

SCIENCE AND TECHNOLOGY

CURRICULUM GUIDE

KEY STAGE 2

GRADE 4

© MINISTRY OF EDUCATION
HUMAN RESOURCE DEVELOPMENT
DOMINICA.
2010.

ACKNOWLEDGEMENT

The Ministry of Education, Human Resource Development, Sports and Youth Affairs through the Curriculum Measurement and Evaluation Unit would like to thank in a very special way a number of schools, Principals and Teachers for their cooperation, and practical involvement in the development of the Science and Technology Program of Study and curriculum guides for Key Stage 2(KS 2).

Special thanks to:

DfID: for its financial contribution toward the development of the curriculum framework and all the associated activities which preceded the piloting of the curriculum guide.

Cambridge group of consultants lead by Mr. John Stewart for his services in making available and managing the DfID funds, and for securing its availability for the financing of the National Curriculum and its associated activities.

Mrs. Lindsay Howard for her critical contribution in supervising and advising curriculum Officers, aided by Principals and dedicated teachers, in seeing that the task could be approached professionally to arrive at a conclusion which reflects the goals and vision of our education system and reflect the values of our society.

Principals and staff of all primary and secondary schools from which teachers were often requested and whose services were solicited at every stage of the curriculum development process. The following teachers who consistently worked along with the Education Officer, Mr. Frank J Newton, must be commended for their invaluable contribution, and these would include; Mr. Andrew Shaw of Wesley Primary, Mr. Alexander Burton of Sineku Primary, Mr. Solomon Pascal - Principal of Grand fond Primary, Mrs. Albertha Peter of Portsmouth Secondary School, Miss Annette Austrie of the Convent High School, Miss Sonia Felix of Bellevue Chopin Primary, Miss. Anthea Felix of St. Luke's Primary, Mr. Jerry Coipel principal of Roseau Primary and Mr. Jeff Jno. Baptiste - head of science department at the Isaiah Thomas Secondary School.

Another group of teachers worked directly on the writing of the Science and technology Curriculum guides for Key Stage two (KS2). Their consistency and professionalism brought the process to the piloting stage. They are Miss. Jacqueline Henderson of Goodwill primary, Miss Nadette Douglass of Grand Bay Primary, Miss. Nadia Laurent of the Roseau Primary, Miss Gloria Angol of Soufriere Primary and Miss Jemima Hill of Newtown Primary.

Of course, special mention must be made of Mr. Nicholas Goldberg head of the Curriculum, Measurement and Evaluation unit for steering and guiding the process in all the subjects to completion by giving valuable advice for and assisting in the planning towards the piloting of the entire process.

The General Editor Mr. Raymond Henderson whose responsibility it will be to produce a final document which will excite all those who come in contact with the same.

And last but not least, the many typists who engaged their typing skills in formatting the finished documents. These would include; Mrs. Margaret Gordon, Miss Florisca Moses, Miss. Christianie Myler, Mrs. Glenda Irish and Ms Doria Honoré.

CONTENT PAGE

CONTENT	PAGE NUMBER
ACKNOWLEDGEMENT	1
INTRODUCTION	5
SUBJECT SUMMARY TERM 1	8
UNIT 1	9
UNIT 2	11
UNIT 3	13
UNIT 4	15
ASSESSMENT ACTIVITIES (UNIT 1-4)	19
SUBJECT SUMMARY TERM 2	22
UNIT 5	23
UNIT 6	26
UNIT 7	28
UNIT 8	30
ASSESSMENT ACTIVITIES (UNIT 5-8)	33
SUBJECT SUMMARY TERM 3	36
UNIT 9	37
UNIT 10	38
UNIT 11	40
UNIT 12	44

INTRODUCTION

While Science is the study of nature, including the biological and physical world, Technology on the other hand, is a method of problem solving which requires all the necessary resources and skills used to gather objective evidence to design and develop gadgets geared towards making life easier and more pleasant.

The Science and Technology curriculum is therefore designed to develop these skills and habits of mind, which are not only directed towards investigating and arriving at plausible conclusions but also towards finding answers to the problems that affect our daily lives. Thus, science education will develop personal strengths, which can be directed in a properly conceptualised 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 attitudes to work.

The Curriculum guide has proposed a number of science activities geared towards helping all students develop their personal strengths. The science and technology activities are also expressed in such a way that they should meet students' social and psychological needs or recognition, affection, security, belongingness and so on. Students will 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, students will enjoy science as a fun activity which includes artistic experiences, creating projects, carrying out investigations that they plan, taking part in science games and contests, recognizing that recreational activities and sports, example basketball, all have science information for students. Students involved 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 the critical importance of that industry in our food security policy. So in order to make sure that our students 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 to meet the needs of society, it is worthy that it be included in the science curriculum and not as a separate subject.

The Curriculum guide is organized in such a way that teachers, students and parents can easily follow it. 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 teachers find it easier teaching from a unit model approach. The teachers must realise that science needs a lot of preparation if students are to gain the maximum from their efforts. No longer should we concentrate our efforts on the above average students. The differentiation of the curriculum in order to address the learning needs of all students should be our foremost goal if we are to comply with the ministry's vision of quality education for all.

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

Thus the strand is further organizes 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 needed for the successful completion of the learning programme. The learning outcomes and success criteria should be seen as a step forward towards a student-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. Students 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 students' interest and give them the opportunity to express these without interruption. This is the way to go. Only this time, we are clearing the misconceptions rising time and time again.

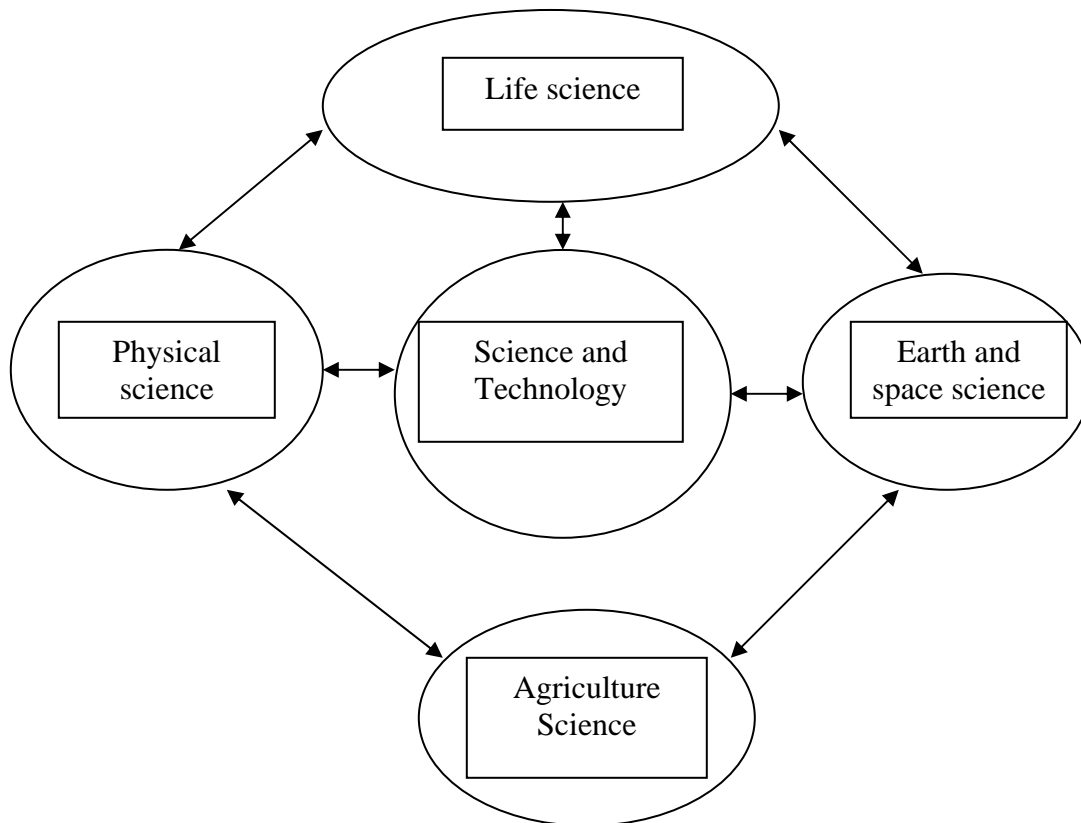
Science and technology are also linked to all the various subjects within the broader curriculum. Here we may mention that the scientific process is the preferred approach to investigating problems within the other subjects. The tools, devices and other gadgets necessary to deliver the other subjects 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 on the scientific development of the students - the former for the measurement and calculation skills and the latter for its broad communication skills which are impacted on all students.

