

# ESSENTIAL Science

## Primary 3

Teacher's Guide



CAMBRIDGE



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Teacher's Guide

John Wilberforce Essiah



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## Structure of the Teacher's Guide

The concise Teacher's Guide is organized under the following headings and features.

### Sub-Strand

NaCCA, Ministry of Education 2019 curriculum Sub-strand covered.

### Strand

The relevant NaCCA, Ministry of Education 2019 curriculum Strand covered is in the top bar.

### Page reference

You will find the the Learner's Book page references on the top right/left for each lesson.

## Strand 1: DIVERSITY OF MATTER

### Sub-strand 1: LIVING AND NON-LIVING THINGS

#### LESSON 1: Grouping plants and animals

LB: pages 2 - 15; WB: pages 6 - 8

##### CONTENT STANDARD

**B3.1.1.1** Show an understanding of the physical features and life processes of living things and use this understanding to classify them.

##### INDICATOR

**B3.1.1.1.1** Classify living things into plants and animals by their life processes.

##### Learning Outcomes:

Learners are expected to:

- ◆ Mention the life processes that all living things undergo.
- ◆ Describe how plants move, grow, make babies, and get food.
- ◆ Describe how animals move, grow, make babies, and get food.
- ◆ Explain the differences between how plants and animals move, grow and feed.

##### NEW WORDS

Life processes, breathe, carnivore, omnivore, herbivore, nutrients.

##### RESOURCES

Videos showing life processes such as growth, movement, excretion and reproduction, pictures depicting life processes.

##### CORE COMPETENCIES

Critical thinking and Problem Solving, Digital Literacy, Collaboration and Communication, Personal Development and Leadership, Creativity and Innovation.

##### SUBJECT SPECIFIC PRACTICES

Observing, Classifying, Predicting, Analysing, Evaluating.

##### HELPFUL LINKS

[https://csoscience.files.wordpress.com/2011/10/2-g3life1\\_110711.pdf](https://csoscience.files.wordpress.com/2011/10/2-g3life1_110711.pdf)

grow bigger. They all move. Just as animals can have their own babies, plants also have baby plants. Humans and animals breathe in air. Plants also take in air through their leaves. This helps them to prepare their food and get energy. They also get water from the soil through their roots.

##### Starter

Ask learners to mimic how different animals move. Let them cite examples of animals that give birth by laying eggs and those that become pregnant.

##### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

##### Activity 1

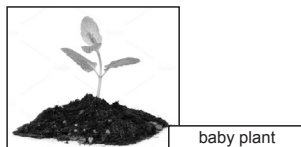
##### Differences between how plants and animals feed

- Ask learners to mention different foods that they eat and their sources.
- Help them to know how plants prepare their own food through photosynthesis.

##### Activity 2

##### How plants and animals grow

- Show pictures of seeds, seedlings, young plants and adult plants to learners to observe.
- Show pictures of a baby girl, young girl and a woman to learners.
- Help learners to identify growth as a life process.
- Let learners discuss the differences in the growth of plants and animals. E.g plants lose their parts and develop new leaves, flowers and branches as they grow, but animals do not lose their body parts as they grow.



### New words

Every lesson in the series identifies key words that learners are expected to know and use appropriately. These are relevant to the lesson.

### Resources

Helps to aid preparation. The series identifies all the relevant resources necessary to deliver a successful lesson. Resources identified are mostly "NO COST" or "LOW COST" materials that teachers can easily acquire to make their lessons more meaningful and enjoyable.

##### Background Information

All plants and animals are living things. This means they are alive. Both plants and animals

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### Background information

Refers to the details that identify and describe the significance and historical value of the lesson topic. It is a vital element, as it provides relevant, factual details that are related to a specific topic.

### Teaching instructions

You will find all activities you are expected to perform under each lesson here. References are made to the Learner's Book where necessary.

**Indicator**

This feature indicates the specific things that learners need to know and be able to demonstrate in order to achieve the content standards. Lessons are generated from these indicators.

**Content Standard**

This feature indicates the broad expectations under the strands that learners are expected to achieve in the course of completing that grade level.

**Learning Expectations**

are provided to help both teachers and learners identify what learners are required to know, understand and do in order to achieve the learning indicator(s).

**Core competencies**

The universal core competencies as stated under each sub-strand in the curriculum is outlined here.

**Subject specific practices**

This is the specific methods or practices which are used to teach a particular lesson under the sub-strand.

**Strand 1: DIVERSITY OF MATTER****Sub-strand 1: LIVING AND NON-LIVING THINGS****LESSON 1: Grouping plants and animals**

LB: pages 2 - 15; WB: pages 6 - 8

**CONTENT STANDARD**

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- ♦ Explain the differences between how plants and animals move, grow and feed.

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**Background Information**

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grow bigger. They all move. Just as animals can have their own babies, plants also have baby plants. Humans and animals breathe in air. Plants also take in air through their leaves. This helps them to prepare their food and get energy. They also get water from the soil through their roots.

**Starter**

Ask learners to mimic how different animals move. Let them cite examples of animals that give birth by laying eggs and those that become pregnant.

**Teaching Instructions**

- Before the lesson drill the new words and ask learners to form sentences with it.

**Activity 1****Differences between how plants and animals feed**

- Ask learners to mention different foods that they eat and their sources.
- Help them to know how plants prepare their own food through photosynthesis.

**Activity 2****How plants and animals grow**

- Show pictures of seeds, seedlings, young plants and adult plants to learners to observe.
- Show pictures of a baby girl, young girl and a woman to learners.
- Help learners to identify growth as a life process.
- Let learners discuss the differences in the growth of plants and animals. E.g plants lose their parts and develop new leaves, flowers and branches as they grow, but animals do not lose their body parts as they grow.



baby plant

**Starter**

Starters help in preparing learners for new skills, methods or concepts, reinforcing previous steps necessary for this new learning/ lesson.

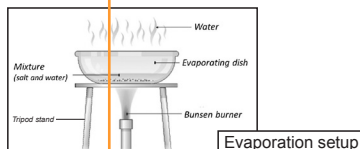


## Project for home or school

In every lesson, an exploration of the concepts learned in the classroom is further extended to the home. The series suggests relevant home activities that help learners to augment and consolidate what has been learnt in the classroom and its real life application where necessary.

## Think and do

This section offers the teacher extra activities to do with learners after the main activities under each sub-strand. It requires deep thinking.



### Activity 4

- In their previous groups, ask learners to list sources of heat they use at home and in school.
- Each group should read out their list to the class for discussion.
- Help learners to understand that heat is a form of energy.

### Talk about

Elaborate on learners ideas to talk about the questions to promote critical thinking on page 115 of the Learner's Book.

### What I Have Learnt

Reflect with learners on the lesson by helping them to read the summarised text and find out what they have learnt on page 117 of the Learner's Book.

## Project for home or school

Refer learners to page 117 of the Learner's Book. Get learners to understand how to handle the project.

### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to page 116 of the Learner's Book and pages 54 - 56 of the Workbook.

### Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

- What will happen when there is no heat from the Sun?
- What are the ways of getting heat?

## Answers to Review Exercise

### Exercise 1

- Heat energy
  - The water will not boil or heat up.
- Iron
  - Sun
  - Lantern
- Accept appropriate drawings.

## Answers to Workbook Questions

### Trial 1

- a → 2 and 4
- a → 4 and 3

### Trial 2

Learners

### Trial 3

- heat energy
- heat
- source
- heat
- sun

### Activity 3

#### Activity on evaporation

- Refer learners to page 35 of the Learner's Book for this activity.

### Think and do

Put learners in groups. Let them discuss the uses of solid-liquid mixtures in everyday life.

### Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to "TRAP" the lesson taught.

**T: Teach:** Teach a lesson.

**R: Reflect:** Reflect on the lesson taught from the introduction to the conclusion.

**A: Analyse:** Analyse by asking yourself the following questions:

- How did the lesson go?
- Was the introduction catchy?
- Were you able to catch the learners' attention throughout the lesson?
- Were the learners able to answer your questions during and after the lesson?
- Did the learners ask you questions during and after the lesson?
- Were learners able to do the exercises at the end of the lesson?
- What three things did you do well during the lesson?
- How are you going to build on this achievement in subsequent lessons?
- What two challenges did you encounter during the lesson?
- How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

### Diagnostic Assessment

The teacher is expected to assess him/herself to ascertain whether the lesson was successful or not. Directives are provided at the end of every lesson to help the teacher do this.

### Extension Assessment

Additional assessment task is provided after every lesson for the teachers use. This is expected to be done by gifted learners in the class.

## Answers

Expected answers are provided for all exercises under every lesson in the Learner's Book. Where answers are to vary from one learner to the other, it is mentioned.

## Assesment for learning

The feature directs teachers in checking learners' understanding of the lesson indicator(s) by way of assessing them. References are made to "Exercises" in the Learner's Book and Trials.

## Organisation and structure of the Learner's Book

The user-friendly Learner's Book tackles the new standard-based Science curriculum features and criteria with a clear and logical structure that incorporates the following features.

### Strand Opener

There are five “strands” in the Learner's Book – one for each of the Science curriculum. This precedes the beginning of contents under each strand.

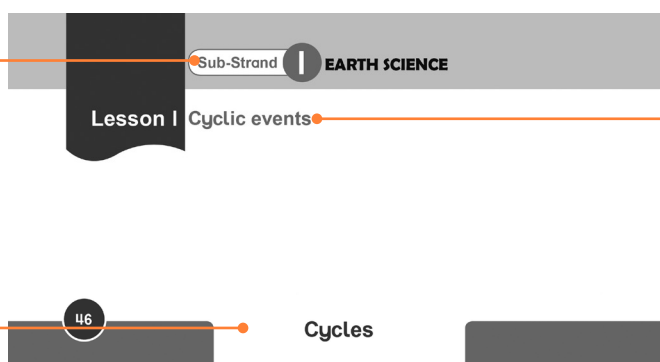


### Header and footer labels

**Strand:** This feature indicates the particular strand from which the lessons are developed.

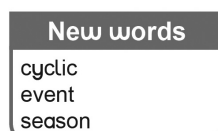
**Sub-strand:** These are larger groups of related topics to be studied under each strand.

**Lesson:** This feature specifies the lesson number under a sub-strand. The lessons are derived from the indicators.



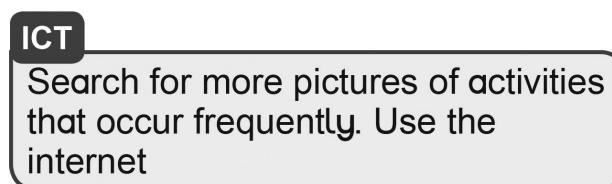
### New words

- build subject-specific vocabulary gradually, giving learners the confidence to understand it clearly and apply it in context and through different exercises.



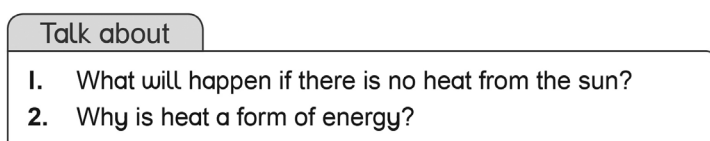
### ICT boxes

- include research activities
- emphasise the core competencies



### Talk about

- Learners are expected to discuss questions either in groups or in pairs. It is a critical thinking section that also helps their communication and collaborative skills





## Think and do

- Learners perform activities and exercise which require deep thinking here.

### Think and do

What will happen to you if you:

- a Put a piece of pencil in your ears?
- b Read in dark places (rooms)

## Project for home and school

- It helps consolidate what learners have already learnt in class. You are expected to direct learners on what they are to do either at home or in school

### Project for home or School

Design a poster to tell your friends at school some healthy habits that can prevent them from gathering ringworm disease in the hair and skin.

## What I have learnt

- helps summarise what have been learnt under each lesson
- through questioning the teacher assesses what the learners have learnt.

### WHAT I HAVE LEARNT

What I have learnt is that I must never share things which I use for myself with anybody. This can help me to stay away from ring worm, eczema and heat rashes.

## Review Exercise

- learners practice and consolidate what they have been taught. This provides an opportunity for all learners to strengthen their newly acquired knowledge.

### Review Assessment

#### Exercise I

Shade or colour green beside the sentences which show healthy habits and red that shows bad habits

- |    |                          |                                     |
|----|--------------------------|-------------------------------------|
| 1. | <input type="checkbox"/> | Cleaning your room.                 |
| 2. | <input type="checkbox"/> | Cleaning sweat from your body.      |
| 3. | <input type="checkbox"/> | Sharing your comb with your friend. |
| 4. | <input type="checkbox"/> | Washing your towel frequently.      |
| 5. | <input type="checkbox"/> | Keeping your hair short             |

### Activities

- incorporate accurate and current individual, pair and group work activities that help learners to explore and practise what they have learnt
- incorporate exercises that allow learners to answer questions about what they have learnt and consolidate learning
- address the syllabus content standards and core competencies
- are representative of the indicators and exemplars
- have instructions and text that are consistent and clearly presented to learners
- promote problem-solving and subject understanding

### Activity

1. Rub your palms together in a quick manner for a while in groups. Touch each other's cheek with your palms. Discuss your observations in class.
2. Rub stones together and observe what happens.
3. Rub sticks together. Find out what happens.
4. Rubbing objects together can give out heat.
5. Talk about all that you have done with friends.


### Text and content

- use language that is appropriate to the level, age, knowledge and background of the learners
- are representative of Ghana's diversity
- have a good gender balance and portray no gender stereotypes

### Illustrations and photos


- are high-quality and representative of Ghana's diversity
- balance the text on every page and add to learners' understanding of the content
- have captions and labels that are simple, relevant, appropriate, and clear
- reflect a variety of learners (including learners with special needs)
- show no gender stereotypes

Sub-Strand 1 THE HUMAN BODY SYSTEMS




The hair covers our head.

**Hair**



The fingers help us to touch things around us.

**Fingers**



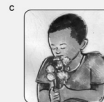


The hands help us to touch and hold things.

**Feet**

**Activity 1**

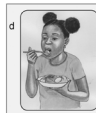
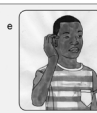
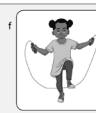
Describe what the part of the external body in each picture is doing.

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Systems

Sub-Strand 1 THE HUMAN BODY SYSTEMS

**Effects of losing part(s) of the external body parts**


We have learnt that our body has many different parts that are very useful to us. You might have come across people who cannot speak, see, walk and hear.

People who cannot see are blind.

Some people who cannot use their mouth and tongue to speak are dumb.

People who cannot hear are deaf.

People without arms or hands find it difficult to hold things or write. Some people cannot walk or run because they have lost one or both legs. Some people may not have lost their legs but they cannot walk or run. We must give support to such people. They do not require our pity. We must be very careful when we are playing both at home and school; we must also do our tasks with great care. It is very important; we do not hurt our external body part(s) whilst playing.



a boy helping a blind man to walk.

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Systems

## INTRODUCTION

Science is such a broad topic that it is broken down into disciplines or branches based on the particular area of study. Learn about the different branches of science from these introductions. Then, get more detailed information about each science.

The objective of this Teacher's Guide is to make teaching and learning more interactive, practical, useful and to bring out the ingenuity of teacher professionalism in the teacher to produce well equipped learners for national development.

This Teacher's Guide has been carefully designed to help teachers teach effectively using the Learner's Book and its accompanying Workbook.

The Teacher's Guide helps teachers to prepare adequately for each lesson by suggesting the following:

- Expected outcomes of the lesson
- The subject specific practices and core competencies to be developed in the lesson
- The pedagogical approaches to be used for the lesson
- The resources to be used in teaching the lesson
- The main points of the lesson
- Ideas or tasks that stimulate critical thinking among learners.

It is expected that after carefully studying the Teachers' Guide, teachers will be able to:

1. Know the provisions in the Learner's Book in terms of Aims, Values, Core Competences and School Time Allocations.
2. Know the recommended teaching and Assessment approaches for each lesson.
3. Understand the structure and scope of sequence of the science curriculum.
4. Prepare schemes of learning for a given academic year, term or week.
5. Select and design appropriate assessment tasks for a given lesson.

Ultimately, the Teacher's Guide will contribute tremendously in ensuring the smooth implementation of the new standards-based science curriculum for primary Schools.

### Role of the Teacher in the effective use of the Learner's Book

The Curriculum encourages the creation of a learning-centred classroom with the opportunity for learners to engage in meaningful "hands-on" activities that bring home to the learner what they are learning in school and what they know from outside of school.

The teacher needs to create a learning environment that supports:

- The creation of learning-centred classrooms through the use of creative approaches to teaching and learning as strategies to ensuring learner empowerment and independent learning.
- The positioning of inclusion and equity at the centre of quality teaching and learning.
- The use of differentiation and scaffolding as teaching and learning strategies for ensuring that no learner is left behind.
- The use of Information and Communications Technology (ICT) as a pedagogical tool.
- The identification of subject specific instructional expectations needed for making learning in the subject relevant to learners.
- The integration of assessment for learning, as learning and of learning into the teaching and learning process and as an accountability strategy.
- Using questioning techniques that promote deeper learning.

### Rationale for Primary Science

Science forms an integral part of our everyday activities and it is a universal truth that development is hinged on Science. Science and Technology is the backbone of social, economic, political, and physical development of a country. It is a never-ending creative process, which serves to promote discovery and understanding. It consists of a body of knowledge which attempts to explain and interpret phenomena and experiences. Science has changed our lives and it is vital to Ghana's future development.

To provide quality Science education, teachers must facilitate learning in the Science classroom. This will provide the foundations for discovering and understanding the world around us and lay the grounds for Science and Science related studies at higher levels of education. Learners should be encouraged to understand how Science can be used to explain what is occurring, predict how things will behave and analyse causes and origins of things in our environment. The Science curriculum has considered the desired outcomes of education for learners at the basic level. Science is also concerned with the development of attitudes and therefore it is important for all citizens to be scientifically and technologically literate for sustainable development. Science therefore ought to be taught using hands-on and minds-on approaches which learners will find as fun and adopt Science as a culture.

## Philosophy

### Teaching Philosophy

Ghana believes that an effective Science education which is needed for sustainable development should be inquiry-based. Thus Science education must provide learners with opportunities to expand, change, enhance and modify the ways in which they view the world. It should be pivoted on learner-centred teaching and learning approaches that engage learners physically and cognitively in the knowledge-acquiring process, in a rich and rigorous inquiry-driven environment.

