriculture teacher are also elucidated particularly, the task of teaching manipulative skills, field project work and working with the community.

5.0 SUMMARY

In this unit you have learnt that you as an agriculture teacher should;

plan your lesson before classroom teaching,
implement your lesson plan through the use of questions, examples, illustrations and analogy and by establishing appropriate frame of references
assist the pupils in field project work
teach manipulative skill such as kinesthetic and observation skill
be in constant touch with the Community in which your school is located

6.0 TUTOR – MARKED ASSIGNMENT(TMA)

1. Prepare a lesson plan for Junior Secondary School one in a named school.

2. Give five procedures for teaching manipulative skill.

3. Mention four ways through which a teacher of agriculture can work with the community.

7.0 REFERENCES/FURTHER READINGS

Olaitan, S.O. (1984): Agricultural Education in the Tropics. Macmillan Pub. London.

Aliyu, A. (1982): Science Teaching in Nigeria, Atoto Press Ltd.

UNIT 4 SOCIAL FACTORS IN THE TEACHING OF AGRICULTURE SCIENCE

CONTENT

1.0 INTRODUCTION

In addition to the many factors that affect the teaching of agriculture in schools, social factors have a very significant effect on agriculture in schools. Farming is the major occupation of the rural Nigerians. As most farmers earn very little income when compared with other occupations of the rural sector and because the occupation requires intensive labour, people tend to associate drudgery and low income with agriculture. When the same impression is conveyed to the teachers of agriculture, the teachers' image and confidence are affected negatively.

2.0 OBJECTIVES

At the end of this unit you are expected to be equipped with the knowledge that will enable you to be able to;

change the negative attitude of your pupils towards agriculture through the development of acceptable attitudes,
identify the factors that lowers the status of agriculture among other sectors of national economy,
be abreast of the community's expectations of the teacher,
evolve some strategies for meeting the community's expectations from you.

3.0 MAIN BODY

3.1 Pupil's bias against Agriculture in Schools

Most of the students of agriculture come from families that practise traditional farming. These students have individual impressions on what traditional farming entails. Sometimes, these impressions come from personal experiences of working under harsh and unpalatable conditions. Such impressions are carried to schools. They quickly come to the conclusion that they have nothing different to offer. The agricultural education programme must therefore encourage a change of attitudes and restructuring of knowledge gained from home.
The teacher of agriculture can improve the pupils' attitude towards agriculture through the following ways;

3.1.1 Effective Programming of Agricultural Activities

The teacher should plan school farming programme to cover a wide variety of subjects, many of which will be new to the pupils and thereby arouse their attention and interest. An example is organization of Young Farmers Club (YFC).

3.1.2 Effective Lesson Plan

Pupils may not be responsive to the teaching of agriculture in the hot afternoon; therefore, agricultural lessons should be in the morning or evenings. Ample use of visual aids should accompany teaching.

3.1.3 Developing Positive Attitudes in Pupils

Attitudes can be learnt. You should strive to develop the right attitudes in your pupils, particularly towards acquiring manipulative skills in

agriculture. To do this, you should identify which aspects or practices in agriculture interest the pupils mostly. You, as an agricultural science teacher should take advantage of these.
Positive attitude can be developed in pupils also through;

(i) Awareness:- The subject-matter the teacher wants the pupils to know must be identified for the student learner. It is only when they are aware of what they are to learn that they react to it.

(ii) Understanding:- Understanding involves identifying the principles and science of any activity. When students have a good understanding of what they are doing, the more they feel towards it. Understanding would make the pupils to drop the earlier attitude they have towards a situation.

(iii) Interest:- Activities must be presented to the pupils in the way it will interest them and when they become interested, that can annul the earlier attitude. Therefore, agricultural activities or agricultural lessons must be made active particularly by allowing the pupils to contribute their own ideas and experiences.

(iv) Appreciation:- We appreciate a thing or situation when we have personal experiences of the situation. The feelings we develop during an activity goes a very long way in forming our opinions. Thus appreciation is learnt by experiencing. The teacher can encourage pupils to appreciate situations in agricultural practices through illustrations, demonstrations and observable examples from their immediate environment.

3.2 "Low" Status of Agriculture

One of the social factors affecting agriculture is its "low" status. Factors that attribute to the low status include:

(i) the drudgery involved in farming practice
(ii) the neglect of agriculture for higher income earning ventures
(iii) the long investment period before farm activities yields a profit
(iv) natural factors such as weather and disaster

Activity A

(i) Mention four methods of developing positive attitudes in pupils.

3.2.1 Mode of farming

Mode of farming involves clearing and burning, tilling the soil, with primitive farm implements. All these activities are energy-sapping yet,

the returns from the venture is not commensurate with the drudgery involved. The adult farmers resist change have their level of income remains poor. Where they are ready to adopt new technologies, the needed funds are not readily available. Thus their mode of farming operations remains crude and less efficient.

3.2.2 Neglect of agriculture in preference for Oil wealth

With the exploitation of oil resources in Nigeria, the attitude of both the government and the people changed towards agriculture. This is because Nigeria and indeed Nigerians, since they can earn more money in oil with lesser efforts.

3.2.3 Long Investment Gestation Period

When investment is made on agriculture, particularly on crop plantations, it takes a long period before the farm begins to yield. Most production activities require time for the investment to mature and yield returns. Most farmers have nothing to fall on during the gestation period.

3.2.4 Natural factors and disaster

Certain factors such as drought, excessive rainfall, intensive heat, pest invasion and fire disaster are often beyond human control. There is also fluctuation between glut and scarcity. All these make farming a risky venture which young people will not want to take.

3.3 Community's expectations of the Agriculture Teacher

Another factor affecting the teaching of agriculture is the community's expectation of the teacher. Parents expect their child's teacher to fulfill several functions. These functions are;

3.3.1 A Model Teacher

The agriculture teacher has been trained in the field of agriculture and he is also an educator. This makes the community to regard him as an expert full of ideas in improved methods of agriculture. He is therefore viewed as a model teacher.

3.3.2 An Adviser

The Community expects the teacher of agriculture to advise the farmers on ways and means' of improved methods of combating the prevalent problems they encounter on their farms.

3.3.3 An Innovator

The school-farm supposed to be a "model" to other farms in the community. This is because improved methods of farming are inherent in the planning of the school farm due to the linkage the school has with the research stations from where they obtain latest findings on farm practise. Parents visit the school and school farms on seeing these innovations, they to adopt new practices.

Activity B

Mention the social factors that affect the teacher of agriculture.

3.4 Meeting the Community's expectations

The Community's expectations of the teacher of agriculture pose some challenges to him and so keep him always on his toes. In the process he needs to evolve some strategies to meet these expectations. These should include efforts to:

maintain good intra-school relationships
plan school community activities
publicize school agricultural projects
provide the school and community with feedback on agricultural programmes

3.4.1 Maintain Good Intra-School Relationships

The teacher should adopt efficient intra-school relationships by maintaining cordial working relationships with the school administration and should assist the school in planning the entire school programme.

3.4.2 Plan School-Community Joint Activities

Teacher of agriculture should embark on programmes that will bring the school and the community together for interaction. Programme such as agricultural shows, field days, exhibitions, home and farm visits, school inter-house competitions can bring the two groups together in a closer relationship.

3.4.3 Publicise Agricultural Science and the School's Farm Projects

When the teacher comes in contact with improved methods of farming as a result of his opportunities to the sources of such innovation, he should attempt to disseminate the same to the community. This can be passed

through the community council or cooperative groups within the community. It may also be publicized through radio, television, posters or even through the religious bodies recognised in the community.

3.4.4 Provide feedback to the School and the Community on agricultural activities

Though agricultural activities take place within the school vicinity, some staff members and students who have little or nothing to do with agriculture or farm projects may be ignorant of the teachers efforts on the farm projects. The teacher of agriculture should therefore make his efforts known to the school and the community. School's assembly and staff meetings could be an appropriate medium for passing such information.

4.0 CONCLUSION

You have learnt in this unit that certain social factors affect the teaching of agriculture. The factors had been identified as the pupil's bias, low status of agriculture, and the community's expectations.

5.0 SUMMARY

In this unit, you have learnt that;

pupils bias against agriculture, low status of agriculture, community's expectations and meeting thecommunity's expectation are the social factors that affect the teaching of agriculture in the school.

Effective programming of farm activities, effective lesson plan and developing positive attitudes in pupils can ameliorate the problem of pupil's bias against agriculture.

The energy-consuming nature of agriculture, neglect of agriculture by the people and government, long investment period and low incentives from agriculture are the bane of low status of agriculture.

The community expects the teacher of agriculture to be a model, an adviser and an innovator.

Maintaining good intra-school relationships, planning school-community joint activities, publicity of agricultural projects and providing feedback on agricultural projects to the school and the community will enhance meeting the community's expectation for the agriculture teacher.

6.0 TUTOR-MARKED ASSIGNMENT (TMA)

i) What factors contribute to the low status of agriculture?

ii) How can the teacher of agriculture develop positive attitude in his pupils?

iii) What are the community's expectations for the teacher of agriculture?

7.0 REFERENCE/FURTHER READINGS

Olaitan, S.O. (1984): Agricultural Education in the Tropics. Macmillan Publishers, London, U.K.

MODULE 2

TEACHING AND LEARNING IN AGRICULTURAL SCIENCES

UNIT 1 TOOLS FOR AGRICULTURAL SCIENCE TEACHING

CONTENT

1.0 INTRODUCTION

In the teaching and learning of Agricultural Science certain tools have been identified to be germane for its effectiveness. In this unit, these necessary tools will be identified and the roles they play also specified.

2.0 OBJECTIVES

It is expected in this unit that you will learn

the difference between goals and objectives
the difference between instructional and behavioural objectives
recognize other skills that are relevant for agricultural teaching

3.0 MAIN BODY

3.1 Goals and Objectives

Clear objectives can act as bases for determining, first the content of the lesson, and second the appropriate methods for teaching the lesson. Effective instruction is invariably based upon an understanding of the concepts, skills or generalizations that the pupils must learn in order for the teacher to judge the effectiveness and success of instruction. Objectives also help teachers to answer such instructional questions as what should I teach today? How would I teach what I am supposed to teach? How will I evaluate my students to find out if they have learned what I intend to teach? To a teacher, objectives give specific direction and guidance in what to teach, how to teach it, what to evaluate, and how to carry out the evaluation.

3.1.1 Goals

Objectives are often confused with educational goals or aims. Goals are general expressions of intent which provide scope, instructional tactics and strategies for learning activities, statements of goals are characterized by such verbs as “understand”, “know”, “appreciate” and “possess”. By their functions and nature, goals are broader than objectives. Examples of educational goals in agriculture are as follows:

that agriculture students should come to know the fundamental facts and principles of agriculture.
Science students should possess the abilities and skills needed to engage in agriculture.
that agriculture students should understand the practical nature of agriculture.

These statements are too vague for agriculture teacher who is looking for a clear guidance in his selection of appropriate content area, a teaching method, and an effective procedure for evaluating outcomes.

3.1.2 Objectives

Objectives indicate what a student should be able to do as a result of his or her learning. Objectives must also be expressed, in measurable terms, in the knowledge, the skill or attitude which the learner will be expected to demonstrate when instruction is completed. Statements of objectives are characterized by such verbs as "measure", "draw", "enumerate", "label", "identify", "demonstrate" and so forth. Examples of statements of objectives are:

the students should be able to draw and label a hoe;
the student should be able to identify the soil samples;
the student should be able to demonstrate the operation of a sprayer.

3.2 Instruction and Behavioural Objectives

As has been noted earlier, objectives are derived from goals. However, two types of objectives are commonly stated in teaching and learning processes. These are instructional objective and behavioural objective.

3.2.1 Instruction Objective

Objectives can be stated in terms of what an agriculture teacher is going to do during a particular lesson or period. This type of objective is called instructional objective because it focuses attention on the teaching process or strategies rather than on the learning outcomes to be attained by the student. Examples of instructional objectives are as follows:

to show students the various parts of a farm tool
to demonstrate how a sprayer can be used to spray
to state the functions of soil water.

