

SCIENCE AND TECHNOLOGY

CURRICULUM GUIDE

KEY STAGE 2

GRADE 5

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HUMAN RESOURCE DEVELOPMENT
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INTRODUCTION

We may express with very little opposition that science is the study of nature, which includes the biological and physical world. It is also accepted, that Technology on the other hand is a method of problem solving. This requires all the necessary resources and skills to be used to gather objective evidence. Then, design and develop gadgets geared towards making life easier and more pleasant for human kind.

The present science and technology curriculum for ks1 and 2 is designed to developed skills and habits of mind which are not only directed towards investigating and arriving at plausible conclusion but also finding answers to the problems that affect our daily life. Thus, science education will develop personal strengths which can be directed in a properly conceptualized and implemented science programme. These strengths include the ability to read, understand and write complete mathematical operations, to develop good communication, interpersonal and intra-personal skills, problem solving skills and critical attitude to work.

The Curriculum guide has proposed a number of science activities geared towards helping all pupils develop their personal strengths. The science and technology activities are also expressed in such a way that they should meet pupils' social and psychological needs of recognition, affection, security, belongingness and so on. Pupils will be able to demonstrate an awareness of social realities and natural phenomena, and their natural curiosity should be tapped and made the prime motivating device in inspiring them to learn about science and technology.

Through the science and technology programme, pupils will enjoy science as a fun activity which includes artistic experiences, creating projects, carrying out investigations that they planned, taking part in science games and contests (Science Fairs), recognizing that recreational activities and sports, example basketball have science information for students. Pupils involve in science activities will also recognize science as a means of advising them, on how to live healthy and safety life styles.

The agriculture strand included in the science and technology programme at every key stage of primary education is an indication that the ministry sees such important industry as being very critical in our food security policy. So in order to make sure that our pupils are given the opportunity to apply science and technological knowledge and skills, to identify and solve practical problems related to the sustainable use of agricultural resources, to facilitate production, distribution and marketing in order to meet the needs of society, is worthy that it be included in the science curriculum and not as a separate subject.

The Curriculum guide is organizes in such a way that it can be easily followed by teachers, pupils and parents. In the past it was felt that a process approach was the way forward to an authentic science curriculum guide. However, we at the curriculum unit have noticed that the teachers find it easier teaching from a content based model. The teachers must realise that science needs a lot of preparation if pupils are to gain and learn the maximum from their efforts. No longer should we concentrate our efforts on the above average pupils.

The differentiation of the curriculum in order to address the learning needs of all pupils should be our foremost goal if we are to comply with the ministry's vision of quality education for all. Very importantly, our pupils are not at the same level. This will have serious implication for the exposure of the curriculum to all pupils. Differentiation is one of the approaches that we can use to help all pupils to learn at their own pace and level. Some of the activities are less difficult than others, as a result, we should allow the more academically advanced pupils the opportunity to do these activities and give the easier activities to the slower or weaker pupils, so that they can develop a sense of achievement.

The science and technology curriculum was not designed for a text book but rather for the scientific advancement of all pupils. While we all agree that not all students will develop the necessary skills to be doctors and engineers, however, all our pupils must be given that choice rather than we making that choice for them. All our pupils can be equipped with the minimum science skills which can permit them to take part in a day to day conversation on the various natural phenomena and the way such phenomena impact our environment.

Thus, the programme is organized into four broad strands to include; Life Science, Earth and Space Science, Physical Science, and Agricultural science. It is expected that these strands together with the teachers' intervention and guidance will equip students with the necessary knowledge and skills required for the successful completion of the learning programme. The learning outcomes and success criteria should be seen as a step forward towards a pupil's centred learning programme.

We are calling on our hard working teachers to become facilitators in the management of the curriculum instead of being the distributors of knowledge. Pupils or pupils can play a part in contributing meaningfully to their own learning. When this is done, science becomes exciting, fun, interesting and enjoyable. We need to stimulate our pupils' interests by giving them the opportunity to express themselves with little or no interruption, is the way to go. Here we also have a role, only this time, we are clearing the misconceptions which will rise time and time again.

Science and technology are also linked to all the various subjects within the broader curriculum. Here we may mention that the scientific process is the preferred approach to investigating problems within the other subjects. The tools, devices and other gadgets necessary to deliver the other subjects are made possible through the timely inventions of technology. Science could not be completed without the added contribution of the social sciences, Health and family life education but more so for the direct impact of Mathematics and Language art on the scientific development of the pupils, the former for its measurement and calculation skills and the latter for its broad communication skills which are impacted on all pupils.

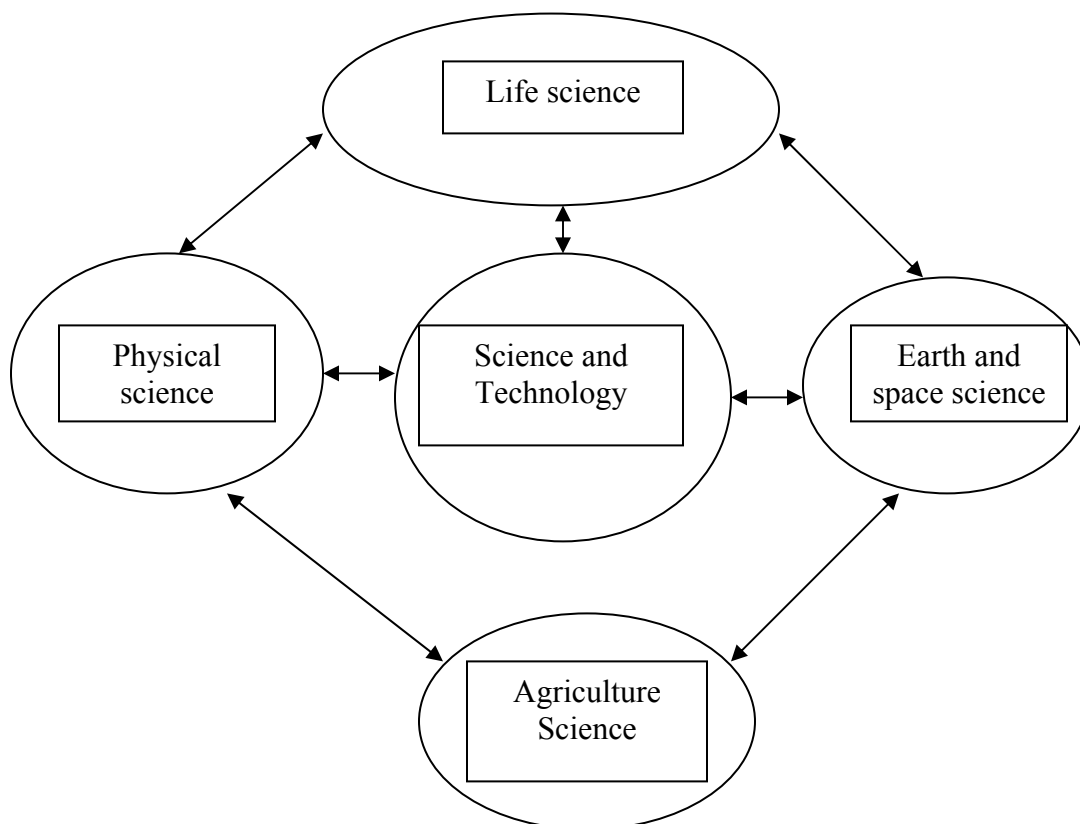
The term summary is broken in its various units, and is placed at the beginning of each term's activities. The term consists of four (4) units and each unit consist of the unit title, the learning outcome and the success criteria. A number of Success criteria have been designed to help students achieve the Learning outcomes and likewise a number of activities have been designed to facilitate the fulfilment of the success criteria. Teachers are kindly asked to carefully evaluate these activities and to feel free to develop their own activities to facilitate their students' specific

learning needs. Make use of the various learning opportunities that the internet affords us, so that our pupils can be exposed to a wide range of learning opportunities so that their experiences won't be limited.

It is not an easy task to teach science to pupil of grade K, however we can guide them through, questions and answers, matching answers and colouring objects. Help them to observe using their senses and to describe what they discover. As they develop help them to be excited about the world around them so that they can begin asking questions and give responses. Remember that their interest in the subject at an early age will help them develop a love for it later.

In ending, always seek the most recent information to help your pupils develop scientifically. Scientific information is not absolute and may change as we advance because of the advent of new technologies and better approaches. Our environment is a big and well equipped natural laboratory and you are called upon to make use of this God give nature teaching tool.

LINKAGE OF SCIENCE AND TECHNOLOGY TO THE PROGRAMME STRANDS



**SCIENCE AND TECHNOLOGY
SUBJECT SUMMARY**

GRADE 5 – TERM 1

KEY STAGE 2	SESSIONS
UNIT 1: LIVING THINGS IN THE ENVIRONMENT	6-8
AT 1: LO1	
SC's: (1-3)	
UNIT 2: WEATHER AND CLIMATE	8-10
AT 2: LO1	
SC's: (1-4)	
UNIT 3: ENERGY	8-10
AT 3: LO1	
SC's: (1-4)	
UNIT 4: AGRICULTURE SCIENCE	8-10
AT 4: LO1	
SC's (1-4)	

UNIT 1: LIVING THINGS IN THE ENVIRONMENT

AT 1: LIFE SCIENCE

SESSIONS: 6-8

LO1: INVESTIGATE AND DESCRIBE THE LOCAL ECOSYSTEM WITH RESPECT TO ANIMALS AND PLANTS

SUCCESS CRITERIA 1: Describe different types of ecosystem

CONTENT: An ecosystem is composed of all individuals of a species that occur together at a given place and time and all populations living together and the physical factors with which they interact. The physical factors include air, water and soil and minerals

ACTIVITIES:

- Take pupils on a nature walk where they can observe and identify the main characteristics of different ecosystems such as rainforest, marine, wetlands and mountains. Prepare a checklist for them to work with, example:
 1. what type of plants and animals observed
 2. what type of roots do the plants have
 3. where are the animals found
 - on tree
 - on the soil
 - in the soil
 - in water
 - under stone
 4. What do the animals feed on?
- On returning to the classroom, let the pupils discuss their observation. Pupils may produce a sketch of the ecosystem with the various animals and plants observed (use a double period for that activity)

SUCCESS CRITERIA 2: Identify abiotic factors (physical factors) within an ecosystem

ACTIVITIES:

- Let pupils make reference to their field trip mentioned above. Let them mention and talk about the physical factors and how they assist the

animals and plants in the ecosystem. These factors are stones, water, soil, rocks, shells and minerals

(See picture of wetland on page 56 of book 4 chapter 5 ‘Let’s Learn Science’)

- Wetlands are areas where land and water meet and have characteristics of both aquatic and terrestrial ecosystems
- Let pupils identify the abiotic factors which allows the animals to survive in the habitat (wetland) above

SUCCESS CRITERIA 3: Show how the abiotic (physical) factors within an ecosystem contribute to the support of life:

CONTENT

Stones – provide a home and protection for some living things such as snakes, frogs, lizards, crabs, millipedes, centipedes etc

air – support respiration and breathing for all living things

water – this is a medium for some animals to live; fishes, tadpoles, some snakes, water sticks insects, water scorpion, alligators, crocodiles. It also provides drinking water for all organisms to facilitate their body processes. The body of most organism is composed of mostly water

soil and minerals – Provide homes in the form of borrows for some organisms. It keeps them from getting over-heated or dehydrated. Minerals provide nutrients for many organisms as diet supplements. For example crabs, lizards, agouti, ants and termites and some snakes live in holes in the soil. Also mineral shells are used by soldier crabs, clams, periwinkles, oysters and other to protect their outer bodies. Human beings on the other hand use sodium chloride (a mineral to add taste to their meals). Other minerals such as potassium, calcium, nitrates and phosphates are important for proper growth and development of organisms and are absorbed in the form of vitamins

ACTIVITIES:

- Let pupils discuss how the plants and animals depend on the physical factors (abiotic) for survival. (See information in the content section.)
- Let pupils refer to the nature walk carried out in **SC1** and Let them discuss and show how plants and animals use the physical factors in the ecosystem for survival.

