**LESSON PLAN ON NATUREAL SCIENCE**

WEEK 1

**Name of Teacher**: Mr. Mac-Donald Arinze

Class: Year 7 & 8

Average age of learners: 13years

Gender: mixed

**Topic: Biodiversity**

Duration: 40 mins

Date: ending 12th January, 2024.

**CONTENT**: Taxonomy and Hierarchy of classification of living things

**RATIONALE**: The knowledge acquired will enable the learners to be able to correctly and accurately classify living things into groups based on their peculiar characteristics.

**PERFORMANCE OBJECTIVES**: By the end of the lesson, given an info graphics of various groups of living things, chart of concept mapping as well as videos displaying the various kinds of organisms, the learners should be able to:

1. **Cognitive Domain (Minds-on):**
2. Define correctly the term biodiversity
3. Define correctly the term Taxonomy
4. Enumerate the Aristotle classification criteria
5. Outline at least one limitation to Aristotle classification method
6. Mention correctly the various kingdoms of living things based on modern classification
7. Correctly mention the hierarchy of classifying living things
8. **Affective Domain (Hearts-on):**
9. Show willingness in the lesson by analyzing correctly the limitations of Aristotle classification and the need for the modern classification method currently used.
10. Appreciate the lesson by answering the teacher’s questions with keen interest.
11. **Psychomotor domain (Hands-on)**
12. Use info graphics and tables to vividly classify living organisms based on the way they move.
13. Implore a concept map to show the five kingdoms of living things and use an inverted pyramid to show the number distribution across the hierarchy of classification
14. **Interpersonal domain:** (Learners’ ability to interact with others and share knowledge):
15. Discuss elaborately in groups and share knowledge and experiences acquired.

**ENTRY/ENTERING BEHAVIOUR:** Learners are familiar with the various living organisms found in their environment.

**INSTRUCTIONAL MATERIALS:** Laptop/desktop, projector, videos, printed images, charts, marker, whiteboard and textbooks.

**KEYWORDS**: Biodiversity, Taxonomy, Hierarchy, Protists, Monera, Fungi, and species

**INSTRUCTIONAL PROCEDURE:** Check table below.

**TABLE: INSTRUCTIONAL PROCEDURE**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Duration** | **Content Development** | **Teaching Strategies** | **Instructional Strategies** | **Specific Instructional Materials in Use** | **Teacher’s Performance Activities** | **Students’ Performance Activity** | **Learning Point** |
| 5 mins | Asking Provocative questions | Set Induction | Brainstorming | Marker, Whiteboard | The teacher divides the learners into groups and asks the learners to group some household items and objects based on their uses, place they are kept and size. | Learners attempts to group the items and hence answer the probing questions that the teacher has given them after brainstorming. | Learners have been able to understand the need for grouping things based on some certain features they share in common. |
| 14mins | -Definition of Taxonomy  -Aristotle classification criteria and it’s limitations | Use of examples and illustrations, demonstration, planned repetition, stimulus variation, questioning and reinforcement. | Think-pair-share | Pictures of penguin,butterfly, elephant,crocodile, eagle, ostrich, human, dolphins e.t.c | The teacher defines taxonomy as science of classification. He then tells students to use Aristotle criteria to classify living things in a particular group. | The learners identify the challenges of the use of Aristotle classification, pay attention to the teacher, generate new ideas and integrate them with other concepts. | The learners have learnt the definition of Taxonomy, and can mention the limitations of Aristotle classification criteria. |
| 8mins | -Kingdoms of living things | Planned repetition and use of examples | Concept mapping | Pictures of various organisms belonging to the various kingdoms | The teacher lists the five kingdoms of living organisms thus: Animals, Plants, Fungi, Protista, and Bacteria/monera | The students listen to the teacher as he outlines the various examples of organisms in each kingdom. | The learners have learnt the five kingdoms of living organism and some organisms found in each kingdom. |
| 8mins | -Hierarchy of modern classification | Use of examples, planned repitition and illustrations | Role-play, mnemonics | Charts showing the number distribution of organisms across each taxonomic level. | The teacher lists the order of classification of living organisms. | The learners uses the mnemonics introduced by the teacher to memorize the hierarchy of classification. | The learners have learnt the hierarchy of classification. |

**EVALUATION:** The teacher evaluates the lesson using the following questions

1. Define the term biodiversity
2. Define the term Taxonomy
3. Enumerate any two of the Aristotle classification criteria
4. Outline at least one limitation to Aristotle classification method
5. Mention the five kingdoms of living things based on modern classification
6. Mention the hierarchy of classifying living things

**CLOSURE:** The teacher summarizes the lesson by guiding the learners in going through the main points of the lesson, discussing the hierarchy of classification. The teacher gives the learners some time to reflect on what they have learnt, ask questions and as well take corrections.

