COURSE GUIDE

EDU 280
AGRICULTURAL SCIENCE METHODS

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INTRODUCTION

Agriculture is the art and science of cultivation of crops and rearing of animals for the economic benefit of man. Agriculture has been and still remains the main stay of the national economy of many nations of the world including Nigeria. The need to ensure and guarantee food security necessitated the formal introduction of Agricultural Science as a regular subject to be taught: first at the Basic and secondary levels for the acquisition of fundamental or foundational knowledge, skills, values and attitudes requisite to agricultural production; and second at the tertiary level for the development of these competences at para-professional and professional levels. The teaching the arts and sciences of agricultural production at the levels of education in Nigeria is a strategy for increasing agricultural productivity to a sustainable and long-term level.

Experience over decades shows that most teachers employed as teachers of agriculture especially, at the basic and secondary levels are not professionally qualified to teach at the first instance. In most cases, graduates of different agricultural programmes be it at degree, diploma or certificate levels find themselves in the school system and classroom as teachers but without requisite pedagogical preparation and orientation. While these teachers might have acquired the knowledge and skills in crop and animal production, the challenge remains their inability to facilitate learning and acquisition of these characteristics on the part of students. This situation leaves much to be desired as this crop of teachers struggle to navigate through the curriculum amid great difficulties to the detriment of the pupils.

The ever increasing advances in the technologies of agricultural production further complicates the challenges and tasks of the teacher of agriculture thus, making the untrained teachers ineffective and underperforming. There is therefore the need to prepare preservice and serving teachers of agriculture pedagogically. To be an effective and competent teacher of agriculture, one need to acquire both the technical knowledge of agricultural production and solid pedagogical orientation. This course “Agricultural Science Methods” is designed to fulfill this purpose.

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Agricultural Education Methods is a second year (200 Level) 2 credit Units degree course available to all students offering Bachelor of Science [B.Sc. (Ed.)] in Agricultural Education. It may be taken by students who wish to learn more about teaching methods, techniques and strategies in Agricultural Science as well as other related disciplines. It is also

designed to *upskill* serving teachers of agriculture who might not have been prepared pedagogically – in knowledge, skills, attitudes and values requisite to effective functioning as teachers of agriculture.

It may be taken by students who wish to learn more about teaching methods, techniques and strategies in Agricultural Science as well as other related disciplines. It is also designed to *upskill* serving teachers of agriculture who might not have been prepared pedagogically – in knowledge, skills, attitudes and values requisite to effective functioning as teachers of agriculture as well as those teachers who are interested in such pedagogic training at higher degree level.

Agricultural Education is a formal instruction in the science and art of agriculture and agricultural practices offered or organized in 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 education al 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.

Approached from a more professional perspective, Agricultural Education is the systematic planning and implementation of teacher education curriculum and programmes intended for training teachers of agriculture; qualified in both subject matter mastery and pedagogy. It is any form of formal and institutionalized training in the science and art of teaching agriculture at any level of education be it primary, secondary or tertiary.

Agricultural Science Methods as 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.

COURSE COMPETENCIES

This course consists of modules which are subdivided in units. This course guide tells you briefly what the course is all about. What additional course (and reference) rmaterials you will be using. 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. 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 adequately

for the challenges you are likely to encounter as a teacher in the field of agricultural science education.

COURSE AIMS AND OBJECTIVES

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

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 the unit. You may wish to refer to them in the course of your study of the unit to check on your progress. You should always look at the unit objectivesafter completing a unit. By doing so you would be able to locate your bearing and level of attainment of the objectives of the unit under reference.

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:

(i) discuss the meaning and scope of the concept of Agricultural Education.
(ii) identify and demonstrate the basic principles of teaching and learning of agricultural education.
(iii) identify the personal qualities and characteristics of professionally qualified teacher of agriculture.
(iv) enumerate the responsibilities and expectations of the teacher of agriculture in the community.
(v) express the significance, importance and characteristics of teaching practice
(vi) appreciate the importance of appropriate use of instructional materials to in the teaching and learning of agricultural science.
(vii) explain the importance of correct statement of instructional/behavioural objectives as well as other relevant skills for agricultural science teaching.
(viii) identify and use the various teaching methods, and instructional strategies in agriculture.
(ix) Plan agricultural programmes in schools and be able to manage school farm.
(ix) explain the concept of evaluation, its scope and procedure in agricultural education programmes.

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 or recommended to be accessed from online resources or libraries. 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 advise 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 15 units. The study units in this course are as follows:

Module 1 Introduction

Unit 1 Agricultural Education
Unit 2 The Teacher of Agricultural Science
Unit 3 The Task of Agricultural Teacher
Unit 4 Social Factors in the teaching of Agricultural Science

Module 2 Teaching and Learning in Agricultural Sciences

Unit 1 Tools for Agricultural Science Teaching
Unit 2 Teaching Aids in Agriculture
Unit 3 The Teaching-Learning transactions in Agricultural Education
Unit 4 Teaching Techniques and Procedure in Agricultural Science

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

Module 4 Preparation for Agricultural Science Teaching

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

Module 1, unit 1 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.

Module 2, Units 1 and 2 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.

Module 2, unit 3 will discuss the teaching-learning transaction in agriculture. In Module 2, unit 4 and Module 3, unit 1, you will learn the teaching techniques in agriculture such as; questioning. learning via references, assignment among others and various methods of teaching agricultural science.

Module 3, Units 2 and 3 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.

Module 3, units 4; Module 4, units 1 and 2 deal with the curriculum and syllabus of agricultural science, scheme of work and lesson plan; characteristics, objectives and relevance of teaching practice in agriculture. Module 4, Unit 3 is also concerns with the preparation and implementation of teaching practice exercise/programme.

Each unit consists of one to two weeks work and includes an introduction, intended learning outcomes, self-assessment exercises, reading/reference materials, conclusion, summary, references and other related resources. The unit directs you to introduction, objectives, reading, materials exercises conclusion, summary, 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.

PRESENTATION SCHEDULE

Your course materials give you important dates for the early and timely completion 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.

SELF-ASSESSMENT EXERCISES

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 to 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.

FINAL 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 youhave 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 the distance learning mode, 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 with self-assessment 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 intended learning outcomes. These learning outcomes let you know what you should be able to do, by the time you have completed the unit. These intended learning outcomes/learning objectives are meant to guide your study. The

moment a unit is finished, you must go back and check whether you have been able to 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 provided reference materials or from a Reading section.
4. The following is a practical strategy for working through the course. If you run into any difficulty or challenge, you could contact your facilitator/tutor or visit the study Centre nearest to you. Remember that your tutor's job is to assist you when in need. 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. Organize 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 intended learning outcomes/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 information updates.
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).

ONLINE FACILITATION

As in all Distance Learning programmes, students will have access to online reference materials recommended in the course. Online facilitation is proposed to be an active delivery mode where the facilitator could be accessed synchronously or asynchronously.

FACILITATOR/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 assigned to a tutorial group.

Your tutor or facilitator will mark and comment on your assignments, keep 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. Therefore contact your facilitator if:

- You do not understand any part of the study units or the assigned readings.
- You have difficulty with the self-assessment tests 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.

SUMMARY

Agricultural Education is a course that is designed 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:

1. What does agricultural education mean?
2. What are the responsibilities of agricultural science teacher?
3. Give examples of the expectations of agricultural teacher in the community.
4. Discuss the importance of teaching practice.
5. Of what significance are instructional aids in teaching?
6. Identify the various teaching methods commonly used in agricultural science.
7. Discuss the importance of programme planning in agriculture.
8. How do you manage school farm?
9. 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.

MAIN COURSE

CONTENTS

MODULE 1 INTRODUCTION

UNIT 1 AGRICULTURAL EDUCATION

CONTENTS

1.0 Introduction

Agriculture has been and still remains the main stay of the national economy of many nations of the world including Nigeria. The need to ensure and guarantee food security necessitated the formal introduction of Agricultural Science as a regular subject to be taught: first at the Basic

and secondary levels for the acquisition of fundamental or foundational knowledge, skills, values and attitudes requisite to agricultural production; and second at the tertiary level for the development of these competences at para-professional and professional levels. Teaching the arts and sciences of agricultural production at the levels of education in Nigeria is a strategy for increasing agricultural productivity to a sustainable and long-term level.

Experience over decades shows that most teachers employed as teachers of agriculture especially, at the basic and secondary levels are not professionally qualified to teach at the first instance. In most cases, graduates of different agricultural programmes be it at degree, diploma or certificate levels find themselves in the school system and classroom as teachers but without requisite pedagogical preparation and orientation. While these teachers might have acquired the knowledge and skills in crop and animal production, the challenge remains their inability to facilitate learning and acquisition of these characteristics on the part of students. This situation leaves much to be desired as this crop of teachers struggle to navigate through the curriculum amid great difficulties to the detriment of the pupils.

The ever increasing advances in the technologies of agricultural production further complicates the challenges and tasks of the teacher of agriculture thus, making the untrained teachers ineffective and underperforming. There is therefore the need to prepare preservice and serving teachers of agriculture pedagogically. To be an effective and competent teacher of agriculture, one need to acquire both the technical knowledge of agricultural production and solid pedagogical orientation. This course “Agricultural Science Methods” is designed to fulfill this purpose.

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.

2.0 Intended Learning Outcome

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

- identify your interest in agriculture
- enable you acquire basic knowledge of principles of teaching/learning agriculture
- equip you to opportunities in agriculture
- become a professional teacher
- cooperate with the administration of your school
- understand and manage agricultural activities in your school and community
- understand and execute teaching and learning activities in agriculture.

3.0 Main Content

3.1 The Concept of Agricultural Education

Agricultural Education is a formal instruction in the science and art of agriculture and agricultural practices offered or organized in 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.

Approached from a more professional perspective, Agricultural Education is the systematic planning and implementation of teacher education curriculum and programmes intended for training teachers of agriculture; qualified in both subject matter mastery and pedagogy. It is any form of formal and institutionalized training in the science and art of teaching agriculture at any level of education be it primary, secondary or tertiary.

One of the major purposes of Agricultural Education is to apply the knowledge and skills learned or acquired from different disciplines to agricultural production.

Scope of Agricultural Education

Agricultural Education goes beyond skills and knowledge development in that students acquire appropriate values and attitudes to develop an understanding of:

i. the significance of agriculture in the global society and the Nigerian society in particular, through the application of scientific and business principles and problem solving strategies;
ii. the interdependency and relationship between agriculture, environment and the economy.

Aims and objectives of Agricultural Education at primary level in Nigeria

Traditionally, the primary school level of Agricultural Education curriculum was designed to address the following objectives:

i. inculcating in pupils the ability to appreciate and interprete the environment in a scientific way;
ii. developing in the pupils a positive attitudinal disposition and interest in agriculture
iii. exposing young children to modern methods and technologies of agriculture
iv. developing in children an understanding and appreciation of agriculture as a vocation
v. developing and understanding of the contributions of agriculture to the economy of the nation and the community
vi. developing and fostering the spirit of inquiry, inquisition and creativity in children.

In summary therefore, agricultural curriculum at pre-professional and pre-vocational levels was intended to children who would be in harmony with agriculture as practiced in their immediate environment (Amadi & Udo, 2018).

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 Agriculture

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, as well as 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 in Oyo State. Others were located at Akure in Ondo State, Umudike in Abia State, Zaria in Kaduna State and Kabba in Kogi State. Later on a rural training center was established at Asaba.

The major objectives of these schools included the preparation of 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 in primary school curriculum necessitated for the adequate supply of qualified teachers to man the subjects at the level of 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 the Nigerian Secondary Schools system

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 objectives of introducing the teaching of agricultural science in secondary schools include:

1. encouragement of students in the use of their hands;
2. the appreciation for the dignity of labour;
3. familiarity with biological processes and thereby instilling rationality in the students;
4. 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.

At the beginning, the number of years agricultural science was taught as a school subject varied from one school to the other depending on the administration of the school as well as the availability of teachers. However, the formal recognition and integration of Agricultural Science as one of the WAEC subjects has unified the duration of the subject as it is now taught both theoretically and practically. The school farm or garden serves as land laboratory as it 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 for Entry

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) or Senior Secondary School Certificate Examination (SSCE). 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:

1. National Diploma (OND)
2. Nigerian Certificate in Education (NCE)
3. Higher National Diploma (HND)
4. Postgraduate Diploma (PGD)
5. Bachelor of Agriculture (B.Agric)
6. Bachelor of Science/Tech. (B.Sc., B. Tech.)
7. Masters of Science/Tech. (M.Sc., M. Tech.)
8. Doctor of Philosophy (PhD)

3.4.2 Careers in Agriculture

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

3.4.2.1 Crop Production

1. Agronomy
2. Crop Protection
3. Horticulture
4. Crop breeding

3.4.2.2 Soils and Surveying

1. Soil science
2. Farming planning
3. Soil ecology
4. Soil conservation
5. Fertilizer programming
6. Soil testing
7. Soil Physics/Chemistry
8. Pedology

3.4.2.3 Animal Production/Fishery

1. Fish farming
2. Animal nutrition
3. Animal husbandry
4. Animal Pathology
5. Animal health

3.4.2.4 Agricultural Engineering/Mechanization

1. Tractor driving
2. Tractor maintenance
3. Small equipment (spraying and tillage) mechanic
4. Farm mechanization
5. Building of farm structures

3.4.2.5 Processing

1. Food Chemistry
2. Food engineering
3. Confectionery and preservation
4. Food administration
5. Catering and home management

3.4.2.6 Research

1. Soils; crop production
2. Food manufacturing and marketing

3. Livestock; fisheries
4. Meteorology
5. Rural Sociology and extension

3.5 Types of Agricultural Education

Agricultural education can be classified into four types; namely

1. General type
2. Vocational type
3. Pre-vocational type
4. Technical type
5. 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

The field of Technical Vocational Education and Training (TVET) recognizes Agricultural Education as one of its component programmes. Here, the objective is to prepare students for a specific vocation in agriculture. 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. Beneficiaries of this form are made to acquire psychoproduction skills, knowledge, values and attitudes requisite to effective engagement in agricultural production as a useful economic venture.

