

ACKNOWLEDGEMENT

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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.

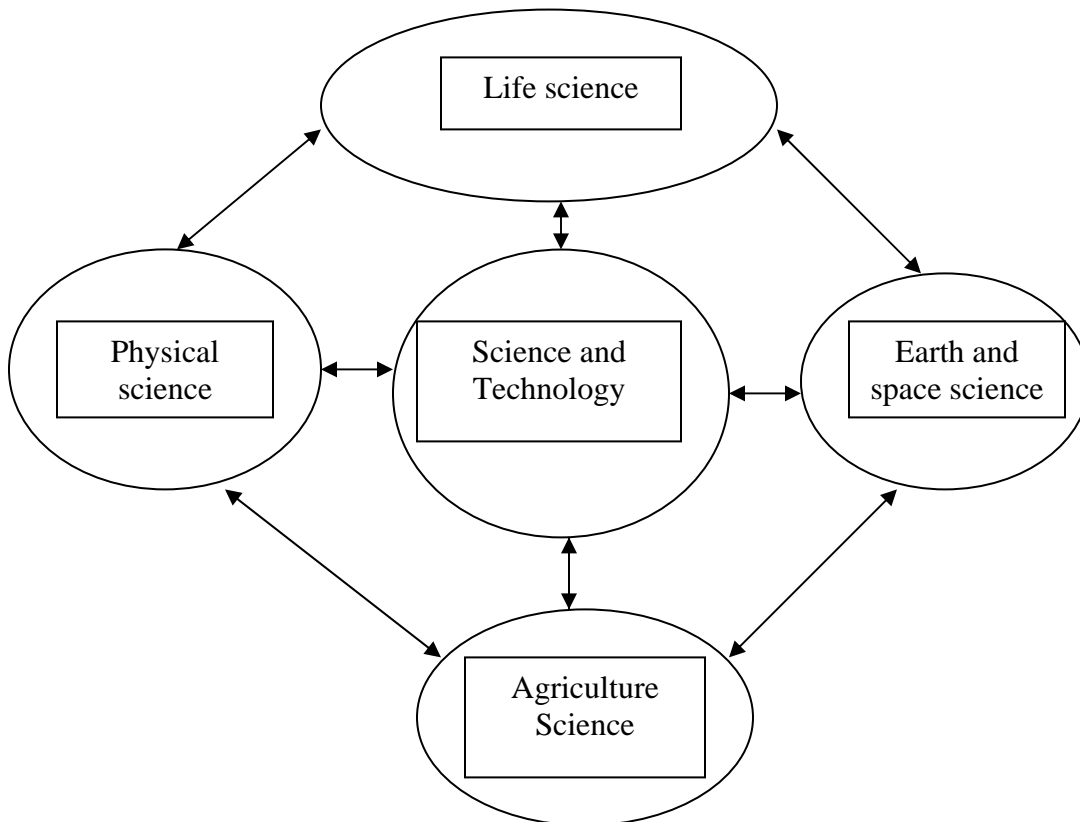
The term summary is broken in its various units, and is placed at the beginning of each term's activities. The term consists of four (4) units and each unit consist of the unit title, the learning outcome and the success criteria. A number of Success criteria have been designed to help pupils achieve 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 pupils' 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 pupils 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 given natural teaching tool.

LINKAGE OF SCIENCE AND TECHNOLOGY TO THE PROGRAMME STRANDS



TERM I

SUBJECT SUMMARY

GRADE 1

		SESSIONS
UNIT 1:	OBSERVING LIVING THINGS	10 - 12
AT 1:	LO 1	
SUCCESS CRITERIA:	(1 – 6)	
UNIT 2:	WEATHER INSTRUMENTS	7 – 8
AT 2:	LO 1	
SUCCESS CRITERIA:	(1 – 4)	
Unit 3:	GETTING READY FOR PLANTING	6 – 8
AT 4:	LO 1	
SUCCESS CRITERIA:	(1 – 3)	
UNIT 4:	FORCES	8 - 10
AT 3:	LO 2	
SUCCESS CRITERIA:	(1 – 4)	

TERM I

GRADE I

UNIT 1: OBSERVING LIVING THINGS

ATTAINMENT TARGET 1: Life Science

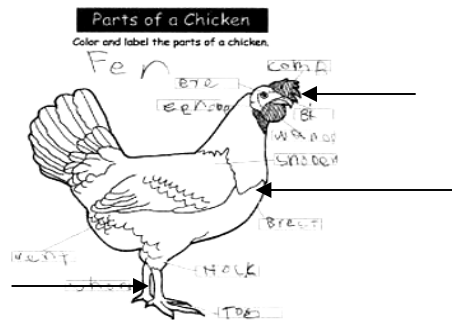
SESSIONS: (10– 12)

LEARNING OUTCOME 1: Describe the external structures of some living things.

SUCCESS CRITERIA 1: **Identify the external parts and discuss the functions and uses of local animals**

ACTIVITY:

- Let pupils observe small animals, such as butterfly, beetle, chick, etc. Let pupils observe animals' different parts and state what the part is used for. (drawings/pictures)



SUCCESS CRITERIA 2: Describe a known pet

ACTIVITY:

- Teacher brings pet to school or present the picture of a pet to the pupils. The pupils observe and describe the pet orally. Using pictures of various pets pupils Prepare a collage of some pets found in Dominica. The collage is then placed in the science corner for later use.