**ASSIGNMENT (HOMEWORK):** Analyze how a foreign friend from United Kingdom can locate you in your school, representing your description in an organized order.

**Actions to carry forward:** The students having learnt the hierarchy of classification should be able to attempt classifying man.

**Biodiversity**

Biodiversity is a term used to describe the great variety of living organisms on earth and their varied habitats.

There are just so many kinds of organisms which over millions of years have adapted to live in a specific type of environment in other to ensure survival.

**Taxonomy**

Taxonomy is the branch of biological science that studies the classification of living things.

**Activity**: Group some everyday objects used at home based on:

(a) Where they are found

(b) State their uses

***Instructions***:

1. Work in group of three

2. Carefully observe each items displayed

3. Use a table with headings: sitting room, kitchen, bathroom, bedroom, playground to sort the objects/items displayed.

***Question***

1. Do you think it is important to classify things?

2. Give a reason to support your answer above

**Aristotle's classification of living things**

**Aristotle** was a Greek philosopher and a thinker who loved about 2400 years ago. He was the first scientist to classify living things into either "Plants" or "Animals".

Then he further divided animals into; those "with blood" and those "without blood".

Lastly he also divided animals based walkers, flyers, and swimmers based on their method of movement.

**Activity**: use the chart containing pictures of penguin, butterfly, elephant, crocodile, eagle, ostrich, human, dolphin, bats, Amoeba.

***Instructions***:

1. Use Aristotle's classification method to classify the animals based on the way they move.

***Questions***:

1. Were there any animal which you battle to classify into a particular group and why?

2. Do you think there is a problem using Aristotle's classification method?

As more and more animals, plants and microorganisms where discovered, scientists started questioning Aristotle's classification system, because it was not convenient to place certain organisms in a particular group as they show distinct characters.

Example, Mould was initially seen as a plant but since it lacks chlorophyll and could not manufacture it's own food it is not in real sense a plant.