ASSESSMENT- Unit 1:**UNIT 1: Living things in the Environment**

Underline the correct word or words

1. The physical factors in an ecosystem is called (biotic, abiotic) factors
2. Abiotic (non-living) factors include (plants, air)
3. Biotic factors include (animals, minerals)
4. Name three physical factors in an ecosystem
5. Name two living (biotic) factors in an ecosystem
6. In an ecosystem stones provide (home, food) for the crabs and lizards
7. In an ecosystem air supports (respiration, shelter)
8. Mineral shells are used by (soldier crab, lizards) to protect their soft outer body
9. Using local materials design an ecosystem illustrating its various component
10. Write a letter to a local representative or minister of government stating why the rainforest should be protected/conserved from over logging
11. Write an article or essay on the topic “Stop over-fishing in our rivers” or “Save the Sisserou Parrot”.

RESOURCES

UNIT 1

Local Environment

Soil samples

Water samples

Stones/rocks

Wet lands

Ponds

Rainforest

Rivers

Sea shore/beach

UNIT 2: WEATHER AND CLIMATE

AT 2: EARTH AND SPACE

SESSIONS: 8-10

LO1: DEMONSTRATE AN UNDERSTANDING OF DIFFERENT TYPES OF CLIMATE

SUCCESS CRITERIA 1: Discuss and Distinguish between climate and weather

ACTIVITIES:

- Let pupils list the factors which influence the weather. These factors are sunshine, temperature, rainfall, wind and cloud cover. Then place pupils in small groups and let each group discuss how one of these factors influence the weather.

Using the table below let pupils observe and record the weather for the next 3 days. (Use a thermometer for this activity)

DAY	WEATHER	
1	TEMPERATURE - LOWEST - HIGHEST -	Cloudy/Not Cloudy Windy/Not Windy Rainy/Sunny
2	TEMPERATURE - LOWEST - HIGHEST -	Cloudy/Not Cloudy Windy/Not Windy Rainy/Sunny
3	TEMPERATURE - LOWEST - HIGHEST -	Cloudy/Not Cloudy Windy/Not Windy Rainy/Not Rainy

Let pupils answer the following questions based on their observations recorded in the previous table.

- 1 - How was the weather like for the past three days?
- 2 - Can you determine your country's climate based on the above information only? Why?
- 3 - What do you think the weather will be like for the next few days?
- 4 - What is the difference between weather and climate?

NB: Weather is the state or condition of the atmosphere at a particular place and time, whereas, climate is the overall pattern of the weather conditions at a particular place over a long period of time

SUCCESS CRITERIA 2: Identify three major climate zones on earth

ACTIVITIES:

- Using a globe help pupils to identify the three major climate zones on earth, these are – polar climate above 60°N and below 60°S – temperate climate between 30° and 60°N and between 30°S and 60°S, tropical climate between 30°S and 30°N. Let pupils guess the temperature in these climate zones. Then compare their estimates with the following table

CLIMATE ZONES	TEMPERATURE	
	Estimated	Real
Polar		
Temperate		
Tropical		

SUCCESS CRITERIA 3 & 4: (3) Discuss the characteristics of each type of climate

(4) Compare the different types of climates

CONTENT:

- The **polar zones** are the coldest zones or region on earth. They are referred to as the arctic and Antarctic region. Temperature can fall to - 129°F (- 89°C) in winter. Most of this area is covered with thick ice all year round. Animals that are common in this area are penguin, polar bear and seals.

The **temperate zone** or region has warm summers, cold winters, rain and snow. The weather in this region is strongly affected by wind and ocean currents. Most plants lose their leaves in winter and houses are usually built with chimneys.

The **tropical zones** are regions that are close to the equator. The climate is usually hot and wet throughout the year. Huge expanse of rainforest and coconut palms along beaches are some of the characteristics

ACTIVITIES:

- Use pictures with characteristics of each climate zone and let pupils list the things and conditions that are seen in the pictures. Pupils can be placed in three groups and each group discusses the characteristics of a particular climate zone. For example group 1 – polar, 2 – temperate and 3 – tropical
- Let pupils compare the three climate zones looking for similarities and differences. They may even prepare a collage of things found in a particular climate zone of their choice

ASSESSMENT- UNIT 2

Weather and Climate

- 1) List three factors which influence the weather
- 2) What is weather?
- 3) What is climate?
- 4) What is the difference between weather and climate?
- 5) Draw a circle representing a globe and label the three major climatic zones on earth
- 6) This animal is found in the polar zone (polar bear, agouti)
- 7) The coldest climatic zone is the (tropical, polar)
- 8) The hottest climatic zone is the (temperature, tropical)
- 9) Coconut palms can be found in the (tropical, polar) zone
- 10) In the temperate zone most plants lose their (leaves, die) in winter
- 11) Design a weather instrument and describe how it works.

Resources

Thermometers, globe, pictures of different climatic zones (tropical, temperate, and polar)

UNIT 3: Energy

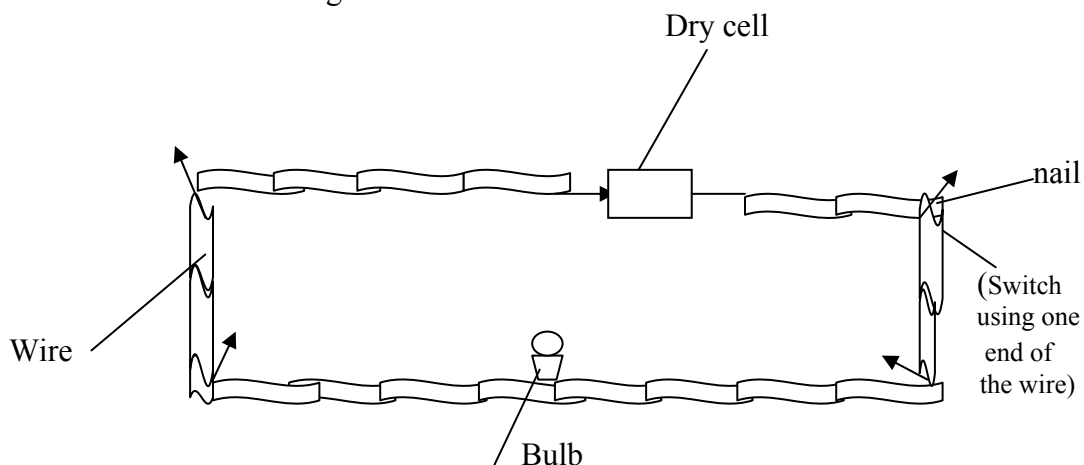
AT 3: PHYSICAL SCIENCE

LO1: DEMONSTRATE HOW ELECTRICITY IS PRODUCED IN A SIMPLE CIRCUIT

SUCCESS CRITERIA 1: Name the parts and set up a simple electric circuit

ACTIVITIES:

- Using the following materials, let pupils name them and set up a simple electric circuit. A strand of copper or electric wire, dry cell battery 2.5v (new), 1 flash bulb, 1sq ft of plywood board or other materials, it could be cardboard or plastic, four 1 inch nails. See diagram below:



- Using a flashlight let pupils name its various parts (bulb, switch and battery or dry cell). Let them properly assemble its parts to complete an electrical circuit. Let them name other devices and places where electrical circuits are found (radios, fridges, stoves, microwaves, electric ovens, toasters, home/domestic electrical system, schools, TV's, washing machines and fans etc). Pupils must be taught that a battery is made up of more than one cells

SUCCESS CRITERIA 2: Distinguish between conductors and insulators

CONTENT:

- Substances which allow electric current to pass through (example copper, aluminium, Zinc, iron, etc) are called conductors and these are usually metals. When substances do not allow electric current to pass through they are called non-conductors. Both types of substances; conductors and non-conductors are

important. The conductors are needed to transfer electric current from point to point or from place to place. Non-conductors are used as insulators to prevent people and animals from getting shocked. Some of them are also used to make pot handles because they are also poor conductors of heat and so prevent the burning of hands and fingers. Insulators or non-conductors are also used to cover the conductors or electric wires in order to prevent them from rusting and corroding and also to prevent them from shocking and short-circuiting

ACTIVITIES:

- Using the circuit developed in SC1, let pupils test different materials to see whether they conduct electricity or not. Materials such as dry wood, green wood, paper clips, pens, plastic, cloth, aluminium foil, forks, knives, toothbrush handles, stones, leaf, leather (an old leather shoe tongue can be used), glass, drinking straw and rubber band etc. Let the pupils present their findings under two headings, conductors and non-conductors

SUCCESS CRITERIA 3: Design and make devices that demonstrate energy transformation (e.g. electricity to light)

CONTENT:

- The energy content of the dry cell or battery is chemical energy. It comes from the carbon which is stored in the dry cell. When the switch is put on in the circuit, electrical energy is produced which is converted to light energy in the bulb.

Chemical energy → electrical energy → light energy

ACTIVITIES:

- Let pupils use the circuit board that they have made to explain the conversion of stored energy in the dry cell to light in the bulb

SUCCESS CRITERIA 4: Practice safety measures when using electrical devices

ACTIVITIES:

- Carry out a brainstorming activity with the pupils entitled “The proper use of electricity”. Ask pupils what will happen if they touch a connected electric wire with bare hands. If they put their fingers in a connected socket. Then they should draw up a list of things that one should not do when using or in the presence of electric current

- 1 - make sure that all electrical cords are insulated or covered
- 2- do not touch switches and sockets with wet hands
- 3 - keep all connected things or devices away from children
- 4 - always unplug devices and appliances before cleaning
- 5 - ask a grown-up for help if someone is not sure how to connect a plug to a socket
- 6 - do not fly a kite near power lines
- 7 - do not plug too many devices on one outlet or extension cord
- 8 - keep electrical devices far away from water
 - Electricity bills are usually relatively high. Place pupils in small group and let them discuss what can be done to conserve electricity and keep bills down. Let them share their findings with the whole class

Here are some of the things they can list and discuss

- use energy saving bulbs and appliances
- purchase and use clothes that need less ironing
- do not leave the electric stove on for long periods if not necessary
- use solar heaters for heating bathroom water, instead of electric heaters
- do not sleep with lights on that are not necessary
- switch off irons and electric kettles immediately after use
- turn off all appliances such as computers, radios and televisions when not in use

ASSESSMENT- UNIT 3

Energy

- 1) Name the major parts of a simple electric circuit
- 2) Construct a simple electric circuit and demonstrate that it works