3.5.3 Pre-vocational Agriculture

The specific objective of agricultural education under this curricular arrangement simply is to introduce learners to the fundamentals of agriculture and therefore not intended to make specific vocations or occupations out of it. Emphasis here is primarily on how to make cultivate crops, rear farm animals and manage diseases and pests at sub professional and vocational levels.

3.5.3 Technical Type

This form of agricultural education is designed to produce specialists at craft or sub professional level in such areas like farm mechanization, plant breeding, horticulture, animal husbandry, fisheries and aquaculture, pest control among others. It may also include training technical experts in plant propagation or animal breeding. Sometimes this is equivalent in level to technical colleges and some colleges of education.

Self-Assessment Exercises

1. Identify any two measures which past governments tried to solve food insecurity challenges in Nigeria
   a……
   ……
   b……
   ……...
2. The objectives of agricultural science education at the secondary school level include:

   a……
   ……

   b……
   ……...
3. Mention career opportunities available to you in agriculture.
   a……..b……
   ……
4. The cardinal objective of Agricultural Teacher Education is to
   ……
   ……
   ……..

4.0 Summary

In this unit you have learnt that:

The inclusionof 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 myriad of career opportunities. Agricultural education are classified into general profession with vocational, technical and professional types

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 References/Further Readings

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

6.0 Possible Answers to Self-Assessment Exercises

1. a Establishment of Regional schools of agriculture b. Integration of agricultural education into schoolcurriculum c. Training of teachers of agriculture in practical and pedagogical skills
2. a. encouragement of students in the use of their hands;
   b. the appreciation for the dignity of labour;
   c. familiarity with biological processes and thereby instilling rationality in the students;
      1. Career opportunities in agriculture include: a. Crop production b. Horticulture c. Animal husbandry d. Poultry farming e. Fish farming and Aqua-culture
      2. The cardinal objective Agricultural Teacher Education is to: a. Produce qualified teachers of agriculture for the primary and secondary levels of education or schools

UNIT 2 THE TEACHER OF AGRICULTURAL SCIENCE

CONTENTS

1.0 Introduction

The teacher occupies a pivotal position in the teaching-learning schema as he represents the key element in any formal learning situation. As the chief prosecutor of the curriculum, the teacher as a matter of fact, holds the key to the direction and quality of the implemented curriculum. The teacher of agriculture therefore determines what happens to the agricultural education or science curriculum, he brings to the class a set of prior expectations, a particular level of knowledge of technical information bordering on values, skills, attitudes, and an ability to interact with the students. However, a teacher's knowledge of technical agriculture, his competence and teaching effectiveness depend largely on the nature of his pre-service training and orientation on the pedagogies as well as, the formal courses and learning experiences acquired in particular

subject areas he was exposed to. It is the teacher himself who creates or facilitates the learning situation and in a practical sense creates situations that are conducive to learning. Neither the brightly painted walls nor good instructional materials can turn a teacher without the requisite pedagogical orientation or rather, one with depressed and disenchanted disposition towards students into an effective instructor or teacher of agriculture. The above narrative underscores the relevance and importance of Agricultural Teacher Education.

2.0 Intended Learning Outcomes

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

- define concept of teaching and effective teaching
- describe the characteristics of the effective teacher
- identify your role as a teacher of agriculture
- understand the desirable personal qualities of a good teacher of agriculture
- identify your likely challenges problems as a beginning teacher of agriculture

3.0 Main Content

3.1 Basic Principles

3.1.1 The Term Teaching

The term teaching is generic as it 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 the ability to communicate these in the most effective manner to the students, as well as acting as a catalyst in developing ideas. Teaching could be said to be an attempt to help someone acquire requisite skills, values, attitudes and knowledge. Teaching of agriculture therefore is the process of facilitating the acquisition of requisite psychoproduction skills in different areas of specialty in the field of agriculture.

3.1.2 The Teacher

A successful teacher is one who teaches effectively, making use of his acquired professional experience. Teacher effectiveness is a concept that tries to define the capacity of a teacher to achieve desired professional

results, especially with reference to the task of teaching. It establishes the success rate of a teacher in fulfilling the mandate of teaching. Teacher effectiveness is usually measured by at least two considerations namely; what the teacher does to achieve results as professionals, and what happens to learners as a result of the activities of the teacher. An effective teacher of agriculture is ever prepared, sets clear and fair expectations, have positive attitude, is patient with students, and assesses his teaching on a regular basis. He is able to adjust his teaching strategies to fit both the students and the material, recognizing that different students learn in different ways. 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.

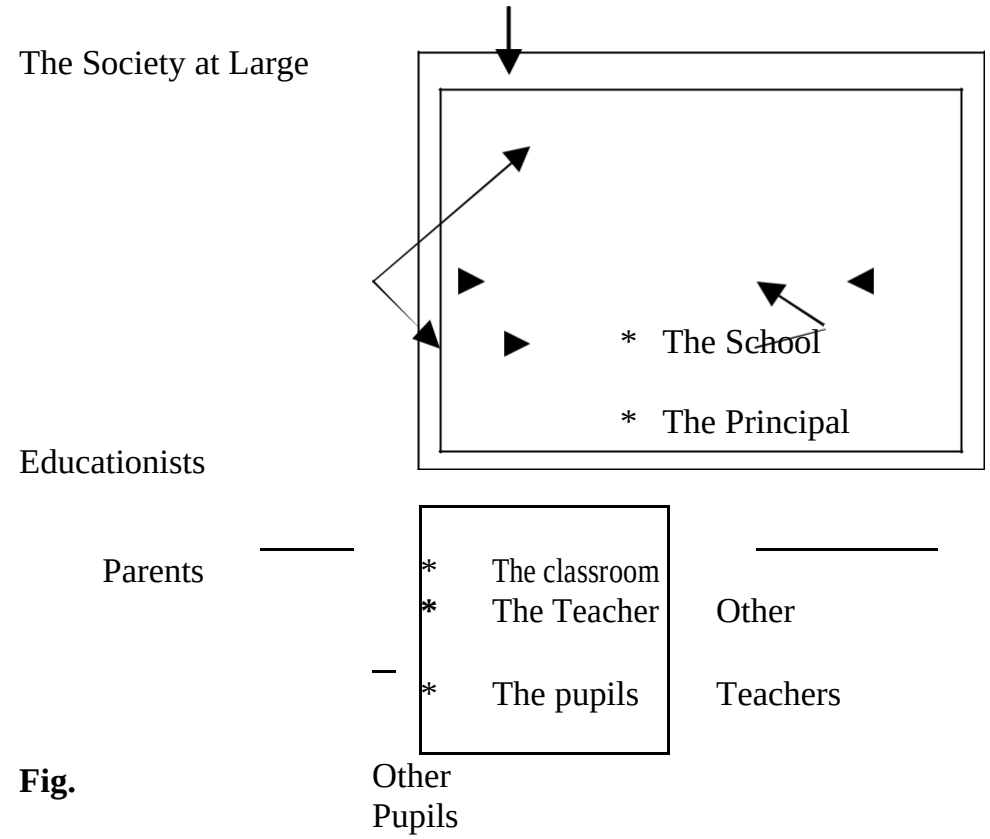

Fig. 3.2.1: The Teacher's Role set within and outside the School.

3.3 Personal Qualities of an Agricultural Science Teacher

Top Qualities of an Effective Teacher of Agriculture

The skills needed for effective teaching involve more than just exrpertise in an academic field. The teacher of agriculture must be able to interact with people and help them understand a new way of looking at the world around. As a teacher, you are a role model who sets the tone for the class. If you are able to show enthusiasm and commitment, your students are more likely to reciprocate. Conversely, when you are negative, unprepared, or impatient, these qualities will reflect in the attitudes of your students towards learning engagements.

Specific personal qualities of an effective teacher of agriculture include the following:

3.3.1 Farming Experience

Traditional experience or training in agriculture is achieved by being raised or reared on a farm by parent farmers or having offered agricultural science as a subject or course of study in the school.

3.3.2 Rural Mindedness

Teachers of agriculture are generally expected to cultivate an attitude of rural mindedness, which is being empathetic with rural people and their farming activities. The must always come down to the level of the rural people/farmers so as to be readily acceptable to the "ruralites" as against being seen from the perspective of an alien trying to invade their privacy or culture and tradition.

3.3.3 Character and Personality

The teacher of agriculture must maintain a high ethical standard while enjoying good relationships with colleagues, pupils as well as members of the host community, must be amiable, reliable, trustworthy and charismatic.

3.3.4 Confidence

The teacher must have absolute self-confidence to teach successfully. This requires careful preparation of lessons and instructional materials well in advance, location and identification of other relevant teaching resources 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. He should not be superfluous and flamboyant but be moderately dressed always. As a matter of fact, cleanliness should be his identity tag

3.3.6 Dedication to Duty

The teacher of agriculture unlike other teachers, is engaged in full time teaching activities, that is, if for instance something happens to the chicken or any other livestock kept in the school farm at any time of the day, the teacher may be called upon to take care or even give account of situations. He is therefore not at liberty to act or conduct himself without caution at all times. He must be ever ready to address issues and challenges as they confront him time and time again

3.3.7 Correct Attitude

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

should be selfless and ever willing to accept others and their varying opinions. The beginning teacher needs time to develop these qualities and this a challenge to him as he struggles to find his feet.

3.4 Problems and Challenges of Beginning Teachers of Agriculture

3.4.1 Teaching as profession

Experience has shown that not everybody can engage in teaching effectively and successfully, hence, the need for teacher's pedagogical preparation through training and exposure to relevant learning experiences at both pre-service and in-service levels. By the nature of his calling, the agricultural science teacher has a lot of contacts to make with other people unlike teachers in other disciplines. He is an opinion moulder a leader, a follower and in deed a rural-minded person. This situation gives rise to a lot of expectations from people he comes in contact with as well as those whose needs and interests are primarily his responsibility to address. This is a critical challenge to the beginning teacher of agriculture as he struggles to meet these expectations.

3.4.2 School Organization and Administration

A teacher of agriculture has contact with different administrations or principals characterized in many ways, some being cooperative or antagonistic, good or bad, high-handed or easy-going; some with different leadership styles and dispositions – be it democratic, autocratic, authoritative, laissez faire etc. The teacher of agriculture also has interactions and relationships with other teachers and non-teaching staff of the school etc. These varying characteristics and dispositions could present some form of challenges as the beginning teacher is always expected to be humble, obedient yet, assertive and resolute with quality service delivery.

3.4.3 Transition from the Institution of Study to the School System

The term "student" is infectious as the saying goes! When students are in school, regardless of their ages, or parental background, they behave alike as children but when they are out of school and probably employed, they need to behave responsibly. There is also a task of being able to apply what is learnt in the school to real life. The beginning teacher of agriculture is therefore readily confronted with adjusting socially and psychologically as he transits from school into the world of work.

3.4.4 Relationship with Pupils

The success of a teacher to a very large extent 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 and readily yield to attending to their needs. The nature of agriculture with reference to practical farm work tends to scare pupils away but the beginning teacher of agriculture can help them to improve on their wrong perceptions. This he can do by being friendly, amiable and charismatic in his approach.

3.4.5 Relationship with Fellow Teachers

There may be conflicts between the agricultural science teacher and colleagues because of the exigencies of some agricultural activities. Experience has shown that sometimes other teachers tend to be unfriendly and antagonistic with the teacher of agriculture just because he controls the dispensation of farm proceeds. The beginning teacher of agriculture should go about such challenges placidly and should as much as possible, refrain from open criticism of others and should avoid dabbling into unhealthy school politics.

3.4.6 The Teacher and Community

The teacher should be ready to engage in healthy and meaningful relationship and association with members of host community of his school. This is the only way he can tap into the community's resource base harnessing both human and material resource to aid his teaching functions and tasks. Communities are always a repository of resource persons, places and materials that the teacher of agriculture can explore to his advantage. The teacher can as well give professional advice to community farmers alike, settle disputes, provide training and extension intervention in areas of mechanization, plant and animal breeding and husbandry, harvesting and post-harvest cultural practices to create or add value to the market potentials.

Self-Assessment Exercises

1. The qualities of an effective teacher of agriculture include:
   a……b……
   ……
   c.
   ……c……
   …….
2. Important roles of the teacher of agriculture include:

a……
……
b……
……
c……
……

3. Areas of challenge/conflicts before a beginning teacher of agriculture are:

a……
……,,,,
b……
……
c……
……
d……
……

4.0 Summary

Studying this unit has enabled you to understand and appreciate who is a teacher and in fact who a teacher of agriculture is, what makes an effective teacher and effective teaching. You are now aware of your roles as a prospective teacher of agriculture and the expected personal and professional qualities you must possess to be able to function effectively on duty.

This unit has acquainted you with:

- What the definitions of teacher and teaching are.
- 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, being a community leader managing the school farm and the school's environment.
- The problems that are likely to be faced by the beginning teacher.

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6.0 Possible Answers to Self-Assessment Exercises

1. The qualities of an effective teacher of agriculture include:
   a. Adequate farm experience
   b. Self-confidence
   c. Rural-mindedness
   d. Humility
   e. Dedication to duty.