Or



SUCCESS CRITERIA 3:

Identify the external parts and discuss the functions and uses of local plants.

ACTIVITY:

- Nature Walk: Let pupils observe plants in their natural environment and collect a few samples to take back to the class. Let pupils discuss what they observed during the nature walk. Let them discuss the uses of some plants seen and the function of the leaves, roots, stem, flower, fruits, and seeds.



Plant Parts	Function
Root	Take in water, store food and anchor the plant in the soil.
Stem	Take water and other substances to the

Stem continues	other parts of the plant and support the branches.
Branch	Take water and other substances to leaves
leaf	Manufacture food (sugar/starch)
flower	Produce fruits, attract insects
buds	Contain young flower
seeds	Contain the young plant, (embryo)

SUCCESS CRITERIA 4: Observe some plants in different local habitats.

ACTIVITY:

- Nature walk: Let pupils observe plants in their local Environment, and talk about where some of them grow. Pupils make inferences through discussion that plants live in different places, (mangrove swamp, near sea, near river, rain forest etc.)



Swamp



marsh



pond



River



Seaside



Rainforest

SUCCESS CRITERIA 5: Care for a plant for at least two weeks.

ACTIVITY:

- Grow bean seeds in small jars for 2 weeks and observe their growth. Pupils will record their observations. Also let pupils draw the resulting seedling or young plant in their note books.

SUCCESS CRITERIA 6:

Observe and evaluate some plants in their habitat.

ACTIVITY:

- Nature Walk: Let pupils observe plants in their local environment. In groups pupils make a poster to display various plants and make statements to describe their habitats. (For example coconut plants grow best close to the sea. The watercress plant likes water or swamp where as the pineapple and cactus plant likes dry areas.)



ASSESSMENT STRATEGY

Prepare a booklet to display four animals and four plants in the environment. For each plant and animal give its functions and uses.

UNIT 2: WEATHER INSTRUMENTS

ATTAINMENT TARGET 2: Earth and Space

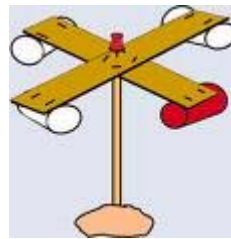
SESSIONS: (7 – 8)

LEARNING OUTCOME 1: Discuss and use simple instruments to measure weather conditions.

SUCCESS CRITERIA 1: **Identify and discuss the instrument used for indicating wind direction.**

ACTIVITY:

- Teacher shows flashcard to pupils with the words wind direction and pupils are allowed to talk about wind direction, that is, how do they know, in what direction is the wind blowing? Show pupils the instrument used for measuring wind direction, (picture or real instrument) and then let them construct a wind vane using locally available materials.
(Drawing of wind vane)



SUCCESS CRITERIA 2: **Discuss what a thermometer is and what it is used for.**

ACTIVITY:

- Show a picture of a thermometer and also someone using a thermometer. Or the teacher may demonstrate how to use a thermometer. Also identify the substances use in thermometers, (alcohol and mercury). Then let pupils:
- Role-play how to use a thermometer. Let them talk about what thermometers are used for. Using a real thermometer ask pupils to read the temperature and record

the result in their notebooks. Also let them draw a model thermometer in their notebook.

(Drawing of thermometer)



SUCCESS CRITERIA 3:

Use a simple instrument to record rainfall.

ACTIVITY:

- Use objects obtained in the local surroundings to construct a rain gauge and measure rainfall using the instrument (remember that rain gauge should be placed in an open area, away from buildings and trees.)



- Over a period of two weeks let pupils record rainfall using worksheets provided by the teacher.

DAYS	AMOUNT OF RAINFALL IN INCHES
DAY 1	
DAY 2	
DAY 3	
DAY 3	

DAY 4	
DAY 5	
DAY 6	
DAY 7	
DAY 8	
DAY 9	

- Let pupils construct a bar chart, with days on the X-Axis and amount of rainfall on the Y-Axis, using the data that they recorded in the table above. Let them answer the following questions. Which day rained the most? Which day rained least? What is the average amount of rainfall for the period?

SUCCESS CRITERIA 4:

Discuss the importance of rain to the environment (cooling, water to plants, water to humans where there is no river, etc)

ACTIVITIES:

- Show video presentation or pictures of countries that have little or no rainfall and those with high rainfall, let pupils discuss what happens to the environment in both cases.



Desert or dry area



Heavy rainfall area

- Use the computer to show pupils pictures of countries with little or no rain and those with high rainfall. Let them talk about what they saw in the pictures. (In the little or no rain pictures they may see deserts, no plants, dead animals, lots of sand, etc). In the high rainfall pictures they will see, lots of people, green scenery, trees, and lots of animals.

ASSESSMENT STRATEGIES

True or false questions

Multiple choice
Fill in the blanks (Close passage)

UNIT 3: GETTING READY FOR PLANTING

ATTAINMENT TARGET 4: Agricultural Science

SESSIONS: (6 – 7)

LEARNING OUTCOME 1: Develop practical knowledge of the activities that are related to land preparation.

SUCCESS CRITERIA 1: Identify tools used for land preparation.