- 3) List five devices or appliances which contain electrical circuits
- 4) What is a conductor and state one use of such material
- 5) What is a non-conductor and name 3 materials that are non-conductors
- 6) Design an experiment to demonstrate if a material conducts electric current or not
- 7) An insulator is a (conductor, non-conductor)
- 8) To prevent a connected wire from shocking, one should use a/an (conductor, insulator)
- 9) To distribute electric current from Roseau to Portsmouth, DOMLEC should use a (conductor, non-conductor)
- 10) List three (3) safety measures one must observe when using electric current
- 11) State three (3) things you would do at home to conserve electricity and decrease your electricity bill
- 12) Imagine that you are at home while the radio is playing and suddenly you observed that smoke is emerging from the radio, what is the best action one should take? (Unplug the radio from the socket and call an electrician.)
- 13) State 2 importances of non conductors or insulators? (They are used to cover electric wires and to make pot handles)
- 14) Why are some insulators used to make pot handles? (Because they are also poor conductors of heat.)
- 15) Name 2 non-conductors used to make pot handles. (Plastics and dry wood)

RESOURCES

Strands of copper wire	dry cells	flash bulbs
1 ft. square ply board	4-1 inch nails	bulb holder
Various conductors (materials)	Various insulators (materials)	aluminium foil
Leather, rubber band	drinking straws, stones	leaves, knives
Forks, spoons, pieces of glass	plastic cover of pens	pencils
Carbon of pencils, charcoal	plugs, switches	electric wires

UNIT 4: AGRICULTURAL PRACTICES

AT 4: AGRICULTURE SCIENCE

SESSIONS: 8-10

LO 1: DEMONSTRATE AN UNDERSTANDING OF THE COMPOSITION AND STRUCTURE OF SOIL

SUCCESS CRITERIA 1: Describe the origin and formation of soil

CONTENT:

- Soils are formed from the weathering or breaking of rock particles, which together with organic matter from plants and animals, water and air provide a medium in which plants grow. Soils consist of four main components; air, water, mineral matter from rocks and organic matter. Soils may differ because of their location, erosion, plant cover, presence of animals or not. The colour of soil may be due to the amount of organic matter present in the soil. The gives the soil a dark brown colour. The more organic matter the soil has the darker it is. The presence of iron mineral in the soil gives the soil a reddish brown colour. The more iron mineral the soil has the more red the soil will be.

ACTIVITIES:

- Collect four different samples of soil from four different areas around the school. Place pupils in small groups. Give each group a sheet of paper or small box to spread their soil sample. Let them observe the soil sample and record every thing they observed. They should be looking for fragments of rocks or stones, plant roots, leaves, mineral particles and any other thing found in the soil sample. Let them share their findings with the whole class. They should discuss why some soil samples are different from the others. (The pupils may be asked to bring their own samples of soil. In such case, they should note the area where they obtained their sample, presence or not of domestic animals, presence of other small animals such as earth worm and millipedes, and whether there is evidence of soil erosion or trees or crop cover.

SUCCESS CRITERIA 2: Describe the vertical structure of soil

CONTENT:

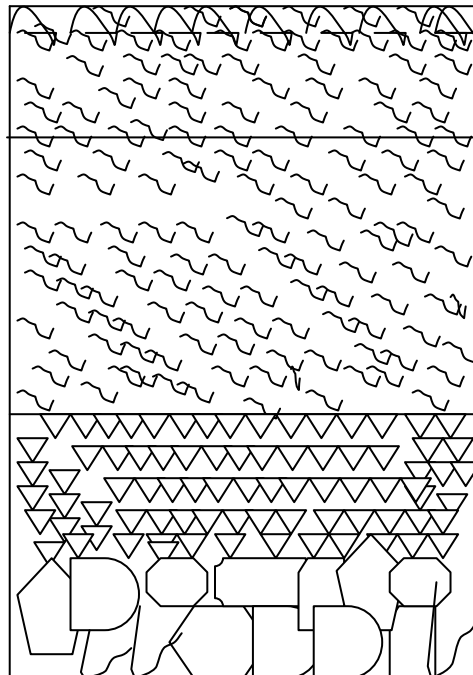
- The vertical structure of soil is referred to as the **soil profile**. This is made up of soil horizons or layers. Soil profile is important because it determines its suitability for agricultural production. The first layer of the profile is called the **A-horizon** and is made up of a thin **darkened** layer due to the presence of **organic matter** in this layer. If the topsoil is deep it is good for the production of root crops. If the top soil is shallow it is good for surface crops such as pumpkins, cucumbers, water melon, cabbage, lettuce and other crops known as surface feeders. It also contains large amounts of plant nutrients, that is, minerals that support plant growth. The **B-horizon** or subsoil when loosely packed permits easy penetration of roots, good drainage and air; it is good for tree crop production which has long tap roots. The **C-horizon** influences the soil type and mineral content. It is also called the bed rock and is made up primarily of **parent rock** and **gravels** or **fragmented rocks**.

ACTIVITIES:

- Place the following information on the blackboard or on a sheet of paper and let pupils design or draw an illustration of a soil profile on their exercise books. Let them label the various layers. Example, they need not place the colours but they need to show the A-horizon, the B-horizon and the C-horizon, with the corresponding topsoil, subsoil and the fragmented and parent rock respectfully.

Sub-divide into 2 areas. An upper dark area due to humus and a yellowish area

Reddish, brown, clay Deposits due to leaching



A – Top Soil

B – Sub-soil

-Fragmented rocks

C

- Parent Rock

Soil Profile (showing layers of soil)

Take pupils to a road and let them observed the cut side of the road close to a hill. Let them draw what they observed. In areas where a road is freshly cut from the side of a hill a profile is easily seen.

SUCCESS CRITERIA 3: Carry out an experiment to show the components of soil

ACTIVITIES:

- Place pupils in small groups and give each group the following materials. A large or medium transparent jar with cover, it could be a mayonnaise or Nescafe bottle, about a $\frac{1}{4}$ lb of soil and water. Let them do the following:
 - place the soil sample in the jar up to $\frac{1}{3}$ level
 - add water up to $\frac{2}{3}$ or just over that
 - shake the mixture vigorously for one minute
 - then leave the mixture to settle for 30 seconds
 - record observations in note book. Let them answer the following questions:
 - (1) Are there any particles/materials on the surface of the water? If yes;
 - (2) Are the particles/materials mentioned above organic or mineral?
 - (3) How many distinct layers are observed in the jar?
 - (4) Are the particles in the jar equal or of different sizes? Explain your answer. (The heavier or denser particles settle at the bottom of the jar where as the lighter or less dense particles settle above the heavier particles).
 - (5) State the origin of the particles which float on the surface of the water in the jar. (Insect remains, plant remains, etc)
- Let pupils produce a labelled drawing of the various layers in the transparent jar illustrating the various layers.

SUCCESS CRITERIA 4: List some crops and the soils most suitable for their development.

ACTIVITIES:

Let students discuss the use of sandy loam, and clayey loam as types of soil most suitable for the growth of certain crops. Crops that require lots of water such as dasheen, rice, water cress, etc require poorly drained soil. So a soil with high clay content is necessary for the development of these crops. All vegetables including bananas, tomatoes, yams, and most root crops grow well in a sandy loam soil.

Invite an extension officer to the classroom to talk to pupils on the topic; “land most suitable for crop production in Dominica or in the district where the school is located.”

Let pupils prepare a map outline for the areas most suitable for crop production in Dominica. Reference can be made for a specific crop such as bananas, vegetables, irish/white potatoes, etc.

ASSESSMENT- UNIT 4

Agricultural Practices

Underline the correct word or words

- 1) Soils are formed from the (weathering, wethering) of rocks
- 2) One of the components of soil is (organic matter, plastics)
- 3) Soil also consists of water (water, steel)
- 4) The organic part of soil mainly consists of (plant remains, minerals)
- 5) Draw a well labelled diagram illustrating the vertical structure of soil
- 6) Horizon A of a soil profile contains (organic matter, parent rock material)
- 7) The top soil is located in the (B-horizon, A-horizon)
- 8) The sub-soil is located in the (C-horizon, B-horizon)

- 9) Design an experiment to show/illustrate the components of soil
- 10) Which soil particle would settle first in a sample of soil and water, the clay particles or the sand particles? Explain your answer.
- 11) Name 4 components or parts of a soil sample. (water, air, mineral matter and organic matter)
- 12) Where does the mineral matter of soil come from? (It from the weathering or breaking up of rocks.)
- 13) Where does the organic matter in soil comes from? (The organic matter comes from the remains of plants and animals.)
- 14) Name two substances that are responsible for the colour of soil and explain how they affect the soil colour. (**Organic matter** gives soil its dark colour and **iron minerals/compounds** give soil its reddish colour)
- 15) If you were a farmer which type of soil would you prefer to have;
 - (a) under conditions of heavy rainfall, sandy or clayey soil? Explain.
 - (b) if the rainfall was light and the crop required a good supply of moisture? Explain.

The answer to (a) is a sandy soil because sandy soils are well drained soil and would allow the excess water from the heavy rain to leave the soil so the plant roots can respire and grow better. If there is too much water in the soil the roots will rot and the plant will die.

The answer to (b) is a clay soil because clay soils retain water very well. This type of soil prevents water from escaping freely and allows the crop to get enough moisture in cases where there is small amount water.

RESOURCES

Soil samples (clay, sand, compost)
 A4 paper/card box/shoe box
 Medium size Nescafe or mayonnaise bottle
 Water, funnel, cotton, school farm
 Botanic gardens, farmer's holding/garden
 Samples of crops: (Dasheen, banana, coffee, cocoa, etc.)
 Agriculture Extension Officer

TERM 2
SUBJECT SUMMARY
GRADE 5

KEY STAGE 2		SESSIONS
UNIT 5:	PLANTS AND ANIMALS	
AT 1:	LO2	10-12
SC's	(1-5)	
UNIT 6:	RESOURCES	
AT 2:	LO2	6-8
SC's	(1-3)	
UNIT 7:	FORCES	
AT 3:	LO2	6-8
SC's:	(1-3)	
UNIT 8:	CROPS	
AT 4:	LO2	6-8
SC's	(1-3)	

UNIT 5: PLANTS AND ANIMALS

AT 1: LIFE SCIENCE

SESSIONS: 10-12

LO2 EXPLAIN THE IMPORTANCE OF THE ECOSYSTEM IN
MAINTAINING THE ENVIRONMENT

SUCCESS CRITERIA 1: Explain the importance of various habitats example
(mangrove, swamps, ponds, rainforest, rivers, seashore, trees)

ACTIVITIES:

- Place pupils in small groups and take them on a field trip or nature walk. (Schools in Roseau can use the back of the Botanic Gardens, Roseau River, Bay town, next to the DOWASCO Liquid Waste Treatment Plant, the area at the back of the Bath Estate Football house and the Propagation Centre of the Ministry of Agriculture in the Botanic Gardens. Let the pupils look for various plants and animals and observe where they live. On returning to the classroom let the pupils share what they observed and recorded about their specific habitat.

Pupils should note that plants provide oxygen for animals to survive and absorb carbon dioxide which is a poisonous gas and produce the green house-effect. Animals provide faeces and other waste products and remains that fertilize the land for plants to grow. Birds and other animals spread seeds which allow plants to grow in wide areas. Insects such as bees pollinate flowers and ensure that fruits are formed to provide food for humans and other animals. Sandy shores or beaches provide breeding grounds for sea turtles. Such information can be drawn from experience or reading or from television documentaries.

Stones provide homes for some animals such as crabs, millipedes, snakes and frogs. Ponds provide living space for tadpoles and small fishes. Trees provide perches for birds, and shelter from the sun's heat for humans and other animals. Trees also maintain moisture in the soil by binding soil particles and prevent and preventing water from escaping rapidly. They also protect the top soil from being eroded by heavy rainfall. Swamps form part of the water cycle which facilitates the constant evaporation and condensation of water. Soil provides support, and food for plants and homes and food for small and large animals.