### Learning Philosophy

Science Learning is an active contextualized process of constructing knowledge based on learners' experiences rather than acquiring it. Learners are information constructors who operate as researchers. Teachers serve as by providing the enabling environment that promotes the construction of learners' own knowledge based on their previous experiences. This makes learning more relevant to the learner and leads to the development of critical thinkers and problem solvers.

## Instructional Guidelines

1. Guide and facilitate learning by generating discourse among learners and challenging them to accept and share responsibility for

their own learning based on their unique individual differences.

2. Select Science content, adapt and plan lessons to meet the interests, knowledge, understanding, abilities, and experiences of learners.
3. Work together as colleagues within and across disciplines and grade levels to develop communities of Science learners who exhibit the skills of scientific inquiry and the attitudes and social values conducive to Science learning.
4. Use multiple methods and systematically gather data about learners' understanding and ability, to guide Science teaching and learning with arrangements to provide feedback to both learners and parents.
5. Design and manage learning environments that provide students with the time, space, and resources needed for learning Science.

## Class management

Most teachers in Ghana teach large classes. Such classes are in the range of 40 to 100 learners or more. The teachers, based on their professional experience over the years have developed skills in classroom methodology. Here are a few reminders about whole class, group, pair and individual work that could be helpful with large classes.

### Whole class teaching

Much of your teaching, especially when your class is large, will involve you standing at the front of the class explaining and listening to your learners. You can set out facts and concepts which everyone can understand. However, your class will vary in ability. More able learners should be given additional tasks to stretch their capabilities while those who find understanding more difficult should be given the time and attention they need.

When you introduce a topic make sure you use learners' existing knowledge and build upon it. The basic information for your lesson is in the text. If you are going to ask learners to read for themselves (at home or in class or to read out loud), work out during your lesson planning which words will be difficult for them to understand and explain these first. Make sure that all your learners have understood your explanation and give time to those having difficulty as well as talking and listening you will

find other activities can be very valuable during whole-class teaching, for example:

### Group work

Class teaching is large group work but sometimes there are advantages in working in pairs or groups of four to six learners: some children make more progress when working in a group of the same ability. On other occasions more able learners can help those who are not quite so quick at understanding. Groups of friends and groups working on different topics are other possible divisions that you could make.

For group work to be successful some thought must be given to the organization of class furniture. In most of our classrooms we still see rows of desks with several children to each desk. The classrooms are also often crowded so that it not easy to move the desks around. Whatever the situation some kind of group can be organized. At its most basic the group will have to be learners at one desk. It might be possible for those at one desk to turn around to face those at the desk behind.

There are many advantages in allowing a number of children to consider a topic, work jointly and bring their findings back to the whole class: each group will think in a slightly different way and have different experiences to share. Such work encourages co-operation and mutual support. Individual groups can study a picture together, or write a poem or discuss a topic like pollution in their village. You need to ensure that there is follow-up to group work so that work is not done in isolation but is instead considered by the class as a whole.

### Pair work

Learners are often instructed to work in pairs – either with their desk mate, or with a partner. This is an ideal opportunity for learners to assist each other, and for them to assess each other. Working with a desk mate offers the least classroom disturbance. The learners are already seated side-by-side. They ask and answer questions during Picture talk, and they discuss the readings before they write comprehension answers individually.

Working with a partner that you have allocated to the learner means that you can pair a slower learner with a faster learner, so that they can

help one another. You may also choose to pair learners of similar abilities together, so that they can proceed more quickly with the work, while you assist the slower pairs.

### Learner self-study

There will be times when you want the class to work as individuals to allow them to become familiar with material you have given them and to allow you to work with Learners of different abilities. It is worth bearing in mind that while there is a need for Learners to learn how to read and study on their own; there are also dangers in this approach. It is essential that the material they read is understandable to them, and that your attention is still focused on the class to ensure that all learners are using the time to read and not misbehave. Use additional material at different levels to ensure that some learners do not finish more quickly than others.

### Teaching tip

One of the most important skills in classroom management is the ability to ensure your learners are occupied for the whole lesson. If a group has finished its task and has nothing else to do it is likely to become disruptive. Break up your lesson and make sure it has several different parts:

- full class work
- individual work
- practical activities

## Pedagogy and Assessment

### Creative and Learning - Centred Pedagogies for Science

#### 1. *Activity-based learning, hands-on, creative, participatory method of learning.*

- Science teachers should device activities to suit the age group and skills of the learners.
- There should be variety in activities. Sorting of items into groups, creation of posters, hands-on activities. E.g separation samples of given mixtures.
- Activities should not only help gather knowledge, but apply and evaluate knowledge. E.g. designing and building objects from common materials.



## 2. **Demonstrations**

- The teacher retains the formal authority role by showing learners what they need to know. e.g. demonstrating how to construct an electronic circuit.

## 3. **Inquiry-based learning**

- Teachers design an investigation toward answering questions. E.g. How is soap produced within the local community?
- Learners carry out investigation – gather data (by asking their parents, people in the community).
- Develops information processing and problem-solving skills. (they learn about the steps/processes involved in soap making).
- Makes use of resources beyond classroom/school (visits to local production sites).

## 4. **Group work (think-pair-share, collaborative learning, problem-based learning, team based learning/ discussions)**

- Collaborative learning highlights the contributions of individual group members, and leads to dialogue and consensus building on topics without a clear right and wrong answer. E.g. placing learners into groups to discuss the physical features that enables various organisms to live in the sea, land or air.

## 5. **Project-based learning**

- Project-based learning is a teaching method in which learners gain knowledge and skills by working for an extended period of time. E.g. Reading and Recording the School/home's electricity consumption over a month.
- This focuses on investigating and responding to an authentic, engaging and complex question, problem, or challenge. E.g. How to solve the problem of poor sanitary conditions in the school.

## **Other Approaches for Teaching Science Learning**

- ICT Based Learning
- Engaging Learners in Meaningful Learning
- Organisation of Field Trips and Nature Walks
- Use of Concept Maps, Mind Maps and Future's Wheel

- Invitation of Professionals to make Class presentations
- Changing the learning setting
- Implementation of a Reward System
- Use of Educational games, songs and ice-breakers

## **Use of ICT**

The use of ICT is firmly incorporated in the Learners Book. During science lessons, learners need to be exposed to the various ICT tools around them.

Some schools in urban areas have access to computers in school or in libraries. Rural areas will become linked in the future. You should learn how to use a computer as soon as you are able. They open up the world as your resource. The internet can provide as much additional material as you will ever need. Once your learners have the chance to use a computer they too will have access to a world of information. This can be done through effective use of the following ICT tools:

- Laptop or desktop computers
- Smartphones
- Tablets
- CD players
- Projectors
- Calculators
- Radios
- Cameras
- Television sets
- Computer and related software, such as Microsoft Office packages (Word, PowerPoint and Excel).

ICTs are a useful communication technology that can by and large be used to enhance the quality of teaching and learning in schools. Internet systems have made the world a globalized one. It is for this that Professor Ali Mazrui describes globalization as “the villagization of the world” hence, the world being a “global village” (Marshall McLuhan and Quentin Fiore, 1968). This means all parts of the world are being brought together by the internet and other electronic communication interconnections. That is more information has become accessible anywhere in the world by way of interconnectedness and interdependency. You can communicate to anybody anywhere in the world from the comfort of your room, car and many more places. In



working towards the rationale of the Science curriculum, there is the urgent need for the teacher to display professionalism through effective use of ICTs in teaching and learning.

The teacher should try as much as possible use whatever technological resources available such as any of those stated above to assist in teaching and learning. The use of ICTs in teaching and learning activities promotes a paradigm shift to learner-centered environment. Here are some useful ideas on how to go about this:

Integrate ICT's in the learning process, as a key competence and contributing to the acquisition of skills and knowledge;

- Use ICT's in the classroom to work on information processing, authentic communication, and on the learner autonomy, as the builder of his or her own learning process;
- Give ICT's a role to help young people be able to arrange, evaluate, synthesize, analyze and decide on the information that comes to them;
- Challenge students with different types of supports and formats and, therefore, a great variety of activities in which they pass from receivers to makers;
- Attend to the diversity or learning needs of students, using the copious offer of interactive exercises available on the web.

### Assessment

Assessment is a process of collecting and evaluating information about learners and using the information to make decisions to improve their learning.

In this Teacher's Guide, it is suggested that assessment is used to promote learning. Its purpose is to identify the strengths and weaknesses of learners to enable teachers ascertain their learner's response to instruction. Assessment is both formative and summative. Formative assessment is viewed in terms of **Assessment as learning** and **Assessment for learning**.

**Assessment as learning:** Assessment as learning relates to engaging learners to reflect on the expectations of their learning. Information that learners provide the teacher forms the basis for refining teaching-learning strategies. Learners are assisted to play their roles and to take responsibility of their own learning to improve performance. Learners are assisted to set their own goals and monitor their progress.

**Assessment for learning:** It is an approach used to monitor learner's progress and achievement. This occurs throughout the learning process. The teacher employs assessment for learning to seek and interpret evidence which serves as timely feedback to refine their teaching strategies and improve learners' performance. Learners become actively involved in the learning process and gain confidence in what they are expected to learn.

**Assessment of learning:** This is summative assessment. It describes the level learners have attained in the learning and what they know and can do over a period of time. The emphasis is to evaluate the learner's cumulative progress and achievement.

It must be emphasised that all forms of assessment should be based on the domains of learning. In developing assessment procedures, try to select indicators in such a way that you will be able to assess a representative sample from a given strand. Each indicator in the curriculum is considered a criterion to be achieved by the learners. When you develop assessment items or questions that are based on a representative sample of the indicators taught, the assessment is referred to as a "Criterion-Referenced Assessment". In many cases, a teacher cannot assess all the indicators taught in a term or year. The assessment procedure you use i.e. class assessments, homework, projects etc. must be developed in such a way that the various procedures complement one another to provide a representative sample of indicators taught over a period.

### Designing Assessment Tasks in the New Curriculum

- Puzzles, Fill-ins, Riddles, maze, scrambled words, true or false, Drawing, Spot the difference, Matching, Pick the odd one out, Objectives with options, rearrange, Gallery Walks,

Below is a sample rubric which you can use to assess your learners performance in science. This can be adapted and used for any assessment tool ( exam, activity, PowerPoint)

### SAMPLE RUBRIC FOR ASSESSING LEARNERS PERFORMANCE

Rubric -Primary School Science	LEVEL 1 With strong prompting from the teacher	LEVEL 2 With some prompting from the teacher	LEVEL 3 With minimal prompting from the teacher	LEVEL 4 Without prompting from the teacher
OBSERVATION	Learners use one of her senses to observe basic information	Learners use at least one of her senses to observe basic information	Learner notices detailed characteristics and phenomena	learners <b>extend/ apply their observations</b> to related objects and/or events
INVESTIGATION	learners participate minimally in carrying out the experiment	learners participate in carrying out the experiment	learners participate in carrying out the experiment and asks “how”, “what”, and/or “why”	Learners express <b>strong sense of wondering</b> and carries out additional experiments
REASONING	Learners draw basic conclusions	Learners draw detailed conclusions	Learners draw connections between ideas and evaluates the choices	Learner ask “what if” and <b>makes hypotheses</b> about related objects and/or events
COMMUNICATION	Learners struggle to express what their did	Learners present conclusions partially supported by data	Learners effectively use data to express their conclusions, and uses materials/ role play/other methods of communication to present them	Learners use data to <b>clearly articulate</b> their observations, approach and findings with detail, and their uses <b>creative methods</b> to present them
UNDERSTANDING	Learners present minimal understanding of the relevant concepts	Learners present weak connection between observation and concept	Learners present evidence of understanding of relevant concepts, theories or principles	Learners present <b>evidence of in-depth understanding</b> of relevant concepts, theories or principles

Source: NaCCA, Ministry of Education 2019

### Core Competencies

The core competencies describe a body of skills that teachers at all levels should seek to develop in their learners. They are ways in which teachers and learners engage with the subject matter as they learn the subject. The competencies presented here describe a connected body of core skills that are acquired throughout the processes of teaching and learning.

#### **Critical Thinking and Problem Solving (CP)**

This skill develops learners' cognitive and reasoning abilities to enable them analyse and solve problems. Critical thinking and problem solving skill enables learners to draw on their own experiences to analyse situations and choose the most appropriate out of a number of possible solutions. It requires that learners embrace the problem at hand, persevere and take responsibility for their own learning.

#### **Creativity and Innovation (CI)**

Creativity and Innovation promotes the development of entrepreneurial skills in learners through their ability to think of new ways of solving problems and developing technologies for addressing the problem at hand. It requires ingenuity of ideas, arts, technology and enterprise. Learners having these skill are also able to think independently and creatively.

#### **Communication and Collaboration (CC)**

These competence promotes in learners the skills to make use of languages, symbols and texts to exchange information about themselves and their life experiences. Learners actively participate in sharing their ideas. They engage in dialogue with others by listening to and learning from them. They also respect and value the views of others.

#### **Cultural Identity and Global Citizenship (CG)**

These competence involves developing learners to put country and service foremost through an understanding of what it means to be active citizens. This is done by inculcating in learners a strong sense of social and economic awareness. Learners make use of the knowledge, skills, competences and attitudes acquired to contribute effectively towards the socioeconomic development of the country and on the global stage. Learners build skills to critically identify and analyse cultural and global

trends that enable them to contribute to the global community.

#### **Personal Development and Leadership (PL)**

This competence involves improving self-awareness and building self-esteem. It also entails identifying and developing talents, fulfilling dreams and aspirations. Learners are able to learn from mistakes and failures of the past. They acquire skills to develop other people to meet their needs. It involves recognising the importance of values such as honesty and empathy and seeking the well-being of others. Personal development and leadership enables learners to distinguish between right and wrong. The skill helps them to foster perseverance, resilience and self-confidence. PL helps them acquire the skill of leadership, self-regulation and responsibility necessary for lifelong learning.

#### **Digital Literacy (DL)**

Digital Literacy develops learners to discover, acquire knowledge, and communicate through ICT to support their learning. It also makes them use digital media responsibly.

### Learning domains (expected learning behaviours)

A central aspect of this curriculum is the concept of three integral learning domains that should be the basis for instruction and assessment. These are:

- Knowledge, Understanding and Application
- Process Skills
- Attitudes and Values

Teachers must ensure that daily learning covers all these three important domains through the use of relevant resources, and utilization of appropriate teaching pedagogies and assessment tasks.

#### **KNOWLEDGE, UNDERSTANDING AND APPLICATION**

Under this domain, learners acquire knowledge through some learning experiences. They may also show understanding of concepts by comparing, summarising, re-writing etc. in their own words and constructing meaning from instruction. The learner may also apply the knowledge acquired in some new contexts. At a higher level of learning behaviour, the learner

may be required to analyse an issue or a problem.

### **SKILLS AND PROCESSES**

These are specific activities or tasks that indicate performance or proficiency in the learning of Science. They are useful benchmarks for planning lessons, developing exemplars and are the core of inquiry-based learning.

#### **Equipment and apparatus handling**

This is the skill of knowing the functions and limitations of various apparatus, and developing the ability to select and handle them appropriately for various tasks.

#### **Observing**

This is the skill of using the senses to gather information about objects or events. This also includes the use of instruments to extend the range of our senses.

#### **Classifying**

This is the skill of grouping objects or events based on common characteristics.

#### **Comparing**

This is the skill of identifying the similarities and differences between two or more objects, concepts or processes.

#### **Communicating/Reporting**

This is the skill of transmitting, receiving and presenting information in concise, clear and accurate forms - verbal, written, pictorial, tabular or graphical.

#### **Predicting**

This is the skill of assessing the likelihood of an outcome based on prior knowledge of how things usually turn out.

#### **Analysing**

This is the skill of identifying the parts of objects, information or processes, and the patterns and relationships between these parts.

#### **Generating possibilities**

This is the skill of exploring all the options, possibilities and alternatives beyond the obvious or preferred one.

#### **Evaluating**

This is the skill of assessing the reasonableness, accuracy and quality of information, processes or ideas. This is also the skill of assessing the quality and feasibility of objects.

#### **Designing**

This is the skill of Visualizing and drawing new objects or targets from imagination.

#### **Measuring**

This is the skill of using measuring instruments and equipment for measuring, reading and making observations.

#### **Interpreting**

This is the skill of evaluating data in terms of its worth: good, bad, reliable, unreliable; making inferences and predictions from written or graphical data; extrapolating and deriving conclusions. Interpretation is also referred to as "Information Handling".

#### **Recording**

This is the skill of drawing or making graphical representation boldly and clearly, well labelled and pertinent to the issue at hand.

#### **Generalising**

This is the skill of being able to use the conclusions arrived at in an experiment to what could happen in similar situations.

#### **Designing of Experiments**

This is the skill of developing hypotheses; planning and designing of experiments; persistence in the execution of experimental activities; modification of experimental activities where necessary in order to reach conclusions.

#### **Values**

At the heart of this curriculum is the belief in nurturing honest, creative and responsible citizens. As such, every part of this curriculum, including the related pedagogy, should be consistent with the following set of values.

**Respect:** This includes respect for the nation of Ghana, its institutions and laws and the culture and respect among its citizens and friends of Ghana.

**Diversity:** Ghana is a multicultural society in which every citizen enjoys fundamental rights

and responsibilities. Learners must be taught to respect the views of all persons and to see national diversity as a powerful force for national development. The curriculum promotes social cohesion.

**Equity:** Socio-economic development across the country is uneven. Consequently, it is necessary to ensure an equitable distribution of resources based on the unique needs of learners and schools. Ghana's learners are from diverse backgrounds, and thus which require the provision of equal opportunities to all, and that, all strive to care for each other.

**Commitment to achieving excellence:** Learners must be taught to appreciate the opportunities provided through the curriculum and persist in doing their best in their fields of endeavour as global citizens. The curriculum encourages innovativeness through creative and critical thinking and the use of contemporary technology.

**Teamwork/Collaboration:** Learners are encouraged to become committed to team-oriented working and learning environments. This also means that learners should have an attitude of tolerance to be able to live peacefully with all persons.

**Truth and Integrity:** The curriculum aims to develop learners into individuals who will consistently tell the truth irrespective of the consequences, and be morally upright with an attitude of doing the right thing even when no one is watching. Learners are taught. Also, be true to themselves and be willing to live the values of honesty and compassion. Equally important, is the practice of positive values as part of the ethos or culture of the work place, which includes integrity and perseverance. These underpin the competencies learning processes to allow learners to apply skills and competencies in the world of work.