ACTIVITIES:

- Pupils make observations from watching a picture of a farmer on his farm and discuss what they observed in the picture.



- A variety of tools are shown to pupils who in turn use their knowledge to say what they are and their use. Pupils are taken to the school garden, where possible, to demonstrate the use of various tools.





- Let pupils complete the table by matching the tools to the activity in the respective column.
(FOR EXAMPLE)

TOOLS	ACTIVITY
FORK	WEEDING
CUTLASS	LEVELING
HOE	DIGGING
RAKE	CUTTING

SUCCESS CRITERIA 2:**Talk about the activities being carried out before planting.****ACTIVITIES:**

- Start this activity by asking pupils, what farmers do before planting? Weeding or clearing, digging or ploughing, making drains, and sowing seeds in seed boxes, etc.
- Role-play activities that take place before planting.
- Make a poster of various things done before planting.
- Engage pupils in carrying out some of these activities by starting school garden/growing plants in seed boxes.

SUCCESS CRITERIA 3:**Explain the functions of drains on farmlands.****ACTIVITY:**

- Field trip to farm/school garden. Let the pupils observe the drains in the garden then ask them what is the function of the drains? They should infer that the drains get rid of excess or too much water in the field or it prevent water logging which is too much water on the top of the soil.
- Let pupils use appropriate tools to dig drains and observe what happens after rainfall. Let them talk about the direction of the drains (across the garden or up and down the garden). It should be noted that proper drains are always constructed or made across the field. This will prevent the formation of gullies and the water from moving too fast down the slope. This avoids soil erosion. On flat lands drains are used to remove excess water.



ASSESSMENT STRATEGY

- Role-play a farmer on his farm with the tools he uses to prepare the land and how he goes about preparing the land and matching land preparation activities to tools.
- Multiple choice questions

UNIT 4: **FORCES**

SESSIONS: 7 - 8

ATTAINMENT TARGET 3: **Physical Science**

LEARNING OUTCOME 2: Describe and evaluate the various effects of forces.

SUCCESS CRITERIA 1: **List example of situations where forces are used and identify forces at work in common objects.**

ACTIVITY:

- Pupils sit on pairs facing each other and use a ball the teacher has given to hit it back and forth from one to the other. Pupils record observations and list other examples where push, pull or twist may be required.
- Pupils watch teacher open and close the classroom door and identify whether the force used was a push or pull. (Uncovering a pot and closing it back, wringing wet clothes, pushing / pulling a chair.)

SUCCESS CRITERIA 2: **Identify forces at work in common objects (e.g. can openers, screw drivers, and wheeled bags).**



ACTIVITY:

- Teacher uses a can opener and pupils identify the type of force applied (push/pull), then the same is done for a screwdriver and the wheeled bag. The wheeled bag is placed both in front the teacher to indicate push and behind to indicate pull. The pupils

are then asked to fill the appropriate column with the correct word. For example; (push, pull, twist)
A word can be used more than once.



Activity	Type of force
Opening a tin of sardine	push
Using a can opener	
Using a screw driver	twist
Wringing wet clothes	twist
Pushing a school wheeled Bag	push
Pulling a wheeled school bag	Pull
Opening a desk/table drawer	pull
Closing a desk/table drawer	push

SUCCESS CRITERIA 3: **Show how applying a force can change motion**

ACTIVITY:

- Sit in groups and use the ball which is placed in the middle and push it every time it is sent your way. Observe the speed with which it moves/rolls. Pupils should infer that when the ball is pushed hard/ with more force it moves faster and when it is pushed with less force it moves slower.

SUCCESS CRITERIA 4: **Show how applying a force can change direction.**

ACTIVITY:

- Tug of War: Place pupils in two groups and let the groups pull on a two-metre rope. Mark the rope in the middle with a coloured twine and let the tug of war begin. Ask students to explain why the rope appeared to remain in one place at the beginning and why it changed direction after a while. Help them to infer that when both sides applied the same force the rope stayed in one place. Then when one side applied more than the other side the direction of the force

changed. Repeat the game with smaller groups of pupils for fun and better understanding.



ASSESSMENT STRATEGIES

Complete the table with the type of force resulting from the appropriate activity. Oral explanation of what happens when we open and close doors, drawers, and pots, etc.

Activity	Type of force
Opening a tin of sardine Using a can opener	
Using a screw driver	
Wringing wet clothes	
Pushing a school wheeled Bag	
Pulling a wheeled school bag	
Opening a desk/table drawer	I
Closing a desk/table drawer	

TERM 2

SUBJECT SUMMARY

GRADE 1

SESSIONS

UNIT 5:	LIVING THINGS IN THE ENVIRONMENT	8 – 9
AT 1:	LO 2	
SUCCESS CRITERIA:	(1 – 5)	
UNIT 6:	RECYCLING MATERIALS	6 – 7
AT 2:	LO 2	
SUCCESS CRITERIA:	(1 – 3)	
UNIT 7:	ENERGY SOURCES	8 – 9
AT 3:	(1 – 5)	
UNIT 8:	FOOD FROM PLANTS	7 – 8
AT 4:	LO 2	
SUCCESS CRITERIA:	(1 – 4)	

UNIT 5: LIVING THINGS IN THE ENVIRONMENT

ATTAINMENT TARGET 1: Life Science

SESSIONS: (8 – 9)

LEARNING OUTCOME 2: Describe familiar plants and animals and discuss their basic needs.

