

METHODS OF TEACHING SCIENCE, BASIC TECHNOLOGY AND COMPUTER STUDIES



EDITED BY

Professors: I. O. Abimbola, A. S. Olorundare,
M. O. Fajemidagba, Esther O. Omosewo, S. A. Onasanya,
Dr. M. A. Fakomogbon & Dr. N. A. Adedokun-Shittu

ADENIJI S.M.
S.S. Olat
05/07/2017

Methods of Teaching SCIENCE, BASIC TECHNOLOGY AND COMPUTER STUDIES

Edited by

**Professors: I. O. Abimbola, A. S. Olorundare,
M. O. Fajemidagba, Esther O. Omosewo, S. A. Onasanya,
Dr. M. A. Fakomogbon & Dr. N. A. Adedokun-Shittu**

FACULTY SUB-COMMITTEE ON SUBJECT METHODOLOGY TEXTBOOKS

- | | |
|----------------------------|-------------|
| 1. Prof. Allen A. Johnson | Chairperson |
| 2. Dr. B. A. Shaw | Member |
| 3. Dr. T. O. Ogunlana | Member |
| 4. Dr. Chetanmeha L. Desai | Member |
| 5. Dr. C. O. Ogunlana | Member |
| 6. Mr. A. A. John | Secretary |

TABLE OF CONTENTS

TITLE PAGE.....	i
COPYRIGHT PAGE.....	ii
PREFACE.....	iii
SUB-COMMITTEE ON SUBJECT METHODOLOGY TEXTBOOKS.....	v
TABLE OF CONTENTS.....	vi