The coastal waters of seas provide living space for corals which sustains life under water for fish hatchlings and fries, (young fishes). These provide food for bigger fishes which are a source of food for humans and other animals

The teacher may want to ask the following questions:

1. What types of plants were observed? (shrubs, grasses, herbs, trees, vines etc)
2. What types of animals were observed? (lizards, birds, bees, grasshoppers, fowls, ground doves, snakes, ants, termites, etc)
3. What do the animals feed on? (fruits, smaller animals, grass, seeds, soil particles, etc)
4. How is the area important to plants and animals? (in the case of animals: food, shade and home, in the case of plants, support, home, food, moisture, etc)
5. pupils could be asked to construct a food chain or web using the organisms seen in the habitat they observed or visited
 - Using pictures cut out from books, magazines, internet images and newspapers, pictures of different habitats. Let pupils describe and note what is observed in the pictures and then share the observations with the other pupils during a whole class discussion.
 - Place pupils in small groups and let them prepare a collage on manila paper, construction paper, flip chart paper, or card box of a chosen habitat. Let pupils write short sentences about the importance of the various components to the existence of the habitat.

SUCCESS CRITERIA 2: Use appropriate materials to construct a model habitat

ACTIVITIES:

- Let pupils construct a model habitat of their choice. (They could work in small groups or individually). They should include models of as many organisms as possible. Let them display their work in the classroom. Teacher should prepare a rubric to include the following, for making the model projects: neatness – 5 marks, proper use of local materials – 5 marks, completeness –

5 marks, labelling – 5 marks, Total = 20 marks. Pupils are to receive sufficient time to construct project. Such activity can be done at home or pupils bring the materials at school and construct model habitat in classroom.

SUCCESS CRITERIA 3: Observe and discuss how the living and non-living parts of the environment affect each other

ACTIVITIES:

- Let pupils discuss how deforestation impact or affect the natural environment. Areas they can discuss should include:
 1. water table destruction
 2. soil erosion
 3. destruction of habitat for birds and other wild life by deforestation
 4. Decreasing ability of trees to absorb carbon-dioxide and to produce oxygen due to effect of acid rain.
- Invite an environmentalist from the Forestry Department or the Environmental Unit or from WEF to talk on key environmental issues to pupils

“Rivers and their importance to the local environment”

“Forest conservation” – or;

“Protecting our habitats for future generation”

Let pupils write a report on the presentation

- Let pupils design posters showing the effects of soil erosion on the environment or
- Let them write a letter to a local news paper about the effects of agricultural activities on the quality of the water in our rivers.
- Let pupils debate the following topic; “the cutting of trees along our river banks will cause the drying up of our rivers.” Or
- “Children are the best protectors of our environment.”
- Invite someone from the Waste Disposal Unit to talk to pupils on the topic “A healthy environment for all to enjoy” or “A clean environment is a healthy place to leave”. Pupils can be asked to write a one page essay on the above topics then share it with the class.

ASSESSMENT: Unit 5

1. Place the following plants and animals in the correct habitats; palm trees, shark, whale, manioc, lizard, Sisserou parrot, Jako parrot, tadpoles, baobab tree, crayfish, periwinkle, tilapia, water beetle, dragonfly, mosquito larvae, mangrove trees, water scorpion, water snail, water lily, tuna, turtles, blue marlin, swordfish, octopus, starfish, redfish, big jacks, mackerel and gomier tree. The habitats are; sea, river, swamp, ponds and rainforest
2. Using the following organism, construct a food chain; whale, fry, tuna, mackerel
3. Grasshopper, small snake, grass, lizard
4. Grass – humans – cows
Say what would happen if the population of humans would increase greatly. (Many cows would be eaten which would cause the amount of grass to grow out of control and humans would have to spend more to control the amount of grass on farms and along streets. Less money would be able for other activities. There would also be a shortage of beef for future use.)
5. Explain what would happen if the number of cows were increased greatly. (The amount of grass would decrease rapidly causing the starvation and death of cows.)
6. Explain what would happen if the population of cows were decreased. (If the population of cows were decreased grass would grow out of control by growing everywhere causing a nuisance to humans.)
7. What is a pond?
8. List three (3) different organisms found in a pond. (Tadpoles, larva, and small fish.)
9. Explain why it is unhealthy to drink water directly from a pond.
10. Imagine that you were a Sisserou Parrot and your habitat was being destroyed. Write one paragraph about your life
11. Construct a poster/plaque to illustrate a clean environment. You must

indicate which ecosystem or habitat that you are advocating for.

RESOURCES

Field trip to botanic gardens, river, DOWASCO's liquid waste treatment plant

Shrubs, grasses, herbs, trees, vines

Small animals (lizards, birds, ants, grasshopper, and insects)

Various habitat, (ponds, rainforest, trees, big stones, aquarium, sea shore, beach, coastal waters, rivers, wet lands, etc)

Magazines, newspapers books, internet images, picture of various habitats)

Forestry Officer

Deforested area

Sanitation Officer from DOWASCO

UNIT 6: RESOURCES

AT 2: EARTH AND SPACE

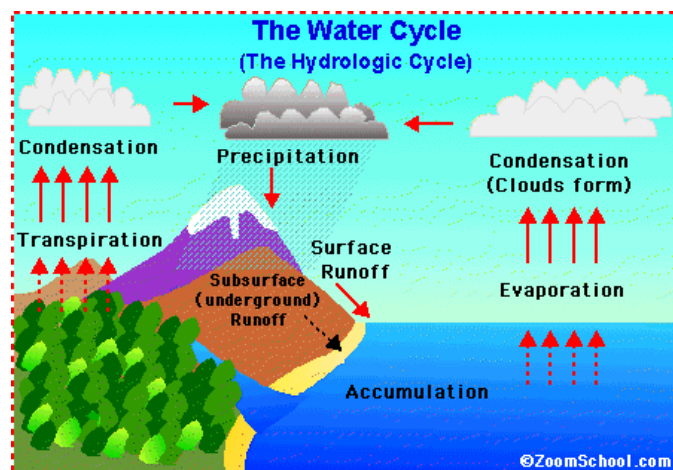
SESSIONS: 6-8

LO 2: UNDERSTAND THE WATER CYCLE AND SHOW HOW HUMAN ACTIVITIES AFFECT THE SAME

SUCCESS CRITERIA 1: Explain and make a presentation of the water cycle

ACTIVITIES:

- Teacher displays large chart with elements of the water cycle and explain key concepts such as evaporation, condensation, precipitation and water vapour to pupils. Pupils are then asked to explain key terms by using them in a sentence. (If possible see page 158-159 in text book 4 'Let's Learn Science', page 117 in New Modern Science Activities book and pages 111-115 in New modern science text book)



SUCCESS CRITERIA 2: Discuss the two main sources of water in nature

CONTENT:

- The two main sources of water in nature are fresh water and seawater. Fresh water includes water from rivers, lakes, wells, springs and ponds. In order that this water is made pure for drinking it must be purified. The process of purification involves **sedimentation, filtration and chlorination**. Seawater, which is also known as salt water, is found in the oceans and seas. In order to make seawater drinkable, it must first be

distilled through the process called **distillation**. This process involves, first **evaporation** and then **condensation**.

ACTIVITIES:

- Place pupils in small groups and give each group either a sample of seawater or river water. Let them decide/observe the difference in taste. Let them add some soap powder or try to dissolve a piece of bar soap in the water sample and note their observation. Let them answer the following questions and record the answers in their note books:
 1. which water is best for drinking?
 2. which water is best for washing?
 3. what can be done to purify the seawater in order to make it drinkable?
 4. why is it unsafe to drink water directly from the river, down stream?

SUCCESS CRITERIA 3: **Discuss and make a report on how human’s activities affect water supply. (Deforestation, improper waste disposal, slash and burn method of clearing land)**

CONTENT:

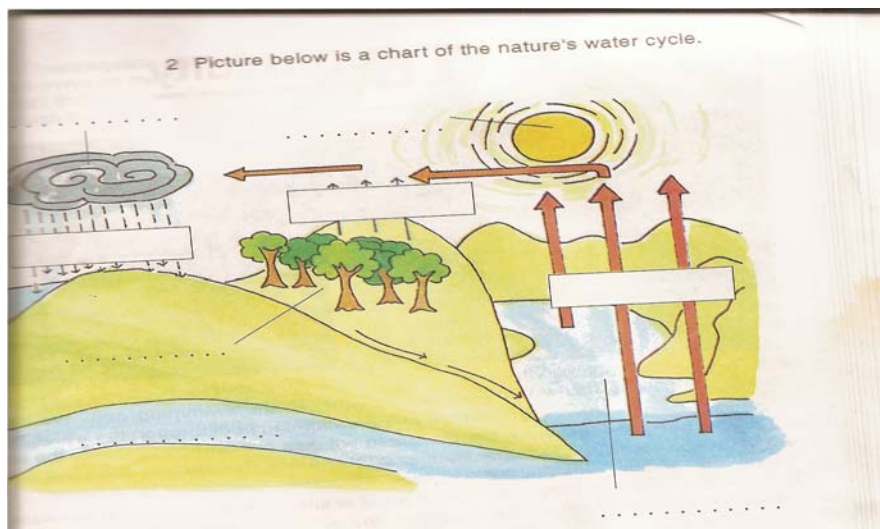
- Most farmers clear land for planting crops by carry out what is called slash and burn method. That is, they cut down the trees and shrubs then burn the remains, thus leaving the soil surface exposed to wind and rain. When it rains heavily, it causes soil erosion which deposits lots of soil particles in the river. This causes water intake system to become clogged or blocked as well as damage to coastal reefs by killing the corals when soil particles settle on them. Deforestation also affects the water supply because the surface of the soil becomes exposed to the heat of the sun. This causes the soil to become loose and then carried away by the wind and rain.

ACTIVITIES:

- Using the internet as a resource, let pupils research the topic “The effect of deforestation on rivers and other water sources”.
- Invite a Forestry Officer to the school and let him/she talk on the topic, “Conserving Water”. Let the pupils write a report on the officer’s presentation
- Take pupils to the river and let them observe the water level. Let them write a report on the conditions of the river and what can be done to increase the amount of water flow.
- Let pupils develop a poster project on “Keeping the river clean” or “Stop the contamination of our rivers”.

ASSESSMENT: Unit 6

1. Name the source of heat in the water cycle
2. Name two processes that take place in the water cycle
3. In your own words or with the help of a diagram explain the water cycle
4. How are clouds formed?
5. List two sources of water which experiences evaporation in the water cycle
6. When rain falls (evaporation, condensation) takes place
7. Name three (3) sources of fresh water in nature
8. Explain how you would make a sample of seawater good for drinking; name the process involved.
9. Name the process involved in the purification of polluted or dirty water for drinking.
10. Explain how deforestation affects the amount of water in a river
11. How can humans contribute to protecting our rivers (planting trees along the banks, no cutting of trees close to the banks, no dumping of waste material close to or in the rivers and by stopping the slash and burn method of clearing land.
12. Use the following words to fill in the blank spaces in the water cycle, as shown below. (Condensation, transpiration, Evaporation)



RESOURCES

Samples of water (Sea, pond, river, lake, rain and tap water)

Visit a water treatment plant/water intake

Forestry Officer

Officer from DOWASCO

Picture of the water cycle cut from books or internet image

Drawing of the water cycle

Manila /construction paper

Markers, plasticine, tray, match stick, cellophane tape, scissors, paper (A4/Legal), see diagram on page 119, book 5, New Modern Science for the Caribbean.