The year summary is broken up into its corresponding term summary, and each is placed at the beginning of each term's activities. The term consists of three (3) or more 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 students 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 students of Grade 2, 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 students develop scientifically. Scientific information is not absolute and may change as we advance because of the advent of new technologies and better approaches. Dominica is a big, well-equipped 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



SCIENCE AND TECHNOLOGY

SCIENCE AND TECHNOLOGY

SUBJECT SUMMARY

KEY STAGE 2

GRADE 4

TERM 1

UNIT 1:	LIVING THINGS IN THE ENVIRONMENT	SESSIONS
AT 1:	LO1	6-8
SC's	(1-3)	
UNIT 2:	WEATHER AND CLIMATE	
AT 2:	LO1	8-10
SC's	(1-5)	
UNIT 3:	ENERGY	
AT 3:	LO1	6-8
SC's	(1-3)	
UNIT 4:	AGRICULTURE SCIENCE	
AT 4:	LO1	6-8
SC's	(1-3)	

GRADE 4

TERM 1

UNIT 1 LIVING THINGS IN THE ENVIRONMENT

AT 1: LIFE SCIENCE

SESSIONS (6-8)

LO 1 DESCRIBE THE ECOSYSTEM OF THE LOCAL ENVIRONMENT

SUCCESS CRITERIA: 1 Research the terms habitat, environment, ecology and ecosystem

ACTIVITIES:

- Using the Internet as a resource, let pupils research the terms habitat, environment, ecology and ecosystem. Let them do a class presentation. They can work individually or collectively
- Let pupils use the library (encyclopaedia as a resource to search for the terms habitat, environment, ecology and ecosystem. Let them do a class presentation. Let them work in groups. A leader in each group will report their findings
- Using whatever resource possible let pupils research the terms habitat, environment, ecology and ecosystem. Let them do a class presentation. (They work in groups or individually)
- Have pupils working in groups stake out an area on the school ground 1x1 m or let pupils observe the animal and plant life and non-living things and report along these lines
 - (a) What living things are there?
 - (b) Which non-living things are there?
 - (c) How do the non-living things and living things affect each other?

SUCCESS CRITERIA: 2 Identify non-living (abiotic) factors in an ecosystem and show how they contribute to the support of life

ACTIVITIES:

- Let pupils identify non-living factors in the ecosystem such as rocks, air, and water. Let pupils discuss and report how these factors contribute to the support of life
- Place pupils in small groups of 4-5. Let them carry out an experiment to describe the reaction of seedlings when there is a change in the direction of sunlight

(see page 21 activity 1 chapter 3 in book 4 “New Modern Science for the Caribbean”)

- Place pupils in small groups of 4-5. Let pupils carry-out an experiment to observe how living things use light, temperature and water. Each group of pupils can be given a different factor to investigate (see page 57 activity 1 and 2 and Finding Out book 6)
- Take pupils on a nature walk to the seashore. Let them identify some abiotic factors such as rocks and water. Let them describe how they support life. Let them share their findings when they return to the classroom

SUCCESS CRITERIA: 3 Give examples of interactions among biotic elements in an ecosystem

ACTIVITIES:

- Using the Internet or encyclopaedia as a resource let pupils research the terms, parasitism, commensalisms, mutualism and let them do a presentation either in groups or individually
- Given a number of parasitic relationship let pupils identify the host and the prey or parasite. Let them identify mutual relationship between two organisms. Let pupils identify commensual relationship between two organisms and state the names and roles of each organism in the relationship examples: identify the prey and host in the following: a caterpillar on a rose plant, a worm inside a dog, a tick on a cow.
- Have students use a magnifying glass to observe animals on a tree. Let them decide what is taking place. Students give reasons for their decisions
- Have students observe and report on interactions among living things in their ‘model’ ecosystem

UNIT 2: WEATHER AND CLIMATE

AT 2 Earth and Space

SESSIONS 8-10

LO CONSTRUCT AND USE INSTRUMENTS TO MEASURE, TO RECORD THE WEATHER AND INTERPRET THE RESULTS

SUCCESS CRITERIA: 1 Design and construct the following weather instruments

- ❖ **A wind vane with 8 cardinal points**
- ❖ **An anemometer**
- ❖ **A simple working thermometer**

ACTIVITIES:

- Using the following materials (paper, pencil, scissors, cardboard, compass, plastic, soft drink bottle, drinking straw, shallow pan filled with rocks and marker) construct a wind vane for measuring wind direction
- Let pupils use materials in their environment, such as cardboard, red thread or twine, pencil and a black marker to construct a model thermometer. Show pupils a real thermometer.
- Let pupils use materials to construct an anemometer (e.g. stick, small balls. (See 'Let's Learn Science pg 154)
- Let pupils construct a model thermometer. See 'Finding Out 5 pg 40
- Take students on a field trip to a Met office. Let them observe how the instruments used in the measurement of weather are used

SUCCESS CRITERIA: 2 Use a wind vane to observe wind direction and use the instrument to keep records

ACTIVITIES:

- Let pupils record the direction of the wind. Using a wind vane they have constructed let pupils fill out the following table. Their recording must be done at the same time everyday.