### Time allocation

A total of four periods a week, each period consisting of thirty minutes, is allocated to the teaching of Science at the lower basic level (**B1- B3**). It is recommended that the teaching periods be divided as follows:

**Theory:** 2 periods per week (30 minutes per period)

**Practical:** 2 periods per week (one double-period)

### Inclusion

Inclusion entails access and learning for all learners, especially, those disadvantaged. All learners are entitled to a broad and balanced curriculum in every school in Ghana. The daily learning activities to which learners are exposed should ensure that the learners' right to equal access to quality education is being met. The curriculum suggests a variety of approaches that address learners' diversity and their special needs in the learning process. These approaches when used in lessons, will contribute to the full development of the learning potential of every learner. Learners have individual needs and different learning styles, learning experiences and different levels of motivation for learning. Planning, delivery and reflection on daily learning episodes should take these differences into consideration. The curriculum therefore promotes:

- learning that is linked to the learner's background and to their prior experiences, interests, potential and capacities;
- learning that is meaningful because it aligns with learners' ability (e.g. learning that is oriented towards developing general capabilities and solving the practical problems of everyday life); and
- the active involvement of the learners in the selection and organisation of learning experiences, making them aware of their importance in the process and also enabling them to assess their own learning outcomes.

### Differentiations and scaffolding

This curriculum is to be delivered through the use of creative approaches. Differentiation and Scaffolding are pedagogical approaches to be used within the context of the creative approaches.

**Differentiation** is a process by which differences among learners (learning styles, interest and readiness to learn etc.) are accommodated so that all learners in a group have their best chance of learning. Differentiation could be by task, support and/or outcome. Differentiation, as a way of ensuring



each learner benefits adequately from the delivery of the curriculum, can be achieved in the classroom through:

- Task
- One-on-one support
- Outcome

**Differentiation by task** involves teachers setting different tasks for learners of different ability e.g. in sketching the plan and shape of their classroom some learners could be made to sketch with free hand while others would be made to trace the outline of the plan of the classroom.

**Differentiation by support** involves the teacher providing a targeted support to learners who are seen as performing below expected standards or at risk of not reaching the expected level of learning outcome. This support may include a referral to a Guidance and Counselling Officer for academic support.

**Differentiation by outcome** involves the teacher allowing learners to respond at different levels. In this case, identified learners are allowed more time to complete a given task.

**Scaffolding** in education refers to the use of a variety of instructional techniques aimed at moving learners progressively towards stronger understanding and ultimately greater independence in the learning process.

It involves breaking up the learning episodes, experiences or concepts into smaller parts and then providing learners with the support they need to learn each part. The process may require a teacher assigning an excerpt of a longer text to learners to read, engage them to discuss the excerpt to improve comprehension of its rationale, then guiding them through the key words/vocabulary to ensure learners have developed a thorough understanding of the text before engaging them to read the full text. Common scaffolding strategies available to the teacher include:

- giving learners a simplified version of a lesson, assignment, or reading, and then gradually increasing the complexity, difficulty, or sophistication over time;
- describing or illustrating a concept, problem, or process in multiple ways to ensure understanding;

- giving learners an exemplar or model of an assignment, they will be asked to complete;
- giving learners a vocabulary lesson before they read a difficult text;
- clearly describing the purpose of a learning activity, the directions learners need to follow, and the learning goals they are expected to achieve;
- explicitly describing how the new lesson builds on the knowledge and skills learners were taught in a previous lesson.

## Organisation of the Curriculum

The science curriculum has been structured into four columns which are Strands, Sub-strands, Content standards, Indicators and exemplars. A unique annotation is used for numbering the learning indicators in the curriculum for the purpose of easy referencing. The annotation is indicated in table 2.

### Example: B3 .2.4.1.2

ANNOTATION	MEANING/ REPRESENTATION
<b>B3</b>	<b>Year or Class</b>
2	Strand Number
4	Sub-Strand Number
1	Content Standard Number
2	Indicator Number

**Strands** are the broad areas/sections of the Science content to be studied.

**Sub-strands** are the topics within each strand under which the content is organised.

**Content standard** refers to the pre-determined level of knowledge, skill and/or attitude that a learner attains by a set stage of education.

**Indicator** is a clear outcome or milestone that learners have to exhibit in each year to meet the content standard expectation. The indicators represent the minimum expected standard in a year.

**Exemplar:** support and guidance which clearly explains the expected outcomes of an indicator and suggests what teaching and learning activities could take, to support the teachers in the delivery of the curriculum.



## ILLUSTRATION OF CURRICULUM STRUCTURE

Class		Content Standards		Learning Indicators	
Strand 1: DIVERSITY OF MATTER					
Sub-strand 1: Living and Non-Living Things					
B1		B2		B3	
B1.1.1.1: Show understanding of the physical features and life processes of living things and use this understanding to classify them		B2.1.1.1: Show understanding of the physical features and life processes of living things and use this understanding to classify them		B3.1.1.1: Show understanding of the physical features and life processes of living things and use this understanding to classify them.	
B4					
B4.1.1.1: Show understanding of the physical features and life processes of living things and use this understanding to classify them					
B1.1.1.1.1: Observe and describe different kinds of things in the environment.		B2.1.1.1.1: Describe the physical features of plants (roots, stem, leaves		B3.1.1.1.1: Group living things into plants and animals based on their physical features	
				B4.1.1.1.1: Group living things into plants and animals based on their uses	

Source: NaCCA, Ministry of Education 2019

## STRUCTURE OF CURRICULUM

The Science curriculum is structured to cover B1 to B3 under five strands with a number of sub-strands as shown in the table below:

STRAND	B1	B2	B3
	SUB-STRANDS	SUB-STRANDS	SUB-STRANDS
<b>DIVERSITY OF MATTER</b>	1. Living and Non-Living Things 2. Materials	1. Living and Non-Living Things 2. Materials	1. Living and Non-Living Things 2. Materials
<b>CYCLES</b>	1. Earth Science 2. Life Cycles of organisms	1. Earth Science	1. Earth Science 2. Life Cycles of organisms
<b>SYSTEMS</b>	1. The Human Body Systems 2. Ecosystems	1. The Human Body Systems 2. The Solar system	1. The Human Body Systems 2. The Solar system 3. Ecosystems
<b>FORCES AND ENERGY</b>	1. Sources and Forms of Energy 2. Electricity and electronics 3. Forces and Movement	1. Sources and Forms of Energy 2. Electricity and Electronics 3. Forces and Movement	1. Sources and Forms of Energy 2. Electricity and Electronics 3. Forces and Movement
<b>HUMANS AND THE ENVIRONMENT</b>	1. Personal Hygiene and Sanitation 2. Diseases 3. Science and Industry 4. Climate Change	1. Personal Hygiene and Sanitation 2. Diseases 3. Science and Industry 4. Climate Change	1. Personal Hygiene and Sanitation 2. Diseases 3. Science and Industry 4. Climate Change

## DIFFERENCE BETWEEN THE TRADITIONAL AND LEARNING-CENTRED CLASSROOM

	TRADITIONAL	LEARNING-CENTRED CLASSROOM
1.	Emphasis is on knowledge acquisition.	Emphasises the acquisition of skills and competencies.
2.	Learning is limited to the four walls of the classroom.	Learning takes place both in and outside the classroom (school compound, community, home, internet, etc.).
3.	Students constantly face the teacher and board.	The classroom is inviting. Desks can be rearranged to promote collaborative as well as independent work.
4.	Teacher restricted to provisions in the curriculum.	Gives room for teacher innovation.
5.	The teaching and learning tools are limited to pens, pencils, crayons and paper.	The teaching and learning process is enhanced by the use of modern technological gadgets such as smart phones, sound systems, computers, TV sets, smart boards, etc.
6.	The classroom environment is devoid of teacher-sponsored TLMs.	The classroom environment is laden with materials for sub-conscious learning.
7.	The teacher takes the centre stage and talks more than the learner.	The learner takes active part in the learning process and talks more.
8.	Here, mistakes are sanctioned.	Mistakes are tools for discovery and learning.
9.	Criterion-referenced assessment is emphasised. Learner's progression is based on score in exams.	Relies on different modes of assessment, progression is based on mastery of competency.
10.	Mainly focused on theoretical mode of teaching.	Plethora of learning modes.

Source: NaCCA, Ministry of Education 2019

## SCOPE AND SEQUENCE

STRAND	SUB-STRANDS	B3
DIVERSITY OF MATTER	Living and Non-Living Things	✓
	Materials	✓
CYCLES	Earth Science	✓
	Life Cycles of Organisms	✓
SYSTEMS	The Human Body Systems	✓
	The Solar system	✓
	Ecosystems	✓
FORCES AND ENERGY	Sources and Forms of Energy	✓
	Electricity and Electronics	✓
	Forces and Movement	✓
HUMANS AND THE ENVIRONMENT	Personal Hygiene and Sanitation	✓
	Diseases	✓
	Science and Industry	✓
	Climate Change	✓

Source: NaCCA, Ministry of Education 2019

## SAMPLE YEARLY SCHEME OF LEARNING – BASIC 3

Weeks	Term 1 (List term 1 Sub Strands)	Term 2 (List term 2 Sub Strands)	Term 3 (List term 3 Sub Strands)
1	Living and non- living things	Earth science	Forces and movement
2	Living and non-living things	Earth science	Forces and movement
3	Living and non-living things	Earth science	Personal hygiene and sanitation
4	Living and non-living things	Life cycles of organism	Personal hygiene and sanitation
5	Materials	Life cycles of organism	Personal hygiene and sanitation
6	Materials	The human body systems	Personal hygiene and sanitation
7	Materials	Ecosystem	Diseases
8	Materials	Sources and forms of energy	Science and industry
9	Earth science	Sources and forms of energy	Science and industry
10	Earth science	Electricity and electronics	Science and industry
11		Electricity and electronics	Climatechange

Source: NaCCA, Ministry of Education 2019

## SAMPLE LESSON – BASIC 3

<b>Date:</b> 15/03/2019	<b>Period:</b> 3 and 4	<b>Subject:</b> Science
<b>Duration:</b> One hour	<b>Strand:</b> Diversity of matter	
<b>Class:</b> B3	<b>Class size:</b> 40	<b>Sub-strand:</b> Materials
<b>Content Standard:</b> B3.1.2.1 Recognise materials as important resources for providing human needs.	<b>Indicator:</b> B3.1.2.1.1 Identify the uses of everyday materials and link the uses to their properties	<b>Lesson:</b> 1 of 1 (Based on the demands of the indicator)
<b>Performance Indicator:</b> Learners can identify the uses of everyday materials, link the uses to their properties and design different things from materials.		<b>Core Competencies/Values:</b> Critical Thinking and Problem Solving Digital Literacy, Communication and Collaboration, Personal Development and Leadership.
<b>Keywords:</b> Materials, wood, plastics, metals, cotton wool.		
Phase/Duration	Learners activities	Resources
<b>Phase1:</b> Starter (preparing the brain for learning) 5 minutes	<ul style="list-style-type: none"> <li>Teacher asks learners to look around the classroom and tell the class what they see.</li> <li>Learners respond: "I see a school bag, a pen, an eraser, a ruler, etc".</li> <li>Teacher explains that all the items learners have mentioned are all materials, which are found in our environment.</li> </ul>	
<b>Phase 2:</b> Main (new learning including assessment) 20 minutes	<ul style="list-style-type: none"> <li>Show learners real samples of wood, plastics, paper, metals, leather and cotton. Learners examine the material samples and make comments.</li> <li>Show learners pictures and videos of common uses of materials e.g. Wood, plastics, paper, metals, leather, cotton, and more materials.</li> <li>Learners use think-pair-share to discuss the uses of the materials in the video or pictures.</li> <li>Brainstorm with learners to come out with the uses of the materials in relation to their properties, e.g. metals are used for making car bodies because they are hard, plastics are used for making bottles, buckets, bowls because they can be moulded into different shapes.</li> <li>Engage learners in an activity to match some products such as buckets, cups, books, tables with their material sources such as metals, clay, glass, wood, plastics.</li> </ul>	Pictures/ flashcards of parts of the human body, an outline drawing of the human body, pencils, crayons, erasers, cello tape, broadsheets of paper.

	<ul style="list-style-type: none"> <li>In pairs, learners create some products from a material or a combination of materials and display their products. Combination of materials and display their products.</li> </ul>	
<b>Phase 3:</b> Plenary/ Reflections (Learner and teacher) 5 minutes	<p>Give learners opportunity to talk about what they have learnt.</p> <p>Elaborate more on learners ideas writing key points on the board. We have learnt about materials. We now know that materials are important and can be used for other products. Summarise lesson.</p>	

*Source: NaCCA, Ministry of Education 2019*





**1**

**Strand:**

**Diversity of matter**

# Strand 1: DIVERSITY OF MATTER

## Sub-strand 1: LIVING AND NON-LIVING THINGS

### LESSON 1: Grouping plants and animals

LB: pages 2 - 15; WB: pages 6 - 8

#### CONTENT STANDARD

**B3.1.1.1** Show an understanding of the physical features and life processes of living things and use this understanding to classify them.

#### INDICATOR

**B3.1.1.1.1** Classify living things into plants and animals by their life processes.

#### Learning Outcomes:

Learners are expected to:

- ◆ Mention the life processes that all living things undergo.
- ◆ Describe how plants move, grow, make babies, and get food.
- ◆ Describe how animals move, grow, make babies, and get food.
- ◆ Explain the differences between how plants and animals move, grow and feed.

#### NEW WORDS

Life processes, breathe, carnivore, omnivore, herbivore, nutrients.

#### RESOURCES

Videos showing life processes such as growth, movement, excretion and reproduction, pictures depicting life processes.

#### CORE COMPETENCIES

Critical thinking and Problem Solving, Digital Literacy, Collaboration and Communication, Personal Development and Leadership, Creativity and Innovation.

#### SUBJECT SPECIFIC PRACTICES

Observing, Classifying, Predicting, Analysing, Evaluating.

#### HELPFUL LINKS

[https://csoscience.files.wordpress.com/2011/10/2-g3life1\\_110711.pdf](https://csoscience.files.wordpress.com/2011/10/2-g3life1_110711.pdf)

grow bigger. They all move. Just as animals can have their own babies, plants also have baby plants. Humans and animals breathe in air. Plants also take in air through their leaves. This helps them to prepare their food and get energy. They also get water from the soil through their roots.

#### Starter

Ask learners to mimic how different animals move. Let them cite examples of animals that give birth by laying eggs and those that become pregnant.

#### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

#### Activity 1

##### *Differences between how plants and animals feed*

- Ask learners to mention different foods that they eat and their sources.
- Help them to know how plants prepare their own food through photosynthesis.

#### Activity 2

##### *How plants and animals grow*

- Show pictures of seeds, seedlings, young plants and adult plants to learners to observe.
- Show pictures of a baby girl, young girl and a woman to learners.
- Help learners to identify growth as a life process.
- Let learners discuss the differences in the growth of plants and animals. E.g plants lose their parts and develop new leaves, flowers and branches as they grow, but animals do not lose their body parts as they grow.



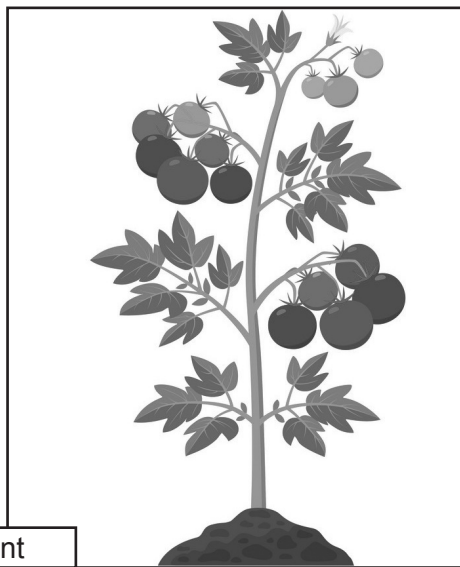
baby plant

#### Background Information

All plants and animals are living things. This means they are alive. Both plants and animals



Young plant



Adult plant

### Activity 3

#### **How plants and animals move**

- Show a video depicting movement in plants to learners.
- Assist learners to mimic a flying bird, a swimming fish or a hopping frog.
- Help learners to infer that animals can move the whole body but plants cannot.

### Activity 4

#### **How plants and animals have babies**

- Make use of seeds, and vegetative propagative parts to show to learners, how plants make new babies.
- Use eggs and pictures of pregnant women and animals to show learners how animals and humans make babies.

### Activity 5

#### **How they respond to external factors**

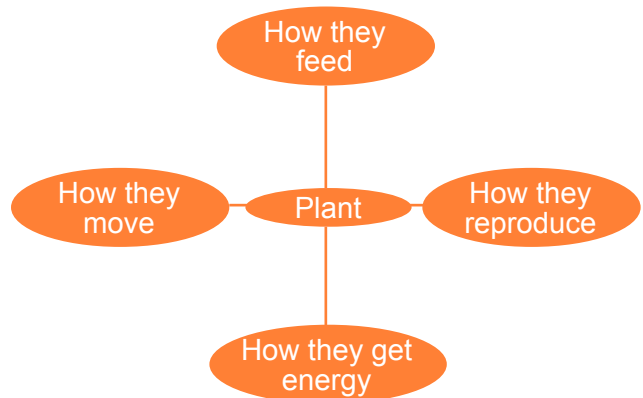
- Guide learners to identify their sense organs such as the eye, nose and ears which are called sense organs.

- Let them compare their sense organs with the structure of plants.
- You can use a potted plant placed under a source of light to show that plants are sensitive to light.

### Activity 6

#### **Characteristics of plants**

- Refer learners to page 14 of the Learner's Book to do this activity. They are to complete this mind map on the characteristics of plants, as shown below.



### Talk About

Task learners summarize at what they have learnt so far.

Let them discuss:

1. What they think is the biggest difference between plants and animals.
2. What will happen when human beings do not eat for a week.

Have learners work in pairs.

### What I have learnt

Ask learners questions for them to come out with what they have learnt.

1. Plants and animals are called living things because they can feed, grow, move, take in air and also produce their own young ones. These processes are called **life processes**.
2. Animals can move their whole body, but plants can move only parts of their bodies.
3. Plants can prepare their own food. Animals get their food from plants and other animals.
4. Animals have body parts that help them to see, hear or smell. These are called sense organs. Plants do not have sense organs.
5. Plants produce their own young ones through their seeds or body parts. Some plants have only one parent, but animals have two parents.

## Project for home or school

Learners are to observe any common animal of their choice in the community.