UNIT 7: FORCES

AT 3: PHYSICAL SCIENCE

SESSIONS: 6-8

LO2: UNDERSTAND THAT THE EFFECT OF FORCES VARIES WITH THE SIZE OF THE FORCE

SUCCESS CRITERIA 1: Measure forces acting on objects

CONTENT:

- A spring balance is used to measure force. When the spring balance is attached to an object and it is pulled, the reading multiply by 10 gives the amount of force in **Newtons** required to move the object. That is, if the reading on the spring balance reads 5kg, this is multiplied by 10 to give (5x10N) 50N. The unit of force is called **Newton**

ACTIVITIES:

- Place pupils in small groups and give each group of pupils; a side of socks, spring balance of 10k/50 Kg/100 Kg capacity, and objects of various weights 1kg, 2kg, 5kg and 10kg/20 kg. Ask them to place each objects in the socks, one at a time and attach the spring balance to the socks, pull the objects along the surface of a table or desk and record the reading on the spring balance, when the object just start moving. Multiply the reading on the spring balance by 10 and this is the amount of force required to move the object. For example

Object	Weight	Force (N)
1	1kg	10 x 1kg = 10N
2	2kg	10 x 2kg = 20N
3	5kg	10 x 5kg = 50N
4	10kg	10 x 10kg = 100N

- Give pupils objects of varied weight and let them indicate which needs more force to be moved. (The heavier the object the greater the force required to move it). For example, pairs of object for comparison could be; one text book and a bag of books; a chair and a desk; an empty jar of water and a filled jar of water. A sock filled with sand and a sock half-filled with sand. A huge stone and a small stone. Know that the heavier the object the greater the force required to lift or move that object.

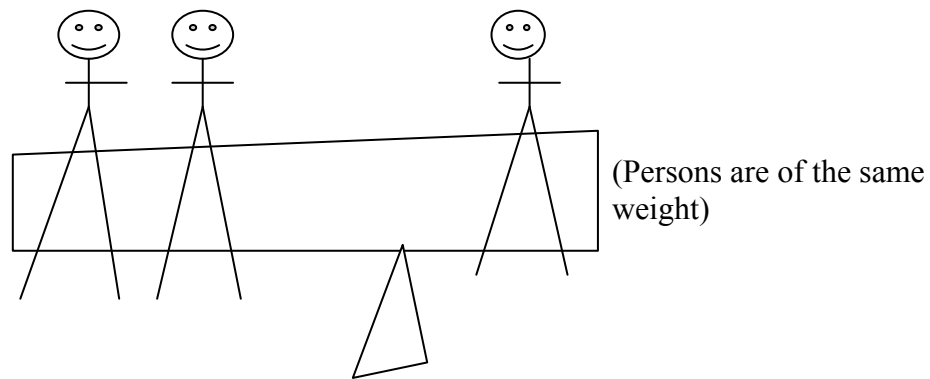
SUCCESS CRITERIA 2: Observe and identify variables (size, shape, and mass) that affect motion

CONTENT:

- The size, shape and mass are variables which affect the motion of objects. If an object is round it will fall faster than one which is flat. If an object is light it will fall slower than one which is heavier. For example, a feather will fall slower than a spoon or a ball. A sheet of paper will fall slower than the same paper which is rolled into a ball then dropped. Other forces acting on objects other than a push, pull, twist or stretch is **surface tension**, which is the force that holds drops of water together. **Up thrust** is the force acting in an upward direction. It is the force that holds up things which float on water or lifts planes from the ground. **Gravity** is the force that causes all objects on earth to fall to the ground. **Friction** is greater when two surfaces rub against each other. It can slow a moving body to a stop. Magnetic force (**magnetism**) is the pull or push exerted by a magnet on magnetic substances placed near it.

ACTIVITIES:

- Place pupils in pairs and give each pair materials such as a sheet of paper, a lime, a grapefruit, a sheet of paper squeezed into a ball-shape, a feather, a 1lb stone, a 4 lb stone (if there are many pupils then each pair can be given one object then they compare their result with the other pupils). Let pupils stand at a height of 10 feet then drop the objects each at a time. Let them measure the time it takes for the object to reach the ground. Which object is heavier? Which object is lighter? Which object will exert the least force? Which object will exert the greater force? Based on the information recorded from dropping the objects from a height of 10ft. Let pupils place the objects in order starting from the smallest to the biggest of the forces exerted by the objects. (You will need a stop clock for that activity)
- Give pupils a number of different scenarios and let them deduce which will need a greater force to move it. For example, a wheel barrow filled with sand or a wheel barrow filled with paper, a stroller with a baby or a stroller with a baby bottle, a horse pulling an empty cart or a horse pulling a cart filled with boxes of bananas. Teacher should make up other scenarios
- Present pupils with a sea-saw and let them indicate the end where the force is greater, using different number of pupils or persons. Example:



SUCCESS CRITERIA 3: Demonstrate that many small forces may act together to form one large force

ACTIVITIES:

- Let pupils participate in a tug of war. Place equal number of pupil at either end of the rope then change the number of pupils at one end and continue making changes until all the pupils have participated. More than one rope can be used to speed up the activity. Pupils should deduce that the rope tend to move towards or in the direction of the bigger forces, where there is a greater number of pupils.
- Let pupils place stones of about 3lbs each in a box one at a time. Every time that pupils place a stone they should compare the weight of the box to its previous weight by lifting the box with the stone. The box should be heavier every time that a stone is added and the box lifted. This indicates that the individual weight of the stones exert an accumulative force on the box. Let pupils infer that when the box is lifted it is heavier or more difficult to be lifted.

ASSESSMENT: Unit 7

1. Name two variables which affect the motion of an object
2. Two objects, one is flat and the other is round are dropped from a height of 10 ft, which one will reach the ground first?
3. What is surface tension?
4. What is gravity?
5. What is friction?
6. Select the correct scenarios:

- (i) - A bigger force is needed to push (a stroller with a baby, a stroller without a baby)
- (ii) - A smaller force is needed to push a (wheelbarrow filled with sand, an empty wheelbarrow).
- (iii) - A bigger force is needed to lift (an empty box, a box filled with stones)
- (iv) - A smaller force is needed to pull (a desk, a book)
- (v) - A bigger force is needed to squeeze a piece of (sponge, wood)

RESOURCES

Spring Balance, various weights (1g, 2g, 5g, 10g,
 Shocks/stocking
 Schoolbag with books
 Sand,
 Huge stone 5 lbs, small stone $\frac{1}{2}$ lb
 Chairs
 Desks
 Football, lawn tennis ball, a sheet of paper, a rolled up sheet of paper into a ball shape
 Sea-saw,
 Rope 12 ft long
 Empty shoe box/banana box
 Shoe box with stone (various sizes) to assess the accumulative effect of forces
 Round objects, flat objects, heavy objects, light objects.

UNIT 8: CROPS

AT 4: AGRICULTURE SCIENCE

SESSIONS: 6-8

LO 2: DEVELOP AN AWARENESS OF THE NUTRITIONAL VALUE OF CROPS

SUCCESS CRITERIA 1: Identify crops grown and give example

ACTIVITIES:

- Take pupils to a nearby farm. Have them make a list of the crops which are grown on the farm. Let pupils indicate which crops are sold for cash and which are used for subsistence and which are used for agro-processing or the manufacturing of other products
- Let pupils design a booklet using A-4 size paper to prepare a picture book of various crops. They may use pictures from the internet, magazines, books, photographs of crops taken by them or friends etc. Let them display their crop booklet in the Science corner for their classmates to see.
- Let pupils collect at least 10 processed/manufactured food labels and let them determine the crops from which these foods were processed. For example, Banana chips from banana, Corn flakes from corn, oat meal from oats, Sugar from sugar cane, flour from wheat, crix biscuit from wheat. Malt from barley, Vanilla essence from vanilla, Vanilla ice cream from vanilla, bread from wheat, potato chip from white potato, raisins from grapes, Olive oil from olive fruit, coconut oil from coconut, instant coffee from coffee beans, milo/ovaltine/nesquick/choco listo/cocoa Roma/hot chocolate from cocoa bean, refresh soap from coconut oil, etc.
- Let pupils prepare a collage of labels of processed foods collected at the super markets or shop. They may use labels of liquefied processed drinks as well. They should place a piece or part of the natural food/crop next to the processed item to indicate the original produce from which the item was obtained. A sentence or two of the items may be appropriate.

SUCCESS CRITERIA 2: State the nutritional value of crop groups

ACTIVITIES:

- Let pupils name crops in the various food groups and state the nutritional value of each group. For example:

CROPS	FOOD GROUP	NUTRITIONAL VALUE
Cabbage	Vegetable	Vitamins
Banana	Carbohydrate	Energy
Rice	Carbohydrate	Energy
Pigeon Peas	Legume	Protein
Lettuce	Vegetable	Vitamins
Potato	Carbohydrate	Energy
Dasheen	Carbohydrate	energy
Carrot	Vegetable	vitamins
Citrus	Fruit	Vitamin C
Mango	Fruit	Vitamins/energy
Etc.	Etc.	Etc

SUCCESS CRITERIA 3: State the function of the nutritional values of some crop groups**ACTIVITIES:**

- Place pupils in small groups and let them state and discuss the function of the nutrients of some crops. For example:

CROP	NUTRIENT	FUNCTION
Banana	Carbohydrate	Energy
Beans	Protein	Tissue, repair and building muscles
Coconut	Fat, Oil	Warmth, energy
Tannia	Carbohydrate	Energy
Soya Bean	Protein	Tissue, repair and building muscles
Cabbage	Vitamin	Prevent deficiency diseases
Etc.	Etc.	Etc.

ASSESSMENT: Unit 8.

- Design a booklet with various crops. Using pictures state the use of the crop and the major nutrients obtained from the crop. If the crop is used for manufacturing other products, name what products are obtained and some of the brand name under which the products are sold
- Place the following crops in the following groups
(Vegetables, Fruits, and Root Crops)

(Cabbage, yams, tannia, dasheen, cucumbers, lettuce, beet, radish, potato, carrot, asparagus, mango, apple, passion fruit, carambola, orange, grapefruit, etc

3. Fill in the following table

CROP	NUTRIENT	FUNCTION
Mango	Vitamins	_____
Bread fruit	Carbohydrates	_____
Soya bean	_____	Tissue repair and building
Coconut	Oils and fat	_____
_____	Vitamins C	Prevent diseases

RESOURCES

School farm or farmers holding located close to school

List of various crops grown locally

List of crops from international countries, can be obtained from the internet

A4 size paper

Pictures or drawings of crops (vegetables, tree crops, root crops, etc)

Label of processed foods from crops

Manila paper

Markers

TERM 3
SUBJECT SUMMARY
GRADE 5

UNIT 9: ADAPTATION OF ORGANISMS 10-12

AT 1: LO 3

SC's: (1-5)

UNIT 10: SOLAR SYSTEM 4-6

AT 2: LO 3

SC's: (1-2)

UNIT 11: MATTER 6-8

AT 3: LO 3

SC's: (1-3)

UNIT 12 ANIMALS 6-8

AT 4: LO3

SC's: (1-3)

TERM 3

UNIT 9: ADAPTATION OF ORGANISMS

AT 1: LIFE SCIENCE

SESSIONS: (10-12)

LO 3: DEVELOP A BASIC UNDERSTANDING OF THE MAJOR ORGANS OF THE BODY, THEIR FUNCTIONS AND THE EFFECTS OF SOME SUBSTANCES ON THEM

SUCCESS CRITERIA 1: Describe the internal organs and their position in the human body and draw and label diagrams e.g. lungs, heart, liver, kidney intestines and stomach

ACTIVITIES:

- Teacher will need to prepare large chart showing the internal organs; the lungs, heart, liver, kidney, intestine and stomach. Use the chart and guide the pupils to label the parts of the organs. (See pages 32-34 of curriculum guide for possible diagrams. Please use simple terms to describe the various parts of the organs.)
- Teacher to provide (trace over) of the different organs and have pupils draw them and label them. Pupils could also be given organs to draw as a home activity and to state their functions.
- Give pupils an unlabelled drawing of the internal organs of the human body as indicated on pages 15 and 20 of Finding Out, Book 5 and let them label the diagram. Teacher should collect the diagrams and correct them for completeness and accuracy.