2. Important roles of the teacher of agriculture include:
   a. Imparting agricultural knowledge and skills
   b. Solving community-based farm problems
   c. Relating with pupils
   d. Relating with co-teachers
   e. Relating with school authority
   f. Relating with host community.
3. Areas of challenge/conflicts before a beginning teacher of agriculture are:

a. Relating with pupils
b. Relating with co-teachers
c. Relating with host community
d. Relating with authority/ management

UNIT 3 THE TASKS OF THE TEACHER OF AGRICULTURE

CONTENTS

1.0 Introduction

This Unit will expose you to the tasks and responsibilities you are likely going to encounter as you take your first launch into the classroom as a teacher of agriculture. Like every other profession, teaching and specifically teaching of agriculture places on you some responsibilities which are measures of your effectiveness both within the classroom and outside it. The way and manner the tasks are undertaken to a reasonable degree, determine the quality of teaching that will be delivered. A good and effective teaching is always predicated upon good and effective planning of what is to be taught, how it would be taught and finally, how to find out or confirm if the correct things have been done thus emphasizing lesson planning, implementation and evaluation or assessment.

2.0 Intended Learning Outcomes

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

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

3.0 Main Content

3.1 Classroom Teaching

3.1.1 Lesson Planning

Planning simply means putting down actions to be taken and steps to be involved in taking such actions. Planning what to teach is a very important and indispensable component of the teaching-learning scheme. Every planning begins first with identifying what objectives, aims or goals to be achieved upon implementation of the plan. To the teacher, determination of plan objectives must take cognizance of some basic learners' characteristics or disposition which include sex, socio-economic background, entry behavior. In planning what to teach, the teacher should have an overview of what the teaching-learning situation ought to be. He should therefore:

a. determine what behavioural outcomes expected in pupils
b. determine content (i.e. body of knowledge needed to convey the information)
c. select appropriate learning experiences to deliver the content
d. determine time duration for each teachable unit
e. determine appropriate instructional strategies for the content of the plan
f. determine strategies for determining level of achievement of stated objectives.

Effective teaching begins with effective planning. Consequently, effective planning stems from the initial ability of the teacher to determine and state in unambiguous terms the general as well as the specific objectives.

Experience has shown that the most effective teachers are those who develop lesson plans and use them. There is no one best teaching plan format or type. There are basically two major lesson planning formats namely; Essay format and Tabular format. The type or format of teaching plan chosen and 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 following variables;

1. the objectives of the lesson (stated at the cognitive, psychomotor & affective levels)
2. time available for the lesson
3. ability and capability of the students
4. entry behaviour of the students
5. size of the class (if it is not too large for instance, you can use demonstration method)
6. 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:

1. identification of subject to be taught
2. problem area or the concept to be taught,
3. objectives of the lesson,
4. procedure:

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

5. instructional materials,
6. assessment or evaluation (summary)
7. assignment, and
8. references/materials for further reading

3.1.2 Why Teachers Need a Lesson Plan

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

1. allocate your time effectively,
2. systematically present your facts,
3. prevent errors of teaching,
4. effectively hand over to a substitute teacher if you will be absent,
5. meet your stated objectives,
6. prepare adequately for instructional materials,
7. command the respect of your pupils,
8. be in firm control of the class situation, and
9. use it as the best teaching aids

3.1.3 Statement of Intended Learning Outcomes

Instructional objectives are critical components to effective teaching as the teacher would be effective only when he knows or understands his destination. The teacher should of necessity have a good cognitive road-map of the scope he intends to cover in every lesson. Instructional objective of every lesson is like a destination which must be reached, and on time too. To have a hitch-free journey, the teacher/leader and the learner should know where they are heading to and the means of getting there. When this basic understanding is lacking both the leader/teacher and the led/learner will be disappointed. Instructional objective is therefore a destination, it is an intended result of an instruction. It is a performance a teacher would want the learner to demonstrate upon being exposed to a particular learning package.

3.1.4 A Hypothetical Sample of a Lesson Plan

1. Date: 7/6/2006
2. Name of School: Government Secondary School, Ondo
3. Class: JSS 2A
4. Number in Class: 40
5. Average Age: 13
6. Number of Period/Time: One (1) period of 40 minutes
7. Unit: Maintenance of Soil Fertility
8. Problem Area: Cover Cropping
9. Objectives: At the end of the lesson, students should be able to:
   (i) identify five cover crops
   (ii) explain the meaning of cover cropping
   (iii) state the functions of cover crops in soil fertility maintenance/management
10. Instructional materials: Textbook, chalk board, five different types of cover crops.
11. Procedure:
    (i) introduction
    (ii) routine activities
    (iii) motivation and revision
    (iv) development of the lesson

    Step I – definition of cover crops or what is cover crop Step II – teacher presents samples of cover crops and identifies by their common and scientific names as well as stating their functions.

12. Closure:
    (i) Summary- teacher makes a quick revision of the lesson with the aid of "chalkboard" summary

(ii) Evaluation- teacher determines level of success using evaluative questions *ab initio* stated

13. Home work
14. References

SPECIMEN OF THE TABULAR FORMAT OF LESSON PLAN

Name of Student:- Ohieku, Adeiza Salamatu
Registration Number:- MOUAU/BED/2021/4646
Course of Study:- Agricultural Education
Name of Practising School:- Community Secondary School, Arigo Okegwen, Okene
Type of School:- Mixed
Class:- Upper Basic II
Average Age of Student:- 14 years
Date:- 13th November, 2021
Duration:- 45 minutes
Subject Matter:- Agricultural Science
Topic:- Agricultural Marketing; Definition, Functions and Types
Specific Behavioural Objectives:- By the end of the lesson, students should be able to:

(a) Define agricultural marketing
(b) Explain the different types of market
(c) State the functions and importance of agricultural marketing

Entry (Entering) Behaviour:- It is assumed that the students are already used to buying and selling of farm produce in the local markets. The following questions could be asked:

(a) What do you go to the market to do?
(b) Why do you go to market?

Set Induction:- The teacher will induce set in the students by telling them a story on 'A farmer who sold his goods to a produce merchant and started weeping when his colleagues told him how much profit he made in a town market.

Instructional Materials:- A picture of a typical market scene with people and goods on display.

INSTRUCTIONAL PROCEDURE

	Content Development	**Skills Strategies**	**Teacher Performance Activities (TPA)**	**Pupils Performance Activities**
Step 1	Introduction	Set Induction	Story about a farmer who sold to a produce merchant…	Students listen attentively.
Step 2	Meaning of Market: A market is a place or situation where buyers and sellers come in contact for exchange of goods and services. A market can exist without a physical location. Marketing is the actual exchange process.	Discussion, Explanation and Questioning.	The teacher gives various conceptual definitions of market and marketing.	Students listen and later respond to questions. They can also ask their own questions.
Step 3	Types of Market; (i) Local market, i.e. market within the country. (ii) International market- market between two countries. (iii) Perfect market- a situation where there is free competition of prices of goods. (iv) Imperfect market- where prices of goods are not negotiable e.g. Monopoly and Monopsony	Explanation and use of examples.	Teacher explains the meaning and scope of each market types.	Students listen and take down points.

Step 4	Importance of Agricultural Marketing: (i) Exchange of goods and services. (ii) Help to develop places. (iii) Provide employment. (iv) Source of income to individual and to the government.	Discussion, Explanation and Question.	Teacher leads the pupils to discuss functions of market and marketing in the economy. He further explains points.	Pupils make their contribution and responds to questions.
Step 5	Summary	Planned repetition and explanation of key points.	Teacher quickly goes through the lesson to highlight vital points summarized on the chalkboard.	Pupils listen and make necessary correction on their jottings. They also ask questions for clarification.

Evaluation:- Oral questions should be used to evaluate the lesson. They are:

(a) What is Agricultural marketing?
(b) Mention the different market types you have studied
(c) Why do you consider agricultural marketing very important in the country?

Closure:- The teacher should compel the students to copy down the vital points he has outlined on the "chalkboard".

Assignment:- Identify the various problems that are encountered in your local market.

NB:

(a) The content development (CD) column presents a meaningful summary of the body of knowledge about the concept being taught.

(b) The Teacher Performance Activities (TPA) spells out activities that the teacher should perform to deliver the content.
(c) The Pupil Performance Activities (PPA) spells out activities that the learners should perform to ensure effective learning of the content.
(d) Strategies /Skills- Here the teacher outlines special behaviours he will exhibit or use at each stage in line with the TPA so as to meaningful deliver the at hand.
(e) It is necessary to correct the age-long erroneous development of content under the column for TPA.

3.2 Implementation of Lesson Plan

Lesson implementation is the actual teaching of the planned lesson; put differently, it is the actualization of the planned lesson or process of putting the planned lesson into action. Successful implementation of the planned lesson justifies all the efforts put into the plan including resources expenditure.

The teacher of agriculture needs to implement carefully what he has planned. Implementation of a lesson plan involves the demonstration or use of the following tasks among others:

1. Asking questions
2. Using examples
3. Using illustrations
4. Establishing appropriate frame of reference

3.2.1 Asking Questions

Questioning is an activity that arouses the curiosity and mental activity of a learner. The teacher should develop mastery of the skills in such a way that he can effortlessly use it in instruction delivery.

The first question should usually be relatively simple and related to pupil's interests or to the basic fundamentals of the topic or used to establish entry behavior of learners. There are good questioning skills which the teacher of agriculture should be conversant with. Questions are normally asked from simple to complex, from particular to general, from lower cognitive to higher cognitive order, and from known to unknown. We also have probing questions, divergent and convergent questions. 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, and 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). Used wisely, questions can be used to induce a set, for stimulus variation, and for revision and evaluation purposes.

3.2.2 Using Examples

The use of examples is a critical skill required in the teaching –learning process, and to effectively use this skill the teacher must be conversant with various categories of instructional materials. The use of examples or instructional materials in instructional communication removes the constraint and drudgery of abstraction in the lesson content. The teacher is expected to bring meaning, and better understanding of some otherwise, abstract concepts. This he does by explaining their meanings through the use of 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.

3.2.3 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.

3.2.4 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.

3.3 Field Project Work

Project-based learning is a teaching method in which students gain knowledge by working for an extended period of time to investigate and respond to an authentic, engaging, and complex question, problem, or challenge. The method is based on the philosophy pragmatism and the principle of "Learning by doing". In this instructional strategy, pupils perform constructive activities in natural setting. It is teacher-facilitated,

collaborative approach in which students acquire and apply knowledge and skills to define and solve realistic problems using a process of extended inquiry. A project is a list of real life that has been imparted into the school. It demands work from the learners. Projects are student-centred, follows specified standards, parameters and milestones clearly identified by instructor.

Role of the teacher in a project goes as follows;

1. the teacher of agriculture is a guide, friend and working partner
2. he should provide occasions for even shy pupils to come forward and contribute something meaningful towards the success of the project
3. should help learners develop character and personality by allowing them to accept responsibilities and discharging them effectively
4. should have initiative, tact and zest for learning.

Types of project Method

Kilpatrick W.H. in 1918 classified projects on the basis of task involved as follows:

1. Problem Type: this are projects that involve investigating and solution of practical problems.
2. Product Type: involves construction of a useful material object or article to embody some idea or plan in external form (e.g. making a model of spade or hoe)
3. Consumer Type: one that provides opportunities for experience on a particular area/field and reporting an account of it (e.g. attending New Yam Festival after which he writes a report on its aesthetic or socio-cultural and philosophical values)
4. Drill Type: is a project that provides opportunities for mastery of skill or knowledge on a particular area/field.

Principles of Project teaching method

1. Principle of utility- the learner must be convinced of the need for undertaking the project as it has impact on life around him- finding solutions to practical problems
2. Principle of readiness- learners are allowed the freedom to choose from a set of problems presented. Choice is based on interest.
3. Principle of learning by doing- must be activity-based as learners are expected to acquire the knowledge based on work and practical experience
4. Principle of reality- projects must be real and related tolife situations of learners and the society
5. Principle of social development—such a project must focus on on societal needs, social development and usefulness to the society.

Merits of project teaching method

1. It is learner-centered and activity-based
2. Students are holistically involved in learning process according to needs, interest, attitude and ability
3. Related to real life situation
4. Develops in learners problem-solving skills and ability
5. Gives real work experience
6. Develops social qualities and synergism in the learner's heart
7. Develops responsibility realization of the students

Farm experience or student farm projects form an integral part of agricultural education. They provide realistic and pragmatic experiences to students hence, it is activity-based. 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 superseded by modern practices. It is the task of the agriculture teacher to set up work experience programmes for the school. The role of the teacher of agriculture in organizing 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 mutual benefit.

3.4 Teaching manipulative skills

Pupils should be made to realize that manipulative skills also referred to as *psychoproduction* skills are essential aspects of the course being taught and they should be given every opportunity to practise them to point of mastery. They include both animal and crop production skills that require series of drills for mastery level attainment.

Procedure for Teaching a Manipulative Skill

1. For you to teach manipulative skill, you should follow the following guidelines:
2. Determine beforehand the abilities that are to be learned by the pupils,
3. Encourage a strong desire in the pupils to possess manipulative skill,
4. Theoretically teach the pupils,
5. Demonstrate the procedure for the pupils to grasp,
6. Allow the pupils to perform the operation by themselves,
7. Give the pupils further exercise,
8. Give opportunity to the pupils to evaluate their achievement

3.4.1 Handling or Kinesthetic Skills

This refers to the senses located in the muscles, skeleton, 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 practice it over time. Handling skills includes the use of hoes for tilling, assemblage of parts of a wheel barrow, pruning etc.

3.4.2 The Role of Observation

Observation skill refers to the ability to use all five senses of the body to recognize, analyze and recall your immediate environment. Observation skill is critical for gaining command on other science process skills. It helps in widening the cognitive horizon of the learner thus giving him the opportunity to conceptualize relationships and characteristics of events or phenomena around him as well as heightening his curiosity. Observation is a very important skill that every teacher needs. It gives them first-hand knowledge about the student – his behavior, mindset, attitude and interest. Observation skills include voidance of distraction, quantifying things as you notice them, keeping an observation journal as well as ability to look for details. Observation inform us about objects, events, attitudes and phenomena using one or more senses. Observation nurture relationships and learning. Through observation the teacher gets to know a child, sees more of her abilities, interests and personal characteristics. Knowing each child helps the teacher to plan individualized and developmentally informed learning activities. Skills needed for observation include communication, emotional intelligence, critical thinking, attention to details etc

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.