SUCCESS CRITERIA 1: Observe and name plant and animals in the local environment

ACTIVITY:

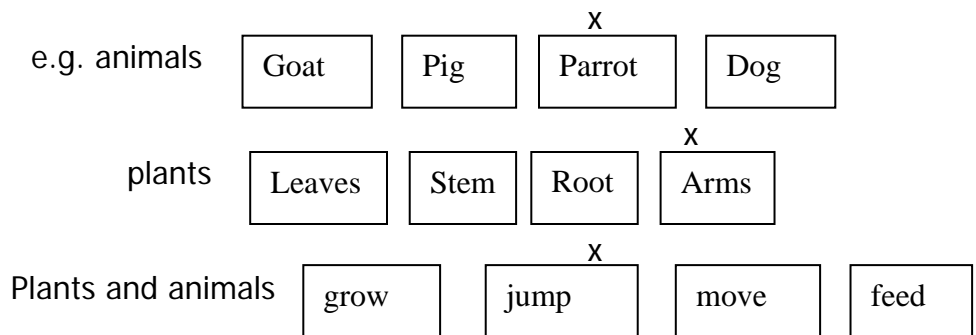
- Nature walk: Take pupils to the school surroundings and let them identify and observe as many plants and animals as possible. On returning to the classroom let them record the information in their notebooks.
- Let pupils draw two plants and two animals with two different characteristics. (Plants based on size or type of leaves and animals based on size and number of legs).

SUCCESS CRITERIA 2: Compare and classify plants and animals in the local environment.

ACTIVITY:

- Nature walk: Take pupils outside and let them observe the plants and animals in their immediate surrounding.
- Let pupils talk about similar features in the animals seen. Let them talk about the differences in the animals. (For example, Cow and cat have four legs but cow is bigger than cat, their sounds are different, and cow eats grass while cat don't.
- Let pupils say how the plants seen are:
i. similar and ii. Different
All plants have leaves, stem and roots but may vary in size according to herbs, trees and shrubs. Pupils say how plants and animals are similar to and different from each other in terms of their characteristics and needs e.g. they both grow but animals move from place to place and the plants do not.

- Teacher prepares a chart based on pupils observation. Chart will include for e.g.:
 - i. Pictures of animals with similar features grouped together.
 - ii. Pictures of plants that make flowers and those that do not. Also plants that are huge trees and those that are shrubs, or herbs
- Pupils will play a card game where they discard the card that does not belong to a set of cards given. They give reasons for their answer.



SUCCESS CRITERIA 3:

Explain how plants and animals depend on the local environment for their basic needs.

ACTIVITY:

- Place pupils in groups of four and let each group visit different area in the school surroundings. Let them observe various plants and animals according to what they eat, where they live and how they build their homes or nest.

SUCCESS CRITERIA 4:**Make oral reports about their pets.****ACTIVITIES:**

- Let pupils bring to class a picture of their pet. And encourage pupils to stand and talk freely about their pet. Guide pupils to talk about how the pet looks, acts, behaves and its needs etc.
- Pupils can prepare a scarp book showing the pets presented, the owner's name and a few sentences about each pet. Place in science corner.

RESOURCES:**LIVING THINGS IN THE LOCAL ENVIRONMENT**

1. A variety of plants and animals in the environment e.g. mango tree, cow, goat, cane plant, guava tree.
2. Pictures of animals with similar features.
3. Pictures of plants e.g. flowering and non-flowering plants.
4. Flash cards with names associated with plants and animals.
5. Pictures of pupils' pets.
6. Scrapbook

MEANS OF ASSESSING THIS UNIT

1. Make journal entries.
2. Place picture of pets in their portfolio.
3. Multiple choice test where necessary

UNIT 6: RECYCLING MATERIALS

ATTAINMENT TARGET 2: Earth and Space

SESSIONS: (6 – 7)

LEARNING OUTCOME 2: Use material resources to produce different things.

SUCCESS CRITERIA 1: Identify and discuss the use of some materials found in the school environment.

ACTIVITY:

- Nature walk. Take pupils outside to look at some objects in the environment. Let them identify the objects seen. Carry some of the objects seen to the class. Let pupils say how each one can be used. Continue open discussion on the use of the presented materials.



- Get pupils involved in putting some of the materials to active use. E.g. - They will use tins to plant flowers and can arrange stones around trees in the schoolyard, etc.

SUCCESS CRITERIA 2: Group materials according to size, colour, material made of, and texture.

ACTIVITIES:

- Teacher supplies some materials from home. Add it to other materials collected in the school environment by the children.

Present labels for classification of materials

How does it feel?

Size

Colour

What is it made of

Let pupils read the labels, then distribute the materials and labels to groups. Let pupils observe the materials supplied.

Tell them that one material may be qualified for more than one category.

Let them classify the materials giving reasons for varied classification.

- Give writing paper and ask pupils to draw pictures of the items under different headings.
E.g.: i. made of cloth ii. red thing
Put pupils worksheets in the science corner.

SUCCESS CRITERIA 3:

Discuss how littering can be avoided.