TEACHING SCIENCE SUBJECTS: AGRICULTURAL SCIENCE, BIOLOGY, MATHEMATICS, PHYSICS, CHEMISTRY

TEACHING AGRICULTURAL SCIENCE.....	1
------------------------------------	---

CHAPTER 1

LESSON NOTE PREPARATION IN AGRICULTURAL SCIENCE <i>Jimoh, S.B.</i>	2
---	---

CHAPTER 2

CURRENT INNOVATIONS IN AGRICULTURE <i>Jimoh, S.B.</i>	12
--	----

CHAPTER 3

GUIDING PRINCIPLES FOR SELECTION OF TEXTBOOKS IN AGRICULTURAL SCIENCE <i>K.O. Afolabi</i>	16
---	----

CHAPTER 4

PROBLEMS AND PROSPECTS OF AGRICULTURAL EDUCATION IN NIGERIA <i>K.O. Afolabi</i>	21
--	----

CHAPTER 5

METHODS OF TEACHING AGRICULTURAL SCIENCE <i>Jimoh, S.B.</i>	25
--	----

TEACHING BIOLOGY.....	30
-----------------------	----

CHAPTER 1

AIMS AND OBJECTIVES OF TEACHING AND LEARNING BIOLOGY IN NIGERIA <i>A.R. Ahmed</i>	33
--	----

CHAPTER 2

LESSON NOTE/PLAN PREPARATION FOR BIOLOGY TEACHING

Mulkah, Adebisi Ahmed 37

CHAPTER 3

POST ANALYSIS OF OBSERVATION AND PREVIOUS PEER TEACHING

Mrs. Hafsat I. Alabi & Prof. I.O. Abimbola 66

CHAPTER 4

CRITICAL EXAMINATION OF THE SCHOOL CERTIFICATE SYLLABUS IN BIOLOGY

Dr. Bello, Ganiyu 70

CHAPTER 5

CURRENT INNOVATIONS IN BIOLOGY AND BIOLOGY TEACHING

Mrs. Hafsat .I. Alabi & Prof. I.O. Abimbola 75

CHAPTER 6

GUIDING PRINCIPLES FOR SELECTION OF TEXTBOOKS IN BIOLOGY

Mulkah Adebisi Ahmed 85

CHAPTER 7

PROBLEMS AND PROSPECTS OF TEACHING BIOLOGY

Dr. Bello, Ganiyu 91

CHAPTER 8

METHODS OF TEACHING SPECIFIC ASPECTS OF BIOLOGY

A.R. Ahmed 99

TEACHING MATHEMATICS 106

~~D~~CHAPTER 1

LESSON NOTES PREPARATION FOR TEACHING MATHEMATICS

Khadijat S. Ameen Ph.D 109

CHAPTER 2

POST ANALYSIS OF OBSERVATION AND PREVIOUS PEER TEACHING EXERCISE

Khadijat S. Ameen Ph.D 115

CHAPTER 3

CRITICAL EXAMINATION OF THE SCHOOL SYLLABUS IN MATHEMATICS

Saidat M. ADENIJI & Medinat F. SALMAN Ph.D 118

CHAPTER 4	
CURRENT INNOVATIONS IN THE TEACHING OF MATHEMATICS	
<i>Khadijat S. Ameen Ph.D & Medinat F. Salman Ph.D</i>	123
CHAPTER 5	
GUIDING PRINCIPLES FOR SELECTION OF MATHEMATICS TEXTBOOKS	
<i>Saidat M. ADENIJI & Medinat F. SALMAN Ph.D</i>	127
CHAPTER 6	
PROBLEMS AND PROSPECTS OF TEACHING MATHEMATICS	
<i>M. A. Akanmu Ph.D & M.O. Fajemidagba Ph.D</i>	135
CHAPTER 7	
SOME METHODS OF TEACHING MATHEMATICS AT THE JUNIOR AND SENIOR SECONDARY SCHOOL LEVELS I	
<i>Khadijat S. Ameen Ph. D & Medinat F. Salman Ph. D</i>	138
CHAPTER 8	
SOME METHODS OF TEACHING MATHEMATICS II	
<i>M. A. Akanmu, Ph.D & M. O. Fajemidagba, Ph.D</i>	142
TEACHING PHYSICS	147
CHAPTER 1	
LESSON NOTES PREPARATION IN PHYSICS.....	150
CHAPTER 2	
POST ANALYSIS OF OBSERVATION AND PREVIOUS PEER TEACHING EXPERIENCE.....	157
CHAPTER 3	
CRITICAL EXAMINATION OF THE SENIOR SCHOOL CERTIFICATE PHYSICS CURRICULUM.....	161
CHAPTER 4	
CURRENT INNOVATIONS IN PHYSICS TEACHING THE STUDENT PEER TEACHING STRATEGY.....	164
CHAPTER 5	
GUIDING PRINCIPLES FOR SELECTION OF A PHYSICAL TEXTBOOKS.....	167

CHAPTER 6 PROBLEMS AND PROSPECTS OF TEACHING PHYSICS AT THE SENIOR SCHOOL LEVEL IN NIGERIA.....	171
CHAPTER 7 SOME METHODS OF TEACHING PHYSICS..... <i>A. O. Akanbi & R. E. Mohammed</i>	173
TEACHING CHEMISTRY	180
CHAPTER 1 CRITICAL EXAMINATION OF THE SCHOOL CERTIFICATE SYLLABI IN CHEMISTRY <i>Upahi, Johnson Enero Ph.D</i>	183
CHAPTER 2 LESSON PLAN PREPARATION <i>Bashirat Titilope Imam & Adekunle Solomon Olorundare</i>	191
CHAPTER 3 SOME METHODS OF TEACHING CHEMISTRY IN NIGERIAN SECONDARY SCHOOLS <i>Bashirat Titilope Imam & Adekunle Solomon Olorundare</i>	199
CHAPTER 4 INNOVATIONS IN THE TEACHING AND LEARNING OF CHEMISTRY <i>Oloyede Solomon Oyelekan</i>	206
CHAPTER 5 GUIDING PRINCIPLES FOR THE SELECTION OF TEXTBOOKS IN CHEMISTRY <i>Upahi, Johnson Enero Ph.D</i>	213
CHAPTER 6 PROBLEMS AND PROSPECTS OF TEACHING SCHOOL CERTIFICATE CHEMISTRY <i>Oloyede Solomon Oyelekan & Adekunle Solomon Olorundare</i>	222
CHAPTER 7 POST -ANALYSIS OF OBSERVATION AND PREVIOUS PEER-TEACHING EXPERIENCES IN CHEMISTRY <i>Modupe M. Osokoya Ph.D</i>	228

CONTENTS

CHAPTER 1: Lesson Note preparation for teaching mathematics
Dr. Khadijat S. Ameen

CHAPTER 2: Post analysis of Observation and Previous Peer Teaching exercise
Dr. Khadijat S. Ameen

CHAPTER 3: Critical Examination of School Certificate mathematics Syllabus
Mrs. Saidat M. Adeniji & Prof Medinat F. Salman

CHAPTER 4: Innovation in the teaching of mathematics
Dr. Khadijat S. Ameen, & Prof Medinat F. Salman

CHAPTER 5: Guiding principles for selecting mathematics textbooks
Mrs. Saidat M. Adeniji & Prof Medinat F. Salman

CHAPTER 6: Problems and Prospects of teaching mathematics in Nigeria
Dr M. A. Akanmu & Prof M.O. Fajemidagba

CHAPTER 7: Some Methods of Teaching Mathematics at the Junior and Senior
Secondary School Levels of Education I
Dr. Khadijat S. Ameen, & Prof Medinat F. Salman

CHAPTER 8: Some Methods of Teaching Mathematics II
Dr M. A. Akanmu & Prof M.O. Fajemidagba

CHAPTER 2

POST ANALYSIS OF OBSERVATION AND PREVIOUS PEER TEACHING EXERCISE

Khadijat S. Ameen *Ph.D*

Objectives

At the end of reading through this material, students should be able to:

1. define the word teaching practice exercise.
2. carry out proper teaching exercise.
3. Differentiate between peer teaching and teaching practice exercise
4. mention the benefits and advantages of peer teaching.
5. report what goes on during the peer teaching exercise.
6. mention some of the characteristics teaching practice exercise.