3.5 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:

1. attending meetings of the Parent/Teachers Association (PTA),

2. assisting in organizing community programmes and projects
3. providing advice to local farmers
4. attending meetings of local farmers union

Self-Assessment Exercise(s)

1. Teacher of agriculture prepares lesson plan for his teaching for the following reasons:
   a……
   ……..
   b……
   …….
   c……
   …….
   d……
   ……

2. The basic features of a good lesson plan are:
   a……
   ……
   b……
   ……..
   c……
   ……..
   d……
   …….
   e……
   …….
3. The project-based method of teaching is considered important for the following reasons:
   a……
   …… ……
   b……
   ……
   c……
   ……

4. For effective teaching of manipulative skill in agriculture, the following guidelines must observed:
   a……
   …….....
   b……
   ……
   c……
   ……

d.……
……
e.……
……
f.……
……

g.....
.....

5. Observation skill is considered very critical in the teaching of agricultural psychoproduction skills because:

……
……...

b.……
……..

c.……
……..

4.0 Summary

This unit has enabled you to 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.

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.

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6.0 Possible Answers to Self-Assessment Exercises

1. Teacher of agriculture prepares lesson plan for his teaching for the following reasons:
   a. It helps the teacher to have mastery of subject and content to be taught
   b. It provides guide to teaching procedure
   c. Makes lesson to progress in correct sequence and logical order
   d. Enable the teacher to realize intended behavioural objectives

2. Basic features of a good lesson plan are:
   a. Preliminaries including subject name, topic, class, lesson duration entry behaviour
   b. Intended learning outcomes
   c. Content development including competencies to be mastered
   d. Procedure for lesson delivery
   e. Evaluation module including questions, exercises and assignments

3. Why do you consider project-based method of teaching important
   a. It provokes creativity and resourcefulness in learners
   b. Allows learners to try out knowledge and skills they have been taught
   c. Guarantees cooperation as well as healthy completion among pupils.

4. For you to teach manipulative skill, you should follow the following guidelines:
   a. Determine beforehand the abilities that are to be learned by the pupils,
   b. Encourage a strong desire in the pupils to possess manipulative skill,
   c. Theoretically teach the pupils,
   d. Demonstrate the procedure for the pupils to grasp,
   e. Allow the pupils to perform the operation by themselves,
   f. Give the pupils further exercise,
   g. Give opportunity to the pupils to evaluate their achievement
5. Observation skill is considered very critical in the teaching of agricultural production skills for the following reasons:
   a. It enables learners to master steps involved in performing the skills
   b. Visual learning precedes manipulative skills development
   c. Widens cognitive horizon of the learner thereby making him/her to establish inter- relation among concepts

UNIT 4 SOCIAL FACTORS IN THE TEACHING OF AGRICULTURAL SCIENCE

CONTENTS

1.0 Introduction

In addition to the many factors that affect the teaching and learning of agriculture in schools, social factors have been identified as having a very significant effect on school agricultural programmes. Farming is the major occupation of the rural Nigerians. Most farmers earn very little income when compared with other occupations of agriculture especially from 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 reflected on the teachers of agriculture, the teachers' image and confidence are affected negatively.

2.0 Intended Learning Outcomes (ILOs)

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

- clarify why pupils have negative attitude towards agriculture
- 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
- understand the community's expectations of the teacher
- identify some strategies for meeting the community's expectations.

3.0 Main Content

3.1 Pupil's Bias against Agriculture in Schools

Most of the students of agriculture come from families tha practise traditional farming These students have individual impressions on what…. Sometimes, these impressions come from personal traditional farming entails

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 most. You, as a teacher of agriculture should take advantage of these.

Positive attitude can be developed in pupils also through:

(i) **Awareness creation:** 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 underlining 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 in the Nigerian context is its "low" status. The low status of agriculture is attributed to the following factors:

1. the drudgery involved in farming practice
2. the neglect of agriculture for higher income earning ventures
3. the long investment period before farm activities yield profit
4. natural factors such as weather and disaster

3.2.1 Mode of farming

Another factor that lowers the status of agriculture is the 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 to investment remains very low and not commensurate with the level of drudgery involved. The adult farmers resist change and therefore, have their level of income remaining very 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 towards agriculture changed. This is because Nigeria and indeed Nigerians, could earn more income or money from 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 in agriculture require time for the investment to mature and yield returns. Most farmers have nothing to fall back on during the long 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. They are forces of nature that man can do little or nothing about. There is also fluctuation between glut and scarcity. All these make farming a risky venture which young people will not want to take the risk for.

3.3 The Community's Expectations of the Agriculture Teacher

Another factor affecting the teaching and learning 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 as well as in the field of education. He is therefore a "specialist farmer" and 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 capable of helping them to solve all their problems and challenges.

3.3.2 An Adviser

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

3.3.3 An Innovator

The school-farm supposed to be a "model" to other farms in the community. This is because in-school farming is characterized by improved cultural activities and methods of farming which subsist in the planning of the school farms due to the synergies and linkages the school has with research stations from where they obtain latest findings on farm practice. Parents visit the school and school farms on seeing these innovations, they to adopt new practices.

3.4 Meeting the Community's expectations

The Community's expectations of the teacher of agriculture pose some challenges that keep him always on his toes. In order to position himself better to take up the challenges, he needs to evolve some strategies to meet these expectations. The strategies should include efforts to:

1. maintaining good intra-school relationships
2. planning school community activities
3. publicizing school agricultural projects
4. providing the school and community with feedback on agricultural programmes

3.4.1 Maintaining 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 Planning 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 Publicizing school's Agricultural Science activities and the School's Farm Projects within the host community and environs

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 recognized 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.

3.4.5 Maintaining good inter- and intra-school relationships

Planning school-community joint activities, publicity of agricultural programmes and projects and providing feedback on agricultural projects to the school and the community will enhance meeting the community's expectation for the agriculture teacher.

Self-Assessment Exercise

1. Factors responsible for the low status of agriculture in Nigeria include:
   a……
   ……..
   b……
   …….
   c……
   …….
   d……
   ……

2. Mention four strategies for developing positive attitudes in pupils:
   a……
   ……...
   b……
   ……...
   c……
   ……...
   d……
   ……...

3. Outline any three social factors that affect the teaching and learning of agriculture in the Nigerian context.

a……
…….

b……
……

c……
……

4. Enumerate the community's expectations for the teacher of agriculture:

a……
…….

b……
……

c……
……

d……
……

5. Identify four strategies the teacher of agriculture can use to meet the expectations of the host community:

a……
……

b……
……

c……
……

d……
……

4.0 Summary

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

In this unit, you have learnt that:

- Pupils bias against agriculture, low status of agriculture, community's expectations and meeting the community'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, as well as an adviser and an innovator.

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6.0 Possible Answers to Self-Assessment Exercises

1. Factors responsible for the low status of agriculture in Nigeria include:
   i. drudgery involved in farming practice
   ii. the neglect of agriculture for higher income earning ventures
   iii. the long investment period before farm activities yield profit
   iv. natural factors such as weather and disaster

2. Mention four strategies for developing positive attitudes in pupils:
   a. Creating awareness through effective teaching
   b. Encouraging pupils to develop understanding of relevant concepts
   c. Making pupils to deveop interest through hands-on experiences
   d. Encouraging pupils to develop appreciation for agricultural activities

3. Outline any three social factors that affect the teaching and learning of agriculture in the Nigerian context:
   a. Government poor attitude to funding of education
   b. Preference/emphasis for mineral oil resources and against agriculture
   c. Low status of agriculture as compared to other vocations
   d. Parents discouraging their ward from taking to agriculture as a profession
   e. Long investment gestation period

4. Enumerate the community's expectations for the teacher of agriculture:
   a. As Model Teacher
   b. As an adviser
   c. As Counselor
   d. As Innovator
   e. As solution Provider

5. Identify four strategies the teacher of agriculture can use to meet the expectations of the host community:
   a. Maintaining healthy/good intra and inter school/community relationship
   b. Planning and executing joint school-community agricultural activities

c. Using community-based instructional resources
d. Publicizing school agricultural activities, projects and programmes
e. Providing school and community with feedback on agricultural activities, projects and programmes on regular and timely basis

MODULE 2 TEACHING AND LEARNING OF AGRICULTURAL SCIENCE

UNIT 1 RESOURCES AND TOOLS FOR AGRICULTURAL SCIENCE TEACHING

CONTENTS

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 Intended Learning Outcomes (ILOs)

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

- differentiate between goals and objectives in the context of education
- state the difference between instructional and behavioural objectives
- explain other skills that are relevant for agricultural teaching.

3.0 Main Content

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 determine if my teaching has been successful with students learning what I intend to teach? To a teacher, well-stated 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:

1. that agriculture students should come to know the fundamental facts and principles of agriculture.
2. that agriculture students should possess the abilities and skills needed to engage in agriculture.
3. 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. It is preferably called "Learning Outcomes" 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:

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

3.2 Instructional versus 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 Instructional 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:

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

3.2.2 Behavioural Objective/Intended Learning Outcomes

Behavioural objectives or Learning Outcomes are stated in terms of the outcomes the teacher expects from his teaching, what he expects to see the pupils do resultant from the teaching-learning encounter. 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 following parts, the handle and metal blade". This is behavioural objective because:

(1) the objective is stated in clear unambiguous and performance-based terms which the teacher could recognize when it is attained by students.
(2) it is stated in terms of the behaviour expected 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

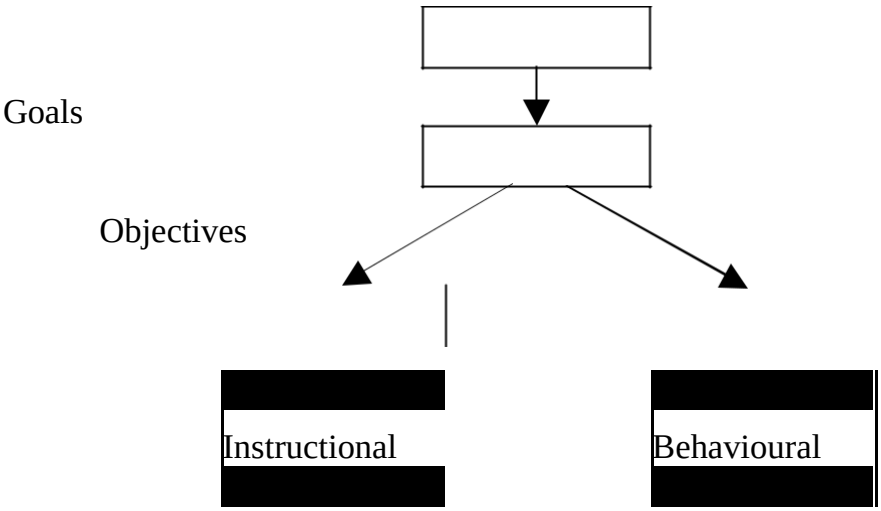

Figure 3.1: Interrelationships of Goals and Objectives

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, and 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 Agricultural Science Teaching

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

3.3.1 Communication Skill

Effective instructional communication is a prerequisite condition to effective teaching of agriculture. Teaching is about establishing effective and affective relationships with the learner. Effective teachers are by extension effective communicators, they understand the interdependency of communication and learning. They equally understand that the knowledge and attitude pupils take with them for any teacher-student encounter are selectively drawn from a complex assortment of both verbal and no-verbal messages about the subject, the teacher, and themselves. An effective teacher is one who is concerned about what the pupil has learned other than what the teacher has taught. He is that teacher who is concerned with what is communicated and how it is communicated. Instructional communication therefore is the process of establishing an effective communication relationship with the learner to grant him the opportunity to achieve optimum success in the instructional environment. The teacher of agriculture should develop early the skill to speak fluently and audibly. 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. An effective teacher should be able to notice when communication is not flowing normally through students' reactions or even facial expressions.

3.3.2 Questioning Skill

Questioning is part of guided enquiry in agriculture teaching. Questioning can be used to stimulate thought or other higher cognitive operations such as critical thinking, intrapolation and extrapolation as the case may be, as well as 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 answers.

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. The classroom is a social system made up of structured activities of independent parts, and for meaningful progress to be made unless these tasks are effectively managed by the teacher. Some of the classroom management tasks include; maintaining effective discipline, instructional resources management, managing classroom activities, and maintaining of effective and affective relationship between the school and host community. Some of the approaches the teacher can use are based on:

1. inter-personal relationship;
2. permissive attitude;
3. authoritarian attitude;
4. behaviour modification approach;
5. 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 that is the entry behavior of students

3.3.5 Effective Use of "Teaching Resources or Aids"

Effective integration of instructional materials is the hallmark of every lesson or classroom instruction. Instructional materials adds flavor to lesson presentation thereby facilitating instructional communication. The teacher of agriculture should be able to employ and deploy instructional materials appropriately in every lesson delivery.

Though there are many senses through which the human body perceives stimuli, 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. Cognition and internalization of environmental stimuli in a teaching-learning situation can as well be jeopardized by the way and manner the teacher uses instructional aids.

Self-Assessment Exercise(s)

1. Classroom level educational objectives are of two types namely:
   a……
   ……
   b……
   ……..
2. Behavioural objectives stated using "Action Verbs", identify any ten of these verb……
   ……..
   ……
   …….
3. Qualities of well-stated behavioural objectives include:
   a……
   …….
   b……
   ……
   c……
   ……
   d……
   ……
4. Explain the difference between behavioural and instructional objectives……
   ……
   ……
   ……...
5. Basic skills required by the for effective delivery of an agricultural lesson are:
   a……
   …….
   b……
   ……
   c……
   ……
   d……
   ……...