Activity A

(1) Give two statements of each of goals and objectives

3.2.2 Behavioural Objectives

Behavioural objectives are stated in terms of the outcomes the teacher expects from his teaching. Attention is thus shifted from the teacher to

the learner, and the distinction between instructional objectives and behavioural objectives is in stating the former in terms of what the teacher does and the latter is stated in terms of the learning outcomes. When performance statements are defined, they express in measurable terms, the skill, knowledge, and/or attitude which a student will be expected to demonstrate at the completion of instruction. Example; given a diagram of a hoe, the student should be able to label the parts, the handle and metal blade. This is behavioural objective because (1) the objective is stated in clear unambiguous terms which the teacher could recognize when it is attained by students (2) it is stated in terms of the behaviour of the learner. The following list of action-verbs will help agriculture teachers formulate behavioural objectives:

Compare, classify, record, demonstrate, name, measure, describe, explain, construct, show, dissect, operate, apply, label, identify, state, draw, list.

3.2.3 Interrelationship between goals, objectives, instructional and behavioural Objectives

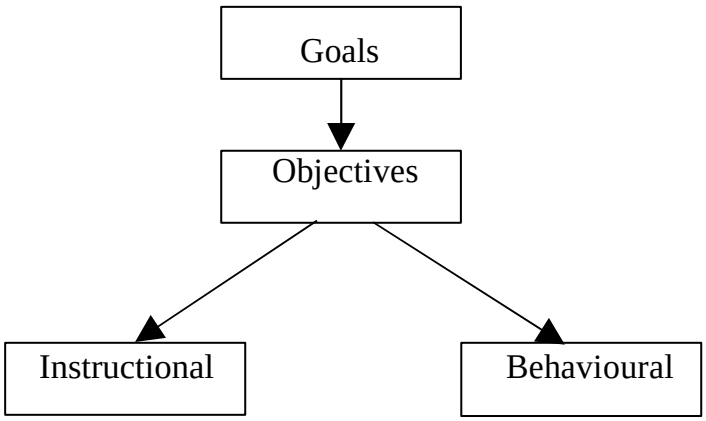


Figure 3.1: Interrelationships of Goals and Objectives

3.2.4 Instructional advantages of behavioural objectives

The school syllabuses in their present form offer little or no guidance to the teacher, therefore, the use of behavioural objectives in lesson planning will partly require the level of mastery of all students using the same syllabus, and may also function as a link between the subject-matter and teaching effectiveness. Behavioural objectives aid instruction by providing direction as to what the teacher expects from the students in terms of the level of achievement and specific skills and abilities to be developed in the students. It is admitted that writing behavioural objectives for the purpose of agriculture teaching is by no means an easy task, at least it is time consuming, nevertheless, stating behavioural

objectives may facilitate the process of identifying appropriate content area and may also make it possible to evaluate accurately the extent to which the desired abilities have been developed in the learners.

3.3 Other relevant Skills for Agriculture Teaching

Other than the effective preparation of the syllabus, scheme of work, lesson plan and lesson notes there are certain skills which if possessed will ensure effective agriculture instruction. The skills include; communication skill, questioning skill, classroom management, class testing and its interpretation, use of teaching aids.

3.3.1 Communication Skill

Effective communication is basic to an effective teaching of agriculture. The teacher of agriculture should develop early the skill to speak fluently and aloud. As a teacher you should practise speaking slowly in the classroom and when we want students to do something, the instruction should be given in the simplest way possible.

3.3.2 Questioning Skill

Questioning is part of guided enquiry in agriculture teaching. Questioning can be used to stimulate thought or questioning, aimed at making children reason or explain such things as cause and effect. Most agriculture teachers ask direct factual questions which do not provoke deep thinking. Teachers should avoid vague questions to which there may be many possible questions.

3.3.3 Classroom Management Skill

What teachers do to create an atmosphere that ensures meaningful interaction between pupils and pupils, and pupils and the teacher during teaching and learning processes is what is known as classroom management. Some of the approaches the teacher can use are based on:

inter-personal relationship;
permissive attitude;
authoritarian attitude;
behavioural modification approach;
social systems approach.

3.3.4 Class Testing and its Interpretation

A good classroom test is a form of learning stock-taking. Most teachers unfortunately use tests as a threat – to learning as tests are mostly used for selection purposes and for the determination of grades. When a test can be used as part of the teaching process, it will show the teacher where teaching should begin.

3.3.5 Effective use of "Teaching aids"

However, seeing, touching and listening have been ascertained to be gateways of human learning. Materials meant for learning should be presented in a manner as to provide students with the opportunity to become actively involved intellectually, perceptually and physically.

4.0 CONCLUSION

We established that there is a distinction between goals and objectives in educational instructions. Behavioural objectives was more favoured in agriculture teaching, it aids in the measurement of pupils' achievement. It was confirmed that certain skills are relevant for the effective teaching. Such relevant skills are found to include: communication skill, questioning skill, classroom management, class testing and the skill for the use of teaching aids.

5.0 SUMMARY

We have learnt in this unit that:

objectives give specific direction and guidance in what to teach to a teacher;
objectives are different from educational goals and aims;
objectives indicate what a pupil should be able to do as a result of his/ her or her learning
relevant skills in agriculture teaching include communication, questioning, classroom management, class testing and effective use of teaching aids.

6.0 TUTOR-MARKED ASSIGNMENT (TMA)

i) List ten active verbs that can be used in stating behavioural objectives.

7.0 REFERENCES/FURTHER READINGS

Aliyu, A. (1982): Science Teaching in Nigeria, Atoto Press Ltd., Ilorin.

Mager, R.F.(1962): Preparing objectives for programmed instruction. San Francisco, Fearon.

Schaller and Wittich (1967): Audio visual materials, Harper and Rows.

UNIT 2 TEACHING AIDS IN AGRICULTURE

CONTENT

1.0 INTRODUCTION

In the last unit we identified the use of teaching aid as a relevant skill in the teaching of agriculture. In this unit therefore, we shall learn about the significance of teaching aids, its sources, how it can be selected and utilized.

2.0 OBJECTIVES

This unit will enable us to:

identify what can be used as teaching aids in agriculture
identify the sources of teaching aids
select teaching aids
determine what is a good teaching aid
utilize teaching aids

3.0 MAIN BODY

3.1 Teaching Aids and Resources for Agriculture Teaching

Teaching aids are materials and devices used to supplement the written or spoken word in the transmission of knowledge, attitudes and ideas to learners. The help to emphasise, clarify or vitalize the instruction. The teaching of agriculture can be made more effective by the use of locally

available teaching aids. Teaching aids may be audio, visual or audio-visual. The teacher of agriculture, therefore, is expected to be familiar with a variety aids and their use in the teaching learning process.

3.1.1 Sources of Teaching Aids

Some common teaching aids for teaching agriculture include: chalk boards, charts, graphs, diagrams, exhibits, flannel boards, flat pictures, photographs, maps, globes, models, objects and specimens, motion pictures, textbooks and reference books.

Conventionally, teaching aids are classified on the basis of the sense organ they appeal to. Those that stimulate the sense of hearing are referred to as audio aids. Some of the most frequently used aids in this category are:

human voice
record player
tape recorder and
the radio

On the other hand, those teaching aids that appeal to students' sense of sight are classified as visual aids. These include:

model, specimens and collections (soils, rocks, weeds, crops, pests, seeds, fertilizers)
still pictures and chalkboard
overhead transparencies
charts, maps, exhibits and graphic materials

There are those teaching aids which appeal to both senses of sight and learning and are referred to as audio-visual aids. Most significant examples are:

Television
Both still and motion pictures with sound track
Film projectors

Other classes of useful teaching aids include printed matter and community resources such as:

syllabuses
textbooks, work books
newspapers
journals

hand books
magazines and
reference texts

3.2 Significance of Teaching Aids

Ideally, the teacher should use a combination of verbal instruction and teaching aids in accordance with sound principles of teaching and not introduce teaching aids merely as entertainment for the students. Properly used teaching aids will help to give first concepts or impressions correctly, stimulate interest, promote better understanding of the lesson and add variety to teaching methods. They may also help to promote intellectual curiosity, contribute to longer retention of learning and clarify principles outside the range of ordinary experience.

3.3 Selection of Teaching Aids

In selecting teaching aids for a particular class or topic the teacher should use the following criteria;

consider the instructional objectives, the relevance of the material the plans and the benefit the students are likely to gain from it;
consider the characteristics of the class s/he is teaching, whether or not the aids will be above their level of ability or within their level of understanding and interpretation,
consider the physical qualities of the aid and its condition. For example, if s/he plans to use a chart, is it clear enough?
give the class a brief introduction to the aid, including what they will see, why and how it relates to what he is teaching.

Activity A

1. List ten items that can be used as teaching aids in agriculture.

3.4 Characteristics of a good Teaching Aid

The effectiveness of any instructional material lies in its ability to:

appeal to the senses – sound and sight,
attract and hold attention,
focus attention on essential elements to be learned at the proper time.

Certain characteristics are common to all good teaching aids which include;

1. Simplicity

The teaching aid must be simple and present only a few ideas at a time pupils cannot comprehend complex ideas presented to them for a short time. The teacher needs to select simple illustrative teaching aids for instructing his pupils especially at the primary stage.

2. Colour

Since pupils are attracted by bright colours, there should be used in the preparation of teaching aids. However, too much brightness should be avoided since it may distract pupils' attention from the objective of the lesson and the instructional material.

3. Flexibility

In the classroom a good teacher will attempt to teach his lessons using a variety of methods and materials. He should therefore select or construct teaching aids that can be instantly modified to suit changes in the approaches to instruction.

4. Visibility

Any teaching aid to be used by the teacher should be of such a size that the smallest detail the teacher wishes to emphasise is large enough to be seen by every pupil in the class. It should be placed conspicuously in front of the class to present a clear view to every pupil.

3.5 Utilization of Teaching Aids

The use of teaching aids is called for:

(i) when the objective of instruction is either too big or too small or too spread out to be comprehended effectively by the students. For example, when teaching about the vegetation or rainfall of an area, diagrams and pictures are useful;

(ii) when examples of the subject-matter are not easily available to students. Such objects such as irrigation schemes and dams. Such could be displayed to the class with films or models;

(iii) If an object is too expensive or delicate for the students to handle or use;

(iv) If the process being studied is a very slow one e.g. observation of various stages of plant growth, the use of picture is preferable;

(v) When the process the teacher wants to emphasise is not visible by the naked eye, for example, the flow of electric current through a copper wire, it could be illustrated by a diagram or picture.

When using teaching aids, it is important for the teacher of agriculture to consider the following suggestions:

1. ensure that the material is accurate and acceptable to the students;

2. preview an aid before using it in class;

3. Arrange the aids in such a way that students will see them from where they are sitting;

4. use the aids at the appropriate time in the lesson, and after that remove them;

5. Do not use only one type of teaching aid to the exclusion of others. There is need for change and variety;

6. Always remember that students are different in age, interest, maturity and experience, it is always an advantage to combine the aids to meet the needs of the various groups in the class;

7. The class needs should determine the type of aid to be used;

8. Do not cause confusion by presenting too much information;

4.0 CONCLUSION

You have learnt in this unit that the use of teaching aids has great contribution to the effectiveness of teaching of agriculture. Teaching aids provided at any particular point in time meets the human senses of sight and sound. It is also characterized by simplicity, colour, flexibility and visibility. The conditions under which teaching aid is relevant and what the teacher should do to effectively use teaching aid have equally been made clear in the unit.

5.0 SUMMARY

We can summarise what we have learnt as follows:

Teaching aids are devices and materials used to supplement spoken or written word in the classroom.
There are several examples of teaching aids that a teacher can use.
There are certain criteria considered for the selection of teaching aids.
Teaching aid possesses certain characteristics.
When using teaching aids, the teacher observes certain conditions.

