

METHODS OF TEACHING SCIENCE, BASIC TECHNOLOGY AND COMPUTER STUDIES



EDITED BY

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TEACHING MATHEMATICS

Edited by

M. O. FAJEMIDAGBA

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CHAPTER 1

LESSON NOTES PREPARATION FOR TEACHING MATHEMATICS

Khadijat S. Ameen *Ph.D*

Objectives

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

1. Understand the concept of a lesson note/ lesson plan.
2. Highlight the characteristics of a good lesson note/ lesson plan.
3. Itemize the importance of a good lesson note/ lesson plan.
4. Write a good lesson note/ lesson plan.
5. Identify stages involved in preparing a good lesson note/ lesson plan.

Introduction

It is very pertinent for the mathematics teacher to plan what he/she is going to teach before embarking on the teaching exercise. This would enable him/her consider all the available items that will facilitate meaningful delivery of the learning materials to the learner. In respect of this, the pre-service teacher needs to understand the following:

- 1) Concepts of lesson note / lesson plan
- 2) Characteristics of a good lesson note / lesson plan
- 3) Importance of a good lesson note / lesson plan
- 4) How to write a good lesson note
- 5) Stages involved in preparing a good lesson note

Concepts of Lesson Note and Lesson Plan

Daily lesson preparation involves putting together all the major activities to be carried out in a particular lesson. These activities include: the method to be used to introduce the lesson, presentation of the topic, evaluation of the lesson to be presented and the appropriateness of the instructional materials to be used.

The two terms are just the same. The concept **lesson plan/ lesson note** shows detailed information of how the elements of the lesson are systematically organized and sequenced for presentation over a period of time. A lesson plan / lesson note should be detailed enough to guide teaching. A lesson plan / lesson note guides the teacher to determine where the learners are going, how they are going to get there and how the teacher will know whether they have arrived. Lesson note/Lesson plan can be written in two ways: Tabular and Prose format. A lesson plan /lesson note is sometimes referred to as an outline of the content to learn but the elements in the content are basically the same. (Wikipedia,2007).

A lesson note /lesson Plan Has the Following Advantages:

- 1) assists the teacher in logical and orderly presentation of his/her lesson.
- 2) Reminds the teacher of the key points and techniques / methods to use in order to carry out a meaningful and successful lesson presentation.
- 3) serves as a guide to whoever is to assist the regular teacher whenever he/she is unavoidably absent from school.

- 4) guides the teachers in the selection of instructional materials appropriate for the topic to be taught.
- 5) reminds the teacher on how and when to use the chosen Instructional materials for a particular topic.
- 6) reminds the teachers on when and how to evaluate his/her lesson

Characteristics of a Good Lesson Note/Lesson Plan

An effective lesson note is expected to have the following features or characteristics:

- 1) should reflect the particular contents or concepts of the subject it is meant for.
- 2) make provision for adequate feedback.
- 3) meet the needs of the students as well as that of the teacher and the society at large.
- 4) make provision for adequate involvement and participation of the students at appropriate stages of the lesson.
- 5) should contain something new and challenging and thus, leading to advanced learning.
- 6) should be built on previous knowledge or past experience of the learners and proceeding from familiar to unfamiliar points or from known to unknown.
- 7) should provide time to exhibit the relationship of all supporting instructional materials with the tasks involved.

A model of a lesson note using the prose format

The daily lesson note preparation may take any convenient format, such as: the tabular, or prose format. The prose format could be broken into the following stages: Preamble, lesson presentation and evaluation. The preamble is the first stage which contains information about the school, the students, lesson objectives, instructional materials, entry behaviour, previous knowledge and introduction of the lesson. The required information in lesson presentation and evaluation of the lesson for teaching practice students are as follows using a student's particulars as case study.

Student's Name (surname first): Ahmed, Suliat Abiodun

Matriculation Number: 13/PD009

Student's Department: Science Education

Level: 300

Date: 10-04-2016

School: United Community Secondary School Ilorin

Class: SSI

Subject: Mathematics

Lesson topic: Basic Operations in other Bases

Sub- topic: Addition and subtraction in other Bases

Period: 2nd Period

Duration/Time: 8.40 am -9.20 am

Average age of students: 16 years

Instructional Materials: The teacher should ensure that relevant concrete objects are made available for learners to see in all lessons. If the concrete objects are not available, the teacher should improvise. This could be in the form of pictures, movies, demo kit, clay draw, etc.