4.0 Summary

By successfully studying this unit, is believed that we have been able to establish the distinction between goals and objectives in educational instructions especially at the classroom level. The concept of "behavioural" objectives was more adaptable in agricultural instructions because emphasis is much on acquisition of manipulative or

psychoproduction skills, as observable behaviours are critical in the measurement of pupils' achievement.

It was confirmed that certain skills are relevant for the effective delivery of agricultural lessons. Such relevant skills are found to include: communication skill, questioning skill, classroom management, class testing and the skill for the use of teaching materials/aids.

We have learnt in this unit that:

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

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6.0 Possible Answers to Self-Assessment Exercises

1. Classroom level educational objectives are of two types namely:
   a. Instructional Objectives
   b. Behavioural Objectives.

2. Behavioural objectives are stated using "Action Verbs", identify any ten of these verb: Student should be able to: demonstrate, draw, label, measure, calibrate, construct, explain, enumerate, outline, find, locate, prepare, cook, sew, plant

3. Qualities of well-stated behavioural objectives include:
   a. Stated in clear and unambiguous form
   b Stated in measurable terms
   c Stated in simple and concise manner
   c. Stated in observable form

4. Explain the difference between behavioural and instructional objectives:
   a. Behavioural objective also known as learning outcome explains what a learner can do after going through the lesson
   b. Instructional objective emphasize what teacher is to do during delivery of a proposed lesson

5. Basic skills required by the teacher for effective delivery of an agricultural lesson include
   a. Communication skill
   b. Classroom management skill
   c. Questioning skill
   d. Interpersonal skill

UNIT 2 TEACHING RESOURCES/AIDS IN AGRICULTURE

CONTENTS

1.0 Introduction

In the last unit we identified the effective use of instructional materials or teaching aid as a relevant skill in the teaching and learning of agriculture. In this unit therefore, we shall learn about the significance of teaching aids, its sources, how they can be selected and utilized to guarantee effective integration in agricultural lesson delivery.

2.0 Intended Learning Outcomes (ILOs)

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

1. identify what can be used as teaching materials/aids in agriculture
2. determine and identify the sources of instructional materials or teaching aids
3. select teaching material/aids
4. determine what makes a good teaching material or aid utilize teaching materials /aids the most effective way.

3.0 Main Content

3.1 Teaching Aids and Resources for Agriculture Teaching

Instructional materials also known as teaching aids are materials and devices used to supplement or support the written or spoken word in instructional communication for the purpose of effective transmission of knowledge, skills, values, attitudes and ideas to learners. They help to emphasize, 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 instructional materials, their sources and use in the teaching-learning process.

3.1.1 Sources of Teaching Materials/Aids

Some common instructional materials or aids for teaching agriculture include: chalk boards, charts, graphs, diagrams, exhibits, flannel boards, flat pictures, photographs, maps, globes, models, mockups, realia (real objects) and specimens, motion pictures, textbooks and reference books.

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

1. human voice
2. record player
3. tape recorder and
4. radio transmission/broadcast

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

1. models, specimens and collections (soils, rocks, weeds, crops, pests, seeds, fertilizers)
2. still pictures and chalkboard
3. overhead transparencies
4. charts, maps, exhibits and graphic materials
5. real objects (realia)

There are yet those instructional materials that simultaneously appeal to both senses of sight and hearing; they are referred to as audio-visual materials/aids. Most common examples are:

1. Television
2. Both still and motion pictures with sound track

3. Film projectors
4. Video

Other classes of useful teaching aids include printed and non-printed materials such as:

- syllabuses
- textbooks, work books
- newspapers
- journals
- hand books, magazines and reference texts

We also have community-based resources which are resources in and around the school environment and host community that the the teacher can resort to in time of need. These include forest reserves, market squares, shrines, farmlands, erosion-sites, factories, rocks etc

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/Criteria

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

- consider the instructional and behavioural 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 materials/aids will be above their level of ability or within their level of understanding and interpretation,
- consider the physical qualities of the material/aid and its condition.

For example, if s/he plans to use a chart, is it clear enough?

The teacher should give the class a brief introduction to the material/aid, including what they will see, why and how it relates to what he intends to teaching.

3.4 Characteristics of a good Instructional material or Teaching Aid

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

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

Certain characteristics are common to all suitable or good instructional materials /teaching aids and these include:

1. Simplicity

The teaching material/aid must be simple and should present only a few ideas at a time, as pupils especially the very younger ones 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, a good combination of colours should be used on suitable backgrounds, in the preparation of instructional materials or 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 of agriculture will attempt to teach his lessons using a variety of methods, techniques, strategies and materials. He should therefore select or construct teaching materials/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 emphasize 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 the objects or examples of the subject-matter are not readily available to in the classroom. Such objects like irrigation schemes, erosion sites and dams 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 such as in toxic agrochemical;

(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 emphasize is not visible to 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 precautions/suggestions:

1. ensure that the material is accurate and acceptable to the students;
2. preview a material/aid before using it in class;
3. arrange the materials/aids in such a way that students will see them from where they are sitting;
4. use the materials/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 pupils 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;

Self-Assessment Exercise(s)

1. Criteria to be considered in selecting instructional materials include:
   a……
   ……
   b……
   ……
   c……
   ……
   d……
   ……
2. What are the time precautions you will observe when using teaching aids?
   a……
   ……

b……
……..
c……
……...

3. State four reasons why the teacher of agriculture should use a variety of instructional materials in teaching a particular lesson:

a……
…….
b……
…….
c……
…….
d……
……

4. Characteristics of good instructional materials include:

a……
……
b……
……
c……
……
d……
……..

5. Conditions warranting use of instructional materials

4.0 Summary

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

We can summarize what we have learnt as follows:

- Instructional materials or teaching aids are devices and materials used to supplement spoken or written word in the classroom.

- There are several examples of teaching materials/aids that a teacher can use.

- There are certain criteria to be considered for the selection of teaching aids.
- Good instructional materials/aids possess certain characteristic features.
- When using teaching aids, the teacher observes certain conditions.

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6.0 Possible Answers to Self-Assessment Exercises

1. Criteria to be considered in selecting instructional materials include:
   a the subject matter, topic and intended learning outcomes
   b Characteristics of the class including age, physical conditions, population size
   c Availability- Is the material readily available or can it be prepared by the teacher?

d Suitability – Is the available material suitable considering the requirements of the lesson?

e Physical qualities of material – Does the available material possess captivating visual qualities?

2. What are the time precautions you will observe when using teaching aids?

i. Ensure that provided material is accurate in the required details

ii. Preview materials well ahead of actual use

iii. Arrange Instructional materials in such a way that pupils have equal chances of its advantage

iv. Use instructional material at the appropriate time

v. Use a variety of materials for each lesson

vi. Do not cause confusion by presenting too much details at a time

3. State four reasons why the teacher of agriculture should use a variety of instructional materials in teaching a particular lesson:

a Each lesson has a variety of objectives to attain

b. Pupils within a given class are predisposed to different learning styles

c. Using a variety of instructional aids makes lesson very interesting and captivating

d Using a variety of materials has the tendency to arouse and sustain learners' interest.

4. Characteristics of good instructional materials include:

a. Simplicity – Instructional material should be simple to comprehend by the pupils, must not contain too much details

b. Attractiveness – Instructional materials should be presented in attractive format.

c. Flexibility Instructional materials must be flexible and adaptable to different teaching-learning conditions.

d. Visibility – Materials on display must be visible from any corner of the classroom.

5. Articulate the conditions warranting use of instructional materials:

a. When the intended learning outcomes of the instruction is either too large or spread out that comprehending details becomes problematic.

b. When objects/examples of subject matter are not readily available

c. If real object of emphasis is too expensive to access

d. If the process being studied is a slow one spanning over long period of time.
e. When the process being emphasized is not visible to the physical human eyes

UNIT 3 THE TEACHING-LEARNING TRANSACTION IN AGRICULTURE TEACHING

CONTENTS

1.0 Introduction

In the previous unit you were given the opportunity to learn about how instructional material or teaching aid plays a vital role in making teaching of agriculture effective. Though, instructional materials or teaching aid is important in teaching, if the teacher does not utilize it in the right way it may lose its utility value and the learner may not learn. It therefore implies that the teacher determines the effectiveness and utility value of any instructional material. 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 Intended Learning Outcomes (ILOs)

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

· Explain the inherent characteristics of teaching and learning processes

- Explain the nature of interaction between the twin processes of teaching and learning.
- Describe the basic teaching principles

3.0 Main Content

3.1 Teaching of Agriculture

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

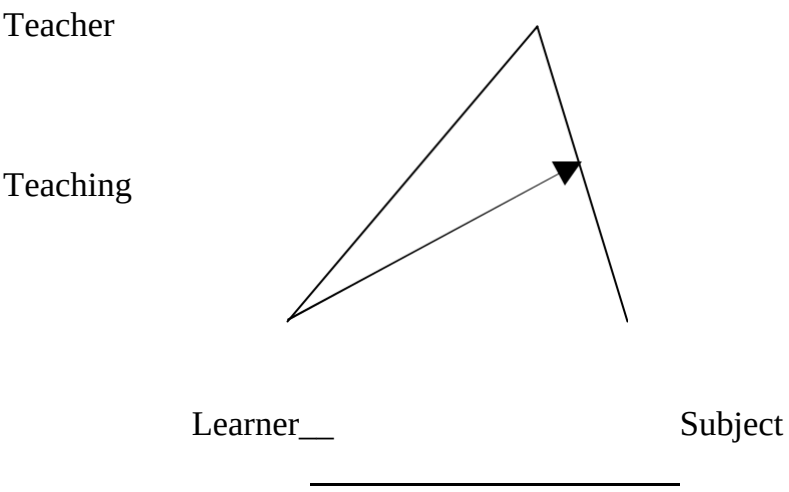

Figure 3.0: Illustration of Triadic Teaching

Teaching is an attempt by someone 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 behavior.

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. These are;

- 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 principles in teaching

The four basic principles of teaching are

1. Principle of Democracy

This principle demands that the teacher treats the pupils equally and as he would like to be treated. No child should be segregated against on the basis of religion, tribe, health status, parental background etc. The teacher should allow the pupils to freely ask questions and interact in the class.

2. Principle of Use or Relevance

The content to be taught must be one the knowledge of which the pupils can readily apply. It must be relevant to addressing the needs and interest of the learners.

3. Principle of Readiness

It is useless to teach something to students before they are ready to learn and if the student sees no immediate use for the instruction he may not be ready to learn. The children must be *maturationally* and cognitively ready for learning to occur and to occur effectively too.

4. Principle Activity/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. Learning in agriculture is more effective if anchored on hands-on experiences such as psychoproduction activities.

5.1.2 The Purpose of Teaching

1. Teaching is the process of attending to learners' needs, experiences and feelings, and making specific interventions to help them learn specific things. The central purpose of teaching is to facilitate and promote learning in those we teach.

   Teaching shapes the conduct, emotional and intellectual dispositions of the learner. The teacher's strategic 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.

2. During the process of teaching, the teacher brings his "superior" knowledge to aid the child in making sense out of his life experiences. It therefore follows that, the very essence and effort of teaching is to keep the experience of pupil moving in the direction of what the expert-teacher already knows and intended for the pupils to learn. During teaching, pupils are exposed to what must have meaning and relevance to their life in and out of school and to help them to see the relationship of their experiences with real life experiences in the society or in the world of work.

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 their environment. Learning is the process of acquiring new understanding, knowledge, behaviours, skills, values, attitudes and preferences. Learning is the acquisition of knowledge, skills through experience or by being taught.

The mechanism 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.

Types of Learning

There are three basic types of learning that can occur in namely; visual, auditory and kinesthetic. Too learn, we depend on our senses to process the information around us. Most people tend to use one of their senses more than the others hence the three most common different learning styles. Learning of agriculture characteristically cuts across the three basic learning types or styles and the teacher of agriculture should ensure success in this direction. Deep and long-lasting learning involves understanding. Relating ideas and making connections between prior and new knowledge, independent and critical thinking, and ability to transfer knowledge to new and different contexts.

3.2.1 The Purpose of Learning

Learning takes place because the organism (the learner) is consistently exposed to environmental stimuli or experiences to which he can react. The learner interacts with the environment both physical and psychological and as this synergy takes place between the learner and his environment, changes are observed in him/her and this in effect

constitutes learning which as an educational process is very important in socialization.

3.3 The Teaching-Learning Transaction in Agriculture Education

The teaching-learning transaction involves four critical 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 as only the student is intended to learn or does the learning of 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 structured 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 towards students.

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. These include;

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

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

3.3.4 The Subject-Matter of Agriculture

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.

Self-Assessment Exercise(s)

1. Explain four basic principles of teaching:

   a……
   ……..

   b……
   …….

   c……
   …….

   d……
   ……

2. Environmental factors that influence the teaching and learning of agriculture are:
   a……
   …….
   b……
   ……
   c……
   ……
   d……
   ……

3. Outline and the four critical elements of the Teaching-Learning transaction.

   a……
   ……..

   b……
   ……..
   c……
   …….
   d……
   …….

4. Briefly explain the concepts of Teaching and Learning:
   a. Teaching can be defined as……

      ……
      ……..

b. Learning can be defined as……

……
…….

4.0 Summary

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.