6.0 TUTOR-MARKED ASSIGNMENT (TMA)

1) What are the criteria you will observe for selecting teaching aid to use?

2) When using teaching, what are the time precautions you will observe?

7.0 REFERENCES/FURTHER READINGS

Aliyu, A. (1982): Science Teaching in Nigeria, Atoto Press Ltd., Ilorin.

Olaitan, S.O. (1984): Agriculture Education in the Tropics, Macmillan publishers, London, UK.

UNIT 3 THE TEACHING – LEARNING TRANSACTION IN AGRICULTURE TEACHING

CONTENTS

1.0 INTRODUCTION

In the previous unit you learn about how teaching aid plays a vital role in making teaching of agriculture effective. Though, teaching aid is important in teaching, if the teacher does not utilize it in the right way it may loose its value and the learner may not learn. This is because teaching is one thing while learning is another, with the latter depending on the former and so interaction ensues. In this unit therefore, you will learn how the two interrelate to influence the learner.

2.0 OBJECTIVES

At the end of this unit, you are expected to be able to;

explain the inherent characteristics of teaching and learning
explain the interaction of teaching and learning

3.0 MAIN BODY

3.1 Teaching of Agriculture

To some people, teaching is dynamic where the teacher teaches the pupils accept it while others see it as triadic because it involves the teacher, the learner and the subject matter, which results in intellectual exchange.

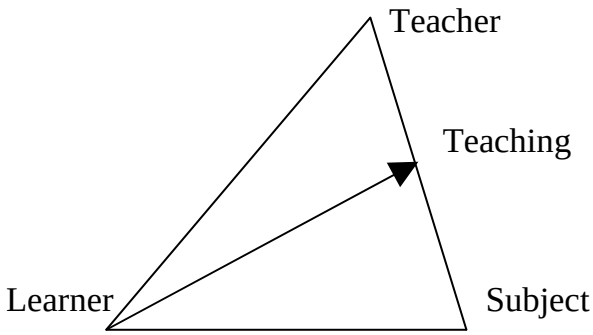


Figure 3.0: Illustration of Triadic Teaching

Teaching is an attempt by some one to share the learning (subject matter) with the learner or someone. Looking at the above definition, you can crystalise three things that is, the teacher, the learner and subject matter. Teaching, as the activities initiated or promoted by an instructor, enhances student learning. It can also be seen as the direction of learning process to bring about the desirable changes as a result of instruction. These changes may be in attitudes, interests, ideas, appreciations, understanding, habit and abilities. The object of teaching or instruction is human growth and development. The teacher's role is to devise situation which will produce this expected changed behaviour. Students' learning remains the only viable and reasonably accurate criteria for evaluating the effectiveness of teaching. It is often said that unless the student learns, the teacher has not taught, hence teaching sets the stage for learning. There are two definite roles of a good teacher of agriculture.

to prepare the learner, this requires pedagogical skills
to present the knowledge and this requires the technical knowledge of the subject matter.

3.1.1 Basic Factors in teaching

The four basic factors of teaching are

1. Democracy:
   This demands that the teacher treats the pupils as he would like to be treated. He should allow the pupils to freely ask questions and interact in the class.

2. Use:
   The content to be taught must be the one that the pupils can apply.

3. Readiness:
   It is useless to teach something to students before they are ready to learn and if the student sees no immediate use to the instruction he may not be ready to learn

4. Learning by Doing:
   Pupils should be allowed to use their hands along with what they are taught, what they use their hands to do make the learning more permanent.

3.1.2 The Purpose of Teaching

Teaching shapes the conduct, emotional and intellectual disposition of the learner. The teacher's effort is thus to determine on the bases of the larger experience and trivial wisdom how the discovery of knowledge should come to the child.

During the process of teaching, teacher brings his superior knowledge to aid the child in making sense out of his life experience.

Therefore, the effort of teaching is to keep the experience of pupil moving in the direction of what the expert already knew. During teaching pupils are exposed to what must have meaning on their life in and out of school and help them to see the relevance of what they learned.

Activity A

1. Explain four basic factors of teaching

3.2 Learning of Agriculture

Learning is the observed changes in behaviour, attributable to active experience. Learning experience is what students obtain, (tangible or

intangible) from the interaction with the external condition in his environment.

The mechanization of learning cannot be observed directly, but the evidence that learning has taken place can. Moreover, a kind of change called learning exhibit itself as a change in behaviour and the influence of learning is made by comparing what behaviour was possible before the individual was placed in a learning situation and what behaviour can be exhibited after such treatment.

3.2.1 The Purpose of Learning

Learning takes place because the organism (the learner) is consistently exposed to reaction in the environment both physical and psychological as the interaction takes place between the learner and his environment, changes are observed in him/her and this in effect constitutes learning as an educational process is very important in socialization.

3.3 The Teaching-Learning Transaction in Agriculture Education

The teaching-learning transaction involves four elements namely the student, the teacher, the subject-matter and the conditions present during the interaction.

3.3.1 The Student

What can be learned in the agriculture classroom depends primarily on the students only the student can learn the information. Their attitudes, expectations before coming to school and ability to acquire knowledge will determine the extent and the rate of learning which will occur in the agriculture classroom.

3.3.2 The Teacher

The teacher represents the key element in any structural learning situation. He brings to the class a set of prior expectations on a particular level of knowledge of technical agricultural information and an ability to interact with the students. Teacher's knowledge of technical agricultural depends on formal courses and experience acquired in a particular subject area. It is the teacher himself who creates or moulds the learning situation and in a real sense creates a condition conducive to learning. Neither brightly painted walls nor good instructional materials can turn a teacher with four disposition towards students into an effective instructor.

3.3.3 Conditions in the School System

The importance of conditions in the school system on learning can be surprisingly great. Certain questions can be considered with respect to conditions in a school system.

what kind of discipline is maintained in the school system?
Who is responsible for supervising agricultural programmes during the school hours?
What kind of attitude exists towards agricultural programme?

It can be emphasised here that these conditions are created both by the teacher and the students.

3.3.4 The Subject-matter

This refers to the technical and scientific information which the subject-matter contains. The interaction between the teacher and the learner students is usually on the subject-matter. The depth and coverage of the subject-matter varies with age and level of student and finally, the environment.

4.0 CONCLUSION

You have learnt that teaching takes places when the students have learnt and learning can be recognized as when a change has taken place in the learner due to the experience (teaching) the learner is exposed to. The transaction of learning and teaching, we also learnt, involved the student, the teacher and the conditions prevalent in the school system.

5.0 SUMMARY

In this Unit, we have learned that;

Teaching is seen as being didactic or triadic
Teaching enhances learning
There are four basic factors of teaching
Learning is the observed change in behaviour due to prior experience
Teaching-Learning transaction involve three elements

6.0 TUTOR-MARKED ASSIGNMENT (TMA)

1) Mention the two definite roles of the teacher of agriculture.

2) Explain the parts played by the three-elements involved in Teaching-Learning transaction.

7.0 REFERENCE/FURTHER READINGS

Collete, T.A. (1973): Science Teaching in the Secondary School, Bostin, Allyn & Bacon Inc.

Abdullahi, A. (1981): Changing School Science Teaching and the implication for Nigerian Schools Nigeria Education forum 4(1) 51-56.

UNIT 4 TEACHING TECHNIQUES AND PROCEDURE IN AGRICULTURAL SCIENCE

CONTENT

1.0 INTRODUCTION

This unit will afford you the opportunity of the knowledge of the specific devices used by teachers in addition to other methods, to help the pupils achieve their educational objectives.

2.0 OBJECTIVES

At the end of this unit, you are expected to be able to

state the specific devices used by the teacher to help students;
achieve how to state the expected educational objectives;
design questions for classroom process;
formulate good classroom questions;
learn through references;
use the library effectively;
design assignments for students;
assist students to take note during teaching.

3.0 MAIN CONTENT

3.1 Questioning

A question is a sentence which requires a response. Asking questions in class discussions, tests or assignments is one of the basic ways by which the teacher can stimulate pupils to think, listen and learn. It is by asking questions and studying the answers that the teacher can measure and evaluate the progress of his pupils in thinking, listening and learning.

3.1.1 Pupils think in four main ways

1. Remembering – This is an activity which makes the pupil think in order to recall various facts that he has previously been taught.

2. Reasoning – This is response to questions which demand explanation for an action or deduction from known facts.

3. Evaluating and Judging – Pupils need experience in weighing alternatives, in judging and making decisions; they need to learn how to decide whether or not a statement is true or a plan is sound.

4. Creative Thinking – This type of thinking produces ideas; proposes solutions to problems and invents ways of doing things.

3.1.2 Designing Questions

To design a good classroom question, the teacher needs first to analyse and plan the kind of task to be set and then formulate the question itself. Types of questions can be identified through their functions. The following types of questions are most common in classroom situations.

1. Data Questions – Questions focusing on specific facts or figures that may be required during lesson. For example, what is the planting distance of maize?

2. Questions that pin point problems – This type of question helps to pin point problem areas e.g. what should farmers guard against when carrying harvested, infested cocoa beans across a plantation.

3. Summarising Questions – This sort of question focuses attention on, or summarises, crucial points in the development of the lesson

for example, how would you arrange, in order of importance, the causes of low productivity in Nigeria.

4. Interesting Questions – This type of question helps to stimulate the interest from the students. It helps to involve the pupils and make material relevant and meaningful to them. For example, what advice would you give a farmer whose birds are being attacked by Avian flue?

5. Questions to involve students – The question require the student to apply some of his former learning to a current and realistic problem under study. For example, select one method that can be used to parboil rice.

6. Questions to make the student curious – The question asked to satisfy curiosity as well as to clarify a situation when the students become puzzled by what they observe. For example, why do you add acid to water and not water to acid.

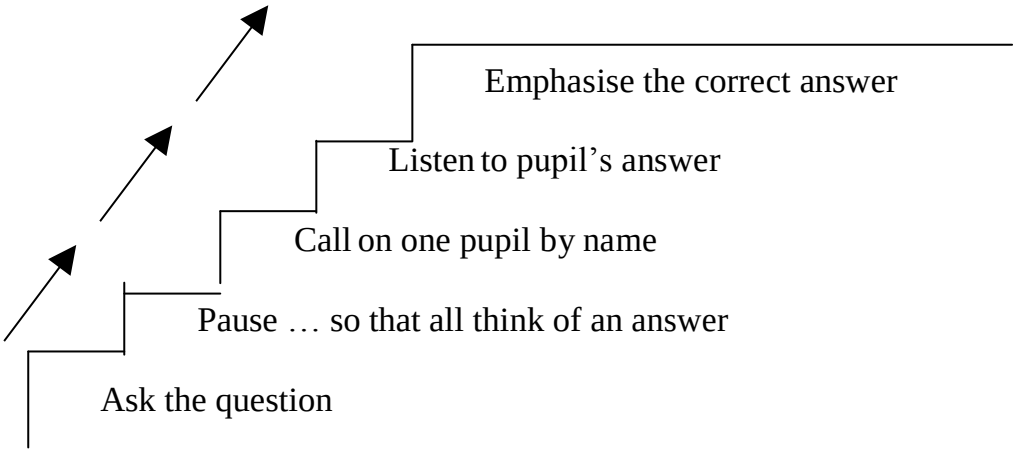
3.1.3 Importance of the use of Questions

Effective use of questions can help the teacher to achieve the following:

stimulate the interest of the pupils in the lesson
establish communication between the teacher and the pupil
focus the pupil's attention on the major points or principles to be remembered.
Stimulate "learning by doing" by making pupils apply facts and principles as they analyse problems.
Help pupils to develop a feeling of confidence and success which leads to greater motivation and competence in organizing ideas and speaking fluently.
Encourage cooperation between members of the class through group activities and shared responsibilities.