References: MAN (2001).MAN Mathematics for senior secondary schools Book 1, 3rd edition, Ibadan University press plc, pp 3-5

Objectives: These are specific learning outcomes expected to be demonstrated by the learners after learning had taken place. Thus, such objectives are referred to as behavioural objectives. Objectives should reflect specific knowledge to be acquired by students and be able to demonstrate at the end of a lesson, so that the teacher and the students can mutually share the purpose of the lesson. These objectives should be specific, simple and clear.

The statements of objectives are different from aims or goals because the focus of the objective is on specific achievable learning outcomes that could be observed by the teacher within the period of the lesson. Also, the objective must reflect at least two of the three domains, namely, cognitive and affective skills or cognitive and psychomotor skills or affective and cognitive skills.

Entry Behaviour/ Previous Knowledge/ Self Induction: A learner's entry behaviour is his/her previous background knowledge that relates to the lesson, which the teacher wants to teach. Previous knowledge is now preferred to Entry behaviour because the meaning of learning has changed from a relatively permanent change in behaviour to a process of conceptual change. Previous knowledge should include knowledge gaps, misconceptions and alternative conceptions that the students may hold before the teacher gives instruction on the topic. It is therefore important that the teacher should find out about this before preparing for a new lesson to facilitate meaningful and successful learning. The following are questions as proposed by Green (1965) that can guide the teacher in estimating the Previous knowledge of students:

- a) What are pupils likely to know from formal teaching?
- b) What do they know from informal sources?
- c) What relevant experiences could they have had?

Introduction of the lesson: introducing a lesson involves the teacher carrying out some activities that will lead to the actual presentation of the topic to be learnt. The purpose of such activities is to arouse the interest/ capture the attention of the students. Examples of such activities are: presenting a circumstance or situation or event that could serve as preamble to the day's lesson. A lesson can also be introduced by asking questions or using of instructional materials that the students can interact with or the teacher can use to teach a concept. The introduction could also be in the form of a review of previous lesson or a general revision to stimulate the recall of the prerequisite knowledge or students' possible alternative conception and misconception. It is in this process that students get a hint of what is to be learnt.

Presentation of the Lesson/ Development: this is a stage of lesson note preparation that involves the selection of different instructions/ strategies as well as materials at appropriate steps in the lesson. In this stage, a series of students' and teacher's activities are combined together in such a way to have a well-integrated lesson. The presentation of a lesson is in steps or stages. Each stage/step indicates

the specific actions to be carried out either by the teacher or the students. These steps are a breakdown of all the activities the teacher intends to present to the students and the ones the teacher carries out during the lesson. There can be as many steps as the teacher wishes and should not be less than four (4), but it is advisable to have a reasonable number that the teacher will be able to cover within the duration of the lesson. During the lesson development, the teacher periodically assesses students' understanding of the lesson through questioning, assignment of specific tasks, and so forth. This is a kind of formative evaluation of students' learning outcomes, which is to come up before the end of the lesson.

Recapitulation: this is an act of repeating the main points/activities of the lesson that have been said/done by the teacher during the lesson. This stage is more of a re-teaching exercise. It is at this stage the teacher highlights the major points of the topic in a logical sequence. The normal lesson could involve so many regressions. Recapitulation straightens the lesson. Green (1965) highlighted some suggestions in questioning form that the teacher can ask during recapitulation as follows:

- a) what did we set out to do?
- b) what have we done?
- c) what remain to be done?
- d) who will do it?
- e) when will it produce result?(p.347)

Evaluation: this is the last stage of lesson presentation. It is an art of value judgment of the worth of a lesson

Evaluation could be done in the form of giving students class exercises or assignments.

The Purpose of evaluation is to:

- 1) find out how much the students have learned.
- 2) reveal knowledge gap, alternative conceptions held by students and mistakes that the students may have acquired from the lesson.
- 3) find out how much of what is learnt can be used by the students.