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

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6.0 Possible answers to Self-Assessment Exercises

1. The four basic principles of teaching are:
   a. Principle of democracy
   b. Principle of Readiness
   c. Principle of Use, Utility or Relevance
   d. Principle of Activity/learning-by-doing
   e. Principle of Relevance

2. What are the environmental factors that influence the teaching and learning of agriculture?

    a. Availability of land and other instructional media-laboratory, workshop,
    b. Relationship between teacher and students
    c. Relationship of Agriculture teacher and co-teachers
    d. Relationship between Teacher of agriculture and school authority
    e. Nature relationship between school and host community

3. Outline the four critical elements of the Teaching-Learning transaction.
    a. the teacher- represents a key element in any structured learning situation, bringing to the class a set of information on skills and knowledge
    b. the learner whose attitude, expectations before entering the class affects his ability to acquire knowledge, skills, values and attitude
    c. nature of subject matter- what is the quantum size and details of content – knowledge, skills, values and attitude
    d. the environmental conditions of the school/classroom – what kind and level of discipline? Who does the supervision? What is the attitude of management/authority to agricultural activities in school.

4. Briefly explain the concepts of Teaching and Learning:
    a. Teaching is defined as consensus of activities planned and organized by the teacher to facilitate learning by the pupil/learner.
    b. Learning is the process of acquiring new knowledge, skills values, attitudes and perspectives.

UNIT 4 TEACHING TECHNIQUES AND PROCEDURE IN AGRICULTURAL SCIENCE

CONTENTS

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 Intended Learning Outcomes (ILOs)

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

- state the specific devices used by the teacher to help students
- achieve how to state the expected educational objectives
- list 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 to 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 as well as invents ways of doing things differently.

3.1.2 Designing Questions

To design a good classroom question, the teacher needs first to analyze 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. Summarizing Questions – This sort of question focuses attention on, or summarizes, crucial points in thedevelopment 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 learning 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 questions 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:

1. Stimulate the interest of the pupils in the lesson.
2. Establish communication between the teacher and the pupil.
3. Focus the pupil's attention on the major points or principles to be remembered.
4. Stimulate "learning by doing" by making pupils apply facts and principles as they analyze problems.
5. Help pupils to develop a feeling of confidence and success which leads to greater motivation and competence in organizing ideas and speaking fluently.
6. 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:

- Emphasize the correct answer
- Listen to pupil's answer
- Call on one pupil by name
- Pause … so that all pupils think of an answer
- Ask the question

1. Ask the question in the class so that every pupil is aware that he is being addressed by the question.
2. Pause and glance at the pupils' eyes so that they will have time to think of the answer.
3. Call on one pupil by name. Every pupil should be asked a question with almost the same frequency.
4. Listen to the pupil's answer and decide whether it gives the correct response or not.

5. Emphasize correct responses by the pupil and reward the pupil who answer correctly. Correct wrong responses and encourage pupils who give poor answers.

Principles of good questioning

The relevance of questioning in the teaching-learning process can significantly be affected by the way or manner it is employed by the teacher. To ask good questions, the following rules must be observed:

1. A good question should be relevant to the topic
2. A good question should be clear and easily understood
3. A good question should challenge or stir thinking in the learner
4. A good question should be answerable
5. A good question should be purposeful and goal-directed
6. A good question should de-emphasize unnecessary repetition
7. A good question should be civil

Self-Assessment Exercise(s)

1. List five important reasons why you as a teacher of agriculture should ask questions in the classroom while teaching?
2. Outline the qualities of good question.

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:

1. ask questions based on the assigned reference
2. set written questions based on the reference
3. make students to discuss about the text they read

3.2.1 Use of the Library

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

1. 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.
2. In this era of ICT, open educational resources (OER) and e-library services should be made accessible to students
3. 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 pupils' thinking and organizing ability of the pupils. They tend to capture and sustain pupils' attention and 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:

1. the teacher should discuss details of the assignment with the pupils.
2. the teacher should advise pupils to carry out the assignment in a quiet and conducive atmosphere with no distractions.
3. 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 they might have gained from lessons 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 pupils:

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

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

Self-Assessment Exercise(s)

1 In which four ways do pupils think? Pupils Think in the following ways

a……..

b……..

c……...

d……....

2. What are types of questions useful in agricultural lessons:

a…….

b……

c……

d……

e……

f……

3. Outline any five steps/guidelines for asking good question in agricultural lessons:

a……..

b…….

c……
…….

d……
…….

4. Characteristics of good questions include that a good question should:

a……
……

b……
……

c……
……

d……
……

e……
……

4.0 Summary

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.

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.

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6.0 Possible Answers to Self-Assessment Exercises

1 In which four ways do pupils think?
Pupils Think in the following ways:
a. Remembering
b. Reasoning
c. Evaluating/judging
d. Creative thinking

2 The following are types of questions useful in agricultural lessons:
a. Data questions – that focus on specicific facts or figures
b. Questions that pin-point problems- help to identify problem ares
c. Summarizing questions – focus on crucial poit of the lesson
d. Low order question – requires low cognitive/mental operations
e. Higher order questions – Focus on higher cognitive/mental operations

3. Steps in asking good questions:
a. Ask the question in clear language
b. Pause and glance at pupils eyes while allowing them time to out possible answers
c. Call on any one student by name to respond
d. Listen attentively to pupils' response
e. Emphasize correct responses and reward accordingly
f. Avoid chorus response from pupils

g. Ensure uniform spread of your questions to pupils

4. Characteristics of good questions include that a good question should:
   a. be relevant to the topic
   b. be clear and easily understood
   c. challenge or stir thinking in the learner
   d. be answerable
   e. be purposeful and goal-directed
   f. de-emphasize unnecessary repetition
   g. be civil as much as possible

MODULE 3 METHODOLOGY OF AGRICULTURAL SCIENCE TEACHING

UNIT 1 TEACHING METHODS IN AGRICULTURAL SCIENCE

CONTENTS

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 to be more effective in your teaching. Just as there are no two teaching situations that are exactly the same, no single method of teaching could be said to be suited for every teaching-learning situation. However, from a pool of these methods, the teacher of agriculture can select the one that is most suited for a particular situation.

2.0 Intended Learning Outcomes (ILOs)

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

- You are expected to become conversant with alternative methods of teaching agriculture
- Explain the procedure involved in each of the specified methods of teaching.

3.0 Main Content

3.1 Demonstration Method

Demonstration method is one of the greatest strategies for acquisition of agricultural 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;

1. teaching manipulative/psychoproduction skills
2. developing understanding of operational procedures
3. securing the acceptance of new and better ways of doing things

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

(i) **Method Demonstration –** This is usedto show how to do a particular operation, the procedures in performing an activity 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 exhibited for students to observe, compare and be able to draw logical conclusions.

3.1.1 Planning a Demonstration

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

1. plan the demonstration in three phase/parts – the preparatory phase, the demonstration and the follow-up phases.

2. rehearse the demonstration beforehand or in advance.
3. to save time, outline the main steps on the chalkboard before the class begins.
4. make sure that every pupil will be able to see and hear what the demonstrator is saying from their individual standing/sitting position.
5. time the demonstration to include a question phase/session

3.2 Discussion Methods

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. In any case, topics for discussion is allocated to discussants/students in advance to enable them to prepare.

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 and topics of discussion and the experience of the pupils.

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

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

As the discussion continues there is the danger of drifting away from the focus, the teacher should step in by summarizing the main facts and refocusing their attention on object and course of discussion. Significant points should be summarized on chalkboard or whiteboard as the case might be.

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:

1. guide and stimulate the learner into discovering the solutions to certain problems arising in his course of study by himself
2. 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 or problem situations. The activities involved in the problem-solving approach are:

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

3.4 Field Trip Method

This is a planned visit to a place of interest outside the classroom to obtain information concerning an academic problem, issue or challenge. 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

1. Select the place of interest to be visited
2. Obtain permission from the school authority
3. Obtain the permission and assistance from the authority of the place to be visited
4. Sensitize the pupils on the visit and what and how
5. 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 of agriculture should:

1. not appoint show offs or class clowns to act as they are likely to make a mockery of the whole exercise.
2. 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

1. The purpose of the exhibition and its educational objectives must be well defined

2. Preliminary plans such as the construction of a site, ideas and materials to be exhibited, size and space needed by each exhibit must be considered.

3. Put the plan into action through organizing the materials as planned and have them well labeled.

Self-Assessment Exercise(s)

1 Demonstration teaching method in agriculture is best used in
a. …….

b. ……..
c. ……..
d. ……..
e. …….

2. In starting a discussion session, the following steps could be followed:
   a. ……
   …….
   b. ……
   c. ……...
   d. ……..
   e. ……..

3. Guidelines for effective Field trip include:
   a……
   …….
   b……
   ……
   c……
   ……
   d……
   ……
   e……
   ……

4.0 Summary

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.

In this Unit you have learn that;

- No one/single teaching method is best in all teaching-learning situations
- 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.

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

6.- Possible Answers to Self-Assessment Exercises

1. Demonstration teaching method in agriculture is best used in
   a. teaching manipulative/psychoproduction skills
   b. developing understanding of operational procedures
   c. showing the result of doing something in a particular way

2 In starting a discussion session, the following steps could be followed:
   a. announce the topic for discussion to the pupils
   b. indicate that each person is expected to express his/her own idea on the subject
   c. ask challenging questions as the discussion progresses and call on individuals to respond
   d. as pupils respond, draw in others by allowing them to express their opinions.
   e. as pupils respond, draw in others by allowing them to express their opinions.

3 Guidelines for effective Field trip include:

a. Select the place of interest to be visited
   b. Obtain permission from the school authority
   c. Obtain the permission and assistance from the authority of the place to be visited
   d. Sensitize the pupils on the visit and what and how
   e. to prepare for the trip

UNIT 2 PLANNING AND MANAGING SCHOOL AGRICULTURAL PROGRAMMES

CONTENTS

1.0 Introduction

The basis of planning in agricultural programmes is to enable you as a teacher of agriculture to prepare a platform for providing suitable learning experiences and 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 of school agricultural programmes and factors that can affect it; and also how you can plan for schools' agricultural programmes including the school farm.

2.0 Intended Learning Outcomes (ILOs)

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

- Explain what planning is
- State the factors affecting planning
- Describe the approaches to programme planning
- Plan a school farm.

3.0 Main Content

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 land to the school, the teacher should examine the soil to identify which crop or crops are suitable for planting. 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 Agricultural Education

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 involveslistingall the tasks and the procedure involved in the programme.

3. **Subject Approach –** A subject is made up of the variable 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. Eachyear the students ina 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 related jobs or occupations.

3.3 Managing the School Farm

School farms are not just spaces for growing crops. They are complete learning zones, which largely succeed in taking learning to new heights or levels. School farms come in handy when it comes to teaching a variety of topics in agricultural practices be it crop rotation, mixed cropping, inter-cropping etc.

Management of school farm is defined as the process of planning, organizing, directing, controlling and evaluating activities in the farm to achieve specific objectives. These objectives include: to demonstrate appropriate practices, to provide opportunities for coordinating classroom theory with practices.

With proper management benefits of school farm include: attendance to activities, behavior modification, diet and nutrition, enterprise and economic well-being, incusion (closing the gap between theory and practice), learning outside the classroom, extension to local and global communities etc.

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 from the classroom into practice. The agricultural science teacher should plan the school farm to facilitate this process of knowledge transfer. 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;

1. To earn money
2. To put theory into practice
3. To provide farming practice opportunities
4. To improve background knowledge
5. To solve individual farming problems
6. For experimentation purposes

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 premises, planting flowers and controlling erosion. The school farm possesses certain characteristics that distinguish it from these other field activities in the school. The characteristics of the school farm include the following:

1. Completion of Classroom Instruction

Almost everything learnt in agriculture by pupils in the classroom can be practised, 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 of Experience Through Practice

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.

3.3.2.1Site 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;

1. Slope of the land - sloping ground should be avoided because of problem of erosion
2. low-land valleys are susceptible to water logging and should be avoided
3. fencing may be necessary to put into check domestic animals
4. 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 (if desirable) of the plants while tree felling may also be necessary.

3.3.2.3Laying Out the Farm

The agriculture teacher and the 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.

3.3.2.4Activities 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. **Crop Section:** Activities in this area include:

- land preparation (planning, clearing, marking out the plots, beds making 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 proceeds eg milk, eggs etc

3. Field trips to government and private farms and agro-allied industries.

Self-Assessment Exercise(s)

1 Basic factors to be considered in planning of agricultural education programmes include:

a…….

b……

c…….

d…… …..

2 What are the approaches to planning of agricultural education programmes ?

a……

b……

c…….

d…….

e……..

3 Outline some of the importance of the school farm.

a……..

b……..

c……..

d……..

4 What are the characteristics of a/good school farm?

a…….

b…….

c…….

d……

e……

4.0 Summary

We have learnt in this unit planning of agricultural programme 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 used effectively to carry out planning activities.

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 of study certain factors that affect planning included market, climatic conditions, soil conditions and availability of capital
- school farm has certain characteristics
- activities on the school farm are mainly on crop and livestock production

5.0 References/Further Readings

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6.0 Possible Answers to Self-Assessment Exercises

1 Basic factors to be considered in planning of agricultural education programmes include:

a. Availability of market - Is market for product available
b. Climatic conditions – are they conducive for what agricultural activities
c. Soil condition – what are the characteristics of soil of the available land
d. Availability of Capital – Is the needed fund available?

2 What are the approaches to programmes planning in agriculture?

a Job Analysis Approach – entails listing out the knowledge, skills, attitudes and values that must be taught
b Task Analysis Approach – involves listing all tasks and the procedures involved in the programme
c Subject Approach – made up of variable units of taught/learned as separate yearly courses
d Integrated Approach – Each subject is taught as an integrated unit throughout the school system
e Occupational Area Analysis – Involves analysis of competencies which are common to and required for initial employment

3 Importance of School the farm:

a Avenue for putting theory into practice
b For experimentation purpose
c Providing farming practice opportunities
d To earn some monetary income
e For solving individual farming problems and challenges

4 Characteristics of the school farm include:

a Completion of classroom instruction
b Opportunity for supervised practice
c Reality of experience of theory and practice
d Avenue for individual farm practice
e Possibility of improved farm practices such as crop rotation

UNIT 3 EVALUATING AGRICULTURAL EDUCATION PROGRAMMES

CONTENTS

1.0 Introduction

One of the main roles of the teacher of agriculture 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 in the most successful way. However, as the acquisition of agricultural knowledge is the ultimate criteria, it is necessary to regularly evaluate pupil'sprogress 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 applicable in agricultural education programmes.

