**EMERALD INTERNATIONAL SCHOOL, MPAPE ABUJA**

**LESSON PLAN AND NOTE FOR WEEK 8 ENDING FRIDAY 3RD MARCH, 2023**

**TERM: SECOND TERM**

**WEEK:** **WEEK 8**

**DATE** : **27TH FEBRUARY - 3RD MARCH 2023.**

**SUBJECT: BIOLOGY**

**CLASS : SS 1**

**TOPIC: ECLOGICAL FACTORS**

**SUB - TOPIC: 1**. **relationship between soil types and water holding effects.**

1. **Water holding capacity.**
2. **Simple measurement of ecological factors and measuring instrument.**

**PERIOD : 7th**

**TIME : 12: 30 - 1:00**

**DURATION : 40 minutes**

**AVERAGE AGE : 14 years**

**SEX: mixed**

**LEARNING OBJECTIVES:** by the end of the lesson,the students should be able to;

1. Explain the relationship between soil types and water holding effects of soil.
2. Explain the water holding capacity of soil.
3. State ecological factors and the instrument used in measuring them.

**RATIONALE:** the student should understand the ecological factors and the instrument used to measure them.

**PREVIOUS KNOWLEDGE:** The students have been taught terms used in ecology.

**INSTRUCTIONAL MATERIALS:** chart showing instrument used in ecological measurement.

**Reference Material:** Essential Biology foe Senior Secondary School by M.C. Michael.

**LESSON DEVELOPMENT**

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| **STEPS** | **TEACHER’S ACTIVITIES** | **PUPILS ACTIVITIES** | **LEARNING POINT** |
| **INTRODUCTION** | The teacher introduces the lesson by reviewing the previous lesson. | The students pay attention. | To arouse the students interest. |
| **PRESENTATION**  **STEP 1** | The teacher explains the relationship between soil types and water holding capacity. | The students pay attention. | To keep them focus. |
| **STEP 2** | The teacher asks the students to explain water holding capacity. | The students explains the water holding capacity. | To encourage critical thinking. |
| **STEP 3** | The teacher sates the ecological factors and the instrument used to measure them. | The students pay attention. | To keep them focus. |
| **BOARD SUMMARY** | **THE RELATIONSHOP BETWEEN SOIL TYPES AND WATER HOLDING EFFECT OF SOIL ON VEGETATION.**  **SOIL -** This is defined as the uppermost layer of the earth crust which provides support and nutrients for plant growth and habitat for some animals.  **TYPES OF SOIL**   1. **SANDY SOIL -** soil is said to be sandy if the proportion of sand particles in a sample of soil is very high. The particles are mainly quartz (sio) and have a size of 2.0mm in diameter.   **Effect on vegetation -** sandy soil is low in plant nutrients as result of high level of leaching, hence it support scanty vegetation or grassland.   1. **CLAY SOIL-** A soil is said to to be clayey if the proportion of clay in a sample of soil is very high. The realtive size of a clay particle is less than 0.002mm in diameter. It is a heavy soil because it is difficult to work or cultivate.   **Effect on vegetation -** clay soil has little ability to retain plant nutrients hence it can support light vegetation such as the forest and some luxuriant vegetation such as savanna or shrub.   1. **LOAM SOIL -** This is the mixture of sand and clay particles with high proportion of organic matter. Loamy soil is more fertile than either clay or sandy soil.   **Effect on vegetation -** loam soil is fertile as it contains plant nutrients. It is the best soil in which plant can grow. It support luxurient vegetation such as forest.  **WATER HOLDING CAPACITY OF SOIL.**  This is the ability of types of soil to retain water. Soil types have certain features which enable them to retain water. Example clay soil has the highest ability to retain water because it has fine soil particles while sandy soil can not retain water because it has large or coarse soil particles.  **SIMPLE MEASUREMENT OF ECOLOGICAL FACTORS AND MEASURING INSTRUMENT**   1. **rain gauge -** it is used to measure the amount of rainfall. 2. **Mercury in glass thermometer -** It is used to measure the lowest and the highest temperature of the day. 3. **Anemometer** - It is used for measuring the speed of wind. 4. **Wind vane -** It is used to indicate the direction of wind. 5. **Hygrometer -** This is use to measure relative humidity. 6. **Barometer -** it is used for pressure measurement. 7. **Photometer or light meter -** it is use to measure light intensity on land. 8. **Hydrophotometer -** it is use to measure light intensity on water. 9. **Colorimeter or pH scale -** it is used to measure acidity or alkalinity of soil or solution. 10. **Baemann funnel -** it is used to collect tiny organism that live in soil water. 11. **Tullgren funnel -** it is used to compare the numbers and types of animals in different soil samples. 12. **Sacchi disc -** it is used to measure the turbidity or transparency of water. 13. **Tape -** it is used to measure he height and length of objects. 14. **Depth guage or depth mater -** it is used for measuring the depth of running or standing water. 15. **Themograph -** it is to record long period temperature or humidity. 16. **Mter rule -** this is used for measuring the length of object. 17. **Water speed meter -**  it is used for measuring the speed of water flow. 18. **Slop guage -** it is used to measure the slope of an area of land. 19. **Pooter -**it is used to collect tiny insects from leaves or stem. | The students ask questions for further clarification. | To create room for slow learners. |
| **Evaluation** | The teacher evaluates the students with the following questions;   1. Define soil. 2. State the types of soil and state their effects on vegetation. 3. Explain the water holding capacity of the 3 types of soil. 4. State the instruments used to measure the following ecological factors. 5. Rainfall 6. Temperature 7. Direction of wind 8. Light intensity 9. Speed of water flow. | The students attempt the questions. | To ascertain their level of understanding. |
| **Conclusion** | The teacher concludes by coping the note on the board. She checks and marks the note. | The students copy the note on the board. | For future use. |
| **Assignment** | Draw and label the following instruments   1. Sacchi disc 2. Meter rule 3. Wind vane. | The students did and submit their assignment for marking and correction. | To encourage the students to study at home. |