3.1.4 Asking Questions in the classroom

For questioning to be most effective a definite procedure needs to be adopted. The teacher should therefore carry out the following steps:



Ask the question in the class so that every pupil is aware that he is being addressed by the question.
Pause and glance at the pupils' eyes so that they will have time to think of the answer.
Call on one pupil by name. Every pupil should be asked a question with almost the same frequency.
Listen to the pupil's answer and decide whether it gives the correct response or not.
Emphasise correct responses by the pupil and reward the pupil who answer correctly. Correct wrong responses and encourage pupils who give poor answers.

Activity A

List five important reasons why you as a teacher of agriculture will ask questions in the classroom while teaching?

3.2 Learning through References

In order to encourage greater participation, the teacher could include selected references as part of the work in his unit plan. Having given references to the pupils the teacher then has to find out whether they have read them or not. He can do this in the following ways:

ask questions based on the assigned reference
set written questions based on the reference

3.2.1 Use of the Library

The teacher and the school librarian can greatly increase the pupil's ability to locate and use reference material.

the librarian should explain to the pupils the arrangements of books in the library and the call number of each book or periodical or bulletins. The librarian should also explain the procedure for borrowing and returning books. He should also tell the pupils who to contact in case of difficulty.

The pupils should be given special assignment which involves the use of the library.

3.3 Learning through Assignments

Assignments are a very useful way of increasing the thinking and organizing ability of the pupils. They tend to capture the attention and sustain student interest for a long time. Assignments improve the rate of recall of the pupil. S/he remembers things s/he achieves on his/her own for longer period and can recall the results faster through the association of the events with the environment and the facilities used in completing the assignments.

The following guidelines are given for the administration of assignments:

the teacher should discuss details of the assignment with the pupils

the teacher should advise pupils to carry out the assignment in a quiet and conducive atmosphere with no distractions.

The pupil should be encouraged to concentrate fully on the assignment and plan his time effectively.

3.4 Note Taking

Taking notes helps students to organize their material and determine salient points in the teaching. After the lesson, the teacher should recommend some references to the students for additional information. They should be encouraged to develop the notes and present them to the teacher for evaluation.

In many schools, pupils are given notes by the teacher. These should be modified for the purpose they are to serve, they should be brief, but not too short that they are not meaningful and they must be understandable.

3.4.1 Guidelines for Note Taking

The teacher should give the following guidelines to the pupil:

listen to the teacher carefully and take legible note on good paper.

listen for the main points (the teacher should list the main points on the chalk board for the students).

take brief notes in outline form (The teacher should endeavour to make brief notes on the chalk board).
keep all your notes relating to one subject in one section or use separate notebooks for separate subjects
review your notes before you forget all the facts
read your notes before the following class
ask the teacher questions on any aspect of the previous note you do not seem to understand.

4.0 CONCLUSION

In this unit you have learnt the use of questioning, references, assignment and note taking are vital for classroom activities, particularly if the guidelines are well defined and adhered to.

5.0 SUMMARY

In this unit, we have learnt that;

questions are statements which require responses
there are six types of questions that can be asked in the classroom based on what situation is at hand
learning can be achieved through the use of references and library
Note taking help the senior pupils to organize them materials and determine the salient points.

6.0 TUTOR-MARKED ASSIGNMENT (TMA)

1) Explain the types of questions that you can ask in the classroom situation.

2) Mention five guidelines for note taking.

7.0 REFERENCES

Olaitan, S.O. (1984). Agricultural Education in the Tropics. Macmillan Publishers, London UK.

MODULE 3

METHODOLOGY OF AGRICULTURAL SCIENCE TEACHING

Unit 1 Teaching Methods in Agricultural Science
Unit 2 Planning and Managing School Agricultural Programmes
Unit 3 Evaluating Agricultural Education Programme

UNIT 1 TEACHING METHODS IN AGRICULTURE

CONTENT

1.0 INTRODUCTION

This unit is intended to expose you to some more methods other than the ones discussed in the last unit of the previous module, that will enable you be more effective in your teaching. Just as there are no two teaching situations that are exactly the same, so, no method of teaching could be said to be suited for every teaching. However, from a pool of these methods, the teacher of agriculture can select the one that is most suited for his particular situation.

2.0 OBJECTIVES

In this unit, it is expected that you will;

become conversant with teaching methods
be able to explain the procedure of the specified methods of teaching.

3.0 MAIN BODY

3.1 Demonstration Method

Demonstration method is one of the teacher's greatest asset in arriving at fundamental skills in the relatively short time. In demonstration, the teacher shows, explains and does something (some acts of skills for the student to see). It is best used in;

teaching manipulative skills
developing understanding
securing the acceptance of new and better way of doing things

There are two types of demonstration namely: method demonstration and result demonstration.

(i) Method Demonstration – This is used to show how to do a particular operation, for example fertilizer application.

(ii) Result Demonstration – This is used to show the result of doing something in a particular way. For instance, the teacher of agriculture may invite an extension worker to give a result demonstration of recommended farm operations to the students. Here, the yield from farms that had different farm operations are mounted.

3.1.1 Planning a Demonstration

Before the teacher appears before the students to carry out demonstration, he should be mindful of the following guidelines;

plan the demonstration in three parts – the preparatory periods, the demonstration and the follow-up period.
rehearse the demonstration before hand.
to save time, outline the main steps on the chalkboard before the class begins.

make sure that every pupil will be able to see and hear what the demonstrator is saying from their individual standing/sitting position.
time the demonstration to include a question period

3.2 Discussion Method

This method involves a group of people or a class who get together in order to exchange ideas, facts and opinions orally about a topic of mutual concern and interest. The teacher acts as a conference leader and directs or redirects ideas and information produced by the pupils in the class. He listens to what is said by each individual pupil in the group as this gives an insight into this level of knowledge and understanding of subject matter.

3.2.1 Method of Discussion

A discussion can be started in different ways depending on the competence of the teacher and the approach he wishes to accept. This in turn will depend upon the subject matter discussion and the experience of the pupils.

In starting a discussion session, the following steps could be followed:

announced the topic for discussion to the pupils
indicate that each person is expected to express his/her own idea on the subject
ask challenging questions as the discussion progresses and call on individuals to respond
as pupils respond, draw in others by allowing them to express their opinions.

As the discussion continue there is the danger of drifting away from the focus, the teacher should step in by summarizing the main facts and bring them back on course. Significant points should be recorded on chalkboard.

3.3 Problem Solving Method

This is an attempt to discover the route to a goal, in the light of past experience and in manner appropriate to the present situation. In this case, the learner encounters difficulties in trying to achieve this goal but obtains satisfaction when he eventually reaches it. Problem solving is used to:

guide and stimulate the learner into discovering the solutions to certain problems arising in his course of study by himself
encourage the learner to reason and pass judgements in order to arrive at a reasonable solution to his problems.

The teacher should provide the pupils with sources of information and help them to analyse the problems. The activities involved in problem solving approach are:

identifying the problem.
interpreting the problem for clearer understanding – defining it.
formulating tentative solution.
gathering of relevant data.
analyzing or evaluating the collected data.
verifying the result.
drawing conclusion and inferences.

Activity A

How do you plan for demonstration with your pupil on a named operation?

3.4 Field Trip Method

This is a planned visit to a place of interest outside the classroom to obtain information. The method can be used to broaden the knowledge of pupils as they could see and hear more that were told in the classroom. A relationship can be encouraged through the method between the school and the community.

3.4.1 Planning a Field Trip

Select the place of interest to be visited
Obtain permission from the school authority
Obtain the permission and assistance from the authority of the place to be visited
Sensitize the pupils on the visit and what to prepare for the trip

3.5 Role Playing

By this method, the students are made to see themselves in the light of others through acting a part or parts. It is important that they have enough background knowledge of what they are required to do such that the acting, dramatizing, singing and dancing can be relevant. For effective use of this method, the teacher should

not appoint show offs or class clawns to act as they are likely to make a mockery of the whole exercise.
Not interfere unnecessarily as the pupils act their parts rather encourage them to act freely

3.6 Project Method

In this method, the pupils assisted by the teacher, plan and execute in a logical sequence every step from the beginning of a topic to its completion. The teacher merely guides and coordinates the work while allowing the pupil do the rest. The project method, if well implemented, helps to hold interest and motivate the study of technical facts and related knowledge in agriculture. Projects are most suitable for pupils who are inquisitive, creative and interested in immediate result of their efforts. Projects can be executed in crop production, livestock management, etc.

3.7 Exhibitions

Exhibitions are displays of materials for visitors to observe and from which they can learn. Some school exhibitions may be the results of individual or group projects of pupils in a class.

3.7.1 Planning an Exhibition

The purpose of the exhibition and its educational objectives must be well defined
Preliminary plans such as the construction of a site, ideas and materials to be exhibited, size and space needed by each exhibit
Put the plan into action through organizing the materials as planned and have them well labeled.

4.0 CONCLUSION

Various methods that a teacher of agriculture can use to bring about effective teaching have been well described in the unit. It is hoped that you will be able to make your selection from the methods to accomplish your teaching assignment depending on the teaching situation you may find yourself.

5.0 SUMMARY

In this Unit you have learn that;

Any method of teaching selected must be the most suitable for the teaching situation

You can choose your teaching method from among demonstration, discussion, project, role playing, field trips, exhibition and problem solving approaches.

6.0 TUTOR-MARKED ASSIGNMENT (TMA)

1. Explain the activities involved in problem solving method of Teaching

2. How do you plan for an exhibition?

7.0 REFERENCES/FURTHER READINGS

Abdullahi, A. (1982): Science Teaching in Nigeria, Atoto Press Ltd., Ilorin.

Olaitan, S.O. (1984): Agricultural Education in the Tropics – Macmillan Pub. London, UK.

UNIT 2 PLANNING AND MANAGING SCHOOL AGRICULTURAL PROGRAMME

CONTENT

1.0 INTRODUCTION

The basis of planning in agricultural programmes is to enable you as a teacher of agriculture to prepare a platform for learning activities. This is because planning helps the teacher to identify some problems that may arise early and therefore devise solutions to curb them. In this unit therefore, you will learn about planning and factors that can affect it and also how you can plan for schools' agricultural programmes including the school farm.

2.0 OBJECTIVES

At the end of this unit you would have learn about

what planning is
factors affecting planning
approaches to programme planning
planning a school farm

3.0 MAIN BODY

3.1 Factors affecting planning of Agricultural Programme

When planning agricultural programmes for schools, consideration should be given to:

1. Market

   The students will have to prove for themselves that agriculture is a real commercial venture and can yield profits if properly executed. The students should therefore be encouraged to be involved in what they can sell, such as crops and vegetables and livestock particularly poultry.

2. Climatic condition

   Agricultural programmes are usually subjected to the vagaries of weather particularly, rainfall. Plans should therefore be made to plant when rainfall is most likely to be stable for a reasonable period for the plants to attain good yield.

3. Soil Conditions

   Considering the available soil to the school, the teacher should examine the soil to identify which crop it is suitable for. Some crops for instance, grow better on acidic soils, some on alkaline soils while others grow when the soil is neutral.

4. Capital

   The available capital to secure the inputs is a great determinant of what can be planned for.

3.2 Approaches to Programme Planning in Agriculture

Some of the approaches to programme planning in agricultural education include the following:

1. Job Analysis Approach – This entails listing the skills, knowledge and attitudes which must be taught.

2. Task Analysis Approach – This also involves listing all the tasks and the procedure involved in the programme.

3. Subject Approach – A subject is made up of the variables units that are taught or offered as separate yearly courses. For example, soil science, crop production, gardening and livestock production may be offered in the first, second, mid or fourth years respectively.

4. Integrated Approach – With this approach, each subject is taught as an integrated unit throughout the school system. Each year the students in a class may learn some aspects of soil science, crop production and livestock production.

5. Competency Approach – This approach identifies the knowledge, skills, attitudes and judgement generally required for the successful performance of a task.