Day	Wind Direction
1	
2	
3	
4	

SUCCESS CRITERIA: 3 Record weather using appropriate symbols

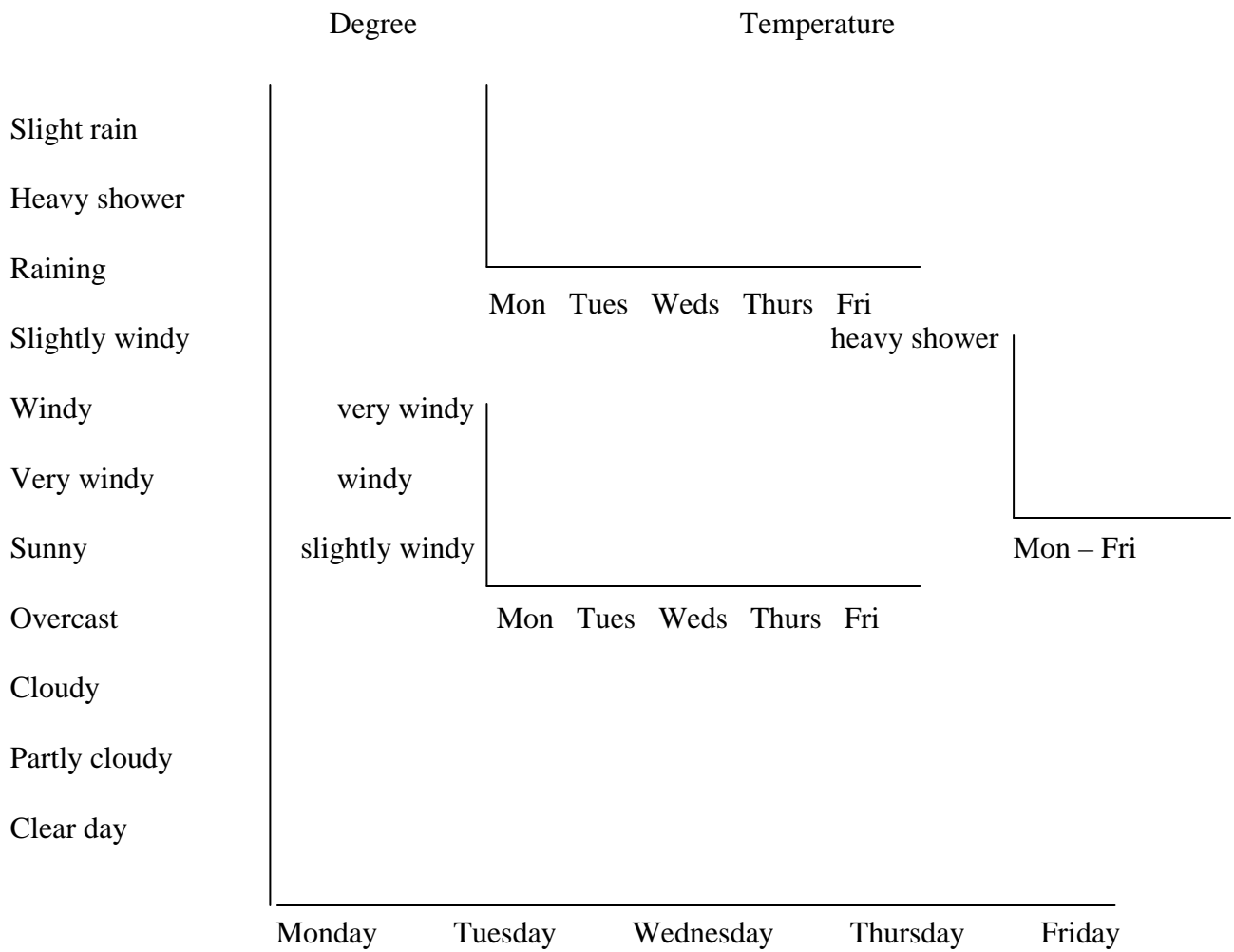
ACTIVITIES:

- Let pupils look at a DVD of someone presenting the weather report
- Let pupils take a look at some of the symbols used. Pupils will now discuss the symbols and its importance to everyone. (Meaning persons who are unable to read will recognize the pictures)
- Pupils will use things in the environment to construct their own weather chart (cotton for cloudy, rice for rain drops etc)
- Ask pupils to construct a chart to collect data on the daily weather for a week. This can be done as a group or individually. Encourage pupils to listen to the weather report given on the T.V. In class pupils will compare their observations and what was given on the T.V.
- Pupils construct a large model of a weather chart to place in the classroom based on the information given on the DBS weather report.

SUCCESS CRITERIA: 4 Summarize and represent data from their recording of weather by using bar charts

ACTIVITIES

- Pupils will use the information that they collect on the daily weather for a week and represent it on a bar chart
- Pupils will discuss the information which they would wish to obtain from the graph
- Pupils construct two bar graphs. One to record their findings and the other what was given on the nightly/morning weather report



- Pupils are asked to interpret both charts and analyze what the graph shows

UNIT 3: ENERGY

AT3: PHYSICAL SCIENCE

SESSIONS 6-8

LO INVESTIGATE WAYS IN WHICH HEAT AND LIGHT AFFECT MATTER

SUCCESS CRITERIA: 1 Investigate the effects of heat on matter (e.g. change in temperature)

ACTIVITIES:

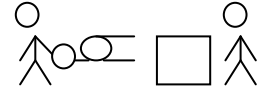
- See activity in book (Let's Learn Science textbook – Standard 3) –
- Suggested material needed: butter, thermometer, liquid etc. Have students place a square of butter in the sun. Let students observe what happens to the butter. Let students say why this happened
- Take and record the temperature of water. Place container of water in the sun or on a stove. Record temperature again after 10 minutes in the sun/2 minutes on stove. Discuss what caused the change in temperature
- Put some milk in a pan on stove. Allow milk to heat until it begins to rise then put off stove. Before milk boils over the pan ask students what caused the milk to rise. Let students say what happened when the stove was turned off. Ask them why did this happen
- Take some sorrel/grass etc., place in a container. Allow students to realize the volume taken up by the material. Place in the sun. Let students observe daily. Let students predict what is happening to the sorrel etc and why. (Students should realize that heat is drying up moisture thus causing shrinkage)

SUCCESS CRITERIA: 2 Investigate the way light does or does not pass through different materials

ACTIVITIES:

- Have students collect a variety of materials; cardboard, paper (different types) glass, mirrors, different colour plastics, plain cloth, cloth of different thickness
- Place students in groups of about 4-5. Provide each group with a light source preferably flashlight

- Have students stand between material and flashlight
Students group materials into those which light passes through fully, (transparent) partially (translucent) or not at all (opaque) or reflectors



- Have students discuss why this is so. Place objects on a surface. Allow pupils to notice the shadow created. Pupils give reasons for the shadow. Move objects further from and closer to the light source. Let pupils observe what happens
- Let students use a light source to play shadow puppets: Source: 'Let's Learn Science 4' pg 138

SUCCESS CRITERIA: 3 Compare various ways in which heat is transferred

ACTIVITIES:

- Explain that heat can be transferred through convection (water); radiation (sun); and conduction (through solids)
 - Let pupils do activity to show that heat is transferred through convection
Activity mixing hot and cold water
Source: 'Let's Learn Science workbook 3 pg 59-60
 - Teacher does this activity to show that heat is transferred through conduction
Source: 'Let's Learn Science workbook 3 pg 61-62 Heat on the Move

UNIT 4 AGRICULTURAL PRACTICES

AT 4: AGRICULTURAL SCIENCE

SESSIONS 6-8

LO DESIGN AND CARRY OUT A PLAN FOR ACTIVITIES IN AGRICULTURE

SUCCESS CRITERIA: 1 List activities that are carried out before plants are planted/seeds are sown

ACTIVITIES:

- Take pupils to the un-cleared spot in the school garden
- Discuss with them what should be done in order to grow crops in this area
- Follow the under-mentioned steps:
 - prepare the land
 - clear the land
 - plough the land
 - refine the soil
 - dig drains
 - form garden beds
 - Let pupils write in their books the type of tool/tools needed to carry out such activities.
- Let pupils prepare a parcel of land and then plant and cultivate it with vegetable crops of their own. (Preferably short term crops, cabbage, cucumber, lettuce, or tomato).
- Selecting and preparing planting materials
 - seeds
 - seedlings
 - Buy good, healthy seed
 - Make nursery boxes
- Prepare nursery boxes using – dry grass and straw – potted soil mixture
- Sow the seeds
- Thin out the seedlings
- Harden the seedling

- List this activity with the one above.

SUCCESS CRITERIA 2: Place in proper sequence the various activities that must be done before crops are planted

ACTIVITIES:

- Provide students with a jumbled list of activities which are required before crops are planted. Students place list in sequence
- Have students role play situation showing in sequence the steps they should follow before planting crops

SUCCESS CRITERIA 3: Demonstrate how various crops are planted

ACTIVITIES:

- Take students on a field trip to a farm. Allow them to observe a farmer planting crops from seeds, suckers and stems
- Allow students to plant crops from seeds, suckers and stems
- Have pupils write essay on how crops are planted

ASSESSMENTS

TERM 1 **UNIT 1** Describe the ecosystem of the local environment

SUCCESS CRITERIA: 1 **Describe the terms habitat, environment, ecology and ecosystem**

ASSESSMENT: Fill in the blanks with: ecology; ecosystem; habitat; environment

1. a place where an organism lives..... (habitat)
2. the study of how living and non-living parts of the environment affect each other..... (ecology)
3. external conditions affecting the lives of plants and animals..... (environment)
4. sections of the environment which include living and non-living matter..... (ecosystem)

SUCCESS CRITERIA: 2 **Identify non-living factors in an ecosystem and show how they contribute to the support of life**