Ask them to write about how it does the following processes:

Gets food, gets energy, moves, grows, responds to stimuli, makes its own babies.

### Assessment for learning

Supervise learners to do the assessment tasks.

Refer them to pages 12 - 13 of the Learner's Book and pages 6 - 8 of the Workbook.

## Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. Write four life processes that both plants and animals undergo.
2. Animals that eat only herbs as their food are called.....
3. List two animals that eat other animals as their food.

### Answers to review exercise

#### Exercise 1

1. a. Animals                      b. Plants  
c. Animals                      d. Plants  
e. Plants
2. a. seeds                          b. moving  
c. energy                          d. air  
e. gills

#### Exercise 2

1. Learner's provide drawings
2. a. Nutrition                      b. Sensitivity  
c. Respiration                      d. Movement  
e. Reproduction
2. a. taste, smell and hear  
b. walk, leg                      c. energy, sunlight  
d. food, animals

### Answers to Workbook Questions

#### Trial 1

1. a. They make babies.      b. They move  
c. They grow
2. a. taste, smell and hear  
b. walk, leg                      c. energy, sunlight  
d. food, animals

#### Trial 2

	Plants/ Animals	Plants/ Animals
1	Plants	Animals
2	Animals	Plants
3	Plants	Animals
4	Plants	Animals

#### Trial 3

1. Carnivores
2. Banana
3. Gills
4. Grow
5. Growth

## Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to “**TRAP**” the lesson taught.

**T: Teach:** Teach a lesson.

**R: Reflect:** Reflect on the lesson taught from the introduction to the conclusion.

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6. Were learners able to do the exercises at the end of the lesson?
7. What three things did you do well during the lesson?
8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## Strand 1: DIVERSITY OF MATTER

### Sub-strand 2: MATERIALS

#### LESSON 1: Uses of everyday materials

LB: pages 16 - 24, WB: pages 9 - 11

##### CONTENT STANDARD

**B3.1.2.1** Recognise materials as important resources for providing human needs.

##### INDICATOR

**B3.1.2.1.1** Identify the uses of everyday materials and link the uses to their properties.

##### Learning Outcomes

Learners are expected to:

- ◆ Identify the uses of common materials such as metals, wood, plastics, straw, fabric and clay.
- ◆ Mention the common properties of materials.
- ◆ Explain how the properties of materials help us to use them for making certain objects.
- ◆ Identify the materials that are used to make common objects.
- ◆ Explain why different material are used in making an object.

##### NEW WORDS

Pottery, Fabric, furniture, carpenter, basketry, cutlery, transparent

##### RESOURCES

Common materials such as clay, wood, fabric, metal, clay, paper

##### CORE COMPETENCIES

Collaboration and communication, Personal Development and Leadership, Cultural Identity and Global citizenship

##### SUBJECT SPECIFIC PRACTICES

Communicating, Analysing, Evaluating, Observing

##### HELPFUL LINKS

<https://youtu.be/DjG3hi001SM>

##### Background Information

The items we use in our homes are made from everyday materials. These materials have properties that help us to use them to make new things. Examples of everyday materials include plastics, glass and metals.

##### Starter

Ask learners to mention any object in the kitchen and say the materials used to make it.

##### Teaching Instructions

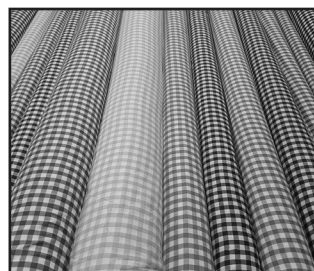
- Before the lesson drill the new words and ask learners to form sentences with it.

•

##### Activity 1

##### *Identifying the common uses of materials*

- Assist learners to mention examples of objects in the home, school and community
- Guide learners to mention the materials used in making these objects.
- Let learners work in groups to identify the sources of these materials.



some common materials use in home and school



## Activity 2

### **Objects made from various materials**

- Engage learners in a group activity.
- Provide them with different materials like clay, plastic, wood, etc.
- For each provided material, the group must write as many objects as possible that can be produced from it.

## Think and do

Refer learners to pages 19 - 22 of the Learner's Book. Engage them to read the notes and look at the pictures.

Have learners work in pairs to come out with the uses of the material in relation to their properties.

## Talk About

Refer learners to page 22 of the Learner's Book to discuss the questions there.

## What I have learnt

Ask questions for learners to come out with what they have learnt. Let them write their answers in their jotters/notebooks.

You can let them read the following:

1. Materials are useful for making the things we use every day such as clothes, furniture, cutlery, houses and bags.
2. Common materials for making everyday artefacts are clay, metals, wood, straw, plastic and glass.
3. We use materials for making everyday items because of their special properties.
4. Some of the properties of materials are: can bend easily, are strong, heavy, light, transparent, float, do not allow water to pass through them.

## Project for home or school

Refer learners to page 24 of the Learner's Book. They are to design different objects such as cars, utensils, houses and buckets using materials such as paper, clay and play dough. Ensure that they present their projects in class for discussion and feedback.

## Assessment for learning

Supervise learners to do the assessment tasks. Refer them to pages 22 - 23 of the Learner's Book and pages 9 - 11 of the Workbook.

## Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. Why glass is used in making windows?
2. List two home materials made from the following:
  - fabric
  - wood
  - metal
  - clay
3. Model a car using clay.

## Answers to review exercise

### Exercise 1

- 1 A. metal  
B. metal  
C. wood  
D. plastic  
E. metal
- 2 a. Glass: Windows, cups  
b. Metal: car, cutlery  
c. Fabric: school uniforms, sports jersey  
d. Plastic: cups, bowls  
e. Clay: mud house, mud stove

### Exercise 2

1. → d
2. → c
3. → e
4. → a
5. → b

## Answers to Workbook questions

### Trial 1

1. glass/plastic
2. wood
3. straw
4. clay
5. fabric

### Trial 2

1. water-proof
2. transparent
3. hard
4. bendable
5. hard
6. smooth

### Trial 3

- a. transparent
- b. strong
- c. light
- d. flexible
- e. water-proof

## Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

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**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## LESSON 2: Using different materials to make objects

LB: pages 25 - 30, WB: pages 12 - 14

### CONTENT STANDARD

**B3.1.2.1** Recognise materials as important resources for providing human needs

### INDICATOR

**B3.1.2.1.2** Demonstrate an understanding that an object is made of one or more materials

### Learning Outcomes

Learners are expected to:

- ◆ Mention different kinds of materials.
- ◆ Demonstrate how materials are put together to form an object.

### NEW WORDS

Wardrobe, roof

### RESOURCES

Pictures of houses, cars, item such as knives with wooden or plastic handles.

### CORE COMPETENCIES

Critical Thinking and Problem Solving, Collaboration and communication, Personal Development and Leadership

### SUBJECT SPECIFIC PRACTICES

Observing, Analysing, Evaluating

### HELPFUL LINKS

<https://youtu.be/Y4hL0ibFmhY>

### Background Information

Different materials are used together to make the objects used in our homes, schools and communities.

### Starter

Ask learners to mention the materials they will use to build their future homes. Let them give reasons.

### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

### Activity 1

#### *Identifying materials in a given object*

- Give learners pictures of cars, houses, bicycles and real items.
- Learners should observe each picture or item carefully to identify the different materials used in making it.

### Activity 2

#### *Uses of materials*

- Take learners on a field trip around the school.
- Learners identify different objects and the material used in building them.
- Task learners to work in groups to identify the uses of each material in a given object. For example, why is the door of the house made of wood, but window made of glass?

### Activity 3

#### *Designing objects from different materials*

- Refer learners to page 27 of the Learner's Book. They are expected to design an object.
- Materials they will need include: paper, cardboard and glass, blu tack or clay.
- They are to use any of the materials above, and design different objects such as canoes, periscope, tables, chairs, plates, cups, hats, shirts and electronic appliances.
- Let them write the properties of each material that helped them to design or mould it into the various objects.

### Think and do

Have learners work in pairs. They should come out with two items that are made up of two or three materials.

### Talk about

Ask learners these questions:

1. Assuming new chairs are to be brought to your school, what material would you like to be used in making those chairs?
2. Why would you want that material to be used in making the chair?

Let them work in groups of five.

### Project for home or school

Refer learners to page 30 of the Learner's Book to do this project.

## Classifying materials based on their properties

- Gather common materials such as paper, wood, glass, plastic, fabric and pottery/clay.
- Group them based on the following properties
  - \* Transparent or not transparent
  - \* Floats or sinks in water
  - \* Bendable or not bendable
  - \* Light or heavy
  - \* Rusts or does not rust
  - \* Rough or smooth

## What I have learnt

Ask questions for learners to come out with what they have learnt. Let them write their answers in their jotters/notebooks.

You can let them read the following:

- Materials are useful for making the things we use every day such as clothes, furniture, cutlery, houses and bags.
- Common materials for making everyday artefacts are clay, metals, wood, straw, plastic and glass
- We use materials for making everyday items because of their special properties.
- Some of the properties of materials are that they can bend easily, are strong, heavy, light, and transparent, float, or do not allow water to pass through them.
- Many objects are made from two or more different materials
- The different materials in an object all have uses that help the object to work well.

## Assessment for learning

Supervise learners to do the assessment tasks. Refer them to pages 27 - 29 of the Learner's Book and pages 12 - 14 of the Workbook.

## Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

- Write the materials used for making the following
  - pencil
  - An aeroplane
  - Tissue

- Take a look at your school building, list the materials used in building your school.

## Answers to review exercise

### Exercise 1

- transparent
  - strong
  - light
  - flexible
  - water proof
- paper
  - straw
  - glass
  - metal
  - plastic

### Exercise 2

- A. Flexible B. heavy C. strong  
D. light E. smooth

2.

x	m	e	t	a	l	a	p
p	t	r	s	l	g	f	a
l	c	l	a	y	s	c	p
a	e	i	o	l	p	m	e
s	z	o	s	z	e	o	r
t	w	o	o	d	i	l	e
i	c	i	a	n	o	e	a
c	n	g	l	a	s	s	m

- Wood.
  - Because it is available in my community
  - I can easily nail the pieces of wood together
  - Because it is strong
  - Because it is not heavy/ it is light
  - I can open it easily to take out my money
  - Any other correct responses from learners

## Answers to Workbook Questions

### Trial 1

Materials used:

Wood

Grass

Clay and others

### Trial 2

Wood

Nails

Roofing sheet

Wire mesh

### Trial 3

Learners to answer

## Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

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**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## LESSON 3: Separation of solid-liquid mixtures

LB: pages 31 - 37; WB: pages 15 - 17

### CONTENT STANDARD

**B3.1.2.2** Understand mixtures, types, formation, uses and ways of separating them into their components.

### INDICATOR

**B3.1.2.2.1** Describe a solid-liquid mixture and explain how to separate the components

### Learning Outcomes

Learners are expected to:

- ◆ Describe what a solid-liquid mixture is and give examples.
- ◆ Form solid-liquid mixtures.
- ◆ Describe how to separate some common solid-liquid mixtures.

### NEW WORDS

Evaporation, Filtration, dissolve, decant.

### RESOURCES

Water, sand, gari, oil, sugar, salt and gravels.

### CORE COMPETENCIES

Critical thinking and Problem Solving, Collaboration and Communication, Personal Development and Leadership, Creativity and Innovation.

### SUBJECT SPECIFIC PRACTICES

Observing, Classifying, Predicting, Analysing, Evaluating.

### HELPFUL LINKS

<https://youtu.be/6cGf4Wzi3lo>

### Background Information

When solid salt is put in water, it dissolves to form a mixture. This mixture is called a solid-liquid mixture. As the name suggests it is a mixture formed between a solid substance and a liquid substance. Another common example is a mixture of soil and water.

### Starter

Ask learners to mention some common mixtures they know.

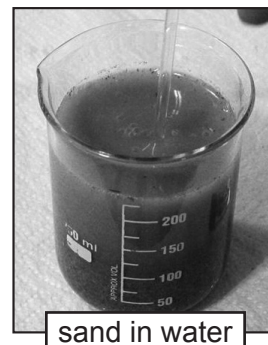
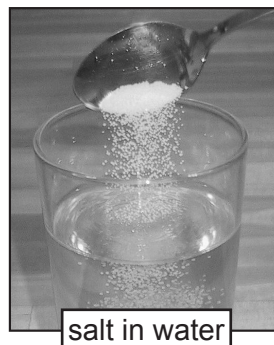
## Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

### Activity 1

#### Forming solid liquid mixtures

- Gather water and different solids such as marbles, chalk, sand, sugar and salt.
- Gather different plastic bottles and put little amounts of each solid substance into different bottles.
- Add enough water to each bottle to form different solid-liquid mixtures.
- Label each of the bottles e.g. mixture of chalk and water.
- Observe each mixture for a while and write all the solids that dissolve in water and those that do not.

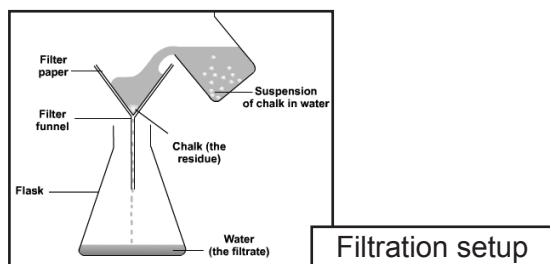


### Activity 2

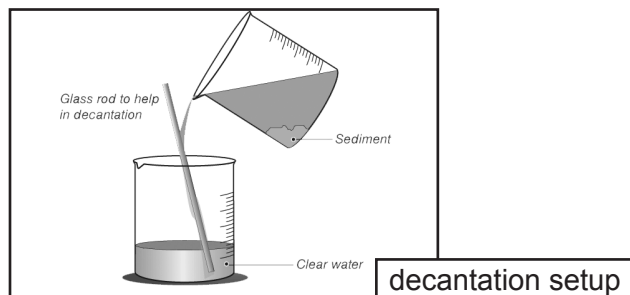
#### Separating solid liquid mixtures

- Filtration is used to separate a solid-liquid mixture in which the solid does not dissolve in the liquid. An example is a mixture of gari and water.
- We will need a filter paper, funnel, a stirrer and a bowl. We can make our own funnel by cutting the top part of a plastic bottle.
- A piece of cloth or cotton wool can also be used as a filter paper. The bottom part of the bottle can then be used as our collecting bowl.
- Carefully place the filter paper in the funnel. Position the funnel well in the collecting vessel. Pour the mixture of gari and water in the funnel with the filter paper and stir. The water passes through the filter paper, but the sand is trapped. This is called the **residue**.

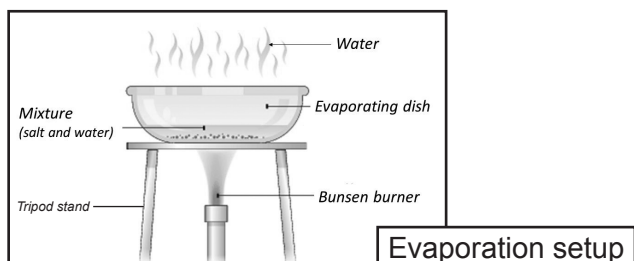




Filtration setup



decantation setup



Evaporation setup

### Activity 3

#### Activity on evaporation

- Refer learners to page 35 of the Learner's Book for this activity.

### Think and do

Put learners in groups. Let them discuss the uses of solid-liquid mixtures in everyday life.

### Talk about

Let learners work in pairs to discuss and answer this:

- There are solid-liquid mixtures seen in our homes and communities. Give some uses of these everyday solid-liquid mixtures.

### What I have learnt

Deduce from learners what they have learnt from the lesson. Write some of their answers on the board as follows:

- Solid-liquid mixtures are formed when a solid is mixed with a liquid.
- Some solids dissolve in liquids when mixed together and other solids do not.
- Examples of common solid-liquid mixtures are salt and water, sand and water and gari and water.

- We can separate some everyday solid-liquid mixtures.
- Evaporation and filtration are common methods used in separating solid-liquid mixtures.

### Project for home or school

Refer learners to page 37 of the Learner's Book for instructions on their home project.

### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to page 36 of the Learner's Book and pages 15 - 17 of the Workbook.

### Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

- How will you separate a mixture of water and sand?
- What is the difference between miscible and immiscible materials?

### Answers to review exercise

#### Exercise 1

- sand and gari
  - rice grains and salt
  - sugar and salt
  - corn dough and gari
  - gari and sugar
- c, f, g
- false
  - true
  - false
  - true
  - false

### Answers to Workbook Questions

#### Trial 1

- grain and water
- rice and water
- soup and meat
- frying fish

#### Trial 2

- filter paper
  - flask
- sand and water
- filtration

#### Trial 3

Miscible	Immiscible
Water and fruit juice	Water and palm oil
Lemon juice and water	Kerosene and palm oil
Water and milk	

## Diagnostic Assessment

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**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## LESSON 4: Change of state of substances

LB: pages 38 - 43; WB: pages 18 - 20

### CONTENT STANDARD

**B3.1.2.3** Know that substances can exist in different physical state (solid, liquid, gas). Many substances can be changed from one state to another by heating or cooling.

### INDICATOR

**B3.1.2.3.1** Explain how substances change state between solid, liquid and gas.

### Learning Outcomes

Learners are expected to:

- ◆ Explain how a substance can change state.
- ◆ Explain how cooling and heating cause change of state of substances.
- ◆ Give examples of substances that can change state between solid, liquid and gas.
- ◆ Demonstrate change of state of some substances.

### NEW WORDS

Evaporation, condensation, freezing, melting

### RESOURCES

Iced block, candle.

### CORE COMPETENCIES

Critical thinking and Problem Solving, Digital Literacy, Personal Development and Leadership

### SUBJECT SPECIFIC PRACTICES

Observing, Manipulating, Analysing, Evaluating

### HELPFUL LINKS

<https://youtu.be/vNvElea-124>

### Background Information

There are three states of matter. These are solid, liquid and gas.

Some substances can change from one state to another. For example, shea butter is solid. When it is put on fire, it melts to become a liquid. When you put it down for sometime, the liquid shea butter cools down to become solid again.

In our homes, liquid food is put in the refrigerator or freezer to make it solid. This is called freezing or solidification.

When you put water on fire, the water begins to boil and turns into vapour. Vapour is water in the form of gas. We say it is in the **gaseous** state.

### Starter

Provide learners with a list of things such as water, cooking oil, milk, sand, air, wind. Let them work in pairs to classify these as solids, liquids or gases.

### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

### Activity 1

#### ***Demonstrating change of states of matter***

- Guide learners to observe changes of state of matter through the following activities:
  - \* Light a candle and observe what happens to the wax.
  - \* Put ice blocks into a bottle and observe it as it melts for a while. Place the bottle in the sun for a while for the melted ice to evaporate.
- Have learners tell you how substances change state. Let them work in pairs.

### Activity 2

#### ***Demonstration on the three states of matter***

- Refer learners to page 41 of the Learner's Book. Guide them to do the activity.

### Talk About

Remind learners that, they have learnt about how substances change state from solid to liquid and gas.

From what they have learnt so far, let them say one thing that is required to be able to change substances from one state to another.

### What I have learnt

Deduce from learners what they have learnt and write some on the board as follows:

3. Many substances can change state between solid, liquid and gaseous states.
4. Substances change state when they are heated or cool down. We apply heat to melt solid substances into liquids.

5. In our homes the refrigerator is used to cool or freeze liquid substances into the solid state.
6. Water can exist in all the three states namely solid, liquid and gas.

### Project for home or school

Refer learners to page 43 of the Learner's Book for instructions on their home project.

### Assessment for learning

supervise learners to do the assessment tasks. Refer them to pages 41 - 42 of the Learner's Book and pages 18 - 20 of the Workbook.

### Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. What happens when
  - a. Water boils
  - b. Water freezes
  - c. Ice block melts

### Answers to review exercise

#### Exercise 1

1.
  - a. heat
  - b. cool
  - c. cool
  - d. cool
  - e. heat
2.
  - a. Liquid
  - b. Solid
  - c. Liquid
  - d. Gas

#### Exercise 2

							S					
							o					
			m				l	i	q	u	i	d
		f	r	e	e	z	i	n	g			
				l			d		a			
				t					s			
s	u	b	l	i	m	a	t	i	o	n		
				n								
				g								

### Answers to Workbook Questions

#### Trial 1

1. liquid to gas
2. gas to liquid
3. solid to liquid
4. liquid to solid

#### Trial 2

					S	o	l	i	d								
					u												
					b												
					l	i	q	u	i	d							
F	r	e	e	z	i	n	G										
					m						A						
					a						S						
					t												
					i												
					o												
C	o	n	d	e	n	s	a	t	i	o	n						

#### Trial 3

- |           |            |
|-----------|------------|
| 1. Liquid | 9. Liquid  |
| 2. Liquid | 10. Gas    |
| 3. Solid  | 11. Solid  |
| 4. Liquid | 12. Liquid |
| 5. Solid  | 13. Solid  |
| 6. Solid  | 14. Gas    |
| 7. Solid  | 15. Liquid |
| 8. Solid  | 16. Solid  |

## Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to “**TRAP**” the lesson taught.

**T: Teach: Teach** a lesson.

**R: Reflect: Reflect** on the lesson taught from the introduction to the conclusion.

**A: Analyse: Analyse** by asking yourself the following questions:

1. How did the lesson go?
2. Was the introduction catchy?
3. Were you able to catch the learners' attention throughout the lesson?
4. Were the learners able to answer your questions during and after the lesson?
5. Did the learners ask you questions during and after the lesson?

6. Were learners able to do the exercises at the end of the lesson?
7. What three things did you do well during the lesson?
8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

**2**

**Strand:**

**Cycles**



## Strand 2: CYCLES

### Sub-strand 1: EARTH SCIENCE

#### LESSON 1: Cyclic events

LB: pages 46 - 52; WB: pages 22

##### CONTENT STANDARD

**B3.2.1.1.** Recognize that some events in our environment occur recurrently.

##### INDICATOR

**B3.2.1.1.1** Describe some cyclic events like day and night, wet and dry seasons and their intervals.

##### Learning Outcomes

Learners are expected to:

- ◆ Describe some cyclic events.
- ◆ Mention the importance of cyclic events.
- ◆ Identify activities associated with cyclic events.

##### NEW WORDS

Cyclic, dry season, wet season.

##### RESOURCES

charts/ pictures/video drawing of cyclic events.

##### CORE COMPETENCIES

Collaboration and Communication, Personal Development and Leadership, Cultural Identity and Global Citizenship, Creativity and Innovation

##### SUBJECT SPECIFIC PRACTICES

Communicating, Analysing, Evaluating.

##### Background information

Some events in our environment are recurrent. These events are described as cyclic events. They include day and night, dry season and wet season, going to school, harvesting of crops, birthday celebrations and Independence Day.

These cyclic events help in predicting the weather pattern, help in planning activities, how crops are cultivated.

##### Starter

Ask learners to mention some activities they do at home or in school.

Let them tell you how often they do them. Is it everyday, every week, every month or every year?

##### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

##### Activity 1

- Engage learners to watch a video/picture on cyclic events, e.g. day and night .
- Use effective questioning to find out from the learners what cyclic events are.
- Explain the terms used in the video to learners. Example, cyclic events, day and night, wet season and dry season.

##### Activity 2

- Put learners into groups of four. Ask learners to come out with the importance of cyclic events. Example, festival brings peace and unity.
- Take feedback from learners, one group after the other, as they give their answers.

##### Activity 3

- In their previous groups, find out from learners the activities associated with cyclic events. Examples: cultivations of crops - wet season; harvesting/drying of crops - dry season; daytime - going to school; night time - sleeping, etc.
- Task each group to present their findings to the class for a whole class discussion.

##### Activity 4

- Engage learners in a collaborative manner to draw any of the cyclic events. Example, Day and night, wet and dry season.
- Help learners to display their drawings for a class discussion.

## Talk about

Refer learners to page 49 of the Learner's Book. Let them discuss the "talk about questions" in pairs. Ensure equal participation of learners to promote communication and critical thinking.

## What I have learnt

Ask learners to read the text on cyclic events under "What I Have Learnt" on page 52 of the Learner's Book

Reinforce that cyclic events occur repeatedly.

## Project Home or School

Explain to learners how they will do the home learning activity on page 52 of the Learner's Book.

### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to pages 50 - 51 of the Learner's Book and page 22 of the Workbook.

## Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. Group the following into cyclic events and Non-cyclic events

Flooding, wet season, day and night, festivals, dry season and bush fires.

### Answers to Review exercise

#### Exercise 1

1. → b
2. → a
3. → d
4. → c

#### Exercise 2

1. Dry season  
Wet season  
Festivals  
Day and Night
2. Accept appropriate pictures/drawings of day and night.
3. Cyclic events occur repeatedly.  
Cyclic events occur from time to time.

### Answers to Workbook Questions

#### Trial 1

1. Wet season ✓      Day and night ✓  
    festivals ✓      Dry season ✓

2. Is an event that happens from time to time.

#### Trial 2

Festivals, Going to school, Birthdays, Day and night

## Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to "TRAP" the lesson taught.

**T: Teach:** Teach a lesson.

**R: Reflect:** Reflect on the lesson taught from the introduction to the conclusion.

**A: Analyse:** Analyse by asking yourself the following questions:

1. How did the lesson go?
2. Was the introduction catchy?
3. Were you able to catch the learners' attention throughout the lesson?
4. Were the learners able to answer your questions during and after the lesson?
5. Did the learners ask you questions during and after the lesson?
6. Were learners able to do the exercises at the end of the lesson?
7. What three things did you do well during the lesson?
8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## LESSON 2: Importance of sun to the earth

LB: pages 53 - 56; WB: pages 23 - 24

### CONTENT STANDARD

**B3.2.1.2** Recognise the relationship between earth and the sun

### INDICATOR

**B3.2.1.2.1** Know the importance of the Sun to the earth

### Learning Outcomes

Learners are expected to:

- ♦ Identify the importance of the sun to the earth.
- ♦ Identify the major uses of the sun to the earth.
- ♦ Draw pictures showing benefits of the sun to life on earth.

### NEW WORDS

Sun, earth, oxygen, immune system, vitamins.

### RESOURCES

Models of the sun, earth,  
Charts/Pictures showing the sun and the earth

### CORE COMPETENCIES

Collaboration and communication, Personal Development and Leadership, Cultural Identity and Global citizenship

### SUBJECT SPECIFIC PRACTICES

Communicating, Analysing, Evaluating, Observing

### HELPFUL LINKS

<https://youtu.be/88QwqQYTKBI>

### Background information

There is constant relationship between the earth and the sun. The sun provides heat and light on the earth. Without the sun's heat and light, the earth would be a lifeless ball.

The sun gives energy to the growing plants that provide food and oxygen for human and animal survival on the earth. The sun's ultra violet rays (UV rays) helps in making vitamin D which helps bones, blood cells and the immune system.

### Starter

Ask learners these questions:  
What do you know about the sun?  
Do we get sunlight every day?

### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

### Activities 1

- Find out from learners:
  - \* What the sun is.
  - \* How the sun benefits the earth.
- Let them work in pairs or in groups.
- Each pair/group should present their answers for a whole class discussion.

### Activity 2

- Engage learners in outdoor activities to illustrate the importance of the sun.
- Back in the classroom, let them share ideas and discuss the importance of the sun.

### Activity 3

- In groups of five, let learners discuss the major uses of the sun to the earth. Example, for drying food, drying of clothes, helps plant grow, it gives light to humankind, it keeps us warmth, etc.
- Let each group present their ideas in class for discussion.

### Activity 4

- Use think-pair-share to engage learners to draw pictures showing the benefits of the sun to life on earth. Examples, drying of clothes, drying of food, etc.

### Talk about

Let learners discuss the "talk about questions" on page 55 of the Learner's Book. This is to promote critical thinking in learners. Have them work in pairs.

### What I have learnt

Do a class reflection with learners on what they have learnt about the lesson.

Let them read the text under What I Have Learnt on page 56 of the Learner's Book.

### **Project for home or school**

Ask learners to make a model of the sun. They can use paper or cardboard. Let them draw what they have modelled.

Learners are to present their work to class for a whole class discussion.

### **Assessment for learning**

Supervise learners to do the assessment tasks. Refer them to page 55 of the Learner's Book and pages 23 - 24 of the Workbook.

### **Extension Assessment**

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. Write three good things about the sun and three bad things about the sun.

### **Answers to review exercise**

1. Accept correct drawings on benefits of the Sun.
2.
  - a. No life
  - b. Plants cannot make food
  - c. Animals will not get food. (suggested answers).
  - d. Sunlight
3.
  - a. True
  - b. True
  - c. False
  - d. True
  - e. False

### **Answers to Workbook Questions**

#### **Trial 1**

1. It gives us heat.
2. it gives us light.

#### **Trial 2**

1. The earth will be dark.

2. We can't dry our things.
3. We cannot see  
(and many more)

#### **Trial 3**

1. I give heat
2. I dry your clothes.
3. I give light (and many more)

### **Diagnostic Assessment**

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to “**TRAP**” the lesson taught.

**T: Teach: Teach** a lesson.

**R: Reflect: Reflect** on the lesson taught from the introduction to the conclusion.

**A: Analyse: Analyse** by asking yourself the following questions:

1. How did the lesson go?
2. Was the introduction catchy?
3. Were you able to catch the learners' attention throughout the lesson?
4. Were the learners able to answer your questions during and after the lesson?
5. Did the learners ask you questions during and after the lesson?
6. Were learners able to do the exercises at the end of the lesson?
7. What three things did you do well during the lesson?
8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## LESSON 3: Identifying types of precipitation

LB: pages 57 - 61; WB: pages 25 - 26

### CONTENT STANDARD

**B3.2.1.3** Show understanding of the roles of condensation, evaporation, transpiration and precipitation in the hydrological (water) cycle.

### INDICATOR

**B3.2.1.3.1** Identify the types of precipitation (rain, snow, hail, sleet) and describe the differences among them.

### LEARNING EXPECTATION

Learners are expected to:

- ◆ Identify different types of precipitation.
- ◆ Build vocabulary on Precipitation.
- ◆ Draw a picture showing a rainy day.

### NEW WORDS

Sleet, Hail, Snow, Precipitation

### RESOURCES

Cut-outs showing forms of precipitation  
Pictures  
Videos

### CORE COMPETENCIES

Collaboration and communication, Personal Development and Leadership, Cultural Identity and Global citizenship, Creativity and Innovation

### SUBJECT SPECIFIC PRACTICES

Observing, Communicating, Analysing, Evaluating

### HELPFUL LINKS

<https://youtu.be/1wreQRWF1FM>

### Background Information

There are different types of precipitation. (rain, snow, hail, and sleet)

They all come from clouds as forms of water from the sky. When water from the clouds falls down under the influence of gravity, it is described as precipitation.

Snow is a solid frozen water. Hail is observed during thunderstorms, mostly large pieces of ice fall on earth.

### Starter

Through a whole-class discussions, find out from learners, the differences between ice block and water. Take feedback from learners and write them on the board.

### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

### Activity 1

- Show learners pictures or videos of different forms of precipitation (e.g. snow, hail, sleet). These might be foreign to them.
- Let them examine and tell you what they saw in the video or pictures.

### Activity 2

- Refer learners to page 58 of the Learner's Book. Assist them to read and explain the terms stated there.
- In groups, let learners match pictures showing different forms of precipitation to their correct names.
- Encourage learners to do group presentations.

### Activity 3

- Have learners draw a picture of a rainy day.
- Let them display their drawings for a class discussion.

### Talk about

Engage learners to discuss the "Talk about" questions on page 59 of the Learner's Book. They should work in groups.

### What I have learnt

Use effective questioning to find out from the learners what they have learnt.

Reflect with learners on the lesson by assisting them to read the text under "What I Have Learnt" on page 61 of the Learner's Book.

### Project for home or school

Refer learners to page 61 of the learner's book. Explain to them how they will do the activity.

### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to pages 59 - 60 of the Learner's Book and pages 25 - 26 of the Workbook.

### Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. Write four (4) forms of precipitation.

### Answers to review exercise

#### Exercise 1

1. Accept any appropriate drawing of rainy day.
2. a. snow  
b. sleet  
c. rain  
d. hail
3. Hail stones

#### Exercise 2

- 1 → b
- 2 → a
- 3 → d
- 4 → c

### Answers to Workbook Questions

#### Trial 1

1. Hail → d
2. Sleet → c
3. Rain → a
4. Snow → b

#### Trial 2

1. True
2. True
3. True

#### Trial 3

1. Rain
2. Snow
3. Hail
4. sleet

### Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to “**TRAP**” the lesson taught.

**T: Teach: Teach** a lesson.

**R: Reflect: Reflect** on the lesson taught from the introduction to the conclusion.

**A: Analyse: Analyse** by asking yourself the following questions:

1. How did the lesson go?
2. Was the introduction catchy?
3. Were you able to catch the learners' attention throughout the lesson?
4. Were the learners able to answer your questions during and after the lesson?
5. Did the learners ask you questions during and after the lesson?
6. Were learners able to do the exercises at the end of the lesson?
7. What three things did you do well during the lesson?
8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?



## LESSON 4: Things that make water impure

LB: pages 62 - 67; WB: pages 27 - 28

### CONTENT STANDARD

**B3.2.1.4** Recognize water and air as important natural resources

### INDICATOR

**B3.2.1.4.1** Identify things that make water impure

### Learning Outcomes

Learners are expected to:

- ◆ Identify things that make water impure.
- ◆ Identify the effects of drinking impure water.

### NEW WORDS

Impure, germs, diarrhoea, cholera, pollute, industrial

### RESOURCES

Pictures or videos of flooding and how water is polluted.

### CORE COMPETENCIES

Collaboration and communication, Personal Development and Leadership, Cultural Identity and Global citizenship

### SUBJECT SPECIFIC PRACTICES

Observing, Communicating, Analysing, Evaluating.

### Background Information

Water is important for human, animal and plant survival. It is used almost everyday in homes, schools and at workplaces. When water is impure, it cannot be used for a lot of activities. Leakages, flooding during rainy season which carries waste deposit in water bodies can make water impure.

### Starter

Show learners two glasses of water, one clean and the other unclean. Ask them to identify the two samples of water and tell you which one is safe for drinking. Let them give you reasons for their choice.

### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

#### Activity 1

- Engage learners to observe cut-out pictures on how water is polluted. E.g. Flooding, mining, littering and many others.
- Refer them to pages 62 and 63 of the Learner's Book to look at the pictures and talk about them.

#### Activity 2

- In groups, let learners present their ideas on the observed pictures on how water is polluted.

#### Activity 3

- Take learners on a trip or nature walk to observe littered parts of the community to observe things that make water impure.
- Let them present their findings for a whole class discussion.

#### Activity 4

- Put learners into groups of four or five. Ask learners in each group to discuss "what will happen if they drink impure water". Let them list their answers.
- Each group should select a leader to read their answers to the class. Lead them in a class discussion.

### Talk about

Engage learners to discuss about the questions under talk about on page 65.

- What should be done to avoid polluting water in our communities?

Let them work in pairs.

### What I have learnt

Use effective questions to find out what they have learnt.

Read the text with learners to summarize the lesson on page 67 of the Learner's Book.

## Project for home or school

Explain to learners how they will do the assessment task under home learning on page 67 of the Learner's Book.

They are to:

1. Observe parts of the home or community.
2. Identify things that make water impure.
3. Create a poster of what they have observed by drawing.
4. Share the poster with the friends.

## Assessment for learning

Supervise learners to do the assessment tasks. Refer them to pages 65 - 66 of the Learner's Book and pages 27 - 28 of the Workbook.

## Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. What make water not safe for drinking?  
(List three)
2. What happens when you drink unsafe water

## Answers to review exercise

### Exercise 1

Suggested answers

- |    |           |   |                    |
|----|-----------|---|--------------------|
| 1. | Picture A | - | Polluted water     |
|    | Picture B | - | not polluted water |

### Exercise 2

1. tyhoid  
cholera
2. Ama is vomiting (picture A)  
Baba is having diarrhoea (picture B)
3. Accept any appropriate answer  
I can make people vomit  
I can make people weak

## Answers to Workbook Questions

### Trial 1

1. Typhoid.
2. Cholera.

### Trial 2

- A. Not good for drinking.
- B. Good for drinking.

### Trial 3

1. I can boil the water.
2. I can filter the water.

## Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to “**TRAP**” the lesson taught.

**T: Teach: Teach** a lesson.

**R: Reflect: Reflect** on the lesson taught from the introduction to the conclusion.

**A: Analyse: Analyse** by asking yourself the following questions:

1. How did the lesson go?
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4. Were the learners able to answer your questions during and after the lesson?
5. Did the learners ask you questions during and after the lesson?
6. Were learners able to do the exercises at the end of the lesson?
7. What three things did you do well during the lesson?
8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## LESSON 5: Properties of air

LB: pages 68 - 74; WB: pages 29

### CONTENT STANDARD

**B3.2.1.4:** Recognize water and air as important resources.

### INDICATOR

**B3.2.1.4.2** Describe the properties of Air.

### LEARNING EXPECTATION

Learners are expected to:

- ♦ Describe properties of air.