6. Occupational Area Approach – This approach involves the analysis of competencies which are common and to some degree are necessary for initial employment in a number of reached jobs or occupations.

3.3 Managing the School Farm

The school farm is very important to any school with agricultural programmes. Teachers and students of agriculture should appreciate the importance of the school farm in translating theory in the classroom into practice. The agricultural science teacher should plan the school farm. Students should manage individual plots of land, cultivating and caring for the crops throughout the growing season. If the school can afford to keep livestock, the students should manage the animals, feeding and caring for them. The school farm is established in the school to meet the following objectives;

To earn money
To put theory into practice
To provide farming practice
To improve background knowledge
To solve individual farming problems
For experimentation

3.3.1 Characteristics of a School Farm

In the school, many activities involve field experience. Such activities may include maintaining the school playing ground, maintaining footpaths, landscaping the school, planting flowers and controlling erosion. The school farm possesses certain characteristics that distinguish it from other field activities in the school. The characteristics of the school farm include

1. Classroom Instruction is completed:

   Almost everything learnt in agriculture by pupils in the classroom can be practiced, observed or demonstrated on the school farm.

2. Supervised Study:

   Most of the activities on the school farm require supervision by the teacher of agriculture.

3. Possibilities for Crop Rotation

   The school farm provides an enclosed piece of land carrying many crops. The school retains this piece of land for a long time without heavy loss of soil fertility or pests' incidence. This can be achieved by crop rotation and it provides a good example of the value of this cultivation technique.

4. Reality

   What is done theoretically in the classroom is brought to reality by the school farm.

5. Individual Practice

   The school farm provides opportunities for individual pupils to practice certain farming techniques on their own. This is achieved by giving the pupils individual plots to manage on their own and at their own rate.

3.3.2 Planning a School Farm

In planning a school farm, major activities involved include site selection, clearance, laying out or division of land into plots.

3.3.2.1 Site Selection

In sitting the school farm, efforts should be made to identify some areas of the school land with a low elevation which has not been used heavily. The school farm must be within walking distance of the school. Other considerations are;

sloping ground should be avoided because of problem of erosion
lowland valleys are susceptible to water logging and should be avoided
fencing may be necessary to put into check domestic animals

It must be accessible to the community to encourage interest.

3.3.2.2 Site Clearance

This involves the removal of vegetation in the area to be farmed. This can be done by clearing and burning of the plants while tree felling may be necessary.

3.3.2.3 Laying out the Farm

The agriculture teacher and these pupils should plan the run of ridges and plants according to the slope of the ground. The teacher should aim to make efficient use of the land allocated to the school. Ideally, a regular or rectangular plot is easier to divide amongst the students. However, whatever is available should be used to the best advantage.

3.3.2.4 Activities on the School Farm

Activities on the school farm can be divided into two major sections. These are the crop section and livestock section.

1. CropSection: Activities in this area include:

   land preparation (planning, clearing, marking out the plots, beds and tillage operations)
   nursery preparation
   crop propagation and maintenance
   harvesting, processing and marketing of crops`
   seed storage for the next growing season
   keeping farm records

2. Livestock Section: Activities in this area include but not limited to:

   selection of breeding stock or types of animals to keep
   construction of livestock pens and houses
   rearing the animals (feeding, watering, cutting, disease and past control)
   sales of animal and animal procedure

3. Field trips to government and private farms

Activity:

What are the characteristics of a/good school farm?

4.0 CONCLUSION

We have learnt in this unit planning of agricultural programmes in schools to offer agriculture is very important as it enables what is learnt in the classroom to be put into reality. In carrying out planning it was understood that certain factors can affect the planning while certain approaches can be derived to carry out planning.

5.0 SUMMARY

In this unit, you have learnt that

agricultural programmes planning is part of the educational programme for the school that has agriculture in his programmes
certain factors that affect planning included market, climatic condition, soil conditions and capital
school farm has certain characteristics
activities on the school farm are mainly on crop and livestock production

6.0 TUTOR-MARKED ASSIGNMENT (TMA)

Why should soil conditions be considered when planning agricultural projects on a given piece of soil?

7.0 REFERENCE/FURTHER READINGS

Olaitan, S.O.(1984): Agricultural Education in the Tropics, Macmillan Publishers, London, UK.

UNIT 3 EVALUATING AGRICULTURAL EDUCATION PROGRAMMES

CONTENT

1.0 INTRODUCTION

One of the main roles of agriculture teacher is to promote learning of the fundamental facts and principles of agriculture and to develop in the pupils abilities and skills needed to engage in agriculture. However, as the acquisition of agricultural knowledge is the ultimate criteria, it is necessary to regularly evaluate pupil's progress in their learning of agriculture. Teachers' role in evaluation is very vital. Thus, they should be well equipped for the performance of this responsibility. In this unit therefore, you will learn about the importance, characteristics, procedure and types of evaluation in agricultural education.

2.0 OBJECTIVES

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

state in importance of evaluation to the pupil, the teacher and the public
explain the characteristics of evaluation in agriculture
explain the steps a teacher should follow when evaluating an agricultural education programme.
Name the types of evaluation common in agricultural education

3.0 MAIN BODY

3.1 Importance of Evaluation

The surest way of verifying if one is making progress or achieving success in a particular assignment or responsibility, is by carrying out an evaluation on such exercise. So also, in evaluation of agricultural education programmes. Evaluation of agricultural programmes is very important to pupils, teachers and the public and also for improving the programme and clarifying instructional objectives

1. The Pupils

Test can motivate learning especially when a pretest is administered before a new material is taught. The pretest furnishes pupils with the scope of the new materials, thus, the pupil pursue learning more diligently.

Evaluation can help the pupil to determine the progress s/he has made towards achieving set goals, identify his/her weaknesses and therefore enable him/her to modify his/her approach accordingly.

Regular scheduling of classroom test stimulates the review of materials previously mastered. This type of relearning, aids retention.

2. The Teachers

Evaluating pupils' progress in the class provides the teacher with information on the pupils' rate of learning thus, enabling the teacher to provide more appropriate instructional guidance.

Evaluation reminds the teacher of the objectives for the course. In some cases, the outcome of evaluation process assists the teacher to redefine the course objectives in clearer terms.

3. The School

Information from evaluation can be helpful in the counseling process especially on matters relating to the choice of career in agriculture or in other areas.

Evaluation provides a mechanism not only for maintaining standard for a school system but also for individual standards. It functions as a type of quality control for the school.

Evaluation can be used in the grouping of pupils for instruction. Grouping is based on the ability as indicated by tests.

4. The Public

Evaluation provides the public with a range of information concerning the achievements of the programme, particularly the community in which the school is located.

5. The Agricultural Programme

Effective evaluation leads to improvement in the overall agricultural programme in the school concerned. It enables problem areas to be identified resulting in appropriate solution sought for.

3.2 Characteristics of effective Evaluation

Though evaluation is very important for the general assessment of agricultural education programme, the objective is only achieved if the evaluation is effective. For evaluation to be said to be effective it should;

Focus on the appraisal of how the objectives of the programme are being achieved
Make provision for the participation of all those involved in the execution of the programme such as teachers, pupils and the school authorities.
Be continuous so as to make provision for occasional stock-taking of the whole programme or at least a segment of it.
Encourage people to determine whether certain set goals are realistic and should also increase awareness of new goals for directing desired levels of progress in agricultural occupation.

3.3 Evaluation Procedure

There are certain steps to be observed if the teacher must obtain accurate information for his evaluation process. An evaluation programme that omits any of these steps may do a lot of harm to any agricultural project. These essential steps include;

identifying the key points to be evaluated
stating the objectives of a programe in specific terms so that evidence of the degree to which objectives are being achieved can be ascertained.
Securing evidence for the achievement of the objectives.
Developing ideas about what factors might be aiding or hampering the achievement of objectives
Securing evidence for and against developed ideas

Revising ideas about what is helping aiding or hampering the achievement of objectives on the basis of the evidence obtained.
Developing and trying out methods of remedying weaknesses in the programme.

The findings and interpretation of facts, obtained from the evaluation programmes, have to be considered within the limitations of time, money, availability of competent personnel and the willingness of the learners involved to study and change existing habits.

3.4 Types of Evaluation

Two major types of evaluation that are of importance to agriculture are:

(a) programme evaluation
(b) evaluation of pupils' achievement

3.4.1 Programme Evaluation

School agriculture programme can be evaluated by determining whether the facilities for the realization of the desired objectives of the programme are available in the school. Questions that school programme evaluation should address are:

what relevant textbooks and resource materials to which pupils have access?
Are the implements, with which the pupils can work on the school's farm adequate?
What are the number and qualifications of agricultural teaching staff in the school?
Are there opportunities for interaction between the pupils and the farming community?
What are the methods of instruction adopted by agricultural science teachers in the school and to what extent are the methods preferred?
In what ways has the programme impacted on the community?

Evaluation must also be carried out to determine the extent to which the programme objectives influenced the graduates of the school. In this regard, effort is directed at finding out whether the graduates:

regard agriculture as a vocation and take pride in undertaking profitable agricultural or agri-based occupations.
acquired sound agricultural education both in theoretical and in practical aspects,

Are worthy of emulation by the community and be able to introduce improved strategies that will assist farmers become successful in agricultural occupations within their respective communities.

3.4.2 Evaluation of Pupils' Achievements

The evaluation of the agricultural programme cannot be complete without assessing the performance of the pupils. The outcome of the assessment will enable the curriculum planners to identify the areas of the curriculum that should be reviewed for improvement. It will also enable the school authorities to recognize the aspects of the programme that re being poorly executed and the possible ways of correcting these faults.

There are wide ranges of testing techniques for evaluating pupils progress. These include:

1. Essay type test
2. Objective type test
3. Performance (practicals) type test
4. Problems (quantitative questions) type test

3.4.2.1 Essay Type Test

This type of test is used as means of evaluating the qualitative aspects of verbal instruction. The test demands that the pupil compose a response of some length, usually by integrating materials from a variety of sources. Essay type is used when the test requires;

description, explanation and prediction of a process
description of instruments, apparatus and so forth
factual knowledge
exposition to theoretical knowledge
interpretation and discussion of results of experiments

Examples of essay tests in agriculture are;

1. Explain five importance of agriculture to national economy
2. What is soil fertility?

Some advantages that are attributed to essay tests are that it;

encourages better study habits
requires a high degree of thinking rather than rote learning

reduces the possibility of cheating
demand recall rather than identification

However, essay type test has been found to contain the following disadvantages;

it is difficult to draw up good questions for the essay test
scoring takes a great deal of the teachers' time
in marking, the teacher tends to carry impressions from one paper to another
teacher's mood may affect scoring and so make the scoring less reliable.

3.4.2.2 Objective Type Test

An objective test is one in which the test items are so framed that there is only one answer to each. The answer is predetermined and the test will give the same score for any individual since the marks cannot be influenced by the prejudices of the teacher. Subjectivity in scoring or marking is therefore eliminated.

There are four classes of objective test that are commonly used in the classroom. These are;

(i) short-answer items or completion test
(ii) multiple-choice items
(iii) matching items
(iv) true-false items

(i) Short-Answer Items or Completion Test

In this type of objective test, the pupils supply answers in short sentences. Examples are
Two major simple farm implements are ……
Agriculture is defined as …..
Cassava is planted at a spacing of …….
Short-answer objective test has the advantage of
reducing guessing to the barest minimum
demanding recall rather than recognition
The test, however has the shortcoming of
being difficult to construct
relatively not rapidly scored

(ii) Multiple-Choice Items

In multiple-choice tests, each test item may start with an introductory question or an incomplete statement together with a number of alternative answers of which one is correct while the other alternatives are incorrect. The multiple-choice test requires the pupils to select the response which is correct for a particular question. Examples of multiple-choice test are

Which of these is not a farm tool?