SUCCESS CRITERIA 2: Describe simply, the functions of the teeth, stomach, intestines, heart, kidney, gall bladder, lungs, pancreas and liver.

ACTIVITIES:

- Let pupils prepare a table like the one below with the various body internal organs and their functions. Teachers explain, then let pupils copy and learn the function of the various body organs.

INTERNAL BODY PARTS	FUNCTIONS
TEETH	Incisor - bite off chunks of food. Canine - tear chunks into smaller pieces Molar - Grinding and chewing of food
STOMACH	Storage of food particles and mixes food with gastric juice during digestion in the abdomen.
INTESTINE	Small Intestine - for digestion and absorption of digested foods. Large Intestine - egestion of undigested food materials and removal of water from undigested food.
HEART	Pump blood to all parts of the body.
KIDNEY	Changes waste into urine
GALL BLADDER	Stores bile which is produced in the liver
LUNGS	Help in breathing. Take in and expel air from the body.
PANCREAS	Produce insulin for the digestion of sugar and also produce pancreatic juice to aid digestion.
LIVER	Produce bile and digestive juices It helps to keep our body working well.

- Place pupils in small groups and give each group an organ to research and they then make a presentation to the class. The presentation should be made using construction or manila paper.

SUCCESS CRITERIA 3: Discuss the basic life processes. E.g. feeding, breathing, movement , reproduction, etc.

CONTENT:

Feeding involves the taking in of food substances. Animals including humans need to eat in order to survive. Eating is one of the basic life processes. The food which is taken through the mouth of humans is chewed and cut into smaller pieces is mixed with saliva and is passed down into the stomach. Gastric juices mix with the food in the stomach. It is passed into the small intestine where it is mixed with pancreatic juices. Some of the digested food enters the blood stream. The rest of the undigested food substances enter the large intestines where water is drawn from it and is passed through the kidneys and is passed out as urine

Breathing involves the inhaling and exhaling of air. The nostrils and the lungs are mainly responsible for breathing. Air is drawn

into the nostrils then it enters the lungs. In the lungs it is stored in structures called air sacs or alveoli. The air then diffuses through the blood and is taken to the heart where it is pumped to all the parts of the body. The blood returns carbon dioxide to the lungs. The carbon dioxide diffuses into the air sacs and is exhaled by the lungs. When inhaled air enters the body the lungs expand and move upwards and outwards to increase its volume. When air is exhaled from the lungs the lungs move downwards and inwards. A special type of muscle helps the lungs to move. This is called the diaphragm.

Movement in humans and animals is the ability to move from place to place in search of food, mating and to defend themselves. The main parts involved in animal movement are the bones, muscles and the joints. There are three main types of joints, the hinge found in the elbow and knee, ball and socket joint found in the shoulder and neck and the gliding joints located in the hands and feet.

Reproduction is the production of new offspring. It involves the joining of a male sperm cell and a female egg cell to form an embryo. The embryo develops into a foetus in humans. The length of time it takes to reproduce varies from one animal to the next. In human it is nine months, and in birds it's 19-21 days. In rabbits it is 21 days.

ACTIVITIES:

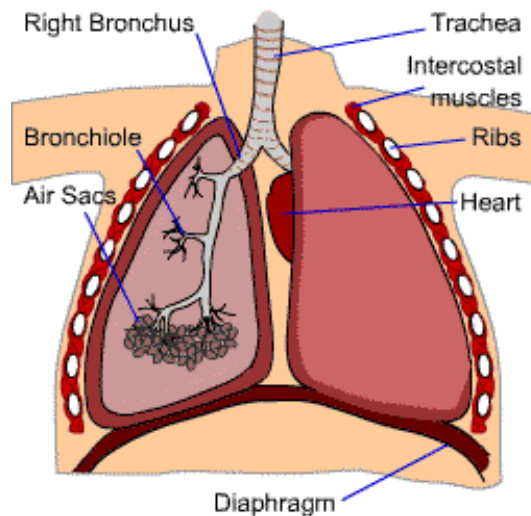
- Let pupils discuss the various life processes and share their information with the whole class.
- Place pupils in small groups and give each group one of the life processes described above to research and make a presentation to the class. They may choose their mode of presentation.
- Discuss with class the different tastes people have for food. Have class conduct a survey of foods that members of the class like and foods they do not like. The survey can be extended beyond their class to other classes and the community. Let them present their information gathered in table and graph form. They should attempt to answer the following questions: which food was most liked? Which was least liked? Which is most healthy? Which is most unhealthy? What advice would they give to persons using unhealthy foods?
- Give pupils a picture of a skeleton and let them label the location of the various types of joints; hinge, ball and socket, and flat joints
- Invite pupils to come to the front of the class and let them move different parts of their body. Ask another pupil to name the type of

joint associated with that type of movement. Pupils should record the information in their note books.

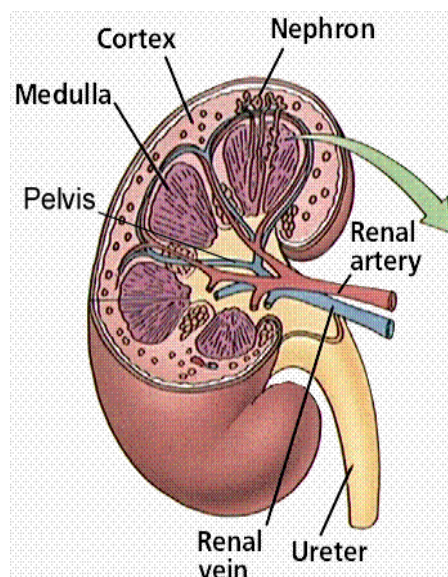
- Let pupils fill out the following table from the above activity.

Body Location	Type of Joint
Neck	
Shoulder	
Elbow	
Waist	
Wrist	
Hand	
Hip	
Knee	
Ankle	
Foot	

- Place pupils in small groups and let each group research reproduction in a different animal including humans. Let them make a presentation to the whole class. They should use manila, construction, flip chart or card board paper to present their information. They should state in their presentation a description or diagram of the reproduction system in the female, the length of time it takes for the young to emerge and how is the young called?
- Teacher will display prepared chart with labelled diagrams of the male and female sex organs. Give pupils an unlabelled diagram on a sheet of paper and let them label it correctly.
- Let pupils draw a labelled diagram of the lungs as seen in the upper section of the diagram on page 15. Let them label the following parts: lungs, diaphragm, wind pipe/trachea, the bronchus (one of the branches leading to the lung), alveolus and air sac. (See page 49, Let's Learn science, Book 4).

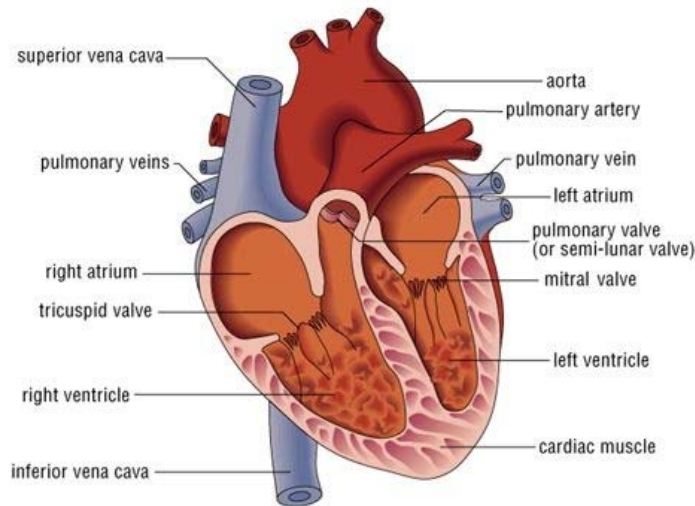


- Let pupils design a model of a lung using the following materials; an empty soda bottle (2 litres), 2 balloons, 2 drinking straws, a rubber band and a piece of clear plastic. Let them use their model to demonstrate the breathing process.
- Let pupils draw a labelled diagram of the kidney showing the, ureter, the blood vessel taking clean blood to the heart (the renal artery) and the vessel taking blood and waste to the kidney (renal vein), the medulla and cortex only. (see diagram below, exclude the parts that are not mentioned in the activity)



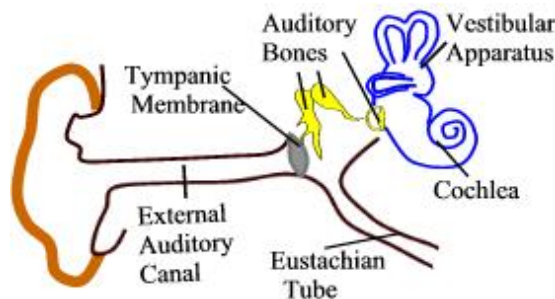
- Let pupils draw a diagram of the heart and label the following parts (aorta, left and right ventricles, left and right auricles, tricuspid valve, mitral or bicuspid valve). Teacher can also give students an unlabelled diagram of the heart and have students labelled the

diagram from a bigger chart posted at the front of the class or drawn on the chalk board.(Only the parts mentioned above should be included).

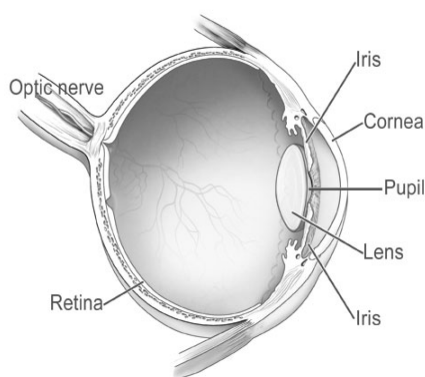


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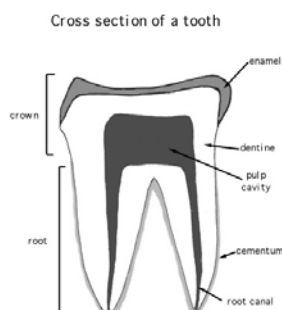
- Let pupils label the diagram of the ear. A prepared labelled drawing should be posted on the chalk board with the following parts (the outer, middle and inner ear, the ear drum, the hammer, anvil, the stirrup and the cochlea). See diagram below. The terminology used in the diagram below is inappropriate for grade five. They should be substituted for those mentioned in the activity. For example the **ears drum** instead of **tympanic membrane**, the **stirrup, hammer** and **anvil** instead of **auditory bones**. Also indicate the **outer, middle** and **inner** ear



- Let pupils label a diagram of the eye from an unlabelled diagram, either drawn or posted on a chart on the chalk board. The diagram should include: the lens, the iris, the pupil, the retina, the cornea and the optic nerve. (See the diagram below). Let them state the functions of the following parts, iris, cornea, pupil, lens retina and optic nerve.