### NEW WORDS

mixture, air, carbon dioxide, vapour, gases, hydrogen.

### RESOURCES

pictures of cars and aeroplanes, balloons

### CORE COMPETENCIES

Collaboration and communication, Personal Development and Leadership, Cultural Identity and Global citizenship.

### SUBJECT SPECIFIC PRACTICES

Observing, Communicating, Analysing, Evaluating.

### HELPFUL LINKS

<https://youtu.be/I3JtnoCnQ7w>

### Background Information

Air is a mixture of gases. These gases are important for human, animal and plant life. Oxygen, Carbon Dioxide, water vapour, rare gases, Nitrogen are all part of air. Oxygen is used for respiration. Carbon Dioxide is used by plants during photosynthesis.

### Starter

Ask learners to take in a deep breath. They should Inhale and exhale. Let them repeat (Inhale, exhale). Ask them what they are breathing in.

### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

### Activity 1

- Put learners into groups of six. Ask each group to brainstorm and answer the following questions:
  - \* What is air?
  - \* Where does air come from?
  - \* Can we see and touch air?
  - \* What shows that air is present in the classroom?
- Invite each group to present their findings to the whole class.
- Write their responses on the board and identify similar answers.

### Activity 2

- Ask learners to perform an activity on properties of air.
- Refer them to page 69 of the Learner's Book to observe the pictures and answer the questions.

### Activity 3

- Ask learners to perform another simple activities on properties of air. Such as inserting a glass jar in water, fanning themselves with a piece of paper e.t.c. Let them work in groups of five.
- Refer them to page 70 of the Learner's Book for instructions.

### Activity 4

- Engage learners in a group activity to make more air enter their classrooms.
- Ask learners to close the doors and windows of the classroom. Let them observe the condition in the classroom.
- Now, ask them to open all the windows and doors and also observe the condition.
- Let them present their findings for discussions in class.

### Activity 5

- Find out from learners in groups: What happens if there is no air?
- Let each group read out their responses to the class.

## Talk about

Engage learners in a discussion on talk about questions to promote communication and critical thinking. Refer them to page 72 of the Learner's Book.

1. How can you make more air enter your classroom or your room at home?
2. Where does air come from?  
Let them work in pairs.

## What I have learnt

Help learners to read the text under "What I have learnt" on page 74 of the Learner's Book as follows:

1. Air can give shape to objects.
2. Air can support burning.
3. Air is made up of different gases.

## Project for home or school

Explain to learners how they should handle the questions under home learning on page 73 of the Learner's Book.

### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to pages 72 - 73 of the Learner's Book and page 29 of the Workbook.

## Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. How will you make more air enter your room?
2. How can air support burning?

### Answers to review exercise

#### Exercise 1

1. Supports burning → c  
Has weight → a  
Occupies space → b

### Exercise 2

1. b
2. Oxygen, carbon dioxide, nitrogen, water vapour

### Answers to Workbook Questions

#### Trial 1

1. Aeroplane
2. Kite
3. Balloon
4. Bird, cotton, etc.

#### Trial 2

1. He is breathing
2. Air

## Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to "TRAP" the lesson taught.

**T: Teach:** Teach a lesson.

**R: Reflect:** Reflect on the lesson taught from the introduction to the conclusion.

**A: Analyse:** Analyse by asking yourself the following questions:

1. How did the lesson go?
2. Was the introduction catchy?
3. Were you able to catch the learners' attention throughout the lesson?
4. Were the learners able to answer your questions during and after the lesson?
5. Did the learners ask you questions during and after the lesson?
6. Were learners able to do the exercises at the end of the lesson?
7. What three things did you do well during the lesson?
8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## Strand 2: CYCLES

### Sub-strand 2: LIFE CYCLES OF ORGANISMS

#### LESSON 1: Germination of maize and bean seeds

LB: pages 75 - 79; WB: pages 30 - 31

##### CONTENT STANDARD

**B3.2.2.1** Demonstrate understanding of life cycle of a plant.

##### INDICATOR

**B3.2. 2.1.2** Observe the germination of maize and bean seeds.

##### LEARNING EXPECTATION

Learners are expected to:

- ♦ Observe how maize and beans germinate.

##### NEW WORDS

Germinate, viable seed.

##### RESOURCES

Cotton wool, maize and bean seeds, water, transparent container

##### CORE COMPETENCIES

Collaboration and Communication.  
Critical Thinking and Problem Solving.  
Personal Development and Leadership  
Creativity and Innovation

##### SUBJECT SPECIFIC PRACTICES

Observing, Classifying Predicting, Analysing  
Evaluating

##### HELPFUL LINKS

<https://youtu.be/ZY6v8UPJGfU>

##### Background information

Seeds germinate when all conditions are favourable. These conditions include water, viable seed, warmth and air(oxygen).

##### Starter

Ask learners to mention names of different fruits having seeds in their localities. Examples, maize, beans, orange, pawpaw, mango seed, etc.

#### Teaching Instruction

- Before the lesson drill the new words and ask learners to form sentences with it.

##### Activity 1

- Put learners into convenient groups and give them two transparent containers, cotton wool, water and bean seed or maize seeds. Label the containers. (A and B)

##### Activity 2

- Guide learners to pack container 'A' with wet cotton wool and push one of each of the different seeds through the side of the container but not to touch the bottom.
- Let learners pour water to soak the cotton wool.

##### Activity 3

- Guide learners to pack container 'B' using the same method in Activity 2 but with dry cotton wool.
- Engage learners to observe the set-up and record their findings

NB:

1. The set-up is to be left for one week.
2. Keep the cotton wool in container 'A' always wet.

Refer learners to pages 76 and 77 of the Learner's Book.

#### Talk About

Refer learners to page 77 of the Learner's Book and discuss the two questions there.

1. What made the seeds in container A to germinate?
2. Why didn't the seed in container B germinate?

## What I have learnt?

Lead learners to read the text under “What I have Learnt” on page 79 of the Learner’s Book. In order to reinforce understanding of the concepts on maize and beans germination.

### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to pages 78 - 79 of the Learner’s Book and pages 30 - 31 of the Workbook.

## Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. List down things that make beans and maize seeds germinate.
2. If esi put a bean seed in water and soil and also put a maize seed in soil alone
  - i. What will happen to the maize seed after seven days?
  - ii. What will happen to the bean seed after seven days?

### Answers to Review Exercise

#### Exercise 1

1. Picture A – The cotton in the container is wet.  
Picture B – The cotton in the container is not wet.
2. Maize seed and wet cotton.
3. Maize seed and dry cotton.

#### Exercise 2

1. Germination of maize seeds.
2. Picture A: maize seed will germinate.  
Picture B: maize seed will not germinate.

#### Exercise 3

1. Accept appropriate drawing of maize or bean seeds.
2. It’s important because it helps plants to reproduce new ones.
3. 

A. Nation	I. mave	R. rote
B. Name	J. gem	S. tore
C. Man	K. on	T. ore
D. to	L. no	U. air
E. get	M. not	
F. got	O. note	
G. go	P. Tone	
H. germ	Q. one	

4.
  - a. water allows the seed to absorb nutrients.
  - b. water makes the seed soft.

### Answers to Workbook Questions

#### Trial 1

Learner’s to answer

#### Trial 2

1. No
2. Take learners around this: because the conditions necessary for gemination are present. That is water, air and suitable temperature (warmth)
3. True
- 4 a. will not geminate
- 4 b. germinate

## Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to “**TRAP**” the lesson taught.

**T: Teach:** Teach a lesson.

**R: Reflect:** Reflect on the lesson taught from the introduction to the conclusion.

**A: Analyse:** Analyse by asking yourself the following questions:

1. How did the lesson go?
2. Was the introduction catchy?
3. Were you able to catch the learners’ attention throughout the lesson?
4. Were the learners able to answer your questions during and after the lesson?
5. Did the learners ask you questions during and after the lesson?
6. Were learners able to do the exercises at the end of the lesson?
7. What three things did you do well during the lesson?
8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?





**3**

**Strand:**

**Systems**

## Strand 3: SYSTEMS

### Sub-strand 1: THE HUMAN BODY SYSTEMS

#### LESSON 1: Functions of the external parts of the human body

LB: pages 82 - 92; WB: pages 34 - 36

##### CONTENT STANDARD

**B3.3.1.1** Recognise that different parts of the human body work interdependently to perform a specific function.

##### INDICATOR

**B3.3.1.1.1** Explain that the external parts of the human body work interdependently to perform a function.

##### Learning Outcomes

Learners are expected to:

- ◆ Identify the different external parts of the human body.
- ◆ Identify the functions of the different external body parts.
- ◆ Predict what happens when one loses a part(s) of the external body.

##### NEW WORDS

Knees, toes, shoulders, chest, abdomen, barking, escape, danger, sense organs.

##### RESOURCES

Play dough, markers, felt pens, paper, cardboard, scissors, doll, cartoon box glue.

##### CORE COMPETENCIES

Critical thinking and Problem Solving, Collaboration and communication, Personal Development and Leadership

##### SUBJECT SPECIFIC PRACTICES

Observing, Analysing, Evaluating

##### Background information

There are many external parts that come together to form the human body system. The human body is a system that is made up of many parts with different functions. We must not play carelessly to lose any part of the body.

##### Starter

A song on the body to motivate learners and prepare them for the lesson.

##### Song

Show me your nose  
This is my nose,  
Show me your eyes  
These are my eyes,  
Show me your mouth  
This is my mouth,  
Show me your buttocks  
This is my buttocks

##### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

##### Activity 1

- In a whole class activity, mention an external body part and learners tell you what it is used for.
- Refer learners to pages 84 - 86 of the Learner's Book to look at the pictures of the various external body parts and read the functions of each one.

##### Activity 2

##### *How the parts of the body work together*

- Assist learners to explain how parts of the body work together to perform the following functions.
  - Play football
  - Study at school
  - Sweep the house
  - Play ampe
- Let learners carry out some of the activities above in groups. Let them tell you the parts of the body they used in each activity.
- Guide learners to understand how the various body parts such as the ear, eyes, hands and feet contribute in performing each of the activities above.
- Refer them to pages 84 and 85 to read the notes there.

### Activity 3

- Refer learners to page 89. Assist them to do the activities under Activity 1.
- Summarise the lesson by stressing the need to protect all parts of the body since they are equally important.

### Talk about

Refer learners to pages 88 and 90 of the Learner's Book. Let them work in pairs or in groups to answer the questions.

### Suggested responses

#### Talk about: Page 90

**Accident:** e.g. car, home, social gathering, school, market.

**Diet/food:** people are allergic to certain food, When they eat such foods, it may cause them to develop health problems.

**Medication:** some medication can cause blindness and can lead to losing of one's body part.

**From birth:** due to changes in the womb, or medication, disease.

**Disease:** some disease can lead to amputation of one's leg, feet and can cause dumbness or blindness.

### What I have learnt

Ask learners questions about what they have learnt after the lesson. Write some on the board. Refer them to page 92 of their Learner's Book to read what is there.

### Project for home or school

Refer learners to page 92 of the Learner's Book for their assignment. Accept different responses from learners and discuss the responses using basketball questioning technique.

*(basketball questioning technique means posing a question and asking a certain learner for an answer. The teacher then asks another learner to expand on that answer further and then another learner is asked to evaluate the response.)*

Possible response: The eyes will see the dog; the sound of the dog bark will be heard with the ears.

This makes one know that there is danger and run with the feet (legs).

### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to pages 90 - 91 of the Learner's Book and pages 34 - 36 of the Workbook.

### Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. Why should we take good care of all part of our body.

### Answers to review exercises

#### Exercise 1

1. A. A blind man cannot see.  
B. An armless girl.  
C. A cripple person.  
D. An amputated girl using crutches cannot walk properly.
2. a. Ear      b. True      c. False      d. False
3. a. Blind      b. Ears      c. Ears and mouth

#### Exercise 2

1. eyes, hands, legs
2. eyes, ears, hand, mouth, legs
3. head, legs, shoulder
4. eyes, ears, hands, legs, shoulders
5. nose, neck, mouth, waist, chin,
6. a. tongue  
b. nose  
c. skin  
d. ear

### Answers to Workbook Questions

#### Trial 1

- |      |      |
|------|------|
| 1. g | 5. e |
| 2. n | 6. b |
| 3. u | 7. c |
| 4. i | 8. d |

#### Trial 2

1. see
2. hear
3. run

### Trial 3

1. whole body
2. legs
3. whole body
4. legs
5. whole body
6. hands and eyes

### Trial 4

1. I want to be healthy
2. I don't want to fall sick
3. I want to grow stronger

## Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to “**TRAP**” the lesson taught.

**T: Teach: Teach** a lesson.

**R: Reflect: Reflect** on the lesson taught from the introduction to the conclusion.

**A: Analyse: Analyse** by asking yourself the following questions:

1. How did the lesson go?
2. Was the introduction catchy?
3. Were you able to catch the learners' attention throughout the lesson?
4. Were the learners able to answer your questions during and after the lesson?
5. Did the learners ask you questions during and after the lesson?
6. Were learners able to do the exercises at the end of the lesson?
7. What three things did you do well during the lesson?
8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## Strand 3: SYSTEMS

### Sub-strand 2: SOLAR SYSTEM

#### LESSON 1: The Sun, Earth and Moon as parts of the solar system

LB: pages 93 - 98; WB: pages 37 - 40

##### CONTENT STANDARD

**B3.3.2.1** Show understanding of the orderliness of the sun, planets and satellites in the solar system as well as the important role of the sun in the existence of the solar system

##### INDICATOR

**B3.3.2.1.1** Know the sun, earth and moon as parts of the solar system

##### Learning Outcomes

Learners are expected to:

- ◆ Identify some components of the solar system.
- ◆ Explain some functions of the sun within the solar system.
- ◆ Identify the difference between the moon and earth.

##### NEW WORDS

Axis, Model, Moon, Reflect, Revolution, Orbit, Rotation, Sphere.

##### RESOURCES

globe, ball, model of the solar system, video or picture showing the solar system.

##### CORE COMPETENCIES

Critical Thinking and Problem Solving, Collaboration and Communication, Personal Development and Leadership

##### SUBJECT SPECIFIC PRACTICES

Observing, Classifying, Predicting, Analysing, Evaluating

##### Starter

Engage learners in a recital of the poem, I see the moon and the moon sees me.

##### Use of ICT

Before the lesson, find videos on the solar system. You can get one on youtube here <https://www.youtube.com/watch?v=65qLZLzErug>. You will show learners this video during the lesson.

##### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

Put learners in sizeable groups and let them perform activities 1 to 3 below.

Give them the necessary resources for learners to perform the assigned activities effectively.

##### Activity 1

##### *Identifying the components of the solar system*

- Show pictures, video or model of the solar system to learners.
- Assist learners to identify the sun, moon and earth in the pictures.
- Guide learners to recall the uses of the sun as learnt in basic one.
- Assist learners to know that the earth moves around the sun, and the moon moves around the earth.

##### Activity 2

##### *Role playing some parts of the solar system*

- Guide learners to role play how the eight planets move around the sun.
- One learner should stand in the middle of a circle to represent the sun.
- Eight circles should be drawn around the smaller circle.
- Eight learners must be selected to represent each of the planets.
- Each learner must stand on one circle.

##### Background Information

The solar system is made up of the sun and the bodies that move around it. Our earth is one of eight planets that move around it. The moon is a satellite of the earth, which means it moves around the earth.



- Each learner begins to move in his circle to show how the planets move around the sun.

### Activity 3

#### **Observing the position of the sun in the morning, afternoon and evening.**

- Guide learners to observe the position of the sun at different times of the day.
- Let learners draw a sketch to show their observations.

### Activity 4

#### **Making a model of the earth, moon and sun, using small rocks, clay or paper.**

- Guide learners to make models of the solar system.
- They can use a piece of stick to draw the orbits of the earth around the sun.
- The orbit of the moon around the earth must be also drawn.
- Learners then use small stones to show the path of the earth around the sun.

Refer to Activity 2 on page 96 of the Learner's book.

### Talk About

Discuss what life would be like without the moon!

1. Using peer review strategy, learners discuss the topic above.
2. Learners display their answers on the board for class discussion.
3. Encourage more responses from learners and observe any special answers for class discussions.
4. You can also ask learners to tell you what they like most about the sun.

### What I have learnt

Ask questions to elicit from learners what they have learnt. Write some points on the board. Refer learners to page 98 of the Learner's Book, and read through the text with them.

1. The sun is at the centre of the solar system.
2. There are 8 planets in our solar system.
3. It takes 24 hours for the earth to rotate around its axis.
4. The moon is a satellite of the earth.
5. The moon is four (4) times smaller than the earth.
6. The moon does not produce light. It reflects light from the Sun.

### Project for home or school

#### **Observing the full moon**

Refer learners to page 97 of the Learner's Book for assignment. Parents should support them.

#### **Assessment for learning**

Supervise learners to do the assessment tasks. Refer them to pages 96 - 97 of the Learner's Book and pages 37 - 40 of the Workbook.

### Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. Why do you think it is important to learn about the Sun, Moon and the Earth?
2. Make a poster of the solar system showing only the Sun, Earth and Moon in their rightful position.

#### **Answers to review exercise**

##### **Exercise 1**

1. a. The sun is on the left  
b. The moon is in the middle  
c. The earth is on the right
2. a. sun                      b. earth                      c. moon  
d. sun                      e. sun
3. a. false                      b. true                      c. false  
d. true                      e. true

#### **Answers to Workbook Questions**

##### **Trial 1**

1. moon                      2. earth                      3. sun

##### **Trial 2**

1. It gives light.  
It gives heat.
2. it gives light.
3. Plants grow on earth.

##### **Trial 3**

1. moon, night
2. cycle
3. night and day.
4. light

##### **Trial 4**

1. us to see in the day.
2. us to see at night.
3. plants to grow.

## Trial 5

Learner's correct answers.

### Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to “**TRAP**” the lesson taught.

**T: Teach: Teach** a lesson.

**R: Reflect: Reflect** on the lesson taught from the introduction to the conclusion.

**A: Analyse: Analyse** by asking yourself the following questions:

1. How did the lesson go?
2. Was the introduction catchy?
3. Were you able to catch the learners' attention throughout the lesson?