(a) Hoe (b) Cutlass (c) Cathete (d) Sickle (e) Rake

Erosion is controlled by

- Irrigation
- Burning
- Planting cover crops
- Bare clearing
- Staking

The main advantages of multiple-choice objective test are that it;

reduces the factor of chance success
ensures complete objectivity of scoring

Some of the disadvantages are that it;

is cheat prone
aids recognition rather than recall
is difficult to construct

(iii) Matching Items

This type of objective test is essentially a series of multiple-choice items, each item in the first column is to be paired with an alternative in the second column. Every test item consists of two parallel lists: one containing stimulus words or phrases, the other response alternatives. The pupils are required to match the items on the two lists.

This kind of test item is particularly useful when the learning of a particular concept requires the association of two things in the pupils' mind.

Example of matching item

Match items on column A against statements under Column B.

A	B
Agriculture	Maize
Fertilizer	Hoe
Farm Tool	Cassava
Root crop	Growing crops and raising of animals
Cereal crop	Urea

(iv) True-False Items

True-False items are usually used for testing factual recall and definitions of terms. True-False item is the most susceptible to guessing of all types of objective tests. It indicates whether a statement is true or false.

Examples of true/false items:-

*	Cover crops supply nitrogen to the soil.	T	F
*	Raising of birds is known as poultry.	T	F
*	Agriculture contributes to national economy	T	F

3.4.2.3 Written Practical Examination

Practical work of the pupil can be evaluated by inspecting the work of the individual pupil on the school farm and allocating marks according to selected items of practice. More importantly, evaluation on practical work can be a written one, intended to test the ability of the pupils to identify, recall and comprehend. It will include identification and knowledge of implements used in farm operations and animal management, common weeds, seeds of crops, diseases of plants, pests, fertilizers, soil, rocks and farm processed products.

Activity:

a) Name two types of evaluation commonly used in agriculture.

b) State the advantages and disadvantages of each.

4.0 CONCLUSION

In this unit, we have been able to take you through the importance of evaluation in agricultural programmes, characteristics of evaluation and types of evaluation commonly used.

5.0 SUMMARY

In this Unit, we have learnt that;

evaluation is the means through which achievement of objective of agricultural programmes can be assessed.
Evaluation is important to the pupil, the teacher, the school and the public.
Effective evaluation has certain characteristics
There are procedures for evaluation
Evaluation is carried out through essay test, objective test and practical demonstrations.

6.0 TUTOR-MARKED ASSIGNMENT (TMA)

Explain the expected characteristics of an effective evaluation in agriculture.

7.0 REFERENCES/FURTHER READINGS

Abdullahi, A. (1982): Science Teaching in Nigeria, Atoto Press Ltd., Ilorin.

Lovell, K. (1978): Educational Psychology and Children. Hodder and Stoughton, London, U.K. pp. 150-170.

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MODULE 4

PREPARING FOR AGRICULTURAL SCIENCE TEACHING

UNIT 1 AGRICULTURAL SCIENCE CURRICULUM AND SYLLABUS

Unit 1 Agricultural Science Curriculum and Syllabus
Unit 2 Scheme of Work and Lesson Plan
Unit 3 Teaching Practice
Unit 4 Teaching Practice: Preparation and Implementation

CONTENTS

1.0 INTRODUCTION

In the previous module you have been acquainted with what agricultural education is, the roles of the teacher of agriculture and some social factors that affect the teaching of agriculture in the school. With that background, you would have considered getting prepared to teach agriculture. In this unit therefore, you will have learn what agricultural science curriculum and syllabus entails, their characteristics and objectives and why a teacher should state objectives for his teaching procedure.

2.0 OBJECTIVES

It is conceived that at the end of this unit you would have learnt:

what curriculum in agriculture is
the purpose of curriculum development
what constitutes a good curriculum
the aims and statements of objectives
how syllabus is a subset of curriculum

3.0 MAIN BODY

3.1 Meaning/definition of Curriculum

Curriculum is a series of learning experiences to which the child is exposed under the auspices of the school so as to bring about the expected learning outcome in the learners.

Curriculum in a planned and guided learning experiences as well as intended learning outcome formulated through the systematic reconstruction under the auspices of the school for the learners continuous and willful growth in personal social competence.

Curriculum is a process involving the learner and a series of experience.

Curriculum is also all the experiences the children have under the guidance of the teacher.

Curriculum is considered as embracing educational objectives and all planned learning experiences and appraisal of student learning.

It is a set of educational objectives, a body of subject matter, a list of exercises and activities to be performed and a way of determining whether or not the objective has been reached by the student.

It is all the school planned experience provided by the school to assist the pupil in attaining those designated learning outcomes to the best of their abilities.

In summary, the various definitions of curriculum can be grouped into three common places namely curriculum as teaching, as learning and as governance.

3.1.1 Purpose of Curriculum Development in Agriculture

The purpose of curriculum development in agricultural science education include the following:

(i) to make sure the needs of the child is met so as to make a vocation from agriculture in future.
(ii) To have concern for the growth and development of the child in agricultural science education.

(iii) So that the child can have insight into the contemporary problems of agricultural science education for example; feeding the nation, mechanization etc.

(iv) So that the child can be exposed to effective learning activities.

(v) To enable the teacher to grow and acquire enough knowledge so as to cope with the contents of the curriculum. Curriculum actually gives direction on the type of educational activities the teacher has to fulfill, hence; to cope with the content required of him.

3.1.2 Components of Curriculum in Agriculture

In curriculum development, the following must be present. These components are:

(i) aims and objectives
(ii) curriculum objectives
(iii) teaching methods and learning activities
(iv) learning materials
(v) evaluation

3.1.2.1 Aims and Objectives

Aims are desired directions of educational progress, when a child graduates out of school we expect him to possess some certain skills. Objectives are specific and well defined targets of achievement. Aims and objectives are found at various levels – national, state, community (all of which are usually represented by agencies – e.g. Ministry of Education), family and individual levels.

3.1.2.2 The curriculum Plan

A curriculum must be planned, if it is not planned, there will be no aims and objectives. By plan we mean the curriculum is prepared by the

approved/appointed agencies e.g. National Universities Commission (NUC), National Commission for Colleges of Education (NCCE), National Board for Technical Education (NBTE), National Educational Research and Development Council (NERDC), Federal Ministry of Education, State Ministry of Education, etc. The approved curriculum is then operated at the appropriate level. From an approved curriculum, syllabus / syllabi, scheme of work, schedule of work or work-plan can be derived.

3.1.2.3 Teaching Methods and Learning Activities

Teachers are trained to impart knowledge how to motivate the students to learn. Curriculum determines the qualification of the primary, secondary and technical schools' teachers. Teaching methods include formal and informal activities which take place in the school. Formal activities include class learning while informal activities include sports, debate, refectory, toileting which though planned in the school but carried out outside the school.

In order to prevent unexpected learning outcomes from these intra-curricular activities, teaching methods should prepare and equip the agriculture teachers on how to handle the students.

3.1.2.4 Learning Materials

There should be a stage when the teacher evaluates either formally or informally the learning/studying materials that the students need and use. There are laid criteria for the evaluation of such course materials. Some of the variables include: relevance, scope, cost, availability, creativity, etc.

3.1.3 Characteristics of a good instructional objective in Agriculture

Instructional objectives in the curriculum of agriculture must have the following qualities/characteristics:

must be stated in specific, measurable behavioural and observable terms;
it must be student oriented (student centred) rather than teacher oriented;
instructional objectives represent the consequences of some learning experiences and not the learning experience itself.
It should specify what the children are to do with the available materials in order to acquire the consequences intended in the learning experience.

It must have two dimensions – a behaviour dimension and the content dimension.

The behaviour and content dimension of the objectives must be adjusted to the age and ability or to the class level which the child belongs.

There must be clear relationship between evaluation and instructional objectives.

3.1.3.1 The importance of stating objectives in agriculture

(i) Teachers state objectives so as to get the direction of educational development

(ii) Objectives help in the selection of content material and desirable learning experiences for both the teacher and the pupils.

(iii) Objectives form one of the major bases for evaluation.

Activity A

Give five reasons why curriculum development is important in the teaching of agriculture.

3.2 Agricultural Science Syllabus

Syllabus in agriculture serves as general guide for teachers in typical situations. Syllabuses are structured under subheadings like topic, performance objectives, content material and activity. It is the duty of the subject matter teacher of agriculture to structure syllabus in a way it will be teachable to the students. This is because the teacher has the first hand information of the knowledge and the ability, the interest, need and experiences of his students and also the facilities available in the school for teaching. It is important to differentiate between an examination syllabus and a teaching syllabus.

Examination syllabus indicates topics to be covered for the purpose of an examination, for instance, West African Examination Council's Syllabus. Examination syllabus may not be arranged in any logical order for teaching/learning effectiveness. The examination syllabus is drawn up by a team of experts usually within and outside the school system.

A teaching syllabus is an outline of the work planned to be done in a course during one term or one year for a particular class in each subject. The topics are arranged in a logical sequence for maximum learning according to the relationship between the various topics in the syllabus.

Certain principles are employed in drawing up a teaching syllabus from an examination syllabus. The teacher should arrange the topics in such a way that he:

(a) proceeds from the known to the unknown
(b) proceeds from simple to difficult topics.

The teacher should ensure that the teaching syllabus is arranged so that the topics suit the intellectual or academic level of the students. Also, the syllabus for agriculture should be planned before the beginning of the school year. The most effective teaching syllabus should spell out:

1. what units or topics are to be covered in a specified period
2. scope or depth of coverage
3. the sequence of treatment indicating the units or topics which will require more time than others.
4. guidelines for methods of instruction
5. references and materials needed for each unit or topic.

3.2.1 Interrelated components of Curriculum

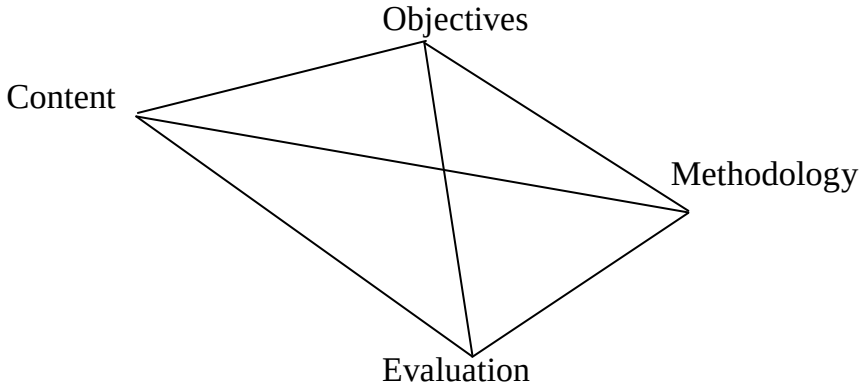

Fig. 1: Interrelated Components of Curriculum

3.2.2 Relationship between Curriculum, Syllabus, Scheme of Work, Lesson Plan and Lesson Note

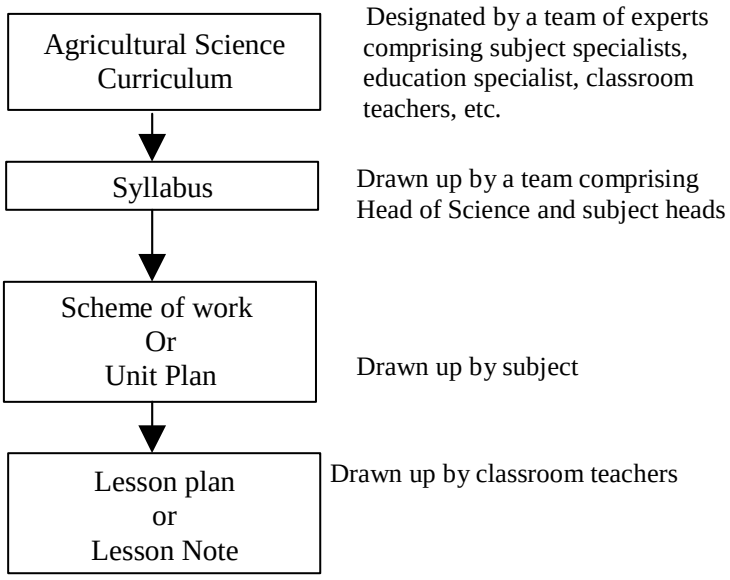

Fig. 2: Relationship between Curriculum, Syllabus, Scheme of Work, Lesson Plan or Lesson Note.