2.0 Intended Learning Outcomes (ILOs)

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

- state the importance of evaluation to the programme, the pupil, the teacher and the general public
- explain the characteristics of evaluation in agriculture

- explain the steps a teacher should follow when evaluating an agricultural education programme
- explain the types of evaluation common in agricultural education.

3.0 Main Content

3.1 Meaning and scope of Evaluation

Evaluation can be defined as the systematic process or body of processes by which information or data is collected, collated and analyzed in our efforts to judge and assess all the component parts of a programme of study with a view to determining their degree of acceptability, merit, appropriateness, goodness, attainability, desirability or otherwise.

The 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 exercises. Same is the case with 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 apretest 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 on 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, 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 for the identification of problem areas 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 programmes, the objective is only achieved if the evaluation is effective. For evaluation to be said to be effective it should;

1. Focus on the appraisal of how the objectives of the programme are being achieved

2. Make provision for the participation of all those involved in the execution of the programme such as teachers, pupils and the school authorities.

3. Be continuous so as to make provision for occasional stock-taking of the whole programme or at least a segment of it.

4. 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 education programme or project. These essential steps include;

1. Identifying the key points to be evaluated.

2. Stating the objectives of a programe in specific terms so that evidence of the degree to which objectives are being achieved can be ascertained.

3. Securing evidence for the achievement of the objectives.

4. Developing ideas about what factors might be aiding or hampering the achievement of objectives.

5. Securing evidence for and against developed ideas.

6. Revising ideas about what is helping aiding or hampering the achievement of objectives on the basis of the evidence obtained.

7. 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 available resources namely time, finances, competent personnel as well as 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 agricultural education programmes are:

1. programme evaluation
2. evaluation of pupils' achievement

3.4.1 Programme Evaluation

School agriculture programmes can be evaluated by determining whether the programme on its own merit worth being mounted, whether the facilities for the implementation of the programmes are available and adequate to guarantee the realization of the desired objectives of the programme within the school. Questions that school programme evaluation should address are:

1. what are the relevant textbooks and resource materials to which pupils have access?

2. Are the implements, with which the pupils can work on the school's farm adequate?

3. What are the number and qualifications of agricultural teaching staff in the school?

4. Are there opportunities for interaction between the pupils and the farming community?

5. What are the methods of instruction adopted by agricultural science teachers in the school and to what extent are the methods preferred?

6. 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 have impacted or influenced the graduates of the programme/school. In this regard, and through follow-up studies and employer's surveys, efforts are directed at finding out whether the graduates:

1. regard agriculture as a vocation and take pride in undertaking profitable agricultural or agri-based occupations;

2. acquired sound agricultural education both in theoretical and in practical aspects.

3. are the graduates worthy of emulation by the community and and will they be able to introduce improved farming strategies that will assist farmers become successful in agricultural occupations within their respective communities?

3.4.2 Models of Agricultural Education programmes Evaluation

An evaluation model within the context of education may be considered as a set of steps or system of thinking or reasoning which if followed or

implemented, will result in the generation of information which can be used by decision makers in the development or improvement of educational programmes

A comprehensive evaluation of agricultural education programmes can be achieved by the use of the following evaluation models

(i) Tyler's objecties-centered model
(ii) CIPP model
(iii) Scriven's Goal free model
(iv) Stake's Responsive model
(v) Eisner's Connoisseurship model

Tyler's evaluation model proposed by Ralph Tyler in 1950 is one of the earliest approaches in programme evaluation which still influences manyb assessment projects or programmes in the field of education. Merits of Tyler's model include;

(i) It is relatively easy toto understand
(ii) It is rational and systematic in nature
(iii) It focusses attention on programme strengths and weaknesses
(iv) It emphasizes the importance a continuing cycle of assessment, analysis and improvement.

Stufflebeam's Context, Input, Process and Product (CIPP) programme evaluation model proposed by Daniel Stufflebeam in the late 1960s and early 1970scame up as alternative to Tyler's model which had been identified with some deficiencies. The CIPP model providesba means for generating datarelating to four critical stages of programme operation viz: Context Evaluation: which continuously assesses needs and problems in the context to help decicion makers determine goals and objectives Input Evaluation: which assesses alternative means for achieving those goals and objectives so as to help decision makers choose optimal means Process Evaluation: which monitors the process both to ensure that the means are actually being implemented and to make necessary modifications

Product Evaluation: which compares actual ends with intended ends and eventually leads to a series of recycling decisions.

Stake's Congruence-Contingency (Responsive) Evaluation model

The model proposed by Stake in 1967 is of the view that programme evaluation should be concerned with three categories of conditions namely; antecedent conditions representing informal interactions of the learner with teacher and materials as well aqs significant others; transaction representing learner's interaction with teacher and materials; outcomes representing end-points, behavioural changes that are

anticipated at the end of instruction or upon completion of the programme.

3.4.3 Purposes of Evaluation of Agricultural Education Programmes

Evaluation of agricultural educational programmes among others serves the following purposes:

(b) To inform learners of their achievement
(c) To familiarize teachers with challenges/problems of the pupils
(d) To provide operational basis for continuous assessment
(e) To inform parent on the progress of their children and wards
(f) To provide guidance services
(g) For teacher accountability
(h) To ensure quality control of programmes

3.4.4 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 or programme that should be reviewed for improvement. It will also enable the school authorities to recognize the aspects of the programme that are being poorly executed so as to fashion out 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 (practical) type test
4. Problems (quantitative questions) type test

3.4.4.1 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;

1. description, explanation and prediction of a process
2. description of instruments, apparatus and so forth
3. factual knowledge
4. exposition to theoretical knowledge
5. interpretation and discussion of results of experiments

Examples of essay tests in agriculture are:

1. Discuss the contributions of agriculture to national economy
2. What is soil fertility?

Some advantages that are attributed to essay test are that it:
- encourages better study habits
- requires a high degree of critical thinking rather than rote learning
- reduces the possibility of cheating
- demand recall rather than identification

However, the essay-type test has been found to contain the following disadvantages or shortcomings:
- it is difficult to draw up good questions for the essay test
- marking and 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.

3.4.4.2Objective 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;
1. short-answer items or completion test
2. multiple-choice items test
3. matching items test
4. true-false items test

(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) Catheter
(d) Sickle

"Soil Erosion is controlled by"

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

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

- reduces the factor of chance in success
- ensures complete objectivity of scoring

Some of the disadvantages are that it:

- it is prone to malpractice/cheating by students
- aids recognition rather than recall
- it is difficult and time-consuming to construct

(iii) Matching Items

This type of objective test is essentially made up of 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 type is particularly useful when the learning ofa particular concept requires the association of two things in the pupils' mind.

Example of matching item test include:

Match items on column A against item/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-item test is usually used for testing factual recall and definition 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

3.4.4.3Written 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 classification of Implements used in farm operations, livestock management practices, common weeds, seeds of crops, diseases of plants, pests, fertilizers, soil, rocks and farm processed products.

Self-Assessment Exercise(s)

1 "Evaluation" of Agricultural programmes can be defined as:
……
……
……

2 Evaluation of agricultural educational programmes among others serves the following purposes:

a……
……
b……
……
c……
……
d……
……..
e……
…….

3 A comprehensive evaluation of agricultural education programmes can be achieved by the use of the following evaluation models:

a……
b……
…….
c……
…….
d……
…….
e……
……

4 For evaluation to be said to be effective it should;

a……
……

b……
……

c……
……

d……
……

4.0 Summary

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.

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.

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6.0 Possible Answers to Self-Assessment Exercises

1 Briefly define "Evaluation"

Evaluation can be defined as the systematic process or body of processes by which information or data is collected, collated and analyzed in our efforts to judge and assess all the component parts of a programme of study with a view to determining their degree of acceptability, merit, appropriateness, goodness, attainability, desirability or otherwise.

2 Evaluation of agricultural educational programmes among others serves the following purposes:

a. To inform learners of their achievement
b. To familiarize teachers with challenges/problems of the pupils
c. To provide operational basis for continuous assessment
d. To inform parent on the progress of their children and wards
e. To provide guidance services
f. For teacher accountability
g. To ensure quality control of programmes

3. A comprehensive evaluation of agricultural education programmes can be achieved by the use of the following evaluation models

(i) Tyler's objecties-centered model
(ii) CIPP model
(iii) Scriven's Goal free model
(iv) Stake's Responsive model
(v) Eisner's Connoisseurship model

4 For evaluation to be said to be effective it should;

a. Focus on the appraisal of how the Intended Learning Outcomes or Objectives of the programme are being achieved

b. Make provision for the participation of all those involved in theexecution of the programme such as teachers, pupils and the school authorities.

c. Be continuous so as to make provision for occasional stock-taking of the whole programme or at least a segment of it.

d. 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.

MODULE 4 PREPARING FOR AGRICULTURAL SCIENCE TEACHING

UNIT 1 AGRICULTURAL SCIENCE CURRICULUM AND SYLLABUS

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 Intended Learning Outcomes (ILOs)

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

- understand the perspectives, meaning and scope of curriculum in agriculture
- understand purpose and process of curriculum development in agriculture
- identify constitutes a good agriculture curriculum and its components
- understand aims and statements of learning outcomes in agriculture
- explain syllabus as a subset of curriculum.

3.0 Main Content

3.1 Meaning/Definitions of Curriculum

1. 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.

2. 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.
3. Curriculum is a process involving the learner and a series of experience.

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

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

6. 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.

7. 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.
(vi) 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 Programme Components of Curriculum

A standard curriculum is made up of four cardinal components namely; Programme of Studies, Programme of Activities, and Programme of Guidance

Programme of Studies
Traditionally schools have focus on programme of studies which are the various subjects or courses of study such as agricultural science, biology, chemistry, physics economics and others. By studying these subjects students learn and master ways of solving problems in different aspects of life.

Programme of Activities
Apart from the teaching of specific subjects, schools also organize learning activities which often are referred to as co-curricular or extra-curricular designed to strengthen knowledge, attitudes, values and skills acquisition. Examples of such activities include; excursions, field-trips,

cultural activities sports and farm-clubs. These activities enable pupils to acquire some basic life survival skills.

Programme of Guidance

The programme of guidance is designed to help learners acquire competence in self direction, or self -guidance. Young learners need to be assisted in making necessary adjustments in life, in choosing careers as well as in managing problems and challenges of life now and in the future. The programme of guidance has three sub-components namely:

1. Vocational guidance – that helps learners to make wise decisions of career or vocations, based on their interet, ability and inate potentials.
2. Educational guidance – that seeks to help learners identify academic difficulties so as to find solutions to them. Educational guidance also helps each pupil toin choosing subjectscombination correctlywith reference to a n anticipated life vocation.
3. Personnal-social guidance – that helps learners to experienceholistic development in areas of vocations, personal, social, mental/cognitive and emotional problems and challenges.

3.1.3 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

3.1.2.1Aims 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:

1. must be stated in specific, measurable behavioural and observable terms.
2. it must be student oriented (student-centred) rather than teacher oriented.
3. instructional objectives represent the consequences of some learning experiences and not the learning experience itself.
4. it should specify what the children are to do with the available materials in order to acquire the consequences intended in the learning experience
5. it must have two dimensions- a behavior dimension and a content dimension

.6. The behavior and content dimension must be adjusted to the age and ability or to the class level which the child belongs
7. There must be a clear relationship between evaluation and instructional objectives.

3.1.3.1 The Importance of Stating Objectives in Agriculture

1. Teachers state objectives so as to get the direction of educational development

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

3. Objectives form one of the major bases for evaluation.

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

Objectives

Content

Methodology

Evaluation

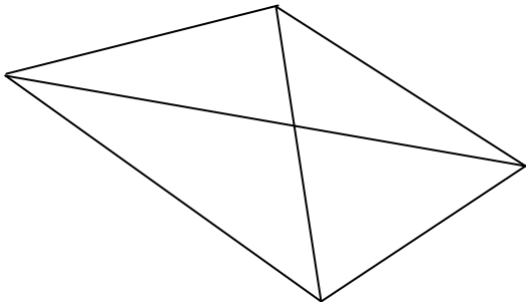
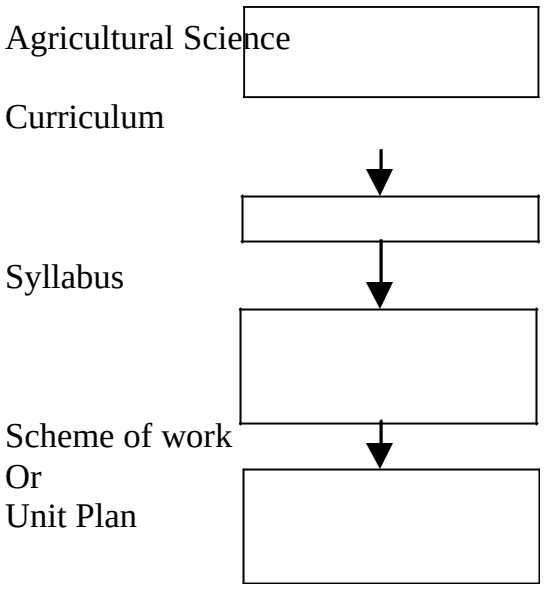


Fig. 1: Interrelated Components of Curriculum

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



Designated by a team of experts comprising subject specialists, education specialist, classroom teachers, etc.