4. Were the learners able to answer your questions during and after the lesson?
  5. Did the learners ask you questions during and after the lesson?
  6. Were learners able to do the exercises at the end of the lesson?
  7. What three things did you do well during the lesson?
  8. How are you going to build on this achievement in subsequent lessons?
  9. What two challenges did you encounter during the lesson?
  10. How are you going to rectify these in subsequent lessons?
- P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## Strand 3: SYSTEMS

### Sub-strand 3: ECOSYSTEM

#### LESSON 1: Habitat of organisms

LB: pages 99 - 108; WB: pages 41 - 47

##### CONTENT STANDARD

**B3.3.3.1** Show an understanding and appreciation of the interactions and interdependencies of organisms in an ecosystem

##### INDICATOR

**B3.3.3.1.1** Identify organisms in a habitat and describe why they live in a particular place

##### Learning Outcomes

Learners are expected to:

- ♦ Identify habitats of different animals.

##### NEW WORDS

Ecosystem, habitat, adaptation, camouflage.

##### RESOURCES

Pictures of plants and animals, videos on plants and animals in their habitats.

##### CORE COMPETENCIES

Digital Literacy, Cultural Identity and Global Citizenship, Critical Thinking and Problem Solving, Personal Development and Leadership

##### SUBJECT SPECIFIC PRACTICES

Observing, Classifying, Analysing, Evaluating, Generating

##### HELPFUL LINKS

<https://youtu.be/5hFoZq0qgrM>

##### Background Information

Every organism has a unique ecosystem within which it lives. This ecosystem is its natural habitat. This is where the basic needs of the organism to survive are met: food, water, shelter from the weather and place to breed its young. All organisms need to adapt to their habitat to be able to survive.

##### Starter

Ask learners to mention some animals that live at home and those that live in the forest.

##### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

##### Activity 1

- Take learners on a tour to the school environment to study about some ecosystems.
- Find pictures of different animals and their habitats. Examples are shown below.
- Show these pictures you have assembled together to the learners.



Refer learners to pages 99 and 100 of the Learner's Book. Let them observe the pictures and talk about them.

### Activity 2

- Assist learners in groups to identify some observable features that enable organisms to live successfully in their habitat. Example, tilapia has fins to help it swim in a pond. Birds have wings to help them fly.
- Let each group present their findings to the whole class.

### Activity 3

- In groups of six, discuss “Is a frog a fish?” Give reasons for your answer.
- Using peer review strategy, ask learners to share their responses with the other groups.
- Identify any wrong responses and correct them.

### Activity 4

- Using talking circle strategy, let learners share ideas with their partners in a circle on “why fish cannot live on land”.
- Learners display their responses on the board.
- They read and discuss their responses with their peers.

### Activity 5

- Ask learners to plan, design and make posters on some organisms in their habitats (natural homes).
- Let them display their drawings for a class discussion.

## Talk About

Refer learners to talk about on page 107 of their Learner’s Book.

Let them work in groups of five for the task.

They are to:

1. Give two differences between a frog and a fish.
2. Identify two similarities between a frog and a fish.

## What I Have Learnt

Ask questions to elicit from learners what they have learnt. Write some on the board.

Refer learners to page 108 of the Learner’s Book, and read through the text with them.

1. Ecosystem is the interaction between living and non-living things and their environment.

2. An ecosystem includes the interaction between living and non-living things and their environment.
3. Organisms need to adapt to their habitat to be able to survive.
4. Adaptation is a modification or change in organism’s body or behaviour that helps it to survive.

## Project for home or school

Refer learners to page 107 of the Learner’s Book. Explain what is expected of them as follows:

1. Write a poem on adaptation of living organisms.  
NB: Parental support is needed.
2. Design and draw posters showing any two organisms in their natural homes.  
Note: Design one for a land habitat and another one for an aquatic habitat.  
NB: Parental support is needed.

### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to page 107 of the Learner’s Book and pages 41 - 46 of the Workbook.

## Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. How does a frog differ from a fish?
2. What animal can live on both water and land? What is the name given to them?
3. What do frog and fish have in common?

### Answers to review exercise

1. a. Ecosystem: is the interaction between living and non living things in their environment.  
b. Habitat: the natural home for animals, plants and other organisms.  
c. adaptation: is a modification or change in the organism’s body or behaviour that helps it to survive.
2. is where the basic needs of organism to survive are.
3. a. Bird: wings, eye, beak, legs, feathers  
b. Fish: eye, mouth, gill, fins, scales, tail  
c. Frog: front leg, hind leg, trunk  
d. Grasshopper: wings, eye, feelers, legs, head.

## Answers to Workbook Questions

### Trial 1

- 1 → e
- 2 → d
- 3 → b
- 4 → a
- 5 → c

### Trial 2

- 1. 1 → e
- 2 → d
- 3 → b
- 4 → a
- 5 → c

- 2. Learner's correct answer.

### Trial 3

A fish	A bird
1. A fish can swim.	A bird cannot swim.
2. a fish lives in water.	A bird lives on a tree.
Other answers.	

- 2.
  - 1. They all lay eggs.
  - 2. They all grow.
  - Other answers.
- 3.
  - a. No
  - b. Frogs are amphibians and breathe through their lungs while fish have gills to extract oxygen from water

### Trial 4

It is not its habitat.

### Trial 5

Learner's correct answer's.

## Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to “**TRAP**” the lesson taught.

**T: Teach: Teach** a lesson.

**R: Reflect: Reflect** on the lesson taught from the introduction to the conclusion.

**A: Analyse: Analyse** by asking yourself the following questions:

- 1. How did the lesson go?
- 2. Was the introduction catchy?
- 3. Were you able to catch the learners' attention throughout the lesson?
- 4. Were the learners able to answer your questions during and after the lesson?
- 5. Did the learners ask you questions during and after the lesson?
- 6. Were learners able to do the exercises at the end of the lesson?
- 7. What three things did you do well during the lesson?
- 8. How are you going to build on this achievement in subsequent lessons?
- 9. What two challenges did you encounter during the lesson?
- 10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

**4**

**Strand:**

**Forces and energy**



## Strand 4: FORCES AND ENERGY

### Sub-strand 1: SOURCES AND FORMS OF ENERGY

#### LESSON 1: Light as a form of energy

LB: pages 110 - 113; WB: pages 50 - 53

##### CONTENT STANDARD

**B3.4.1.1** Demonstrate understanding of the concept of energy, its various forms and the ways in which it can be transformed and conserved.

##### INDICATOR

**B3.4.1.1.1** Know that light is a form of energy.

##### Learning Outcomes

Learners are expected to:

- ◆ Identify light as a form of energy.
- ◆ Identify where light comes from.
- ◆ Explain what would happen if there were no light on earth.

##### NEW WORDS

Light, energy.

##### RESOURCES

Charts/pictures / drawings of sources of light, flashlight, candle.

##### CORE COMPETENCIES

Personal Development and Leadership, Creativity and Innovation, Critical Thinking and Problem Solving

##### SUBJECT SPECIFIC PRACTICES

Observing, Analysing, Evaluating, Classifying

##### HELPFUL LINKS

<https://youtu.be/E9OX-y2PErk>

##### Background Information

Light is a form of energy that helps vision to be possible. Light is found everywhere around us. Light on earth helps plants to make food on their own. Light on earth maintains the ecosystem and solar system. Rays are paths on which light travels and it does this in a straight line.

##### Starter

Ask learners where we get light from. Take feedback from learners.

##### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

##### Activity 1

- Ask learners to close and open windows and doors of their classroom. Let them talk about their findings in groups/pairs.

##### Activity 2

- Engage learners to create a dark room or identify a dark place eg. Cupboard.
- Ask learners to switch on torchlight, lamp, light from the phone to look for an object.
- Find out from learners their observations about the activities.

##### Activity 3

- Assist learners to identify that light is a form of energy that helps us to see.
- Find out from learners how light helps us to see.
- Let them work in groups of five and present their findings for a class discussion.

##### Talk about

Encourage learners to talk about the questions on page 111 of the Learner's Book.

1. What will happen if there were no light on earth?
  2. Why we need light in a dark room.
- Let them work in groups of five.

Take feedback from learners.

##### Think and do

Ask learners what will happen if someone stays in a dark room for a lot of days. They should work in pairs and discuss the topic.

Reinforce that light is a form of energy by reading the summary text with learners.

### What I have learnt

Elicit from learners what they have learnt from the topic by asking them questions. Refer learners to page 113 of Learner's Book to read the text on "What I have learnt".

### Project for home or school

Refer learners to page 113 of their Learner's Book for project and home learning.

### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to page 112 of the Learner's Book and pages 50 - 53 of the Workbook.

### Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. What will happen if there is no light on earth?
2. Why should we need light for?

### Answers to Review Exercise

#### Exercise 1

1. Accept appropriate drawings
2. a. see, eyes  
b. light, see
3. 1 matches c. the Sun  
2 matches a. flash light  
3 matches b. electric bulb

### Answers to Workbook Questions

#### Trial 1

- |    |   |    |   |    |   |
|----|---|----|---|----|---|
| a. | √ | b. |   | c. | √ |
| d. | √ | e. | √ | e. | √ |
| g. |   | h. |   | i. |   |

#### Trial 2

Learners correct drawing

#### Trial 3

1. False
2. True
3. True
4. True
5. True
6. False
7. False

### Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to "TRAP" the lesson taught.

**T: Teach:** Teach a lesson.

**R: Reflect:** Reflect on the lesson taught from the introduction to the conclusion.

**A: Analyse:** Analyse by asking yourself the following questions:

1. How did the lesson go?
2. Was the introduction catchy?
3. Were you able to catch the learners' attention throughout the lesson?
4. Were the learners able to answer your questions during and after the lesson?
5. Did the learners ask you questions during and after the lesson?
6. Were learners able to do the exercises at the end of the lesson?
7. What three things did you do well during the lesson?
8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## LESSON 2: Heat as a form of energy

LB: pages 114 -117; WB: pages 54 - 56

### CONTENT STANDARD

**B3.4.1.2** Show an understanding of the concept of heat in terms of its sources, effects, importance and transfer from one medium to another.

### INDICATOR

**B3.4.1.2.1** Know heat as a form of energy and identify some sources of heat.

### Learning Outcomes

Learners are expected to:

- ◆ Know heat as a form of energy.
- ◆ Identify sources of heat.
- ◆ Come out with other processes that can generate heat.

### NEW WORDS

Heat, Source, Energy.

### RESOURCES

Pictures, charts of sources of heat.  
LED (bulb) switched on.

### CORE COMPETENCIES

Critical thinking and Problem Solving,  
Personal Development and Leadership

### SUBJECT SPECIFIC PRACTICES

Observing, Manipulating, Analysing,  
Communicating.

### HELPFUL LINKS

<https://youtu.be/jKokXIJ9Gw4>

### Background Information

Heat is a form of energy. There are different activities that produce heat energy. These include, LED or bulb switched on for a long time, lighting of fire, rubbing of palms, charging a laptop or mobile phone, and striking stones together.

Heat is measured in joules (J). The sun provides heat which gives warmth to humans.

### Starter

Engage learners to rub their palms together for a while. Take feedback from learners.

### Teaching Instructions

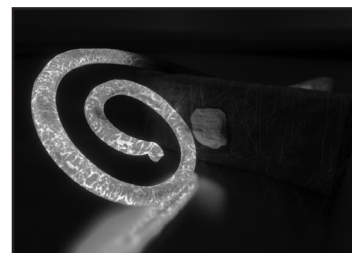
- Before the lesson drill the new words and ask learners to form sentences with it.

#### Activity 1

- Put learners into groups of five. Let them discuss and come out with other processes that can generate heat. Examples, lighting of fire, charging a laptop, charging a mobile phone, etc.
- Each group should present their findings to the whole class.

#### Activity 2

- Show learners pictures of processes that generate heat.
- Refer learners to page 115 of the Learner's Book. Let them talk about the pictures and discuss the questions.



#### Activity 3

- Ask learners to mention some sources of heat energy in groups or in pairs. Assist learners to make reference to the pictures.

#### Activity 4

- In their previous groups, ask learners to list sources of heat they use at home and in school.
- Each group should read out their list to the class for discussion.
- Help learners to understand that heat is a form of energy.

#### Talk about

Elaborate on learners ideas to talk about the questions to promote critical thinking on page 115 of the Learner's Book.

#### What I Have Learnt

Reflect with learners on the lesson by helping them to read the summarised text and find out what they have learnt on page 117 of the Learner's Book.

#### Project for home or school

Refer learners to page 117 of the Learner's Book. Get learners to understand how to handle the project.

#### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to page 116 of the Learner's Book and pages 54 - 56 of the Workbook.

#### Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. What will happen when there is no heat from the Sun?
2. What are the ways of getting heat?

#### Answers to Review Exercise

##### Exercise 1

1. a. Heat energy  
b. The water will not boil or heat up.
2. a. Iron  
b. Sun  
c. Lantern
3. Accept appropriate drawings.

#### Answers to Workbook Questions

##### Trial 1

1. a → 2 and 4
2. a → 4 and 3

##### Trial 2

Learners' correct drawing(s)

##### Trial 3

1. heat energy
2. heat
3. sources
4. heat
5. sun

#### Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to "**TRAP**" the lesson taught.

**T: Teach:** Teach a lesson.

**R: Reflect:** Reflect on the lesson taught from the introduction to the conclusion.

**A: Analyse:** Analyse by asking yourself the following questions:

1. How did the lesson go?
2. Was the introduction catchy?
3. Were you able to catch the learners' attention throughout the lesson?
4. Were the learners able to answer your questions during and after the lesson?
5. Did the learners ask you questions during and after the lesson?
6. Were learners able to do the exercises at the end of the lesson?
7. What three things did you do well during the lesson?
8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## LESSON 3: Uses of heat

LB: pages 118 - 122; WB: pages 57 - 59

### CONTENT STANDARD

**B3.4.1.2** Show an understanding of the concept of heat in terms of its sources, effects, importance and transfer from one medium to another.

### INDICATOR

**B3.4.1.2.2** Know the everyday uses of heat.

### Learning Outcomes

Learners are expected to:

- ◆ Identify everyday uses of heat.
- ◆ Identify the applications of heat energy.
- ◆ Explain why farmers need heat energy.

### NEW WORDS

Heat, Preservation.

### RESOURCES

Pictures of uses and application of heat energy (use pictures from the text book).

### CORE COMPETENCIES

Critical Thinking and Problem Solving, Personal Development and Leadership

### SUBJECT SPECIFIC PRACTICES

Observing, Manipulating, Analysing, Communicating.

### Background Information

Heat is the form of energy that is transferred between systems or objects with different temperatures (flowing from the high-temperature system to the low-temperature system). Also referred to as heat energy or thermal energy.

One of the most important types of energy on Earth is heat energy. A great deal of heat energy comes from the Sun's light hitting Earth. Other sources include geothermal energy, friction, and even living things.

### Starter

Ask learners to say or write every day uses of heat at home. Take feedback from learners.

## Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

### Activity 1

- Show learners pictures on every day uses of heat. Refer them to pictures from the Learner's Book on page 118 and 119.
- Let them talk about the pictures and give their feedback for a class discussion.

### Activity 2

- Engage learners to observe pictures charts/ video of professions that use heat energy. Eg. Farmers, nurses, blacksmiths, tailors and seamstresses.
- Through think-pair-share or in groups, ask learners to mention one or more application of heat energy in the following professions: farmers, nurses, hair dressers, blacksmiths, tailors and seamstresses.
- Let each pair/group share their ideas with the whole class.

**Caution:** Let learners observe safety measures whilst dealing with hot substances.

## Talk about

Discuss with learners all the questions on page 119 of the Learner's Book to improve understanding of the lesson.

1. Why do farmers need heat?
2. What will happen if you touch hot substances with your bare hands?

Let them work in groups of five.

## What I Have Learnt

Lead learners through plenary discussion on the lesson. Ask them questions on what they have learnt. Encourage every learner to talk.

Refer them to page 122 of the Learner's Book to read "What I Have Learnt".

## Project for home or school

Ask learners to make a poster on safety measures to follow when dealing with hot substances. They are also to identify purposes at home that heat is used for.

Explain to them how it will be done.  
Refer learners to page 121 of the Learner's Book.

### Assessment for learning

Supervise learners to do the assessment tasks.  
Refer them to page 121 of the Learner's Book and pages 57 - 59 of the Workbook.

## Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. Identify things at home that we use heat to do.
2. List two uses of heat to farmers.

### Answers to Review Exercise

1. a. True  
b. False  
c. True.
2. Heat

### Answers to Workbook Questions

#### Trial 1

Learners' correct drawing(s)

#### Trial 2

1. For cooking.
2. For boiling water.
3. For keeping us warm.
4. For ironing or pressing clothes.

#### Trial 3

1. yes
2. yes
3. no
4. yes
5. no

## Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to “**TRAP**” the lesson taught.

**T: Teach: Teach** a lesson.

**R: Reflect: Reflect** on the lesson taught from the introduction to the conclusion.

**A: Analyse: Analyse** by asking yourself the following questions:

1. How did the lesson go?
2. Was the introduction catchy?
3. Were you able to catch the learners' attention throughout the lesson?
4. Were the learners able to answer your questions during and after the lesson?
5. Did the learners ask you questions during and after the lesson?
6. Were learners able to do the exercises at the end of the lesson?
7. What three things did you do well during the lesson?
8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?



## Strand 4: FORCES AND ENERGY

### Sub-strand 2: ELECTRICITY AND ELECTRONICS

#### LESSON 1: Sources of electrical energy

LB: pages 123 - 126, WB: pages 60 - 62

##### CONTENT STANDARD

**B3.4.2.1** Demonstrate knowledge of generation of electricity, its transmission and transformation into other forms of energy.

##### INDICATOR

**B3.4.2.1.1** Identify different sources of electrical energy.

##### Learning Outcomes

Learners are expected to:

- ◆ Identify different sources of electrical energy.
- ◆ Discuss sources of electricity they use at home.
- ◆ Create a poster on sources of electricity.

##### NEW WORDS

Electricity, energy, hydro, solar.

##### RESOURCES

Pictures / drawings / posters on sources of electricity.