4.0 CONCLUSION

In this unit, you have been exposed to the meaning of curriculum through its definitions. We have also studied the purpose and component of curriculum. In addition, we learnt that instructional objectives of a curriculum have certain characteristics and it is important to state objectives during the teaching of agriculture.

5.0 SUMMARY

This Unit has afforded us to learn that:

curriculum is a series of learning experiences to which the child is exposed under the guidance of a teacher.
That syllabus gives direction to the teaching calendar of the teacher.

6.0 TUTOR-MARKED ASSIGNMENT (TMA)

Give three characteristics of instructional objectives.

7.0 REFERENCES/FURTHER READINGS

Williams, G.A. (1974): Dynamics of Curriculum Change in Mathematics. West African Journal of Education, June, pp. 141-151.

Collete, T.A. (1973): Science Teaching in Secondary School, Boston, Allyn and Bacon Inc.

UNIT 2 SCHEME OF WORK AND LESSON PLAN

CONTENT

1.0 INTRODUCTION

A teaching syllabus lends itself to the formulation of scheme of work and subsequently that of lesson plan. In this unit therefore, we shall learn how scheme of work is drawn up from the syllabus into teachable units from which daily lesson plan or lesson notes are prepared.

2.0 OBJECTIVES

In this unit, it is expected that you will learn that

scheme of work and lesson plan are drawn from the syllabus
certain factors should be considered when drawing up the scheme of work and lesson plan
effective lesson plan has seven components

3.0 MAIN BODY

3.1 Scheme of Work

Scheme of work is drawn up in order to facilitate the coverage of the syllabus. In a scheme of work, the teacher puts down the topics or units to be covered in each week of the academic year. This is done by dividing the syllabus into three parts corresponding to three terms of school academic year. Each term's work is then broken up into the number of weeks in the term. The scheme of work is thus drawn up. The scheme may be revised from time to time according to the speed at which the pupils progress in their learning activities. The syllabus and

the scheme of work are guides to the learning activities and the way they are to be distributed. There is a great need to plan every course in order to ensure that all the course work is covered. It is the teachers responsibility to design the course to suit its purpose and that of his pupils. Time and periods are allocated to the topics or sub-topics to be taught.

In drawing up a scheme of work from a syllabus, the following factors should be borne in mind.

(1) the need for logical sequence
(2) the age; ability range and previous knowledge of the pupils.
(3) The amount of time required by each topic
(4) The scheme should be prepared in time with the number of effective weeks of learning in a term or a year.
(5) The number of agriculture periods per week including practical periods and farm projects
(6) A short note of resources and materials for each topic

The teacher of agriculture should have a course to follow in order to achieve his goals and objectives. He/she is analogous to a ship that follows a course to reach its destination. Therefore a course of study or scheme of work is made for the following reasons:

1. to enable the teacher prepare himself for effective teaching
2. to enable the teacher think through what he proposes to teach and how he will teach it.
3. to have records of what had been taught
4. to avoid teaching what is not needed while omitting what is necessary
5. to provide a seasonal sequence of teaching and proper coordination of the situations of activities.
6. to provide for desirable learning outcome
7. to ensure adequate provision of suitable reference materials and teaching aids
8. to develop teachers' confidence.

Activity A:

(i) Give five factors to be considered in scheme of work
(ii) State three purposes of scheme of work

3.2 Lesson Plan in Agricultural Science Teaching

Planning includes everything that the teacher does before actually beginning the teaching. This planning may include what the teacher

puts down on paper as a guide to her/his teaching. It may also include her/his written objectives, what s/he wants to accomplish, who is to do what, how and when it is to be done, why and where will it be done and what procedures for evaluation. The success of any course or lesson depends upon the preparation or the plan and the skillfulness with which it is followed and accomplished. The first problem in planning is to set aims or objectives in such a way that they can be easily understood and recognized by the pupils. Plans may be revised as the need may arise.

There are different types of plans. There are course plans, a yearly plan, term plan, weekly plan, and daily lesson plan. Each plan varies according to class; the subject and the extent of the weighting the details included.

3.2.1 The Daily Lesson Plan

This is commonly known as, teaching plan or note of lesson. It is usually a plan for teaching a class, a job or notes of lesson. It includes what the teacher wants to teach, how, when and how long to teach it. There are variety of lesson plans, and so, there is no rigid format lesson plan which is suitable for every condition. Even though there are variations in the lesson plans, there are essential things which each plan should include. These are:

(i) the title of the lesson
(ii) the objectives for the lesson
(iii) the materials needed
(iv) the matter or problem of the study
(v) the procedure for attaining the objectives
(vi) evaluation
(vii) references

3.2.2 Preparing the Lesson Plan

Lesson plans are necessary for all types of instruction. Each lesson plan may not necessarily be written in details; usually it covers one or two pages which the teacher uses to guide himself. The daily lesson plan contains the following:

1. The Introduction Section – This should include the level of class, the date and the time duration.

2. The objectives – These give the indication of what is expected of the students at the end of the lesson. The changes expected must be observable and measurable to a certain degree.

3. Procedure – This should include everything that the teacher plan to do including his plan for the students learning activities. The activities should be listed in order of how it is going to happen during the lesson and the sequence to follow. The sequence is like this:

   - Introduction
   - Equipment and material
   - Presentation
   - Conclusion

4. Application – It involves providing opportunity for active use of what has been learnt by the student, checking how the student perform and encouraging them to put into more practice the principles, theories and concepts they have learnt through the lesson.

5. Evaluation through testing – This may be used as a guide to know how far the students are following what they have been taught. Evaluation may take the form of oral questions, drawing conclusions from observations, etc.

6. Assignment – Assignment or home work is an important part of the lesson plan. In giving assignment, the teacher must make sure that the assignment is clear, straight forward, reasonable and not too difficult.

7. References – Relevant references should be given to the students for further reading.

3.2.3 A Typical example of a Lesson Plan

Although there is no pattern or format for lesson note that can fit in all situations, the following format is suggested for your lesson note.

Lesson Note:

School:	Ondo Boys High School, Ondo
Date:	17th May, 2006
Subject:	Agric. Science
Class:	JSS 2
Time:	8.10 – 8.50 a.m. (40 minutes)
Title of Unit:	Farm tools
Topic of the Lesson:	Hoe
Behavioural objectives:	At the end of the lesson the students should be able to:

(a) Draw and label a hoe
(b) State four uses of hoe
(c) Mention three methods of the maintenance of a hoe

Previous knowledge: Students are familiar with simple farm tools
Apparatus: A hoe
Reference: School Certificate Agriculture by Akinsanmi, O., University of Ibadan Press, Ibadan.
Introduction: The teacher introduces the lesson by asking the students the following questions:

(a) who are those who use hoes?
(b) who has ever used a hoe amongst you?

Presentation:

Step I: The teacher raises up the hoe for identification
Step II: The teacher draws and label the hoe
Step III: The teacher explains the labeled parts of the hoe and states the uses as: weeding, ridge making, planting, digging, harvesting.
Step IV: Hoe can be maintained by keeping away from water and stored in a dry cool place. Hoe must be cleaned after use. It must not be left on the ground to avoid termite invasion.

Summary: Hoe is one of the simple farm tools used on the farm. It has a handle and a metal blade. It is a multipurpose implement.

Assignment: Draw a hoe and state its three uses.

4.0 CONCLUSION

In this unit, you have been exposed to the leaning of scheme of work and how they can be developed by a teacher. Their relevance and importance in agriculture teaching have been equally expounded. The role of lesson plan and how it can be prepared were also learnt in the unit.

5.0 SUMMARY

We have learnt at length on this unit that scheme of work is drawn from a syllabus and;

that certain factors must be considered when drawing the scheme of work
that scheme of work give direction to the teaching calendar for the teacher while lesson plan gives direction to daily teaching of agriculture.
that daily lesson plan should comprise of the introduction, objectives, procedure, application, and assignment.

6.0 TUTOR-MARKED ASSIGNMENT (TMA)

(i) Give the content of a daily lesson plan

(ii) State five reasons why scheme of work preparation is necessary for you.

7.0 REFERENCES/FURTHER READINGS

Williams G.A. (1974): Dynamics of Curriculum Change in Mathematics, West African Education Journal, June, pp. 141-151.

Collete, T.A. (1973): Science Teaching in the Secondary School, Boston, Allyn and Bacon Inc.

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UNIT 3 TEACHING PRACTICE

CONTENT

1.0 INTRODUCTION

Teaching as a profession requires that the would-be teacher be well trained in the science and art of teaching. One of the ways of exposing the teacher-in-training to practicals is through participation in "teaching practice". In this unit, you will learn about the characteristics, objectives and importance of 'teaching practice'. Also to be learnt in this unit is the 'selection procedure' for teaching practice and those who participate in it.

2.0 OBJECTIVES

At the end of this unit you will be expected to be able to;

enumerate the characteristics of teaching practice
state the objectives of teaching practice
list the importance of teaching practice

have the knowledge of selection procedure for teaching practice
identify those who should take part in teaching practice

3.0 MAIN BODY

3.1 Characteristics of Teaching Practice

The teaching practice period is characterized by the following:

the student teacher normally lives in or near the school to which he has been assigned;
s/he may not formally be required to study other courses during the period;
the student-teacher is placed under a cooperating teacher who guides him/her during the teaching practicum;
s/he forms a part of her/his cooperating school teaching staff and is expected to adjust to the prevailing conditions in the school
s/he participates in all the professional, field and extra-curricula activities of the school.

3.2 Objectives of Teaching Practice

The primary aim of teaching practice in agriculture is to help the student teacher develop the competences; personal characteristics, understanding, knowledge and skills needed by a professional technical teacher of agriculture. In broad terms, teaching practice is a period for testing the individual student-teacher. Specifically, teaching practice is designed to achieve the following:

provide experiences that give the student-teacher an opportunity to establish his/herself in the challenges of agricultural programme;
reveal the student teacher's personality. Based on the demands and experiences of the 'new role' being played – (i.e. student-teacher) emerge a refinement of selected traits and sensitivities as: personal appearance, poise and confidence, enthusiasm, sense of humour, dependability, imagination, creativity, adaptability, tolerance of stress, empathy with pupils, respect for the opinion of others, persistence and ability to evaluate self;
provide the student-teacher with the opportunity to establish self as a teacher;
help self to analyse subject-matter competencies;
provide the student-teacher with the opportunity to practicalise management activities that aid and assist learning activities (such as classroom management, instructional planning, preparation of

materials, presentation of information, problem-solving, discussion and instructional evaluation;
provide self with the opportunity to acquire skills and techniques that enhance self teaching competencies; and
train self to identify factors that influence the effectiveness of the teaching-learning process and to find ways to direct or control them.

3.3 The importance of Teaching Practice

The experience and benefits of teaching practice are shared by the student-teacher, the staff and students of the cooperating school. Similarly, the teacher education institution (college or university) stands to gain a lot from the arrangements.

3.3.1 Benefits to the Student Teacher

A well-planned and organized teaching practice helps you, the student-teacher, to:

discover the relationship between educational theory and its application in a real teaching (live) situation,
understand the principles of child growth and development in relation to the learning process,
acquire the art of resourcefulness and creativity in planning, developing and evaluating effective learning experience for and with the pupils,
develop desirable personal and professional attitudes towards members of the teaching profession,
broaden your understanding of curricular, co-curricular, intra and extra practices
identify your strength and weaknesses in the variety of competencies associated with effective teaching.