ASSESSMENT: Identify the non-living factor in each of these below:

- a) Coconut tree, sea shore, sea grape tree
 - b) Crab, mollusc, sea, oysters
 - c) Rocks, seaweed, fish, starfish
 - d) Worms, ants, soil
- Choose one of the factors which you identified in question 1. Explain how it contributes to the support of life
 - Choose one of the factors which you identified in question 1. Draw a picture showing how it contributes to the support of life. Use words to help explain your picture

SUCCESS CRITERIA: 3 Give examples of interactions among (living things) habitat (biotic factors in an ecosystem

ASSESSMENT:

- How is commensalism like mutualism? How is it different?
- Give one example of each relationships
(a) parasitic-host (b) commensalism (c) mutualism
- Which of these relationships would be most beneficial to learning in the classroom?
(a) commensalism (b) parasitic-host (c) mutualism
Why do you say so?
- Fill in the blanks using parasitic-host, commensalism or mutualism
(a) A bird with a nest in a tree.....(commensalism)
(b) Flea on a dog.....(parasitic-host)
(c) Ants eating the extra juice from aphids (mutualism)

UNIT 2: Weather and Climate

SUCCESS CRITERIA: 1 Design and construct a wind wane, anemometer and simple working thermometer

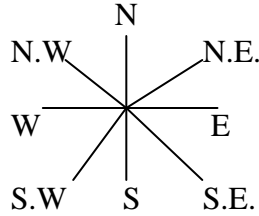
ASSESSMENT:

- Assess students on group participation, ability to work together and completion of the instruments

SUCCESS CRITERIA: Use a wind wane to observe wind direction and use the instrument to keep records

ASSESSMENT:

- After students have observed the wind direction for 1 week, collect books and check students' records
- Draw a wind wane showing a south easterly wind



SUCCESS CRITERIA: 3 Record weather using appropriate symbols

ASSESSMENT:

- Make a chart to record the weather conditions in this report:

Present weather is windy and partly cloudy with drizzles. Sunrise 5:50am; sunset at 6:05pm

SUCCESS CRITERIA: 4 Summarize and represent data from their chart of weather by using bar charts

ASSESSMENT:

- Assess pupils on how they have used the information to construct their graph and the completion of their graphs

UNIT 3 Energy

SUCCESS CRITERIA: Investigate the effects of heat on matter (e.g. change in temperature)

ASSESSMENT:

- The following items were placed in the sun for 30 minutes. Explain what changes you expect in each



A cube of lard/shortening



The water in the jug



Mr. Brown fitted the nail into the hole without any problems. He then removed the nail and heated it. When he tried to put it back into the hole, the hole seemed too small. What do you think happened?

These containers of water were placed in the sun for the times indicated. Put them in order from coolest to hottest



45 Minutes



90 minutes



1 hour



15 minutes

SUCCESS CRITERIA: 3 Investigate the way light does or doesn't pass through different materials

ASSESSMENT:

- Write opaque, translucent, reflecting or transparent next to the following:
 - (a) A page from your exercise book.....
 - (b) A mirror.....
 - (c) A clear plastic.....
 - (d) A piece of cardboard.....



Shane wants to form a large shadow. Should he move the ball closer to or further away from the light?

SUCCESS CRITERIA: 3 Compare various ways in which heat is transferred

ASSESSMENT:

- Give 3 ways in which heat can be transferred



When Mrs. Brown touched the handle of this pan on the fire it burnt her fingers. How was the heat transferred to the pan's handle?

Complete:

We are able to feel the sun's heat through.....

UNIT 4

Agricultural Practices

SUCCESS CRITERIA: 1 List activities that are carried out before plants and seeds are sewn

ASSESSMENT:

- List the activities which should be done before seeds are sewn
- List the steps which should be taken before a crop is grown

TERM 2
GRADE 4

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

UNIT 5 PLANTS AND ANIMALS

AT 1: LIFE SCIENCE

SESSIONS: 8-10

LO 2 DESCRIBE AND EXPLAIN THE IMPORTANCE OF GROWTH, DEVELOPMENT AND REPRODUCTION OF PLANTS, ANIMALS AND HUMANS

SUCCESS CRITERIA 1: Observe and discuss the development of a butterfly

ACTIVITIES:

- Take pupils on a nature walk around the school or neighbourhood. Let pupils look for butterflies. Their pupae, larva and eggs. Let them note where these were found. On returning let the pupils place the different stages of the development of the butterfly in correct order; (eggs, caterpillar, pupa, adult butterfly). Let them make drawings in their note books (see page 22 of 'Let's Learn Science Book 3)
- Let pupils use the textbook on page 26-27 to study the life cycle of the mosquito. Let them describe the various stages. (Let's Learn Science Book 3). Let them draw the different stages of the life cycle of the mosquito (see page 27 of text book and page 25 of work book 'Let's Learn Science)

SUCCESS CRITERIA 2: Describe simply, reproduction in human beings

ACTIVITIES:

- Let pupils describe how human beings reproduce in their own words. Teacher may introduce topic through discussion on conception. Male and female reproduce through conception during which the sperm from the male and the egg from the female join together to form a foetus which remains in the female for nine (9) months. The foetus is formed in the uterus which is filled with amniotic fluid. The foetus is attached to the mother through the umbilical cord. At birth a baby is born. Let pupils draw the sperm and the egg or ovum to note the difference.
- Let pupils use available resources such as the Internet, encyclopaedia and textbook to research reproduction in humans. Let them make a presentation to the class
- They should attempt to answer the following questions

- How long does it take from conception to birth in humans? What are the unborn young called? What is the fluid which surrounds the young called? Name the cord by which the foetus is attached to the mother.

SUCCESS CRITERIA 3: Discuss and explain reproduction in birds

ACTIVITIES:

- Invite a veterinarian to the classroom to talk to the pupils on reproduction in birds (chicken). Let them discuss a number of questions in the class before the arrival of the Veterinary officer. They should ask the questions that they previously discussed in the class. Let them write a report on the Vet's presentation.
- Let pupils research the development of a chick from egg to hatching. Let them say how long it takes for the chicken to hatch. They should note the information in their note book. The hens' eggs are fertilized inside by the sperm from the cockerel. The eggs are laid, and then it takes 21 days for the chicks to hatch. The chicks later develop in an adult hen. (Egg → Chick → Hen)

SUCCESS CRITERIA 4: Discuss and explain reproduction in fishes

ACTIVITIES:

- Take pupils on a visit to the prawn farm at Belfast. Let the Fisheries Officer explain the process of reproduction in fishes to the pupils. Let the pupils note the important points and write a report on returning to the classroom. Let them present their report to the class or collect the reports for assessment
- Let pupils use different resources to research reproduction in fishes, (Internet, textbooks, encyclopaedia etc). Let them make a presentation to the class. This activity can be either a small group or individual activity.
- Teacher should lead students into a discussion on reproduction in fishes. The female fish lays the eggs in the water then the male fish spread sperm over the fish in the water. The fish hatches after a few days into very tiny larva, and then a small fish develops and grows into an adult fish. This reproductive cycle continues. (fish eggs, fish larva, small fish, adult fish). Let pupils draw the various stages in

their notebooks and use arrows to point to the direction in which the fish development occurs.

UNIT 6: Resources

AT 2: EARTH AND SPACE

SESSIONS: 10-12

LO 2: INVESTIGATE THE PHYSICAL PROPERTIES OF WATER AND AIR

SUCCESS CRITERIA 1: Discuss the physical properties of air

ACTIVITIES:

- To identify air let pupils put their hands in front of their mouth and breathe in and out consciously
 - (a) can they feel something pushing against their hand?
 - (b) what do they think it is?

- Let pupils hold a sheet of paper and swing their hand around
 - (a) does the piece of paper bend?
 - (b) what is it that bends the paper?