Evaluation can be conducted before the lesson, during the lesson and after the lesson, or altogether.

Evaluation conducted before the lesson is to find out the kind of knowledge that students are bringing to the lesson that the teacher may not anticipate adequately in the lesson plan so that he/she can make an immediate adjustment in the lesson. Also, evaluation conducted during the lesson is to find out things that students may get wrong during the lesson so that the teacher can do something about them immediately before the lesson goes too far or before students become confused, while the evaluation conducted at the end of the lesson is to find out how much of the whole lesson the students understand and can apply. It is a time to note what to prepare for during the next lesson that will make the students understand the lesson properly and be able to apply what they have learnt.

A SAMPLE LESSON NOTE IN MATHEMATICS

Student's Name: Oyinna, Edith J

Matric Number: 13/PD002

Student's Department: Science Education

Level: 300

School: Unilorin Secondary School

Class: JSS 2

Lesson Topic: Plane Shapes

Sub Topic: rectangle

Duration: 40mins

Date: 27/2/2016

Period: First period

Time: 8:00—8:40am

Average age of the Students: 14 years

Instructional materials and teaching aids: A wooden rectangular shape and a cardboard paper showing a diagram of a rectangle and cut out shapes.

References: MAN Mathematics for senior secondary school Book1, 3rd edition, Ibadan University press(plc), pp 138-144.

Objectives: *AT THE END OF THE LESSON*, the students should be able to:

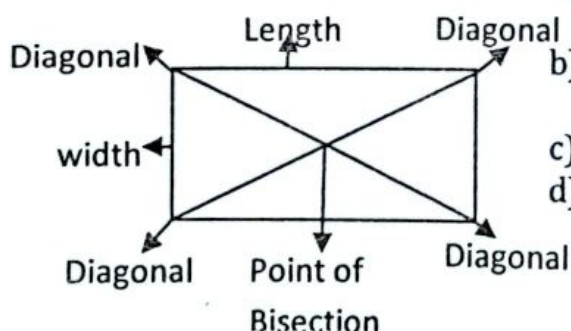
- 1) Identify a rectangle among other plane shapes
- 2) Identify the sides of a rectangle
- 3) Identify its interior angles
- 4) Draw its diagonals
- 5) Measure the sides to get the lengths and widths
- 6) Calculate the area of a rectangle

Previous Knowledge/ Entity Behaviour/Self Induction: students are familiar with shapes with four sides in their environments.

Introduction (5mins): teacher asks the students to look around their classroom environment and mention some shapes which have four sides. Students respond well to the questions asked by the teacher.

Presentation/Development of the lesson (32mins):

Lesson Content (8mins)



- a) The sides which are opposite to each other are equal in length.
- b) The angles which are opposite to each other are equal when measured in degree or radian.
- c) The diagonal bisects each other at right angle.
- d) The diagonal bisects the rectangle and two similar triangles are formed.

Method and Procedure (15mins): The teacher leads the students to measure the angle and sides of several rectangles, record their measurement. What generalization can we state based on the measurements (illustrate this relationship with the geo board)? The students respond by measuring, recording and making generalization based on the measurement.

Recapitulation (8mins): the teacher goes over the major points of the lesson with the students, such as:

- 1) A rectangle is made up of four sides.
- 2) The two opposite sides are equal in length
- 3) All the four interior angles are right angles.
- 4) The diagonals bisect each other at right angle.

Evaluation (2mins): the students are given different figures to interact with. Students are asked to measure angles, sides, diagonals in order to make some generalizations.

Assignment (2mins): the teacher gives the students the following problems to solve at home.

- 1) Calculate the area of a rectangle with the length of 15cm and breadth of 8cm.
- 2) What is the length of the rectangle of area 24cm^2 and width of 3cm?
- 3) Find the breadth of a rectangle of area 12.5cm and length of 10cm.

Revision questions

- I. Write a detailed lesson note on a topic in the senior secondary school mathematics curriculum for an SSII class
- II. What are the main differences between lesson plan and lesson note?
- III. Mention at least 5 reasons why a mathematics teacher should write a lesson note
- IV. What are the main differences between instructional objectives and behavioural objectives?

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