3.3.2 Merits to pupils, staff and school

Teaching practice:

helps to improve the supervisory skills of the cooperating teacher,
makes possible the contacts between school, staff and education experts from the colleges or university,
stimulates the attention of pupils who are excited by the presence of a new teacher with new skills, strategies, methods and materials for effective learning,
provides new ideas for improving existing curricular practices,

improves the staff situation of the school and particularly reduces the teaching load of the cooperating teacher.

3.3.3 Advantages to College or University

The college or university, being the reservoir of learning and teaching theories to which the student teacher has been exposed, initiates and organizes teaching practice for the following benefits:

it provides the college or university with the opportunity to give practical, on-the-job training to the student teacher in order to supplement his/her theoretical knowledge

it creates a favourable environment for conducting research and applying research findings to actual school situations through student teachers

it helps the college or university in the evaluation of the effectiveness of the entire pre-service teacher education programme

it assists the training institution to identify problems of both the school and the student teacher which require investigation and immediate solution

it enhances mutually beneficial relationships between the participating colleges or universities and the cooperating school

Activity A

Mention five ways you can benefit from teaching practice

3.4 Selection Procedures for Teaching Practice

3.4.1 Selection of Student Teachers

To be eligible for teaching practice, a student teacher should satisfy the following requirements:

College or University requirements such as successful completion of prescribed professional or other courses of study. For instance in a course of study of three years, teaching practice is done in the second and third year;

The student-teacher must be physically and mentally fit; Ability to apply the theories of learning in a teaching situation; Possess a working knowledge of child growth and development; Have a mastery of subject matter in the field of specialization.

3.4.2 Selection of Co-operating Teachers

The cooperating teacher plays an important part in student teaching practice. His selection is based on the following requirements:

She/he must be a competent teacher of agriculture with professional training and some years of experience.
She/he must be able to work with novice and inexperienced teachers;
She/he must possess the capacity for personal professional growth and maintain good educational philosophy and professional ethics;
He must be skilled in teaching the subjects in the school through the use of adequate instructional methods and materials.

3.4.3 Selection of co-operating Schools

A typical school for teaching practice should satisfy the following conditions:

have a good quality agricultural programme;
possess adequate facilities including a school farm to be made available to the student-teacher;
has easy accessibility to the school and its farm projects for the student-teacher and the college supervisor;
must be typical of secondary schools in the area covered by the teaching practice programme;
should have the approval of the school Board of Governors/Management, and possibly the board of governors to be used as a student centre.

3.5 Participants in Teaching Practice

A successful teaching practice programme in agriculture involves the active participation of the principal, cooperating teacher, the college supervisor, members of staff and the student-teacher.

3.5.1 The Student-Teacher

The student-teacher is the focal point in the teaching practice programme. In order to succeed in the programme the student teacher has certain responsibilities s/he must discharge in relation to those of the other participants in the programme. The student teacher should therefore be carefully introduced teaching by the following procedures:

obtaining information about the school in which he will be teaching, such as its location, subjects offered and classes available;
visiting the school prior to teaching practice to get acquainted with the principal, cooperating teacher, pupils, syllabus, scheme of work and time table;
planning the teaching practice with his college supervisor on the basis of information obtained during the visit to the school;
participating in extra-curricular activities of the school in order to assume a good leadership role in school activities and improve the experiences of the pupils;
developing good relationship with other members of staff through adequate planning of his/her daily lessons.

3.5.2 The College or University Supervisor

The supervisor in the college or university is the representative for coordinating and supervising student teaching. His responsibilities include:

selecting student teaching centres;
assigning student teachers to schools and supervising teachers;
liaising between the college and cooperating school;
assisting the student teacher in developing his/her teaching programme;
liaising with the co-operating teacher;
evaluating the student teaching practice.

3.5.3 The Principal of the Cooperating School

As the administrative head of the school and a participant in the teaching practice, the school principal:

gives approval for student teaching in his school;
secures accommodation for the student-teacher/s;
briefs the student teachers on important matters relating to the school;
encourages the student-teacher to accomplish his/her tasks;
keeps progress reports of individual student-teacher from information received from the cooperating teacher.;
organizing a short staff meeting in the first week of the student teaching to welcome the student teacher and introduce him/her to members.

3.5.4 The Co-operating Teacher

The co-operating or supervising teacher should be a teacher of the subject in which the student-teacher is specializing. His/her roles include:

helping the student teacher in all stages of teaching practice from orientation, observation and assigning activities to responsible reaching.
assisting the student teacher in planning field work or farm experiments.
familiarizing the student teacher with the school environment and the school farm programme.
planning instructional activities cooperatively with the student-teacher (indoor and outdoor agricultural activities not excluded).
fostering cordial relationships between the student-teacher and other individuals in the school.

3.5.5 The Members of Staff

The members of the school staff have a major influence on the success of the student teaching practice. Their roles in the teaching practice programme include:

offering constructive suggestions when necessary and maintaining a good relationship with the student teacher.

3.5.6 The Pupils

Having been informed by their teacher of the arrival of the student teacher, the pupils should:

neither be embarrassed by his presence nor try to embarrass the student-teacher.
behave in their normal manner whilst under the direction of the student teacher, participating fully in class proceedings and at all times observing school regulations.

4.0 CONCLUSION

This unit has afforded you the opportunity of knowing what teaching practice is, its characteristics and objectives and the ways its benefits affects the student teacher, the pupils, the school where the teaching practice takes place and to the college or university. You have also

learnt the procedures for the selection of participants in teaching practice, as well as identifying their roles and responsibilities.

5.0 SUMMARY

We have learnt in this unit that:

teaching practice has some inherent characteristics,
teaching practice is beneficial to the student-teacher, the school, the pupils and the college or university,
that there are procedures of selecting the student teacher, the cooperating teacher, and the cooperating school,
that the participants in teaching practice include; the student teacher, the college or university supervisor, the principal of the cooperating school, the cooperating teachers, other members of staff of the cooperating school and the pupils.

6.0 TUTOR-MARKED ASSIGNMENT (TMA)

(1) List the participants in teaching practice

(2) What are the selection procedures of the cooperating school?

7.0 REFERENCES/FURTHER READINGS

Olaitan, S.O.(1984): Agricultural Education in the Tropics; Macmillan Publishers, London, U.K.

UNIT 4 TEACHING PRACTICE PREPARATION AND IMPLEMENTATION

CONTENT

1.0 INTRODUCTION

The duration of teaching practice depending on the college or university. It normally ranges from six weeks to three/four months. It is therefore expected that enough preparation must be made to have a successful teaching practice. Under this unit therefore, efforts shall be made to learn about the importance of preparation for teaching practice, planning and implementation of teaching practice.

2.0 OBJECTIVES

It is expected that this unit will expose you to:

how you can prepare for teaching practice,
how you can plan for teaching practice,
how teaching practice can be implemented.

3.0 MAIN BODY

3.1 Preparation for Teaching Practice

Adequate preparation is necessary for a smooth commencement of teaching practice.

3.1.1 Preparation by the Supervisor

The college supervisor meets the student-teachers to explain the purposes of student teaching and the roles of student-teachers during teaching the practice, and to give them the opportunity to choose the teaching practice school.

The college supervisor visits the cooperating schools to seek and obtain the consent of the principals and to satisfy self about, the suitability of the schools for teaching practice. S/he also discusses with the principal and cooperating teachers such matters as timetable, teaching load for student teachers, feeding, accommodation and other administrative issues.

3.1.2 Orientation with the Student Teachers

The coordinator of the teaching practice shares his/her findings with the student-teachers on return from the visits and announces the date of student-teachers first visit to schools. The coordinator holds a few meetings to orientate the student teachers towards the exercise. During his/her meetings; the skills, knowledge and understanding of the teaching profession which the student teachers had already learnt in professional courses and micro-teaching are revised. Student-teachers are also reminded of their responsibilities in the cooperating schools to: the principal, cooperating teachers, members of staff, pupils and the community. Student teachers also ask questions to clarify areas of misconceptions.

3.1.3 Student Teachers' Preparation

Before the teaching practice commences, the student-teacher visits his practice school with letters of introduction to the principal and the cooperating teachers. Accompanying the letters are the necessary documents, particularly the principal's and cooperating teacher\'s assessment forms and report-forms that should be returned to the college on completion of the teaching practice period. During the visit, the student-teacher:

obtains the syllabus or scheme of work of the areas he is to cover;

obtains information about the number of pupils enrolled in his subject and the classes s/he will teach;
meets his/her class for the first time, as well as other members of staff;
visits the laboratories and check the available instructional materials;
plans and prepares the activities to be performed during the first week of the teaching practice. This includes lesson plans and notes of the first week.

Activity A

Who is a cooperating teacher?

3.2 Planning Teaching Practice

3.2.1 Student Teacher's First Day in the School

On his/her first day as a member of the teaching staff, the student-teacher is not expected to teach immediately. Instead, he is given time to adjust self to the routines of class work:

observes the teaching procedure followed by the supervising teacher and taking note of the general routine;
becomes familiar with available teaching materials;
acquaints self with the pupils;
identifies areas in which plans can be made for immediate participation.

3.2.2 Student Teacher's Planning

Planning is essential for successful teachings. The student-teacher should seek the assistance of his cooperating teacher or coordinator in his/her planning. All work must be planned well in advance. The student teacher will be expected to make unit plan and lesson plan.

3.2.2.1 Unit Planning

The syllabus given to the student teacher usually contains the materials which the pupil is expected to cover either for a period of one year or for an examination. The syllabus has to be broken down into smaller units of related topics to help both the student teacher and the pupil in the teaching learning process. Essential features of a unit plan are the:

Objectives: Unit objectives are specified in general form while lesson objectives are stated in specific terms.

Content: This refers to the subject-matter to be included / covered in the lesson.

Methods and Procedures: Learning can take place through carefully planned and skillfully executed procedures
Materials needed: There are the resources needed which are based in the content and procedures

Teaching Sequence: Time relationship of the development of ideas.

3.2.2.2 Lesson Planning

A lesson plan is the outcome of activities the teacher will follow in order to create an effective learning situation. To be more specific, a lesson plan is a plan for teaching a unit which may take one or more periods to cover. Lesson planning includes determining what to teach; how to teach it, when to teach it and for how long it should be taught. For the content and benefits of lesson plan, check unit 2 of module 2.

3.3 Implementation of Teaching Practice

Effective implementation of good lesson plans results in successful teaching. The student teacher may need to adapt his plan according to the class learning speed and other factors:

Read the plan thoroughly so that he is familiar with what is to be taught, although he should avoid memorizing it.
Avoid holding the plan while teaching, but glance at it occasionally to make sure you are following the procedure laid out.
Listen to the pupils, response and adapt your lesson accordingly without abandoning your set goals.
Make full use of all visual and other teaching aids. (teaching aids must be real in most cases).
Use every technique you can to motivate and stimulate interest
Be fair, friendly and firm
Use examples from the community as often as possible
Enforce discipline but at the same time be friendly
Keep to the time schedule

4.0 CONCLUSION

For a successful teaching practice, we have learnt that the participants must all be well prepared. The preparation commenced with the coordinating of 7P visiting the school of the practice to get the basic information after which the student-teachers are well orientated about the practice. It was also brought to your knowledge that the student teacher should plan for what to teach and the procedures of implementation are equally well defined.

5.0 SUMMARY

We learnt in this unit that:

there is the need for adequate preparation towards teaching practice;
the supervisor and the student teacher along with the school of the teaching practice are fully involved in the preparation;
the student-teacher undergoes orientation so as to get familiar with all that is required of him/her as a student-teacher in practice
the student-teacher has to plan for the units and lesson to be taught
specified ways of conduct in the classroom situation, must be observed by the student teacher to have effective implementation.

6.0 TUTOR-MARKED ASSIGNMENT (TMA)

Explain the roles of the supervisor in the teaching practice preparation.

7.0 REFERENCES/FURTHER READINGS

Olaitan, S.O. (1984): Agricultural Education in the Tropics, Macmillan Publishers, London, UK