Drawn up by a team comprising

Head of Science and subject heads

Drawn up by subject

Drawn up by classroom teachers

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

Self-Assessment Exercise(s)

`

1 In the context of agricultural education, curriculum is defined as:
……
…….
……
…….
……
…….

2 Outline the three cardinal programmes of curriculum in agricultural education:
a……
…….

b……
……

c……
……

3 State three reasons why curriculum development is important in the teaching of agriculture.
a……
……..
b……
……..
c……
……..

4 State any three characteristics of well stated instructional objectives:

a……
…….
b……
…….
c……
…….

5 Present in logical sequence in which plans of learning are organized:
a……
…….
b……
…….
c……
…….
d……
……

4.0 Summary

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.

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.
- Give three characteristics of instructional objectives.

5.0 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.

6.0 Possible Answers to Self-Assessment Exercises

1 In the context of agricultural education, curriculum is defined as:

a. The sum total of learning experiences a learner is presented with or exposed to under auspices of the school and/or guidance of the teacher.

2 The three cardinal programmes of curriculum are:

a. Programme of Study - which are the various subjects or courses of study such as agricultural science, biology, chemistry, physics economics and others. By studying these subjects students learn and master ways of solving problems in different aspects of life.

b. Programme of Activities – also often referred to as co-curricular or extra-curricular activities designed to strengthen knowledge, attitudes, values and skills acquisition. Examples of such activities include; excursions, field-trips, cultural activities sports and farm-clubs. These activities enable pupils to acquire some basic life survival skills.

c. Programme of guidance - designed to help learners acquire competence in self direction, or self -guidance. Young learners need to be assisted in making necessary adjustments in life, in choosing careers as well as in managing problems and challenges of life now and in the future

3. Reasons for planning the agriculture curriculum

a. To make sure the needs of the child is met so as to make a vocation from agriculture in future.

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

c. To enable the teacher to grow and acquire enough knowledge so as to cope with the

d. contents of the curriculum.

e. Curriculum actually gives direction on the type of educational activities the teacher has to fulfill, hence; to cope with the content required of him

4. Characteristics of well stated Intended Learning Outcomes include:
   i. Must be stated in specific, measurable behavioural and observable terms.
   ii. It must be student-oriented (student-centred) rather than teacher-oriented.
   iii. Behavioural outcomes represent the consequences of some learning
   iv. experiences and not the learning experience itself.
   v. It should specify what the children are to do with the available materials in order
   vi. to acquire the consequences intended in the learning experience
   vii. It must have two dimensions- a behavior dimension and a content dimension
   viii. The behavior and content dimension must be adjusted to the age and ability or to
   ix. the class level which the child belongs
   x. There must be a clear relationship between evaluation and intended learning outcomes.

5. Present in logical sequence in which plans of learning are organized

   1 Curriculum
   2 Syllabus
   3 Scheme of Work/Unit Plan
   4 Lesson Plan

UNIT 2 SCHEME OF WORK AND LESSON PLAN

CONTENTS

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 Intended Learning Outcomes (ILOs)

By the end this unit, you will be able to:

- state the scheme of work and lesson plan drawn from the syllabus
- understand that certain factors should be considered when drawing up the scheme of work and lesson plan
- understand that effective lesson plan has seven components.

3.0 Main Content

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

There is a great need to plan every course in order to ensure that allthe course work is covered. It is the teacher's 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.
6. The number of agriculture periods per week including practical periods and farm projects.
7. 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.

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

3.1.3 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.

3.1.4 A Typical example of a Lesson Plan

Although there is no pattern or format for lesson plan that can fit into all situations, the following format is suggested for your practice and adoption for future use..

Lesson Plan

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 labels 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.

Self-Assessment Exercise(s)

1. Make an outline of the content of a daily lesson plan

a……..
b……..
c……
d……

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

a……
……

b……
……

c……
……

d……
……

3 The scheme of work is drawn up for the following reasons:

a……
……

b……
……

c……
……

d……
……..

4.0 Summary

\In this unit, you have been exposed to leaning the concept of scheme of work and how it 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.

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.

5.0 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.

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

6.0 Possible Answers to Self-Assessment Exercises

1 Major components of a standard lesson plan/note of lesson are as follows:

a. Introduction – detailing preliminary information on subject to be taught, topic, duration of lesson, entry requirements etc.
b. Intended Learning outcomes
c. Content development
d. Procedure of lesson presentation
e. Evaluation procedure

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

- The need for logical sequence.
- The age; ability range and previous knowledge of the pupils.
- The amount of time required by each topic.
- The scheme should be prepared in time with the number of effective weeks of learning in a term or a year.

  The number of agriculture periods per week including practical periods and farm projects.
- A short note of resources and materials for each topic.

3 The scheme of work is drawn up for the following reasons:

a. To enable the teacher prepare himself for effective teaching.
b. To enable the teacher think through what he proposes to teach and how he will teach it.
c. To have records of what had been taught.

d. To avoid teaching what is not needed while omitting what is necessary.

e. To provide a seasonal sequence of teaching and proper coordination of the of activities.

f To provide for desirable learning outcome.

g To ensure adequate provision of suitable reference materials and teaching aids.

h To develop teachers' confidence.

UNIT 3 TEACHING PRACTICE

CONTENTS

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 Intended Learning Outcomes (ILOs)

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

- enumerate the characteristics of teaching practice
- state the objectives of teaching practice

- list the importance of teaching practice
- understand have the knowledge of selection procedure for teaching practice
- identify those who should take part in teaching practice and how to select them.

3.0 Main Content

3.1 Characteristics of Teaching Practice

The teaching practice period is characterized by the following:

1. the student teacher normally lives in or near the school to which he has been assigned;
2. s/he may not formally be required to study other courses during the period;
3. the student-teacher is placed under a cooperating teacher who guides him/her during the teaching practicum;
4. s/he forms a part of her/his cooperating school teaching staff and is expected to adjust to the prevailing conditions in the school;
5. 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:

1. provide experiences that give the student-teacher an opportunity to establish his/herself in the challenges of agricultural programme;
2. 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;
3. provide the student-teacher with the opportunity to establish self as a teacher;
4. help self to analyze subject-matter competencies;

5. 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;
6. provide self with the opportunity to acquire skills and techniques that enhance self-teaching competencies; and
7. train self to identify factors that influence the effectiveness of the teaching-learning process and to find ways to direct or control them.

3.2 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:

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

3.3.2 Merits to Pupils, Staff and School

The merits of Teaching practice include:

1. helps to improve the supervisory skills of the cooperating teacher,
2. makes possible the contacts between school, staff and education experts from the colleges or university,
3. 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,

4. provides new ideas for improving existing curricular practices,
5. 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:

1. 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

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

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

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

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

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:

1. 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;
2. The student-teacher must be physically and mentally fit;
3. Ability to apply the theories of learning in a teaching situation;
4. Possess a working knowledge of child growth and development;
5. 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:

1. She/he must be a competent teacher of agriculture with professional training and some years of experience;
2. She/he must be able to work with novice and inexperienced teachers;
3. She/he must possess the capacity for personal professional growth and maintain good educational philosophy and professional ethics;
4. 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:

1. have a good quality agricultural programme;
2. possess adequate facilities including a school farm to be made available to the student-teacher;
3. has easy accessibility to the school and its farm projects for the student-teacher and the college supervisor;
4. must be typical of secondary schools in the area covered by the teaching practice programme;
5. should have the approval of the school Board of Governors or 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:

1. obtaining information about the school in which he will be teaching, such as its location, subjects offered and classes available;
2. visiting the school prior to teaching practice to get acquainted with the principal, cooperating teacher, pupils, syllabus, scheme of work and time table;
3. planning the teaching practice with his college supervisor on the basis of information obtained during the visit to the school;
4. 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;
5. 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:

1. selecting student teaching centres;
2. assigning student teachers to schools and supervising teachers;
3. liaising between the college and cooperating school;
4. assisting the student teacher in developing his/her teaching programme;
5. liaising with the co-operating teacher;
6. 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:

1. gives approval for student teaching in his school;
2. secures accommodation for the student-teacher/s;
3. briefs the student-teachers on important matters relating to the school;
4. encourages the student-teacher to accomplish his/her tasks;
5. keeps progress reports of individual student-teacher from information received from the cooperating teacher;
6. 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:

1. helping the student teacher in all stages of teaching practice from orientation, observation and assigning activities to responsible reaching.
2. assisting the student teacher in planning field work or farm experiments.
3. familiarizing the student teacher with the school environment and the school farm programme.
4. planning instructional activities cooperatively with the student-teacher (indoor and outdoor agricultural activities not excluded).
5. 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:

1. neither be embarrassed by his presence nor try to embarrass the student-teacher**.**

2. 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.

Self-Assessment Exercise(s)

1. Importance of Teaching Practice Programme include:

   a……
   …….

b……
……

c……
……

d……
……

2 Participants in the supervision of student-teachers in practice are:

a……
……..

b……
…….

c……
…….

d……
……

3 The roles of the cooperating teacher are:

a……
……

b……
……

c……
……

d……
……

4 Selecting a typical school of practice for student-teacher of agriculture should satisfy the following conditions:

a……
…….

b……
…….

c……
…….

d……
…….

4.0 Summary

This unit has afforded you the opportunity of knowing what teaching practice is, its characteristics and objectives and the ways its benefits affect the student teacher, the pupils, the school where the teaching practice takes place and to the college or university. You have also learnt the procedure for the selection of participants in teaching practice, as well as identifying their roles and responsibilities.

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.

5.0 References/Further Readings

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

6.0 Possible Answers to Self-Assessment Exercises

1. Importance of Teaching Practice Programme include:
   a. provide experiences that give the student-teacher an opportunity to establish his/herself in the challenges of agricultural programme;

b. 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 etc
c. provide the student-teacher with the opportunity to establish self as a teacher;
d. help self to analyze subject-matter competencies;
e. provide the student-teacher with the opportunity to practise management activities that aid and assist learning activities (such as classroom management, instructional planning, preparation of materials, presentation of information, problem-solving etc.
f. provide self with the opportunity to acquire skills and techniques that enhance self-teaching competencies; and
g. train self to identify factors that influence the effectiveness of the teaching-learning process and to find ways to direct or control them.

2. Participants in Teaching Practice supervision include:
   a College/University based supervisor – assigned from the training institution
   b Cooperating teacher- who is subject teacher in the school of practice
   c Cooperating school – where student is practicing
   d Head teacher or school principal

3 Roles of the cooperating teacher include**:**
   a. Helping the student teacher in all stages of teaching practice from orientation, observation and assigning activities to responsible reaching.
   b. Assisting the student teacher in planning field work or farm experiments.
   c. Familiarizing the student teacher with the school environment and the school farm programme.
   d. Planning instructional activities cooperatively with the student-teacher (indoor and outdoor agricultural activities not excluded).
   e. Fostering cordial relationships between the student-teacher and other individuals in the school.

4. Selecting a typical school of practice for student-teacher of agriculture should satisfy the following conditions:
   a. have a good quality agricultural programme;

b. possess adequate facilities including a school farm to be made available to the student- teacher;
c. has easy accessibility to the school and its farm projects for the student-teacher and the college supervisor;
d. must be typical of secondary schools in the area covered by the teaching practice programme;

UNIT 4 TEACHING PRACTICE PREPARATION AND IMPLEMENTATION

CONTENTS

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 Intended Learning Outcomes (ILOs)

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

- explain how you can prepare for teaching practice
- understand you can plan for teaching practice
- explain how teaching practice can be implemented.

3.0 Main Content

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:

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

2. obtains information about the number of pupils enrolled in his subject and the classes s/he will teach;
3. meets his/her class for the first time, as well as other members of staff;
4. visits the laboratories and check the available instructional materials;
5. 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.

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:

1. observes the teaching procedure followed by the supervising teacher and taking note of the general routine;
2. familiarizes with available teaching materials;
3. acquaints self with the pupils;
4. identifies areas in which plans can be made for immediate participation.
5. meets his/her class for the first time, as well as other members of staff;
6. visits the laboratories and check the available instructional materials;
7. 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.

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

3.2 Planning Teaching Practice

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:

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

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

3. **Methods and Procedures**
   Learning can take place through carefully planned and skillfully executed procedures

4. **Materials needed**
   These are theresources needed which are based on the content and Procedures reference to a subject matter.

5. **Teaching Sequence**
   Time relationship of the development of ideas.

3.2.2.2Lesson 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:

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

Self-Assessment Exercise(s)

1 Student-teacher on the first day at school of practice should observe the following protocol:

a……
……
b……
……
c……
……
d……
……

2 The formal process of providing student-teachers with talk-shops, counselling and advisory hints in preparation for field practice is called ……

3 In implementing the Teaching practice plan student-teacher should observe the following protocol:

a……
…….

b……
……

c……
……

d……
……

e……
……

4.0 Summary

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.

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.

5.0 References/Further Readings

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

6.0 Possible Answers to Self-Assessment Exercises

1 Student-teacher on the first day at school of practice should:

a observes the teaching procedure followed by the supervising teacher and taking note of the general routine;
b familiarizes with available teaching materials;
c acquaints self with the pupils;
d identifies areas in which plans can be made for immediate participation.
e meets his/her class for the first time, as well as other members of staff;
f visits the laboratories and check the available instructional materials;
g 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.

2. The formal process of providing student-teachers with talk-shops, counselling and advisory hints in preparation for field practice is called "Orientation"

3. In implementing the Teaching practice plan student-teacher should observe the following protocol:

a Read the plan thoroughly so that he is familiar with what is to be taught, although he should avoid memorizing it.
b Avoid holding the plan while teaching, but glance at it occasionally to make sure you are following the procedure laid out.
c Listen to the pupils, response and adapt your lesson accordingly without abandoning your set goals.
d Use every technique you can to motivate and stimulate interest.
e Be fair, friendly and firm.
f Use examples from the community as often as possible.
g Enforce discipline but at the same time be friendly.
h Keep to the time schedule.