ACTIVITIES:

- Let pupils look out of the classroom window immediately after break.
Let pupils discuss what they've just seen and let them discuss how to prevent it.
- Pupils listen to a talk by the Environmental Health Officer (about littering).
Ask questions to guide discussion. E.g. what do you think can happen if Tommy steps on the mango peeling? How does the schoolyard look after break? Would you like to live in a dirty community? Why not?
Let pupils say how litter can be avoided. E.g. what could Sarah have done with the banana peel? How will a community look if people don't litter?



- Let pupils write a banner. E.g. 'Keep the place clean' or 'Do not litter'. Display banner in the science corner.

RESOURCES:

1. Materials of different size, colour, texture, collect from the school surroundings
2. Labels
3. Blank sheets
4. Pictures of materials from home and school e.g. tins, bowls, tablecloths, metal spoon, paper clips.

MEANS OF ASSESSING THIS UNIT

1. Mini exhibition on pupils drawings and poster made.
2. Grade pupils on creativity based on how well they used the materials found in the environment.

UNIT 7:

ENERGY

ATTAINMENT TARGET I:

Physical Science

SESSIONS:

(8 – 9)

LEARNING OUTCOME 1

Construct and operate devices that produce/use and convert energy.

SUCCESS CRITERIA 1:

Operate simple devices at home and school to show use of energy.

ACTIVITY:

- Let pupils do the following: Put on the classroom switch and say what happened, wind a toy car and say what happened, drop a stone, and throw a ball and say what happened.

SUCCESS CRITERIA 2:

Demonstrate an understanding of safety in the home and school.

ACTIVITY:

- Recite this poem on 'Safety Practices in the home and school'.
Don't play with the plugs
when your hands are wet
Don't play with matches
Even if your hands are dry.
For they are bad and can end your life,
Practice these and stay alive.

Write down the practices the poem says you must not do. Example; I. Don't touch the plug with wet hands.

II. Don't play with matches

Let pupils name other things that are dangerous at home and at school. E.g., don't throw fruit peel in the yard. Don't throw broken bottles anywhere and don't throw pieces of metals around the home and school.

SUCCESS CRITERIA 3:

Identify some simple devices that use energy in the home.

ACTIVITY:

- Present items and pictures of objects that use energy.
- Let pupils identify the objects. E.g. TV, video, washing machine, radio, flashlight, etc

Pupils say what happens when the television is plugged compared to when it's unplugged. They say what happens when a candle is lit, e.g. it gives off light and it will get hot. Let pupils say what happens when an iron is put on.



SUCCESS CRITERIA 4:

Explain energy conversion in simple devices

ACTIVITY:

- Teacher explains to pupils that energy changes from one form to another and is never destroyed then give an example and ask pupils to give other examples. Ask as many pupils as possible.
- Let pupils match each device to the useful energy produced when the device is in operation.

Device/appliance	Energy produced
iron	sound
candle	Sound and LIGHT
TV	Heat and light
radio	light
stove	Heat

SUCCESS CRITERIA 5:

Construct a simple device to demonstrate the use and conversion of energy.

ACTIVITIES:

- Present a model catapult. Let pupils look at it closely. Then let them name the materials used to construct it.

Demonstrate how the catapult is made.
Take pupils outside to collect suitable sticks

Supply the other materials: two strands of tube rubber $\frac{1}{2}$ " x 6", 1 piece of leatherette material 2" x 3" with curved edges, four pieces of strings 6" long. (per child)

Let pupils follow these directions for making the catapult.

Drawing of catapult

Take your stick and two pieces of string.
Tie rubbers to each end of the stick using the strings.

Tie the other end of the rubbers to the leatherette material using the other pieces of strings.

(Demonstrate step by step again while pupils follow)
Then let pupils construct their own catapult. Also advise pupils that they should not use the catapult to hit each other or to attack pets and wildlife

- Let pupils construct a model toy at home to demonstrate the use and conversion of energy and display the same in the science corner. Assess the pupils for neatness and completion.

RESOURCES:

1. Simple devices like toy car
 2. Ball
 3. Stone
 4. Classroom switch
 5. Poem on 'Safety Practices at home and school'
Ref: Keskidee pupils Book 3)
 6. Pictures showing radio, TV, washing machine, lit candle, iron
1. Model catapult
 2. Wood
 3. Rubber

MEANS OF ASSESSING THIS UNIT

1. Grade pupils based on the construction of their catapult. (Develop a rubric for Grading)
2. Give post-test on use and conversion of energy (multiple choices).
Also matching columns.

UNIT 8:

PLANTS AS FOOD

ATTAINMENT TARGET 4:

Agricultural Science

SESSIONS:

(7 – 8)

LEARNING OUTCOME 2:

Recognise that plants are used to produce food in society.

SUCCESS CRITERIA:

Name a variety of plants, which are used as food.

ACTIVITIES:

- Show video presentation or poster on an area of land having a variety of crops and let pupils identify the crops grown.
- Pupils listen to talk by a local farmer. Farmer names some of the plants he grows and tells pupils that his plants serve a number of uses.

-given a list of plants, allow pupils to use coloured chalk to circle those plants which are used as food in our society.



RICE



TOMATO



WHEAT

- Present basket of natural and manufactured foods, from plants. (E.g. pop corn, orange, cream of wheat, dasheen). Let pupils identify them and say which plant they come from. (Labels can be used for this activity.)