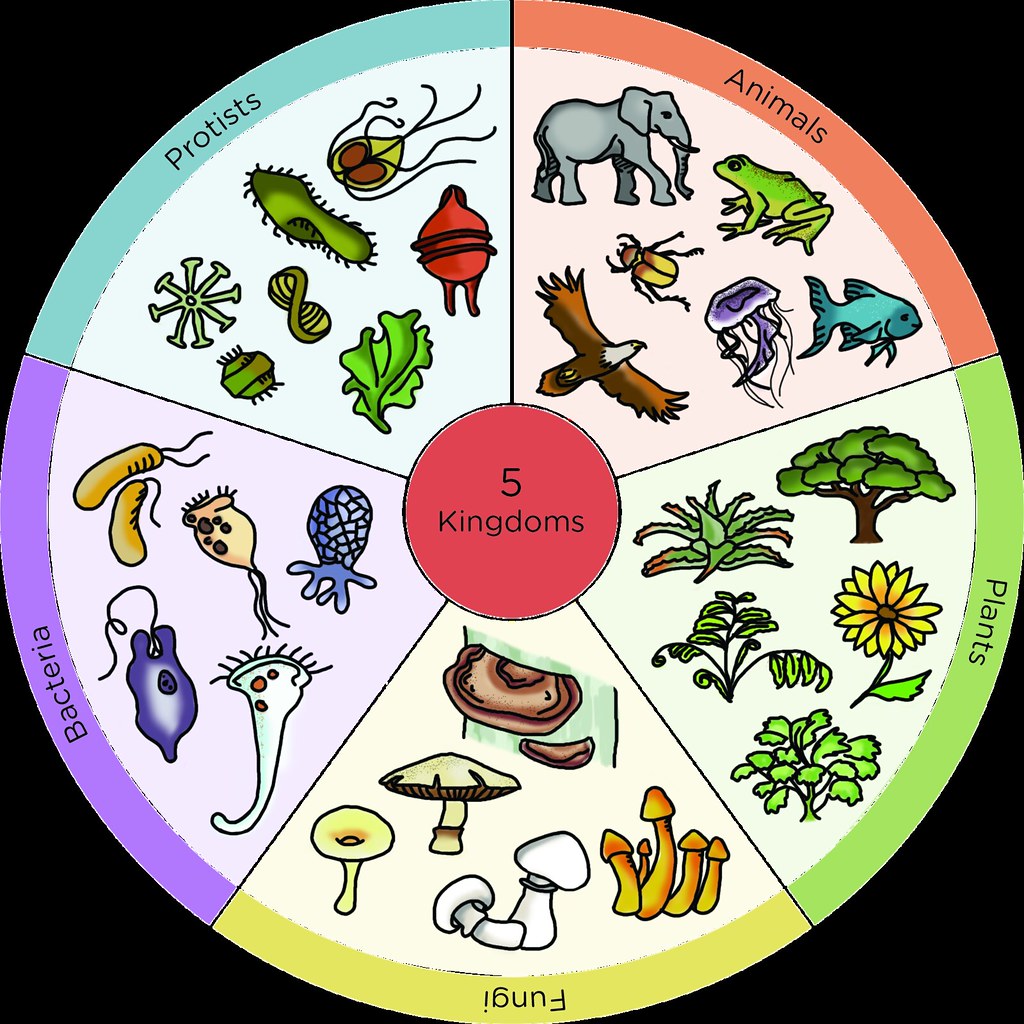
**Modern classification system**

In 1700s, **Carl Linnaeus** developed a classification system that classified organisms according to their similarities, functions and relationships with other organisms.

Today, with the use of microscope and the knowledge of genetics and evolution, we can classify living organisms more accurately according to their shared characteristics.

Modern classification system tried to group all living things into five broad Kingdoms:

* Animals
* Plants
* Fungi
* Protista
* Bacteria/Monera



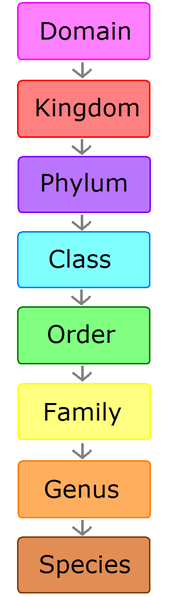
**Hierarchy of classification**

The classification system for organisms also needs to divide organisms up further as each kingdom contains thousands of different types of organisms.

Each Kingdom is divided into smaller groups or division called **phyla**. Organisms with similar characteristics will occupy a similar phylum, smaller groups called **classes** are found and each class is further divided into **orders**, **families**, **genera** and then **species**.

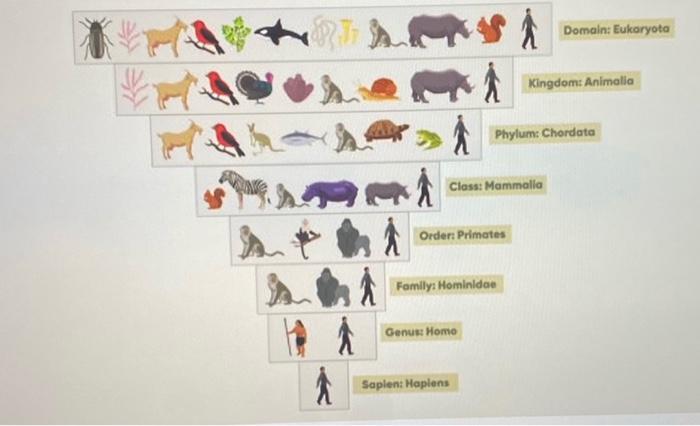
A kingdom is a very big group containing large number of organisms, whereas a species is much smaller group containing few organisms.

**Diagrammatic representation of hierarchy of classification**



* **King - Kingdom**
* **Ph**illip - **Phylum/Phyla**
* **C**uts - **Class**
* **O**pen - **Order**
* **F**ive - **Family**
* **G**reen - **Genus**
* **S**nakes - **Species**

**Classification of man using the taxonomical hierarch**

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