- Fill a bottle with water. Place the mouth of the bottle into the mouth of the tap. Observe what happens when you turn on the tap slowly to allow the bottle to be filled with water.
 - (a) what do you hear when the bottle is being filled up with water?
 - (b) what do you think is escaping from the bottle when it is being filled with water?

- Air occupies space. Air is found everywhere. All spaces are filled with air. All empty objects are not really empty but filled with air

- Take a balloon pump or blow air into it. Observe what happens
 - (a) why does the balloon become bigger?
 - (b) does this show that air occupies space?

Now let off the balloon. Why does it fly about?

- Submerge an empty glass upside down completely into a bucket of water. Observe what happens
 - (a) why does water not completely fill the empty upside down glass?
 - (b) does this show that air occupies space?

- Pass a drinking straw under the glass until it is just above the level of the water in the glass then take a pull at the straw and observe what happens. Describe what happens

Why do you think water goes into the glass now?

- Air has mass.
Hang two similar balloons to the ends of a stick so that the stick balances. Now, inflate one of the balloons and place it back on the stick. What happens and why? This shows that air has mass and weight. Pupils should conclude that three physical properties of air it **occupies space**, it have **weight** and **mass**.

- SUCCESS CRITERIA 2 & 3:**
- 2: Distinguish between various soils on the basis of physical properties**
 - 3: Investigate the water holding capacity of different soils (sandy, clay, loam)**

ACTIVITIES:

- Place pupils in 3 groups and give each group a sample of a sandy soil or a clay soil or a loam soil. Let pupils carry out the below activity;

Materials: funnel or bottle top and bottle bottom, (by cutting a small water bottle into two halves), cotton wool/fitter/tissue paper, soil samples, water, plastic cup/bottle bottom obtained from cutting the water bottle.

Push some cotton wool into the necks of the funnels. Stand the funnels in the containers

Add a cupful of the soil sample to the funnel

Fill the plastic cup with water and pour it into the soil sample in the funnel. Measure the amount of water which passes through each soil sample. Also find out what amount of the water remained in the soil. The difference between the amount of water poured and the amount of water filtered through the funnel is the amount of water remained in the soil.

Observe what happens and answer the following questions

- (1) which soil drained the fastest?

(2) which soil drained the slowest?

(3) which soil retained most water?

(4) which soil retained less water?

- Take a sample of wet soil between your thumb and forefinger and feel whether the sample is gritty, coarse or smooth. If it is coarse then the soil is sandy. If it is smooth it is clay. If it is gritty it is loam
- Let pupils present the result of their tests in table form. (The table below is just an example and the students should be given an empty one to fill in their information).

SOIL SAMPLES	FEEL OF PARTICLES	WATER RETENTION	DRAINAGE
SAND	coarse	low	high
LOAM	gritty	medium/moderate	medium
CLAY	smooth	high	poor

UNIT 7 FORCES

AT 3 PHYSICAL SCIENCE

SESSIONS: 6-8

LO 2 DEMONSTRATE THAT THE EFFECT OF FORCES VARIES WITH THE SIZE OF THE FORCE

SUCCESS CRITERIA 1: Observe and describe ways in which the strength of materials can be altered

ACTIVITIES:

- Give pupils a rubber band and ask them to stretch the material until its shape is altered, ask them to describe what happened and why. The materials get thinner and smaller in width. The force applied caused the material to stretch.
- Give pupils a round or cylindrical piece of lead. Ask them to flatten it using a hammer. Let them describe what happens. Did the strength or shape of the material altered?
- Give pupils various types of materials such as Styrofoam board, brick, a wooden board, a hard cover book, a sheet of paper etc. Ask them to try breaking the materials by applying a force. Let them describe what happened in each case and state where a big force or a small force is needed. (See page 107 in ‘Let’s Learn Science book 4)
- Place pupils in small groups give them a sheet of A-4 paper. Let them roll it into a cylinder (use scotch tape to form the cylinder) then place a small load on it, (a book, a stone or a piece of wood/board). Observe what happens; repeat the experiment by folding the paper into cylinders of various diameters. Let them record their findings in the table below. (Pupils should conclude that the larger the diameter the stronger is the paper cylinder).

TUBE	DIAMETER (cm)	AMOUNT OF WEIGHT NEED TO BREAK THE TUBE (g / Kg)
1		
2		
3		
3		

SUCCESS CRITERIA 2: Describe using observation forces that can alter the shape of materials

ACTIVITIES:

- Give pupils materials such as clay, plasticine or play dough and let them develop various shapes of objects. Let them state the type of force applied such as push, pull and twist
- Using plastic bottles, balloons and cups. Let pupils apply various forces to change the shape of the objects. (Squeeze, pressure when blowing a balloon). Let pupils state the force used to change the shape of the object

SUCCESS CRITERIA 3: Observe how the materials used in a structure affect its strength

ACTIVITIES:

- Take pupils on a field trip to observe bridges and other structures. Let them write what they observed such as the type of materials used in constructing the named structures. Let the pupils list other materials that could be used to enhance the strength of the structure. (Steel, cement, sand, etc)
- Let pupils stack magazines and or books on top of a cardboard box and observe what happens. Let them explain what happened and note the same in their textbook
- Let pupils place the same number of magazines and books on a wooden box of similar size to the cardboard box above. Let them observe and explain what happened. Compare the results above to that of this activity
- Let pupils do the activity 10.3 in work book 2, page 85, 'Let's Learn Science' Use match boxes that are stacked in different position, that is long sides to long sides, then short sides to short sides, then flat sides to flat sides.
- Let them answer the following: which structure was easier to topple if it is given a push? Which is more difficult to topple when given a similar push? Let them conclude that the wider the base the stronger the structure. In this case the structure made from the boxes placed on their flat sides is stronger.

UNIT 8: CROPS

AT 4 AGRICULTURE SCIENCE

SESSIONS: 6-8

LO 2 DEMONSTRATE AN UNDERSTANDING OF THE NUTRITIONAL NEEDS OF PLANTS

SUCCESS CRITERIA 1: List the major nutrients needed by plants
2: State at least one function of each of the major nutrients

ACTIVITIES:

- Place pupils in small groups and give each group an empty fertilizer bag with the formulae N-P-K. Let them state what the symbols N-P and K stands for. Let each group choose a nutrient and state its function in plants. Let them record their findings in their note books and make a presentation to the whole class. The teacher may choose to invite an extension officer from the ministry of agriculture to explain to the students the use of fertilizes in agriculture production and the importance and functions of the major nutrients to plant development.
- Let pupils participate in applying fertilizers containing the various major nutrients to named plants and record the growth of the plants. Do not allow them to apply the fertilizers to some of the plants so they can use them as controls
- Let pupils find out the parts of the plant that are most affected by nitrogen, phosphorus, and potassium. Let the pupils fill the following table.

SUCCESS CRITERIA 3: Name at least two symptoms associated with the deficiencies of various nutrients (such as potassium, nitrogen, phosphorus etc)

ACTIVITIES:

- Let pupils use the Internet and other research medium to find out the symptoms associated with the deficiencies of potassium, nitrogen and phosphorus

- Invite an Extension Officer from the Ministry of Agriculture to come to the classroom to talk to the pupils on the effects of potassium, nitrogen, phosphorus, zinc and magnesium deficiencies on the growth and development of plants

EVALUATION/ASSESSMENT

UNIT 5:

- 1) Name the four stages in the development of the butterfly
- 2) Name the stage in which the butterfly does not feed
- 3) In what medium can one find the larvae of a mosquito
- 4) What is the unborn child of a human called
- 5) What is the fluid which surrounds the foetus in humans called
- 6) A bird produces live young ones (true/false)
- 7) A bird takes (21 days, 9 months, 1 month) to hatch its eggs
- 8) The eggs of fishes are fertilized (inside/outside) their bodies
- 9) Place the following stages of the life cycle of a mosquito in order; (larva – egg – adult mosquito – pupa)
- 10) The mosquito spends all their life cycle in water (true/false)

UNIT 6:

- 1) State two properties of air ((1) air has mass and; (2) occupies space)
- 2) Air is matter in a (gaseous, solid) state
- 3) Air is only found in the atmosphere (T/F)
- 4) Air has mass but does not take up space (T/F)
- 5) Describe an experiment that shows that air occupies space
- 6) Water boils at (100 °C, 50°C, 212°C)
- 7) Water freezes at 0°C, 32°C, 4°C)

- 8) Sugar and salt are (soluble, insoluble) in water
- 9) Water is a (liquid, solid) at room temperature
- 10) Describe an experiment to determine the freezing point of water

UNITE 7: Which of the following statements are true and which are false?