SUCCESS CRITERIA 2:

Discuss which plants produced food above ground and which below ground

ACTIVITIES:

- Distribute pictures to pupils showing a variety of food from plants. Help them to identify which plants produce food above and which produce food below ground



Given a list of plants let pupils classify the food as those that grow: **above/below** ground

Above ground	Below ground
Bananas Tomatoes Cane, corn	Yam, dasheen carrot Tania Ginger,

Cabbage, lettuce	potatoes, peanuts,
---------------------	-----------------------

SUCCESS CRITERIA 3: **Grow a number of plants in pots and observe their growth.**

ACTIVITIES:

- Supply pupils or let pupils bring vegetable seeds to class. Help them to identify the seeds. Provide pots for planting. The pots can be made from recycled material from the school and home surroundings.

- Place pupils in groups of two and explain the following task to be carried out for the next two or more weeks.
 - Fill the pots with soil.
 - Using your finger make four holes in the soil. These small holes are for planting your seeds.
 - Drop about 2 – 3 seeds in each hole.
 - Cover the seeds with some soil.
 - Now water the seeds
 - Let pupils continue watering plants daily.
 - Let pupils record the information in their notebooks.
 - Pupils must observe plants for growth of seedlings.
 - Using rulers, pupils must measure plants every two days and record growth in centimetres. E.g.

Days	Growth in cm
Day 4	_____ cm
Day 6	_____ cm
DAY 8	_____ CM

- Let pupils report their findings to the class.

RESOURCES: PLANTS AS FOOD

1. VCR - cassette

2. Resource person - farmer

3. Coloured chalk

4. A variety of natural and manufactured foods from plants e.g. popcorn, oranges, dasheen, cream of wheat. Or just the labels of the manufactured goods will do.
5. Pictures showing foods grown above and below ground e.g. yam, ginger, Tania, bananas, dasheen, cane etc.
6. Vegetables seeds
7. Pots for planting/cut buster bottles and use bottom parts as pots
8. Rulers

MEANS OF ASSESSING THIS UNIT

1. Written assessment on classifying plants as growing below ground or above ground.
2. Teacher assesses pupils work based on their findings for growth of plants.

SCIENCE AND TECHNOLOGY

SUBJECT SUMMARY

TERM 3

GRADE 1

UNIT 9:	GROUPING PLANTS AND ANIMALS	SESSIONS
AT 1	LO 3	10 - 12
SUCCESS CRITERIA:	(1 – 5)	
UNIT 10:	THE SOLAR SYSTEM	
AT 2	LO 3	8 – 10
SUCCESS CRITERIA:	(1 – 4)	
UNIT 11:	MATERIALS	
AT 3:	LO 3	8 - 10
SUCCESS CRITERIA:	(1 – 4)	
UNIT 12:	FOOD FROM ANIMALS	
AT 4:	LO 3	6 – 8
SUCCESS CRITERIA:	(1 – 3)	

GRADE I

TERM 3

UNIT 9: GROUPING PLANTS AND ANIMALS

ATTAINMENT TARGET 1: Life Science

SESSIONS: (10 – 12)

LEARNING OUTCOME 3: Group plants and animals according to given criteria

SUCCESS CRITERIA 1: **Discuss the importance of some plants and animals**

ACTIVITY:

- Let pupils discuss the importance and uses of plants and animal. (Group work).

ANIMALS: Let pupils make inferences through discussion as to which animals are used locally for food, as pets, transportation, in medicine and to make cultural instruments. E.g.:

ANIMALS	USES
COW	FOOD/shoe/straps
DOG	PET
CAT	PET
FOWL/CHICKEN	FOOD
PIG	FOOD
DONKEY	LOAD
MULE	LOAD
GOAT SKIN	DRUM

PLANTS

- Pupils are presented with a collection of plants. Pupils look at the plants and try to name them. Pupils are then placed in small groups with a variety of plants and try to name them. They also discuss within their groups why plants are important and how they are used. They then share their answers with the whole class

- Place pupils in small groups of 4's and let them make a poster or a collage of the uses of some plants or animals on card box or manila paper.

SUCCESS CRITERIA 2: Group some plants and animals according to their uses

ACTIVITY:

- Give pupils a list of plants and animals and let them group them according to the following criteria
PLANTS: (fruits and vegetables)
ANIMALS: (Food and Pets)

SUCCESS CRITERIA 3 and 4: Role-play the behaviour of some animals

Imitate the action of some animals.

ACTIVITY:

- Ask a pupil to imitate the action of an animal then ask another pupil to name the animal imitated. Continue the activity until most or all of the pupils have participated.
- Ask pupils to role-play the action of a farmer milking a cow or a goat, collecting eggs from a pen or an animal taking care of its young.

SUCCESS CRITERIA 5: Make a presentation of some plants and animals e.g scrapbook, collage

ACTIVITY:

- Let pupils prepare a poster, scrapbook or collage of an animal or plant and display it in the science corner. This activity can be done on A4, manila paper or card box paper.