- Let pupils label a diagram of the tooth. Let them show the following parts of the tooth; the crown and the root, dentine, enamel, pulp cavity, and the root canal (see diagram below)



SUCCESS CRITERIA 4: Describe the effects of various drugs (alcohol, tobacco, antibiotics, marijuana and cocaine) on the body.

ACTIVITIES

- Let pupils role play the effects of various drugs on the body and mind. Hold discussion with pupils about effects of drugs. Note the important points on the chalk board and let them copy them on their note books at the end of the discussion.
- Have pupils list as many substances as they know that are harmful to the body. Get them to carry out their exercise in groups, and then share their information with the class.
- Carry out a demonstration by inviting a smoker to the classroom. Material needed: a smoker, a cigarette, and cotton wool or tissue paper (white). Let the smoker blow a few puffs of smoke on to the tissue paper or cotton wool. Let pupils observe the darkened stains caused by the smoke. Ask pupils if they have noticed (a) the

stained teeth and fingers of heavy smokers (b) the breath of a smoker. (The darkened spot is caused by nicotine content of the cigarette). Teacher should explain to students that smoke has a similar effect on human lungs. It destroys the cells of the lungs which causes lung cancer.

- Have pupils work in small groups and let them describe the reaction and behaviour of someone who is under the influence of alcohol. Let them share their information with the class. Note the important points on the chalkboard and let students record them in their note books.
- Invite a substance abuse counsellor to the classroom and have them talk on the effects of substance abuse on peoples' health. Have pupils do a written report on the counsellor's presentation.
- Let pupils design and prepare posters on a theme related to the dangers of drugs and have them place the posters in strategic places around the school. Evaluate them for the clarity and neatness of the posters.
- Let pupils compare the positive use of antibiotics to the negative use and abuse of cocaine or marijuana. They should look at the advantages and disadvantages of both drugs. (Cocaine is used as a sedative in hospitals and marijuana is used as a herbal medication against asthma. However when these substances are used for smoking they can be very dangerous to the brain and other body organs), especially when taken in high quantities or when used continuously.
- Let pupils research some antibiotics used in controlling diseases. Let them name the disease or diseases controlled by these drugs the possible side effects. Let them discuss the abuse or misuse of the drugs and the danger they pose.
- Let pupils debate the following topics. This can be done in collaboration with the social studies and language art teacher/subject.
 - "Illegal drugs are a danger to the academic development of young people".
 - "Marijuana should never be legalized because it is a danger to young people."
 - "Herbal medicines should be promoted to aid our eco-tourism instead of pharmaceuticals".

- Let pupils write a letter to the editor of a local news paper indicating the effects that marijuana is having on some of the youths (“Paros”) of their community.
- Teacher or principal should seek permission from the magistrate court to allow pupils of grade 5 to attend a court hearing on the illegal possession of marijuana, or cocaine by an individual. On returning to the classroom the pupils should hold a mock court hearing to role play the functions of the magistrate, lawyer, convict, prosecutor, and policeman. More than one activity should be role played to allow most students the opportunity to participate.
- Let pupils of grade 5 carry out a demonstration during break in the schoolyard advocating against the use of drugs. Let them come up with a theme for the demonstration and they should use various posters illustrating the theme. Example, “Education **YES**, drugs **NO**”, “a peaceful community is a drug free community”, “and a drug free lifestyle is a healthy style”.

UNIT 9: ASSESSMENT

1. Give pupils a diagram of the digestive system and let them label the following; gullet/oesophagus, stomach, small intestine, large intestine, rectum, and anus.
2. Give pupils a diagram of the excretory system and let them label the following; kidney, bladder and ureter.
3. Name two waste substances (liquids) that are excreted from the body? (sweat and urine)
4. Which organ is responsible for the pumping of blood in the human body (the heart)
5. The _____ (kidney, lungs) help to get rid of liquid waste in the human body.
6. The main excretory substance found in urine is _____ (urea, protein)
7. Provide pupils with a diagram of the heart and let them label the following (left ventricle, left auricle, right ventricle right auricle, tricuspid and mitral valve, and aorta)
8. Let pupils match the type of teeth with their function.

Type of Teeth	Function
Canine	Chewing and grinding of food
molar	Use for the cutting of food
premolar	Use for tearing
incisors	Crushing or grinding of food

9. Describe briefly the function of the stomach.

10. Choose the correct answer; which of these digestive juices can be found in the stomach (A) Amylase, (B) Gastric juices, (C) Bile
11. Digestion is completed in A. the large intestine, B. the small intestine C. the stomach.
12. The production of bile takes place in the A. stomach, B. heart. C. liver.
13. State the differences between exhale air and inhale air
14. What type of joint would be found in the following position of the human skeleton?
 - (a) at the elbow _____ (Hinge joint)
 - (b) at the hip _____ (Ball and socket)
 - (c) at the neck _____ (Ball and socket)
 - (d) at the shoulder _____ (ball and socket)
 - (e) in the fingers and toes _____ (gliding)
 - (f) at the backbone _____ (gliding)
 - (g) at the knee _____ (hinge joint)
15. The female reproductive gamete is called the _____. (Egg/Ovum)
16. The male reproductive gamete is called the _____ (Sperm)
17. The sperm is formed in the _____ (testes)
18. The egg/ovum is formed in the _____ (ovary)
19. The tube which connect the ovary duct to the uterus is called the _____ (fallopian tube).
20. The fusing of the male and female sex cells is called _____ (fertilisation)
21. Which organ is most likely to be affected by the consumption of alcohol _____? (the liver)
22. Which drug may lead to cirrhosis of the liver _____ (alcohol)?
23. Name two illegal drugs in Dominica _____ and _____ (cocaine and marijuana).
24. Name a drug which is not illegal in Dominica but causes plenty of problems in the society, especially at bars _____ (Alcohol).

RESOURCES

Labelled and unlabelled charts with drawings of the kidney, heart, lung, liver, intestine, and stomach,

Labelled and unlabelled drawings of the EAR, EYE, and Human Skeleton

Labelled and unlabelled diagrams of the molar, canine and incisor teeth

Labelled and unlabelled diagrams showing position of the different types of joint located on the human skeleton. (Hinge joint, ball and socket, gliding)

Manila paper

Markers (various colours)

Photo copies of various body parts (un-labelled) for students to work with.

UNIT 10: SOLAR SYSTEM

AT 2: SPACE AND WEATHER

SESSIONS: 4-6

LO 3: DESCRIBE THE PLANETS OF THE SOLAR SYSTEM

SUCCESS CRITERIA 1: Research what is known about the planets of the solar system (Composition, support life, appearance, moons etc.)

ACTIVITIES:

Let students recite the rhyme “Many Very Early Men Just Sat Under-Neath”. This will help them to match the first letter of every word in the rhyme with the first letter of the planets (Mars, Venus, earth, Jupiter, Saturn, and Neptune), so that they will be able to name and know the planets in the order that they are located from the sun. (N.B: Since 2006 Pluto is no longer regarded as a planet it is known, instead, as a dwarf planet. In this regard there are now only eight planets instead of nine.)

- Let pupils use the internet, encyclopaedia and other resources to research the structure of the earth. Their presentation should include (a) Layers, distance from the sun, the time it takes for it to revolve around the sun, the time to rotate on its axis, number of moon, the imaginary line on which it rotates, its closest planet, and the galaxy to which it belongs. (The four layers of the earth are the crust, mantle, outer core, and inner core).

SUCCESS CRITERIA 3: Construct a model of the solar system and make a presentation

ACTIVITIES:

- Place students in small groups and let them prepare a model of the solar system. Materials needed: 10 pieces of strings of various lengths, small and medium balls, a 2 sq ft hard cardboard square, scissors, and protractor to mark the orbit of the various planets. They should use materials of their choice. (See model in book 5 page135-136 in let’s learn science). Let them place their model for every one to see or let them make a presentation to the whole class.
- Let pupils research the various objects found in space. These should include natural; asteroids, meteors, and stars, etc. Man made or artificial; satellites, space ships, etc. let them make a presentation about the characteristics or importance of these objects.

UNIT 10: ASSESSMENT

1. Name the planets of the solar system in the order in which they are located from the sun.
2. Which planet is closest to the sun?
3. Which planet is furthest away from the sun?
4. Which planet is 3rd in position away from the sun?
5. To what galaxy does the solar system belong? (the milky way)
6. What is the path/trajectory that the planet travels around the sun called?
7. Which is the second largest planet of the solar system?
8. Which is the largest planet of the solar system?
9. Which planet has a ring around its entire surface?
10. Produce a drawing of the earth and show the following parts; the core, mantle, and the crust.
11. Which solar body is no longer considered a planet after 2006?
12. Write an essay of 120 words indicating the importance of satellites to humans.
13. Which country was the first to send men to the moon?
14. People who travel to space are called (astronauts, pilots)
15. Name two astronauts who travelled to the moon, in what year was that?
16. Name a Russian and an American spaceship which have travelled in space. (Russian- Sputnik and American- Challenger/Apollo/Columbia spacecrafts).
17. Why does the moon not support life?
18. Why do you man has not yet visited Mercury?
19. Where is movement more restricted on earth or on the moon? Explain.

Resources

Pictures of the various planets

Pictures of the moon

Pictures of space graft /spaceship

Picture of satellite

Foot ball, cricket ball, tennis balls to represent the planets

Plasticine

Strings

UNIT 11:**MATTER****AT 4:****PHYSICAL SCIENCE****SESSIONS:**

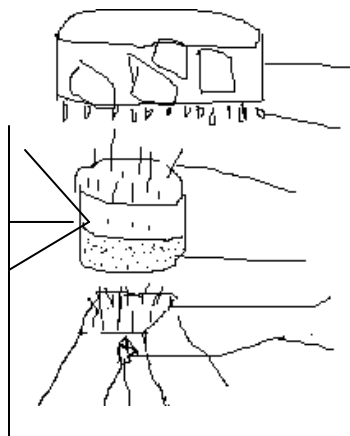
6-8

LO 3:

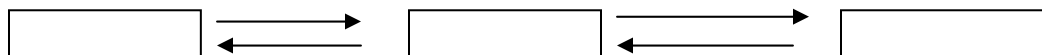
INVESTIGATE CHANGES IN MATERIALS AND MATTER

SUCCESS CRITERIA 1:**Identify melting, freezing condensation and evaporation as changes of state****ACTIVITIES:**

- Materials needed: Ice cubes, 2 small dish/Petri dishes/tin covers, petroleum jelly, butter/lard, candle, mayonnaise, and matches.
 - Place some ice cubes in the dish and leave it on the table for 10 minutes. Observe what happens and record the information.
 - Place the petroleum jelly, the lard, butter on a dish, light the candle with the matches and heat each of the dishes at a time.
 - Observe what happens and record the observations.Let pupils explain what happened. All the substances melted. What was the state of matter at the beginning and at the end of the experiment? What is the process called that changed one state of matter to the next? (Melting)
- Have pupils place water in a container then place the container with the water in the refrigerator. Have them note the change of state. What was the state of matter of the water before and after freezing? What is the process called that changed one state of matter to the next? (Freezing)
- Let pupils observe the process of evaporation and condensation of water by studying the diagram below. (This should be a demonstration experiment.)
Materials needed: A container with ice cubes, a heat source (Bunsen burner or an alcohol lamp), a container with water, A tripod. Mount the apparatus as shown in the drawing and observe The water as it changed to gas (water vapour and then condenses on the cold surface and then changed to water (liquid) again. Label the diagram to show the changes.