Introduction

It is very important for student- teacher to understand various activities in teaching exercise such as the following:

- 1) Previous observation
- 1) Peer Teaching exercise
- 2) Characteristics of Peer Teaching
- 3) Benefits and Advantages of Peer Teaching
- 4) Post Observation of Peer Teaching
- 5) Meaning of Teaching Practice
- 6) Characteristics of Teaching Practice
- 7) Differences between Peer Teaching and Teaching Practice exercises.

Peer Teaching Exercise

The word 'peer' simply means a group of individuals of equal rank (or age). In education, peer group refers to pupils or students of the same class (or age). Peer teaching, therefore, involves a situation where a member of the group or class teaches other members of the same class. This is a preparatory teaching exercise for the actual teaching practice. In the exercise, the student- teacher is expected to prepare a full lesson note meant to guide or assist him or her in adequate presentation of the content of the knowledge to be imparted to other peers, who stand for the students he teaches. This is usually preceded by a rehearsal.

During the lesson presentation, a supervisor, usually the student teacher's lecturer will assess his performance. After the lesson presentation, the student teacher listens to the comment (s) by the supervisor and his/her peers / classmates that taught the class taught. Twenty-five minutes is usually allotted for peer teaching, but the supervisor may limit the peer teaching to a minimum of 10 minutes or more within which the student- teacher will teach all that has been initially prepared in a full lesson of 35 or 40 minutes. In peer teaching exercise, student- teachers will have to use as many skills as possible within the time allotted to him or her.

Characteristics of Peer Teaching

Peer teaching is characterized by the following;

- 1) It requires many skills when teaching peer group in a lesson.
- 2) A member teaches his/her classmate.
- 3) Maximum of 25 minutes is required in presenting a lesson meant for 40 minutes.

Advantages of Peer Teaching

- 1) Peer teaching encourages familiarity between the teacher and the students, thereby bringing cordial relationship.
- 2) It generates understanding and motivates the classmates to pay attention.
- 3) Students identify their colleagues by their names.
- 4) A friendly relationship between the teachers and other classmates makes the student - teacher to be more relaxed and confident in the lesson presentation.
- 5) Peer members feel relaxed to ask questions and pass comments.
- 6) It prepares student - teachers for the challenges that are likely to come up during the actual teaching practice exercise.
- 7) It stresses the importance and use of instructional resources to supplement the factual information to enhance meaningful understanding.

Limitations of Peer Teaching

- 1) Students are unnecessarily relaxed and, sometimes, do not take the exercise seriously.
- 2) Shortage of time
- 3) Lack of teaching materials (note that students are expected to improvise)

Post Analysis of Peer Teaching

- 1) Teaching exercise is easier for student - teachers that have already been through NCE training.
- 2) Student - teachers with NCE qualification are able to carry other students along in their teaching.
- 3) Students with NCE qualification might be able to manage their time than other students.

Teaching Practice

Teaching practice is an exercise whereby student teachers are posted to secondary schools within or outside the locality of their institution. They are expected to put into practice the knowledge and skills taught them in theory of instruction. They are to be observed on those methods taught to them whether they are practicable.

What Teaching Practice is about and Its Expectations

- 1) It exposes student- teachers to teaching experience.
- 2) The teaching experience usually lasts for a minimum period of six weeks.
- 3) The student-teacher assumes the teaching responsibility of the serving teachers.
- 4) Supervision of student - teachers during teaching exercise is carried out by lecturers in the Faculty of Education.

- 5) Student - teachers are expected to be punctual and regular in their respective school of assignment during the period of the teaching practice.

Revision questions

- 1) What are the major differences among micro-teaching, peer teaching and teaching practice exercise?
- 2) Mention five characteristics of peer teaching.
- 3) Describe and explain the term teaching.

References

- Farrell A. Margaret and Farmer A. Walter (1980). *Systematic Instruction in Mathematics*. For the company.
- Salman, M. F. Mathematics Methodology, Lecture Notes Edu 203. University of Ilorin, Menographed.
- Abimbola I.O. & Abolade A.O. (Editor) (2009). *Fundamental Principles and Practice of Instruction*. Ilorin, Bamitex Printing Press.