Resources

1. Various Food labels.
2. Pictures of foods and animals.
3. Drum, plants which are used for medicine.

4. DVD with animals – charts.

ASSESSMENT STRATEGIES

1. Match items of animals and their use, see table on page 39.
2. Fill in the blanks using sentences and words used in the unit.
3. Assess pupils participation in class discussion
4. Assess pupils' scrapbook and or, collage for completeness of activity and neatness.

UNIT 10: **EARTH IN THE SOLAR SYSTEM.**

ATTAINMENT TARGET 2: **Earth and Space**

SESSIONS: (8 – 10)

LEARNING OUTCOME 3: Discuss simple characteristics of the earth as a planet in the solar system.

SUCCESS CRITERIA 1: **Represent the solar system on paper and label the position of the earth and the sun.**

ACTIVITIES:

- Let pupils make a model of the solar system. Use about 10 students – label earth and sun.

Let the sun stand in the middle. Children with the respective planet label get in their order.



(Leave out Pluto as a planet, it is no longer)

- Given a worksheet allow pupils to colour pictures of the earth, sun and three other planets in the solar system using different colours.

SUCCESS CRITERIA 2: **Name at least three planets in the solar system**

ACTIVITY:

- Using cards with the names of the planets: The cards are distributed to groups of five pupils Earth, Venus, Mars, Mercury and Sun. The pupils are asked to form the solar system around the Sun. The teacher reviews the pupils' model for correctness. The teacher calls out the names of the planet including the sun and the pupils lift a hand to indicate that he/she is that

planet, the teacher reviews the position of that pupil for correctness

SUCCESS CRITERIA 3:

Colour a model of the solar system using different colours

ACTIVITY:

- Using Different coloured plasticine and paper, ask pupils to make their own model and represent the Sun, Mercury, Earth, Venus and Mars. Use yellow plasticine to represent the Sun.

SUCCESS CRITERIA 4:

Observe and record natural occurrences of day and night. (Compare day and night)

ACTIVITIES:

- Let pupils tell what they see in the sky during the day and night.
- Given pictures/drawings of the sun, moon and stars pupils will discuss when they are seen in the sky. Is it always, sometimes and never during the day and night.
- Using a flashlight and a partner pupils demonstrate daytime and nighttime.
 - Stand facing your partner who is holding the flashlight. It is daytime.
 - Let pupils turn around so they cannot see the light. It is nighttime
 - Turn around in the same direction until it is daytime again.

RESOURCES

1. Pupils
2. models of PLANETS.
3. Coloured clay, card box
4. Paper for chart.
5. Flashlight.

6. Picture of sun and moon.
7. Pictures of stars

ASSESSMENT STRATEGIES

1. Assess pupils model of the solar system
2. Assess colouring sheet for neatness
3. Assess pupils ability to name at least 3 planets
4. Test with true or false or fill in the blank questions.
5. Assess pupils' participation in class discussion and ability to work in small groups.

UNIT 11: MATERIALS IN OUR ENVIRONMENT

ATTAINMENT TARGET 3: Physical Science

SESSIONS: (8 – 10)

LEARNING OUTCOME 3: Describe the properties of some materials found in the environment.

SUCCESS CRITERIA 1: Investigate the properties of materials.

ACTIVITIES:

- Let pupils observe some materials found in the school surroundings or brought from home. Let pupils talk about each material: transparency, hardness and strength. For example; glass, it is hard, transparent, and fragile. Let them describe properties of wood, clay, sand, plastic, cloth, etc.
- Give pupils a variety of objects and let them identify the materials suitable for making these objects.

SUCCESS CRITERIA 2: Match the properties of materials to their use

ACTIVITY:

- Let pupils match objects, to selected materials and say why material was chosen. For example: stone: making walls, houses, because it is strong, hard and plentiful

SUCCESS CRITERIA 3: Choose materials suitable for making Kites, windmills, water wheels and pot handles

ACTIVITY:

- Let pupils construct a kite and windmill using the appropriate materials. Plastic or Paper, Twine, Thread and the central vein from coconut leaf



- Put pupils in small groups and let them construct windmills using coconut leaf, or other available materials.



SUCCESS CRITERIA 4:

Construct a simple object using chosen and appropriate materials.

ACTIVITY:

- Let pupils make an object or a toy using their own creative abilities. They should be allowed to choose the material or materials necessary for making their selected object. They can then explain to the class what their object is and it is used. Their objects are then displayed in the science Corner. The teacher will assess them for neatness and creativity.



RESOURCES

1. Tennis ball

2. Chubby bottle
3. Piece of clay
4. Pieces of plastic
5. Pieces of Metals
6. Wood

ASSESSMENT STRATEGIES

1. Match objects to the natural materials from which they are made
2. Assess pupils kite, toy truck, toy car or windmill, Use rubric).
3. Written test with true or false items. E.g. A kite can be made from wood. (T/F)

UNIT 12: FOOD FROM ANIMALS

ATTAINMENT TARGET 4: Agricultural Science

SESSIONS: (6 – 8)

LEARNING OUTCOME 3: Recognize that animals are used to produce food in agriculture.

SUCCESS CRITERIA: Name the flesh of various animals.

ACTIVITIES:

- Teacher makes a list of animals and their corresponding flesh. Pupils are asked to add to the list. Involve pupils in discussion. Pupils make mention of animals and the name of its flesh.