- 1) A force can be defined as a pull or push ()
- 2) Gravity is the force that pulls objects to the earth's surface ()
- 3) When squeezing an object a force is applied ()
- 4) When closing a door a force is applied ()
- 5) When opening a door a force is not applied ()
- 6) Stretching a rubber band affects its strength ()
- 7) Flattening a cylindrical force of led does not affect its shape ()
- 8) A bridge made of cement and steel is stronger than a wooden bridge ()

UNIT 8:

- 1) Write down the meaning of the following symbols
a) N b) P c) K
- 2) Chlorosis is caused by a lack of (nitrogen, phosphorus)
- 3) The major nutrient/element responsible for the green parts of plant is.....
- 4) Name the major nutrient responsible for roots development in plants
- 5) State one symptom linked to a lack of nitrogen.

GRADE 4

TERM 3

KEY STAGE 2

SESSIONS

UNIT 9: ADAPTATIONS OF ORGANISMS

6-8

AT 1: LO3

SC's (1-3)

UNIT 10: SOLAR SYSTEM

8-10

AT 2: LO3

SC's (1-4)

UNIT 11: MATTER

8-10

AT 3: LO2

SC's (1-4)

UNIT 12: ANIMALS

10-12

AT 4: LO3

SC's (1-5)

UNIT 9 ADAPTATIONS OF ORGANISMS

AT 1: LIFE SCIENCE

SESSIONS: 6-8

LO 3: EXPLAIN AND DISCUSS SIMPLE CELL STRUCTURE OF LIVING ORGANISMS

SUCCESS CRITERIA 1: Identify cells as the building block of all organisms

ACTIVITIES: Activity to show that cells are the building blocks of living things

- Crush a piece of chalk into very fine particles. Ask pupils to compare how the piece of chalk has become to how it was before. Explain that each of these tiny particles can be compared to a cell in a living thing
- Hold discussion as to whether living things would exist if there were no cells. Let students give their reasoning for their answer
- Discuss why cells are important

SUCCESS CRITERIA 2: Use blocks to show that all organisms are made up of cells

ACTIVITIES:

- Have pupils work in groups to build a model of a living thing (e.g. tree, human) out of plastic blocks. Pupils describe what they did and what was used. Pupils say what each block represents. (a cell) in a living thing. Pupils write out a definition for cells

SUCCESS CRITERIA 3: Describe simple structure of plants and animal cells

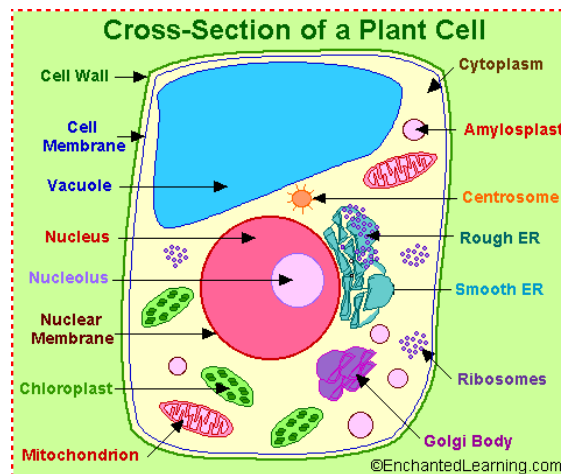
ACTIVITIES:

- Group pupils in groups of 4-5. Provide each group with a picture of a plant and an animal cell. Have pupils describe the structure of the different cells. Have pupils draw the cells. Let them identify parts of the cell such as: cell wall, cell membrane, nucleus, cytoplasm, chloroplasts, vacuole and mitochondrion. They should record the information in their notebook. Also let them share with the whole class.

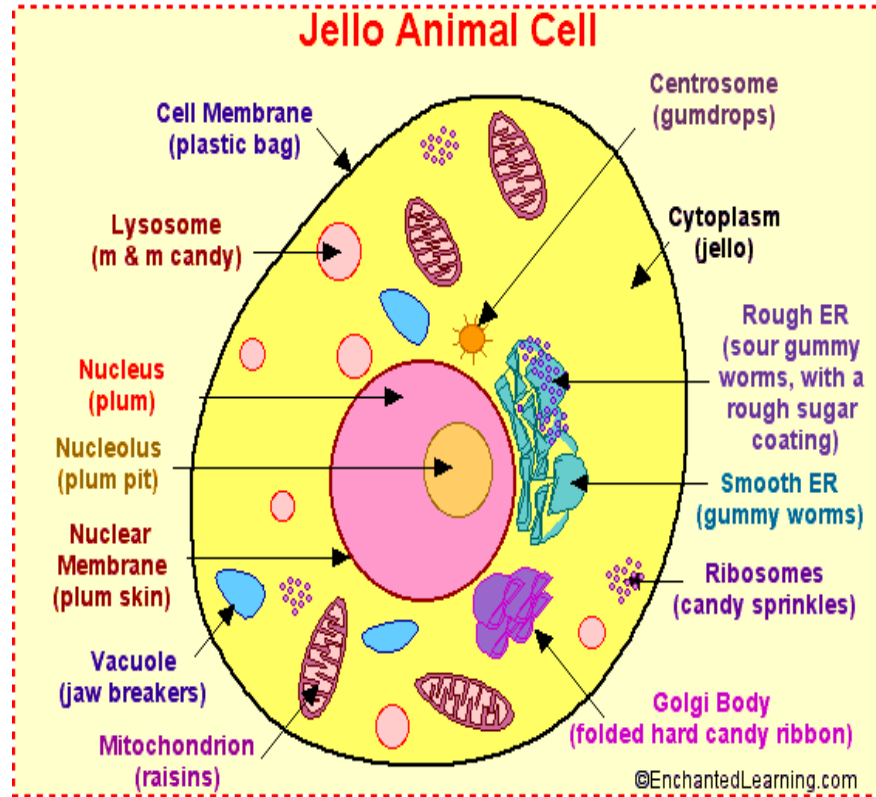
- Let pupils with the help of the teacher discuss the functions of the following parts of the cell, a table is provided below to help them. The teacher will give them an empty table to fill out in class after the discussion or it may be given to them as home assignment.

CELL PARTS	FUNCTIONS
CELL WALL	1. Give strength to the plant 2. Protect the inner parts of the cell
CELL MEMBRANE	1. Encloses the cytoplasm and other parts of the cell 2. Allow some substances to enter and leave the cell
VACUOLE	1. Keeps the cell turgid 2. Stores water and other chemicals 3. May store insoluble wastes
CHLOROPLASTS	1. Contains chlorophyll for the process of photosynthesis
MITOCHONDRION	1. Site where respiration takes place to produce energy
NUCLEUS	1. Contains chromosomes for transferring information from parents to off springs 2. Controls cell metabolism

- Let pupils note the main **differences** between the plant and the animal cell.
 - A plant cell has cell wall the animal cell has no cell wall
 - A plant cell has chloroplast the animal cell has no chloroplasts
 - A plant cell has a big vacuole located almost to the centre; the animal cell has many small vacuoles located all over the cell.
 - The nucleus is located at the centre of an animal cell and in a plant cell it is pushed to one side of the cell by the vacuole.