- Have pupils place the arrows in the proper direction and put the states of matter in the proper position:



(Liquid, solid, condensation, melting, freezing, water vapour, water, gas, evaporation and ice)

- Have pupils relate the processes mentioned above to the changes taking place in the water cycle. They may use a diagram of the water cycle to illustrate their answer. Let them explain their answer to the class.
- Let pupils give examples of every day life of the natural processes of changes in the State of matter. (Rain pouring, water evaporating from a puddle, the water level in a pond dropping, ice taken out from the refrigerator and left on the counter melting, and clothes drying after being left outside on a line, etc.)
- Let pupils explain the phenomenon produced when a glass filled with ice becomes wet with droplets of water dripping on its sides without having any noticeable holes.

SUCCESS CRITERIA 2: Investigate a mass of water when it changes from liquid to solid and back

- Have pupils investigate a volume of water when it changes from liquid to solid and back. Measure a quantity of water in a measuring cylinder. Pour the water in a measuring plastic or clear container like a cut soda bottle (use the bottom half). Place the

container of water in the refrigerator freezer. Remove the container after the water is freeze. Record the temperature of the water in $^{\circ}\text{C}$. Leave the ice on the window ledge or on the laboratory counter and observe what happens. Measure the quantity of water again using the same measuring cylinder. Record your findings. Is there any difference in the volume of the water? Mark the water level with a marker. Freeze the same water sample again and observed what happened. Was their an increase/decrease in the water volume after freezing?

- Place a container of water on the windows ledge and observe what happens over three days. Explain why there was a change in the volume of water in the container. Did the amount of water in the container increase or decrease? What happened to the water? (It evaporated)? In what state did the water escaped from the container? What caused the water to evaporate from the container? (the heat from the sun)

SUCCESS CRITERIA 3: Draw a diagram to show the change of state of matter

ACTIVITY



- Let pupils draw a diagram using the boxes below and various arrows to represent the different states of matter and the changes taking place.(freezing, melting, evaporation, and condensation)



Let pupils draw the arrangement of the particles of each state of matter and explain the strength of the force of attraction between the particles of each state of matter, particularly making reference to the distance between particles in each arrangement. For example force of attraction between the particles of a solid is strong, between particles of a liquid is moderate and between the particles in a gas is weak.

UNIT 11: ASSESSMENT

- Use an arrow to show the direction in which evaporation is taking place

Water ----- Steam

- what change of state is taking place when water vapour is changing to water (Condensation, freezing): Water----- Water vapour

- Has the water gain heat of loss heat? (It has loss heat)

4. Name the state of matter of the following substances, A. water, B. water vapour, C. ice.
5. When ice is melted to water is there a loss or gain of energy? (gain of energy)
6. Where is the force of attraction stronger, between the particles of a solid or the particles of a liquid? (between the particles of a solid)

RESOURCES

Bunsen burner/alcohol lamp
tripod
small cooking pot
ice trays
water
butter/lard/cheese/petroleum jelly
measuring cylinder/measuring cup
Thermometer
freezer

UNIT 12: **ANIMALS**

AT 4: **AGRICULTURE SCIENCE**

SESSIONS: 6-8

LO 3: **RECOGNISE FISH FARMING AS AN ASPECT OF AGRICULTURE**

SUCCESS CRITERIA 1: **State the importance of fish in the diet**

ACTIVITIES:

- Teacher will lead pupils in discussion on the nutritional value of fish in human diet. Fish is a good source of protein and its oils reduces coronary artery diseases. It has a low fat content and contains high levels of essential minerals and vitamins. Shell fish is rich in iodine, fluorine, phosphorus, magnesium, calcium, and vitamins A and D and some of the vitamin B group. Fish also contains high levels of unsaturated fatty acids which tend to lower blood cholesterol. Cod liver oil has been used as a source of vitamin and cold medicine, especially for children.
- Let pupils research on the nutrients and other minerals that are obtained from fish and are important to human health. Let them note the information in their note books and discuss it with the whole class. Most of the nutrients present in fish are already stated in the first activity. Let them state an important trace mineral that can be obtained from fish. (Zinc). Let them research its importance to humans.
- Let pupils bring labels of canned fish to the classroom. Let them observe and record the nutritional contents of the labels. They can compare and discuss the nutrients of the various labels. Which nutrients are present in larger and lower amounts?
- Let pupils prepare a table showing the various nutrients found in fish and their importance to human.

SUCCESS CRITERIA 2: **Name some salt water and fresh water fishes in Dominica**

ACTIVITIES:

- Invite a resource person from the forestry and wildlife or the fisheries department of the Ministry of Agriculture to talk to pupils on the names and characteristics of fresh water fish in Dominica.

This would include mullet, crawfish, teta, and prawn etc. The pupils should note the names of the fish and write a report on the presentation then share it with the rest of the class or it can be collected as an assignment for assessment.

- Take pupils to a fish landing site if possible and ask them to identify and name the fish brought on land by the fishermen. They should share their information with the class.
- Invite a fisheries officer to the classroom to talk to pupils on the various types of fish use as food are found in waters (marine) around Dominica. (Sprat, mackerel, sardines, kingfish, blue marlin, swordfish, barracuda, snappers, flying fish, shark, silver dolphin (dorad), lobster, eels, shrimp and stingray, etc).
- Let pupils find out the following information from the public by organizing a questionnaire with the following information.
 1. Which fishes are in greater demand as food in Dominica? (red fish, silver dolphin, snappers, groopers, flying fish, lobster, shrimps and mackerel and tuna)
 2. Which fish is caught more regularly? (Red fish)
 3. Which fish is most expensive? (Silver dolphin)
 4. Which fish sells the best? (silver dolphin/dowad)
 5. At what time of the year is fish more available? (year round)
 6. What can be done to increase the quantity of fish available on the market? Etc.
- The Coral reef is part of our ecotourism product. Let pupils discuss the reasons for protecting the coral reefs in Dominica. (This should include; serves as fish habitat, fishes lay and hatch there, people enjoy the under water scenery as a form of recreation. It serves as a barrier to strong waves entering the shores and indirectly contributes to the country's foreign currency reserves because the tourists spend at hotels, in souvenir shops and restaurants and when they come to snorkel in Dominica's waters or coast line.)

SUCCESS CRITERIA 3: Name and label parts of a fish

ACTIVITIES:

- Take pupils to the school library or provide them with a science text book or an encyclopaedia and let them draw and label a diagram of a fish. Those with internet resource could use it as their source of information.
- Use a large prepared chart with the labelled diagram of a fish. Provide pupils with individual unlabelled drawings. Let them label

their diagram using the posted chart as reference. (Refer to New Modern Science Book 6, page 25 for a reference diagram.). Pupils should note the following; gills, pectoral fin, mouth, caudal fin, dorsal fin, trunk, eye and scales.

UNIT 12: ASSESSMENT

1. Name two nutrients found in fish
2. Name two fresh water fish
3. Name two salt water fish
4. Explain briefly why fish protein is better than meat protein.
5. Draw a diagram of a fish and label the following parts, the head, gill caudal, fin pectoral fin and dorsal fin and trunk.
6. Name two minerals present in fish.
7. Why is the fat of fish better for human diet than animal fat?
8. Why are corals important to the economy of Dominica?
9. What is the young of a fish called (fry)

RESOURCES

Labels of fish products vend at super markets
Pictures/drawings of local salt water fishes
Picture / drawings of local river fish
Aquarium
Internet facility
Computer
Pictures of corals
Picture of fish farming facilities
Fisheries Officers
Manila paper
Markers

SAMPLE UNIT PLAN GRADE 5 SESSIONS (6-8) KS2

UNIT 1: LIVING THINGS IN THE ENVIRONMENT

LO1: Investigate and describe the local ecosystem with respect to animals and plants

SUCCESS CRITERIA	ACTIVITIES	RESOURCES/MATERIALS	ASSESSMENTS
1. Describe different types of ecosystems.	Nature walk: let pupils observe and identify the characteristics of different ecosystems, such as rain forest, marine, wetlands, ponds and rivers: prepare a check list, see activity 1, SC 1. On returning to the classroom let pupils discuss their observations. They may produce sketches of the area to help with their discussion.	Ecosystem, paper, pens/ pencils, pictures or drawings / pictures of various ecosystem , manila paper, and markers Manila paper, pencils, markers/ pictures of drawings of different ecosystems, A4 paper.	Teacher assesses pupils' participation in the discussion and the accuracy of their presentation and drawings. Assess pupils for accuracy of information, linked to activity above.
2. Identify abiotic factors (physical factors) within an ecosystem	Let pupils use the information collected from the above field trip or nature walk to identify the physical factors in that ecosystem (air, soil, water, rocks, stones, logs, etc)	Ecosystem observed and all the physical factors (abiotic factors) within them.	Assess pupils' written work for correctness. They could also be assessed through questions and answers.
3. Show how the abiotic (physical) factors within an ecosystem contribute to the support of life.	Let pupils show how the organisms (plants and animals) depend on the physical factors for survival. Air is necessary for all living things to live. It is needed for respiration and for cooling. Rocks serve as	School surroundings, pupils, teachers, notebooks, and pencils, pictures of amphibians, reptiles, birds, earthworm, and millipedes in their respective habitat.	Assess pupils for listings made in their notebooks and for contributing proactively in class discussion. A small short

	homes for some organisms and for obtaining minerals for growth and development. Water serves as a thermo-regulator for all living things. Some organisms can only absorb soluble substances. Water serves as a solvent of those substances. Water also serves as a medium of transport for some organism as well as a home for fishes, crustaceans and Amphibians like tadpoles and young alligators and crocodiles.		answer or multiple choice test can be used to assess pupils. For example. Which of these are called abiotic factors of an ecosystem? Rock, Stones, Trees, Birds, Snakes, Water, Mineral, etc.
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SAMPLE LESSON PLAN

GRADE 5

Duration: 60 minutes or 2 sessions

No. of Pupils: _____

Unit I: Living things in the environment

Date: _____

L O 1: Investigate and Describe the Local Ecosystem with Respect to Animals and plants

SC: Describe different types of ecosystem

Objective: Pupils will be able to describe different types of ecosystems.

Materials and resources

Nature walks or Pictures of various ecosystems (Pond, rainforest, river, sea, mountain, etc) or the school surroundings

Introduction:

Teacher explains to pupils the purpose of the nature walk and outlines safety measures to be adopted while working outside the classroom.

Also ask pupils if they have gone mountain climbing or to the rain forest. Ask them to describe how they feel close to the school compared on the top of a mountain, or describe the types of plants and animals associated to both areas.

Transition Statement

Tell pupils that the aim of the lesson is to help them to describe the different types of animal and plants associate to different ecosystems.

Science process skills to be developed

1-Observation, 2-Communication, 3. Recording

Development

- 1- Place pupils in small groups of 4-5
- 2- Select a member of the group as leader
- 3- Lead them to the selected location
- 4- Tell them that they have 15 minutes to observe every thing they can about plants and animals in the ecosystem or the picture chosen.
- 5- Lead pupils back to the classroom
- 6- Let them discuss their observations and drawings of the ecosystem observed.

Conclusion

Each group to present their results to the rest of the class or selected pupils are called upon to describe the area selected or the picture observed.

Assessment

Monitor pupils' ability to work in groups and assess drawings and list of organisms observed.