ANIMALS	FLESH
COWS	BEEF
GOAT	VEIL
SHEEP	MUTON
FOWL	POULTRY
PIG	PORK

- Pupils state their favourite, meat and Why?
- Match flesh to its respective animal.

SUCCESS CRITERIA 2: Name some products that are developed from animal parts.

ACTIVITIES:

- Discuss some animals parts and some products that can be obtained from them.
- Bring to class items made from animal parts. Pupils will identify items and state from which animal part they are made. (straps, shoes, coats, etc)
- Given a worksheet ask pupils to identify and colour other products developed from animal parts.

- Match products (pictures) to the animal parts.

SUCCESS CRITERIA 3:

List other products that are obtained from animals

ACTIVITY:

- Teacher states some products that are obtained from farm animals, and then invites pupils to contribute to the list written on the chalkboard. Example: milk, cheese, and butter from cow: Ham, pig snout, pigtail, lad from pigs, Wool from sheep for sweaters, clothes, hats etc.

RESOURCES

1. Pictures of meat cuttings from various animals.
2. Pictures of animals/ beef, mutton, port, turkey and poultry
3. Tin stuffs – pictures of products (corned beef, leather strap, shoes, coats, etc)

ASSESSMENT STRATEGIES

1. Pupils are asked to fill out table with the names of animals and the name of their flesh or given the flesh of the animals they are asked to name the animal.
2. Given manufactured products or items pupils are asked to name the animals from which they are obtained or manufactured.
3. Write short sentences on a farm animal. For example, I have a cow. It gives me milk. My cow is brown. My cow has no horns. My cow made a small cow/ calf.

ADDITIONAL RESOURCES

LIFE SCIENCE

1. Sample of plant life, live pet (preferably a kitten).
2. Pictures of animals in their habitat, plants, animals.
3. Song sheet, radio cassette player, worksheet, cassette, posters made.
4. Watering can, water, dirt.

EARTH SCIENCE

1. Games, flash card, wind vane, pictures of different countries.
2. Worksheets, VCR, videocassettes, puzzles.
3. Straws, feathers, pencils, 2 litre bottles, scissors, small Clorox bottles.

PHYSICAL SCIENCE

1. Bell, play dough, dough, school bags, tin of corned beef.

AGRICULTURAL SCIENCE

1. Paper, pencil, worksheets.
2. Various agricultural tools, seeds, seedlings, soil, sandbox, sand.

SAMPLE UNIT PLAN GRADE 1 SESSIONS (10-112) KSI

UNIT 1: OBSERVING LIVING THINGS

LO: Describe the external structures of some living things.

SUCCESS CRITERIA	ACTIVITIES	RESOURCES/MATERIALS	ASSESSMENTS
1. Identify the external parts and discuss the functions and uses of local plants	Nature walk: Let pupils observe plants in their natural environment and collect a few samples to take back to the classroom. Pupils discuss what they see in front of them (parts of a plant). In table form students write the name of the part in one column and its function in another.	Parts of plants to include; leaf, stem, flower, root, note books, pencils, teacher and pupils	Teacher assesses students table for completion and correctness.
2. Care for a plant for at least two weeks.	Grow bean seeds in small jars for 2 weeks and observe their growth. Pupils will record their observations. Also let pupils draw the resulting seedling in their notebook.	Beans, glass jars, moist soil/moist tissue, record books	Teacher will assess pupils' records over the 2 weeks period and assess the size, neatness and accuracy of the drawing.
3. Describe a known pet	Pupils look at the picture of the pet the teacher has brought to school. They talk about the animal and all that they know about it.	Picture of pet, Pupils , Teacher	Assess pupils base on their participation in the discussion
4. Identify the external parts and discuss the functions and uses of local animals	Pupils view pictures of various local animals and list their functions and what they are used for. (Lets learn science textbook pages 18-29)	Pictures of animals,	Assess pupils' written work for correctness. They could also be assessed through questions and

<p>5. Observe some plants in different local habitats</p>	<p>Nature walk; Pupils observe plants in their local environment and notice where some of them grow.</p>	<p>School surroundings, pupils, teachers, notebooks, pencils</p>	<p>answers</p> <p>Assess pupils for listings made in their notebooks</p>
<p>6. Observe and evaluate some plants in their habitat</p>	<p>Working in small groups pupils make a poster to display various plants and write statements to describe their habitats</p>	<p>Manila, card box or construction paper, markers, crayons.</p>	<p>Assess pupils on the appropriateness and neatness and clarity of their poster and their involvement in developing the poster.</p>

SAMPLE LESSON PLAN

GRADE I

Duration: 80 minutes

Unit I: Observing Living things

L O: Describe the external structures of some living things

SC: Identify the external parts and discuss the functions and uses of local plants

Materials and Resources

Plant parts, table with two columns, pencils, school environment

Introduction:

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

Transition Statement

Tell pupils that the aim of the lesson is to help them to describe the external parts of plants.

Science process skills to be developed

1. Observation,
2. Communication

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.
- 5- Lead pupils back to the classroom
- 6- Let them discuss their observations and complete the table below

Example

Plant Parts	Function
Roots	
Stem	
Leaf	
Flower	
Fruit	

Conclusion

Each group to present their results to the rest of the class

Assessment

Monitor pupils' ability to work in groups and assess table for correctness and completion