PLANT CELL



ANIMAL CELL

Note: ONLY the MOST important parts related to the pupils' level should be given to them and these have been outlined in the table.

UNIT 10: SOLAR SYSTEM

AT 2: EARTH AND SPACE

SESSIONS: 8-10

LO 3: UNDERSTAND HOW THE EARTH AND SUN WORK TOGETHER TO FORM NIGHT AND DAY

SUCCESS CRITERIA 1: Explain the relationship between the earth and sun

ACTIVITIES:

- Write the words 'Night and Day' on the board. Have pupils explain how the earth depends on the sun to form night and day
- Have pupils draw pictures showing location of the sun during the day and its location during the night. Have pupils explain what is happening in their picture

SUCCESS CRITERIA 2: Use models to demonstrate rotation

ACTIVITIES:

- Mark an X on a globe. Slowly spin the globe around from West to East. Pupils indicate every time the X reappears. The reappearance of the X is the result of one rotation
- Have a pupil stand at a spot. Have the pupil pivot slowly from West to East. Indicate that when the pupil returns to the same spot at which they begin, this is equal to one rotation

SUCCESS CRITERIA 3: Demonstrate how night and day are formed

ACTIVITIES:

- Put off lights and close windows in order to darken the classroom

Flashlight = sun, globe, earth

Mark an X on a globe or put some other form of marking. Using a flashlight, shine on the globe. Slowly rotate the globe West and East.

Pupils determine in which part of the world it is day and which part it is

night. That it is day at the parts of the globe facing the light and day at the parts of the globe away from the light.

- Have pupils draw a diagram to show how night and day are formed
- Take a pupil to represent the earth. Rotate the pupil slowly. Have another pupil shine a flashlight on the pupil. Divide the class into 4 quarters.....around the classroom. Have pupils call out when it is day or night for them

SUCCESS CRITERIA 4: Construct a simple sun dial

ACTIVITIES:

- How to construct a sun dial
Place a stick vertically into the ground. Every hour measure the distance of the shadow from the base of the stick and record the measurement taken. This can be done by placing a smaller stick in the ground to mark the end of the shadow. Let pupils determine which hours produced the longest and shortest shadow etc. Pupils then explain why this is so.

UNIT 11: MATTER

AT 3: PHYSICAL SCIENCE

SESSIONS: 8-10

LO 3: INVESTIGATE THE DIFFERENCES BETWEEN VARIOUS MIXTURES

SUCCESS CRITERIA 1: Investigate the separation of various mixtures by filtration, heating, chromatography, decanting

ACTIVITIES:

- Separation by filtration and heating (evaporation)
Source: 'Let's Learn Science 3 pg 115-117

To remove sand from a mixture of sand and salt

1. Place the mixture of sand and salt in a beaker
2. Add water to the mixture. Stir with a stirrer to dissolve all the salt.
Add more water if necessary
3. Fold the filter paper into four parts.
4. Place the filter paper in the funnel.
5. Put the funnel over a container and pour the mixture into the funnel.
6. Wash the substance left on the filter paper with water.
7. Dry the washed substance left on the filter paper with water.

What has been collected on the filter paper? What has been collected in the conical flask? Filtration is used to separate soluble solids from insoluble solids

To remove salt from the salt and water mixture, simply evaporate by heating the filtrate until the water dries.

- Separation by chromatography
Source: 'Let's Learn Science pgs 118-119
- Separation by decanting
Pupils mix oil with water
Pupils separate the mixture by pouring out the water

SUCCESS CRITERIA 2: Determine how the dissolving time of a solid is affected by temperature

ACTIVITIES:

- To determine how dissolving time is affected by temperature
Source: 'Let's Learn Science 3 – Part 11 pg 122-123

SUCCESS CRITERIA 3: Investigate how the dissolving time of a solid is affected by its Particle size

ACTIVITIES:

- Activity to show how the dissolving time of a solid is affected by its particle size
Source: 'Let's Learn Science Book 3 pages 121-122
Materials needed: 2 teaspoons of sugar, 2 beakers/glasses, 2 stirrers, water, mortar and pestle (this can be substituted by paper and stone).
 1. Fill a beaker with water and label it 'A'
 2. Place 1 teaspoon of sugar into beaker 'A' and stir until the sugar dissolves.
 3. Record the time needed for the sugar to dissolve completely.
 4. Fill the other beaker with water and label it 'B'.
 5. Using the mortar and pestle, crush the second teaspoon of sugar into smaller pieces. Place the crushed sugar in beaker B. Stir the contents until all the sugar is completely dissolved
 6. Record the time for the sugar to dissolve completely.

What did you observe? Which beaker of water, A or B, takes a shorter time to dissolve all the sugar? What does this activity show? It shows that the smaller the particle size the faster the solid (solute) will dissolve in the liquid (solvent).

SUCCESS CRITERIA 4: Investigate how temperature affects the solubility of a Substance

ACTIVITIES:

- **Activity to determine how temperature affects solubility of a substance**
Source: 'Let's Learn Science Book 3 pages 124-125.
Materials needed: Sugar, a spoon, a stirrer, an alcohol lamp, a beaker and water.

1. Fill a beaker with water
2. Add a spoonful of sugar into the water and stir until all the sugar has dissolved
3. Keep adding the sugar until it does not dissolve any more.
4. Record the number of spoonfuls of sugar added.
5. Heat the sugar solution what happens to left over sugar in the beaker.
6. Add some more sugar to the hot solution. What happens?

What is the effect of heat on the amount of sugar that can be dissolved?
It should be noted that the solubility of a solid increases with an increase in temperature. That is to say, heating a solid will increase its solubility. Solubility therefore is the maximum amount of a solute (**solid**) that can dissolve in a given amount of solvent (**liquid**) at a fixed temperature.

UNIT 12: AGRICULTURAL PRACTICES

AT 4: AGRICULTURAL SCIENCE

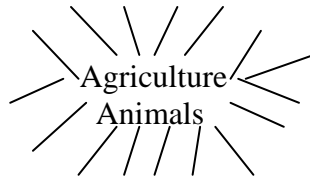
SESSIONS: 10-12

LO 3: CARE FOR DIFFERENT TYPES OF ANIMALS USED IN AGRICULTURE

SUCCESS CRITERIA 1: List some animals used in Agriculture, birds, cows

ACTIVITIES:

- Have pupils brainstorm for names of animals used in Agriculture
- Have pupils collect pictures of animals used in Agriculture then let them construct a collage or a picture board.
- Make a web of animals used in Agriculture



SUCCESS CRITERIA 2: Name some of the breed of animals

ACTIVITIES:

- Provide students with a list of breeds of animals

Birds

Golden Comet
Leghorns
Rhode Island

Rabbits

New Zealand White
California Wonder
Flemish Giant

Cows

Angus (American)
Jersey (British)
Holstein (Holland)
Zebu (local cow)
Jamaican Hope

Pigs

Large White
Landrace
Large Black
Saddle Back

Goats

Boar
Angora
Kashmir Goat
Anglo-Nubian

Sheep

Black-Belly (Barbados)
Southdown
Dorset (Oxford)

- Have pupils call out and record the information presented above.
- Provide pupils with a jumbled list of breeds of animals. Have them place them under the categories of goats, sheep, birds, rabbits, and cows.
- Have pupils research the various breeds of animals
- Have pupils form a collage showing the different breeds of animals. Have pupils talk about their collage to the whole class.

SUCCESS CRITERIA 3: Describe the characteristics of the breeds selected

ACTIVITIES:

- Group pupils based on the numbers in the classroom
- Assign each group a breed of animal. Have pupils research the characteristics of the breed. Pupils present their findings to the class
- Assign one animal to each pupil. (Based on class population two or more pupils may have the same animal). Have the pupils research the characteristics of the breed as a home assignment. Have each child share their findings with the class

SUCCESS CRITERIA 4: Participate in the caring of an animal at home, school or on a farm near you

ACTIVITIES:

- Have pupils talk about their pets or an animal which lives close to them. Have pupils suggest the best ways of caring for these animals. Have pupils make a list of what they would look for in order to determine if an animal is well cared for
- Have pupils choose an animal to care for. Hold discussions as to the best ways to care for these animals. Have pupils carry out these duties and share their experiences with the class
- Arrange a visit to a farm. Have pupils participate in taking care of the animals
- Arrange a class visit to the home of a pupil with a pet or farm. Let pupils help to take care of the animal feed, bathe, provide water, as well as cleaning their quarters

SUCCESS CRITERIA 5: Write a report on the animal you cared for and share it with your class

ACTIVITIES:

- Let pupils briefly talk about the animal which they cared for or with their neighbour, in the classroom. Have pupils write a report about the animal which they cared for. Pupils give their report a title. Have pupils read their report to the class
- Have pupils write a poem on how to take care of a particular breed of animal as a group exercise. Have pupils share their poems with the class. Let class decide whether the animal will be properly taken care of

ASSESSMENT

TERM 3

UNIT 9

SUCCESS CRITERIA: Identify cells as the building blocks of all organisms

ASSESSMENT: Fill in the blanks

1. I am the building block of all living things.....
2. Both plants and animals are made up of.....

SUCCESS CRITERIA: Use blocks to show that all organisms are made up of cells

ASSESSMENT: Draw a living thing made up of blocks to show all organisms are made up of cells

count the number of blocks in your drawing

use a key to explain the number of cells in a diagram = = 1 c□

SUCCESS CRITERIA: Describe the simple structure of plants and animals cells

ASSESSMENT:

1. Describe a plant cell
3. Describe an animal cell
4. Give two differences between a plant cell and an animal cell
5. What are the main differences between a plant cell and an animal cell?

UNIT 10

SUCCESS CRITERIA: Explain the relationship between the earth and sun

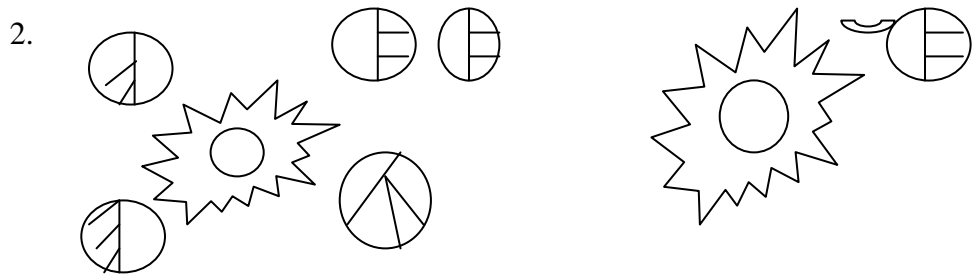
ASSESSMENT:

1. What part does the sun play in producing:
(a) night and (b) day?
2. Imagine you are the sun, you are about to begin the day in a part of the world.
Write down what you would say to this part of the earth?

SUCCESS CRITERIA: Use models to demonstrate rotation

ASSESSMENT: This ball began rotating exactly at point A:

1. Draw a diagram showing the position of the A after it has completed 1 rotation



Which of the above diagrams is showing rotation?

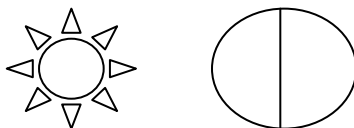
3. Put in a word to complete the sentence

One..... results in night and day and happens every 24 hours

SUCCESS CRITERIA: Demonstrate how night and day are formed

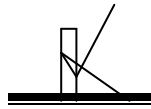
ASSESSMENT:

1. Using a diagram explain how night and day is formed
2. Shade the section which experiences night



SUCCESS CRITERIA: Construct a simple sun dial

ASSESSMENT:



(Insert next diagram)

1. At which point was the sun the highest in the sky?
2. At which point was it the lowest?

UNIT 11 Matter

SUCCESS CRITERIA 1: Investigate the separation of various mixtures by heating, filtration, chromatography and decanting

ASSESSMENT:

1. Say how you would separate the following mixtures:
 - (a) sand and water
 - (b) sugar and water
 - (c) flour and water
 - (d) peas and water
2. List three different ways of separating mixtures

3.



you want to remove these nails from the container without pouring out the water or dipping your hand into the bottom of the container. Show how you can do that

SUCCESS CRITERIA 2: Determine how the dissolving time of a solid is affected by temperature

ASSESSMENT:

1. In which of these will the sugar dissolve quicker?



30°C



10°C



45°C

2. True or false

A teaspoon of sugar will dissolve faster in 2°C rather than 10°C.....

The cooler the temperature the slower a solid dissolves.....

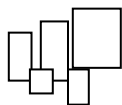
Data showing the time taken for 3 teaspoons of sugar to dissolve

Temperature of solvent in °C	Ice cold water at 2°C	Tap water at 22°C	Warm water at 28°C
Time taken to dissolve in minutes	7	2	½

When did the sugar dissolve quicker? Slower? Study the table carefully. What can you conclude from it?

SUCCESS CRITERIA 3: Determine how the dissolving time of a solid is affected by its particle size

ASSESSMENT:



Sugar A



Sugar B

1. In which set will the sugar dissolve quicker? Why is that so?

2.



A



B

Paul put a teaspoon of white sugar from container A into a glass. He then placed a teaspoon of brown sugar from container B into the same glass and begin to stir. After 1 minute, there were still particles of brown sugar in the container. Why do you think this is so?

SUCCESS CRITERIA 4: Determine how temperature affects the solubility of a substance

ASSESSMENT:




Sue



Jack

1. Sue placed 10 teaspoons of sugar in her glass and began stirring. Jack's glass also had 10 teaspoons. After the same time stirring, Jack's sugar dissolved while Sue's glass still had sugar at the bottom. This may be because:
 - (a) Jack was stronger than Sue
 - (b) Sue's glass had less sugar
 - (c) The water in Jack's glass was hotter
2. Sharon keeps adding 1 teaspoon salt to water, then stirring it. After some time, no matter how much she stirred, particles of salt remained at the bottom. What can she do to have the water take in more salt?

3.  (ice water) – why is the boy having difficulties in sweetening the juice?

UNIT 12 Agricultural Practices

SUCCESS CRITERIA 1: List some animals used in Agriculture

ASSESSMENT:

1. Pick out the odd one
 - (a) sheep, (b) rat, (c) cows
2. Make a list of 5 animals used in Agriculture
3. Choose one of these animals and say how it is used in Agriculture

SUCCESS CRITERIA 2: Name some of the breed of animals e.g.. birds, cows

ASSESSMENT:

1. List one different breed of animal in each of these:
bird....., rabbit....., cow.....
Goat....., sheep.....
2. Re-arrange these letters to form the name of an animal
 - (a) elginsh ofwl
 - (b) eerjrsy
 - (c) ralge hwhite
 - (d) rgnaoa
 - (e) odrest

SUCCESS CRITERIA 3: Describe the characteristics of the breeds selected

ASSESSMENT:

- 1) Who am I?
 - (a) I give plenty of milk.....
 - (b) I am the name for your local cow.....
 - (c) I am a big rabbit with grey fur and very large ears.....
 - (d) I provide a lot of eggs for you to feed your family.....
 - (e) I provide wool for your beautiful clothing.....
 - (f) Write a brief description of a.....

SUCCESS CRITERIA 4: Participate in the caring of an animal at home, school or on a farm near you

ASSESSMENT:

Observe students caring for an animal. Use this checklist to evaluate them

- | | | |
|--------------------------|--------------------------|------------------|
| Yes | No | |
| <input type="checkbox"/> | <input type="checkbox"/> | Feeds the animal |

- Waters the animal
- Shows an interest in the animal
- Shows an awareness of the needs of the animal
- Responds positively to the animal
- Knows what foods to feed the animal