##### CORE COMPETENCIES

Digital Literacy, Cultural Identity and Global Citizenship, Critical Thinking and Problem Solving

##### SUBJECT SPECIFIC PRACTICES

Observing, Analysing, Predicting

##### HELPFUL LINKS

- <https://www.instituteforenergyresearch.org/history-electricity/>
- <https://www.youtube.com/watch?v=8u8W-5TxcAo>
- <https://interestingengineering.com/the-7-basic-sources-of-electricity-you-should-know-about>

##### Background Information

Electricity is a major source of energy to homes, schools and industries. Aboadze, Akosombo

and Bui hydroelectric plants are sources we get electricity from. Batteries can be used to generate electricity. The use of electricity by the sources mentioned is monitored by Electricity Company of Ghana (ECG) through meters. We need to use electricity wisely to avoid wastage, shortage and power fluctuations.

##### Starter

Ask learners to tell you where they get electricity for their homes and schools from.

##### Use of ICT

Before the lesson, download a video from youtube on the history of electricity (the first production of electricity).

Use these links:

- <https://www.youtube.com/watch?v=6p5WXzrYYil>.
- [https://www.youtube.com/watch?v=\\_rPa\\_Y1stf8](https://www.youtube.com/watch?v=_rPa_Y1stf8).

Also download this video on how electricity is generated.

<https://www.youtube.com/watch?v=8u8W-5TxcAo>.

Show these videos to learners in the course of the lesson.

##### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

##### Activity 1

- Show learners pictures of various sources of electricity. You can refer them to page 123 of the Learner's Book.
- Let learners discuss and talk about the pictures.

##### Activity 2

- Play a video on how electricity was first produced to learners.
- Ask them questions to repeat some key facts they heard in the video.

### Activity 3

- Show learners video/pictures or a poster on how electricity is produced from various sources eg. Solar, hydro and generators.
- Demonstrate to learners how electricity is produced from batteries to light a flashlight, lamp, bulb or LED.
- Refer them to the Activity on pages 124 and 125 of the Learner's Book.
- Let learners share their observations.

### Talk about

Engage learners to discuss sources of electricity they use at home.

Let them work in pairs to find out what will happen if there was no electricity.

### What I Have Learnt

Ask learners to tell you what they have learnt. Assist them to read the summarised text on page 126 of the Learner's Book.

### Project for home or school

Refer learners to home learning activity on page 126 of learners' book. Explain to them that they are to list the sources of electricity they use at home. Encourage them to share their findings in class.

### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to page 126 of the Learner's Book and pages 60 - 62 of the Workbook.

### Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. What are sources of electricity we use at home?
2. Name five things that uses electricity at your home.

### Answers to Review Exercises

1. a. True  
b. False  
c. False
2. Sources of electricity (Accept appropriate source of electricity).
3. Energy

### Answers to Workbook Questions

#### Trial 1

1. Aboadze thermal plant
2. Bui hydroelectric power
3. Nuclear source of energy
4. Akosombo dam
5. Wind power
6. Solar panels

#### Trial 2

1. at home
2. at school
3. at church
4. at mosque
5. In the market

#### 2b.

- a. True                      b. false                      c. false

#### Trial 3

Learners' correct drawing(s)

### Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to “**TRAP**” the lesson taught.

**T: Teach: Teach** a lesson.

**R: Reflect: Reflect** on the lesson taught from the introduction to the conclusion.

**A: Analyse: Analyse** by asking yourself the following questions:

1. How did the lesson go?
2. Was the introduction catchy?
3. Were you able to catch the learners' attention throughout the lesson?
4. Were the learners able to answer your questions during and after the lesson?
5. Did the learners ask you questions during and after the lesson?
6. Were learners able to do the exercises at the end of the lesson?
7. What three things did you do well during the lesson?
8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## Strand 4: FORCES AND ENERGY

### Sub-strand 3: FORCES AND MOVEMENT

#### LESSON 1: Effects of forces on objects

LB: pages 127 - 131; WB: pages 63 - 66

##### CONTENT STANDARD

**B3.4.3.1** Know that movement is caused by applied forces due to the release of stored energy.

##### INDICATOR

**B3.4.3.1.1** Explain force and demonstrate how it causes movement.

##### Learning Outcomes

Learners are expected to:

- ◆ Explain force.
- ◆ Identify how forces cause movements.
- ◆ Mention forces they observe in everyday life.

##### NEW WORDS

Force, movement, magnet.

##### RESOURCES

Magnet, nails/pins, water, plastic pens, pieces of paper, stones, bucket or container, toy car, table. Pictures on activities involving forces.

##### CORE COMPETENCIES

Cultural Identity and Global Citizenship, Critical thinking and Problem Solving, Personal Development and Leadership

##### SUBJECT SPECIFIC PRACTICES

Observing, Manipulating, Analysing, Evaluating

##### HELPFUL LINKS

<https://youtu.be/mdT8UmfO91M>

##### Background Information

Force is a pull or push of an objects. When a force is applied to an object, there is movement. Many different types of forces act upon a lot of structures or objects. We can describe force as pull or push. In everyday life, forces such as gravitational (force of gravity) frictional, compressional and others are applied.

##### Starter

Ask learners to pull and push objects in the class. Find out from them why the objects are moving or not moving?

##### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

##### Activity 1

- Engage learners in rubbing plastic pens in the hair in groups. Let them use the pens to pick pieces of paper.
- Guide them to discuss their observations.

##### Activity 2

- In groups of five, ask learners to use magnets to attract nails and pins.
- Find out from learners what they have seen and why it happened.

##### Activity 3

- Ask learners to push toy cars or let them drop stones in water in a bucket or container.
- Supervise them.

##### Talk about

Guide learners to talk about the questions under “talk about” on page 130 of the Learner’s Book.

1. What is a force?
2. How is force applied?
3. Why do we need forces in everyday life?

This will help to promote communication and collaborative learning.

##### What I Have Learnt

Ask learners to write down what they have learnt.

Refer them to the Learner’s Book page 131. Read the text with them to elaborate their ideas.

## Project for home or school

Refer learners to 131 of the Learner's Book.  
Give out the instructions for the home project as follows:

1. Find out four ways you apply force in everyday life.

Learners are to report their findings on the next lesson for a class discussion.

### Assessment for learning

Supervise learners to do the assessment tasks.  
Refer them to pages 130 - 131 of the Learner's Book and pages 63 - 66 of the Workbook.

## Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. Why do we need force in our everyday lives?
2. What will happen if Kofi pull his table?

### Answers to Review Exercise

#### Exercise 1

1. Force is a pull or push on objects.
2. They are attracted by the pen.
3. The table will move.
4. Pull, push, attract and movement.

### Answers to Workbook Questions

#### Trial 1

Learners' correct drawing.

#### Trial 2

- |         |         |
|---------|---------|
| 1. pull | 2. push |
| 3. pull | 4. push |

#### Trial 3

1. Force is push or pull of an object
2. Nothing will happen to it
3. It will move

## Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to "TRAP" the lesson taught.

**T: Teach:** Teach a lesson.

**R: Reflect:** Reflect on the lesson taught from the introduction to the conclusion.

**A: Analyse:** Analyse by asking yourself the following questions:

1. How did the lesson go?
2. Was the introduction catchy?
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4. Were the learners able to answer your questions during and after the lesson?
5. Did the learners ask you questions during and after the lesson?
6. Were learners able to do the exercises at the end of the lesson?
7. What three things did you do well during the lesson?
8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## LESSON 2: Caring for simple machines

LB: pages 132 - 135; WB: pages 67 - 68

### CONTENT STANDARD

**B3.4.3.2** Recognise some simple machines used for making work easier, analyse their advantages and know their uses eg. Levers, inclined planes and pulleys.

### INDICATOR

**B3.4.3.2.1** Demonstrate how to maintain and care for simple machines.

### Learning Outcomes

Learners are expected to:

- ◆ Mention how simple machines are maintained and stored in their homes.
- ◆ Demonstrate how to care for simple machines.

### NEW WORDS

Simple machines, care.

### RESOURCES

Pictures / charts / drawings of simple machines, oil, grease, clean cloth.

### CORE COMPETENCIES

Cultural Identity and Global Citizenship, Critical Thinking and Problem Solving, Personal Development and Leadership

### SUBJECT SPECIFIC PRACTICES

Observing, Manipulating

### HELPFUL LINKS

<https://youtu.be/LSfNYpCprw4>

### Background Information

Simple machines make work easier and faster in our homes, schools and work places. They need to be maintained and stored properly. This will increase their life span. It will also save cost and damage.

### Starter

Engage learners in an activity to mention any simple machine and give its uses.

## Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

### Activity 1

- Display simple machines for learners to observe and identify their names in groups of four. Example, scissors, brooms, screw driver, etc.

### Activity 2

- Show learners pictures/drawings/realia/video of simple machines.
- Engage learners to talk about their uses.

### Activity 3

- Assist learners in groups to come out with ways of caring for simple machines. Find out how they do that in their homes.
- Refer learners to page 133 of the Learner's Book to look at pictures on various ways of caring for simple machines. Let them talk about them in their groups.

### Activity 4

- Let learners undertake basic maintenance practices such as oiling, removing dirt, washing and using them for correct purposes.
- Learners should share their views about the activities.

## Talk about

Discuss with learners the question, "Why do we need to maintain and care for simple machines?", on page 133 of the Learner's Book to promote critical thinking and problem solving.

## What I Have Learnt

Engage learners to mention how simple machines are maintained in their homes, schools and work places through questioning. Write some of their answers on the board. Then refer them to page 135 of the Learner's Book to read through "What I have learnt" there.

## Project for home or school

Refer learners to 135 of the Learner's Book. They are to create any simple machine, using paper, cardboard or clay.

Encourage learners to present their work for discussion in class.

### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to page 134 of the Learner's Book and pages 67 - 68 of the Workbook.

## Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. Why the following are examples of simple machines
  - broom
  - pen
  - bottle opener
2. How do we care for the following simple machines?
  - pair of scissors
  - cutlass

### Answers to Review Exercises

1. Simple machine
2. a and b: Accept appropriate drawing and colouring.
  - c. Take feedback
  - d. Simple machines
3. a. accept appropriate answers.
  - b. To make them last long.
    - To increase their lifespan
    - To make them work well
    - To save cost
    - To prevent damage
4. Drawing and colouring.  
Ways of caring for simple machines.
  - Oiling
  - Greasing
  - Removing dirt
  - Keep it away from water

### Answers to Workbook Questions

#### Trial 1

- a. broom
- b. scissors
- c. car/bus.
- d. machine

#### Trial 2

a, e, f, h, i

#### Trial 3

Learners' correct drawing(s)

## Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to “**TRAP**” the lesson taught.

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5. Did the learners ask you questions during and after the lesson?
6. Were learners able to do the exercises at the end of the lesson?
7. What three things did you do well during the lesson?
8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?





**5**

**Strand:**

**Humans and the  
environment**

## Strand 5: HUMANS AND THE ENVIRONMENT

### Sub-strand 1: PERSONAL HYGIENE AND SANITATION

#### LESSON 1: Keeping the environment clean

LB: pages 138 - 141; WB: pages 70 - 71

##### CONTENT STANDARD

**B3.5.1.1** Recognise the importance of personal hygiene.

##### INDICATOR

**B3.5.1.1.1** Describe ways of keeping the environment clean.

##### Learning Outcomes

Learners are expected to:

- ♦ Describe ways of keeping the environment clean.
- ♦ Identify the importance of keeping the environment clean.

##### NEW WORDS

Clean, environment, scrub, sweep, dust, hoe, wipe, mop, detergent.

##### RESOURCES

Pictures, showing clean environments, videos, cutlass, hoe, detergent, mop, scrubbing brush.

##### CORE COMPETENCIES

Critical Thinking and Problem Solving, Collaboration and Communication, Personal Development and Leadership, Digital Literacy

##### SUBJECT SPECIFIC PRACTICES

Communicating, Generating, Classifying

##### Background Information

With environmental issues like water contamination, pollution, and climate change, it's natural to look for ways we can reverse the damage to our planet and keep our environment clean.

Our oceans are filled with items that do not belong there. Huge amounts of consumer plastics, metals, rubber, paper, textiles, derelict fishing gear, vessels, and other lost or

discarded items enter the marine environment every day, making marine debris one of the most widespread pollution problems facing the world's ocean and waterways.

A clean environment is one that is devoid of any form of pollution and its effect. Hence it could be an environment that has clean air, clean water, and clean energy. Basically, it is a healthy and safe environment. Very commonly, a clean environment is also considered as one that is tidy.

##### Starter

In a think pair-share activity, ask learners the following questions.

- Which places in your school can you scrub?
- Which places in your home can you scrub?

Collect responses from learners and write key ideas on the board.

##### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

##### Activity 1

- Provide samples of common cleaning items such as brooms, dusters, mop, etc. to learners.
- Have them identify them and talk about the uses of those materials.

##### Activity 2

- Put learners into groups of six. Pose this question to them. "What do you do to keep the home and school clean?" Example, sweeping, cleaning, weeding, scrubbing, etc.
- Have learners brainstorm in groups to come out with the different ways of keeping the home and school clean.
- Each group should present their findings to the class for discussion.

### Activity 3

- Have learners observe the pictures on page 136 of the Learner's Book. Engage them to talk about them.
- Find out their observations and write key ideas on the board.

### Activity 4

- In their previous groups, task learners to discuss and list few points on why it is important to keep the environment clean.
- Have each group make a presentation to the whole class on their findings.

### Activity 5

- Re-inforce the learning by showing a video or personally demonstrating the use of the cleaning items to learners.
- Now allow learners to also demonstrate ways of keeping the environment clean.
- Let them sweep/clean/dust selected places in the school.

**Note:** Make sure learners wear nose masks when cleaning, sweeping or dusting.

### Activity 5

- Ask learners to draw pictures showing some ways of keeping the environment clean.
- Let them display their drawings for discussion.

## Talk about

Have learners discuss:

1. Why it is important to sweep the classroom and school compound every day.

Have learners work in pairs and discuss the question.

## What I Have Learnt

Through questioning, have learners talk about what they have learnt.

Summarise the key concept and let learners copy them into their books.

1. To keep the environment clean, we can use the broom, scrubbing brush, mop and other cleaning items to clean.
2. Some ways of cleaning the environment are by sweeping, cleaning, weeding, scrubbing, etc.

3. Keeping the environment clean is very important.

Refer to page 141 of the Learner's Book.

## Project for home or school

Have learners design a poster to be used for a science fair to show some items that can be used to keep a clean environment.

Additionally, have learners use the internet to find out new ways of keeping the environment clean.

Let them print out some pictures and glue their work on a manila card.

### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to page 140 of the Learner's Book and pages 70 - 71 of the Workbook.

### Answers to Review Exercise

#### Exercise 1

1. False
2. a broom  
b. water  
c. cutlass  
d. dustbin  
e. hoe
3. a. By sweeping the compound  
b. By collecting all the dust with a dust pan after sweeping.  
c. By weeding bushy areas  
d. by scrubbing dirty floors  
Accept other correct answers

### Answers to Workbook Questions

#### Trail 1

1. Sweep the environment
2. Put rubbish into dustbin
3. We must weed bushy areas in the environment

#### Trial 2

Learners correct drawing(s)

#### Trial 3

1. sweeps
2. broom
3. scrubbing

#### Trial 4

Learners correct drawing(s)

### Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. List down five materials we use in cleaning the environment.
2. Write three ways of keeping the environment clean.

### Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to “**TRAP**” the lesson taught.

**T: Teach: Teach** a lesson.

**R: Reflect: Reflect** on the lesson taught from the introduction to the conclusion.

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**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## Strand 5: HUMANS AND THE ENVIRONMENT

### Sub-strand 2: DISEASES

#### LESSON 1: Prevention of common skin diseases

LB: pages 142 - 144; WB: pages 72 - 73

##### CONTENT STANDARD

**B3.5.2.1** Know common diseases of humans, causes, symptoms, effects and prevention

##### INDICATOR

**B3.5.2.1.1** Know how common skin diseases can be prevented

##### Learning Outcomes

Learners are expected to:

- ◆ Identify some common skin diseases.
- ◆ Identify how to prevent skin diseases.

##### RESOURCES

Pictures of people suffering from common skin diseases, videos.

##### NEW WORDS

Skin, rashes, ring worms, prevent, comb heat rashes

##### CORE COMPETENCIES

Critical Thinking and Problem Solving  
Collaboration and Communication.  
Personal Development and Leadership  
Digital literacy

##### SUBJECT SPECIFIC PRACTICES

Observation, Communicating,  
Generating, Classifying, Planning,  
Analysing, Evaluating

##### HELPFUL LINK

[https://youtu.be/93Zac7m\\_wqE](https://youtu.be/93Zac7m_wqE)

##### Background Information

Skin infections are caused by the growth of bacteria or microorganisms just under the skin and enter through minor injuries such as cuts, scrapes and blisters. In general, these infections remain fairly mild and can often be cured by topical solutions. However, there are cases where skin infections can become increasingly painful and dangerous, especially if left untreated.

##### Starter

Ask learners to tell you how someone can get a skin disease.

##### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

##### Activity 1

- Let learners discuss and name some common skin diseases they know. Example, rashes, eczema and ringworm.
- Let learners share their personal experience or stories on getting skin infections to the whole class.

##### Activity 2

- In groups, ask Learners to act how they bath and talk about how regular bathing can prevent skin disease.
- Let each group make a presentation to the class for discussion.

##### Activity 3

- Show pictures and videos on common skin diseases and their prevention to learners. Refer them to page 142 of the Learner's Book to talk about the pictures.
- Take feedback from them on what they saw. Write them on the board.

##### Activity 4

- Refer learners to page 143 of the Learner's Book to read the story and talk about it.
- Ask them questions to find out if they have understood the lesson.
- Let them identify what Araba and Aku did, why Araba gave her things to Aku to use and how Aku got infected with the skin disease.

##### Activity 5

- In their previous groups, let learners discuss how skin diseases can be prevented.



- Let them present their answers for a whole class discussion.
- Re-shape learners' ideas stressing that it is good to seek medical attention to stop the spread of skin diseases.

### Think and do

Ask learners, what they can do to prevent common skin diseases.

### Talk About

Learners discuss how eczema can be prevented. Let learners present their answers to the class.

Have learners work in pairs.

### What I have learnt

Through questioning, find out from learners what they have learnt.

Summarize the key learning concepts to learners and have them write them in their books.

Write some on the board as follows:

To prevent skin diseases:

1. I must never share personal things with others.
2. I must bath very well and regularly.

### Project for home or school

Refer learners to page 144 of the Learner's Book for their home project.

Additionally, you can ask learners to search the internet for pictures on common skin diseases (heat rashes, eczema and ring worm, etc) and make an album of it.

### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to page 144 of the Learner's Book and pages 72 - 73 of the Workbook.

### Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. Name three common skin diseases
2. What can we do to prevent an eczema infection?

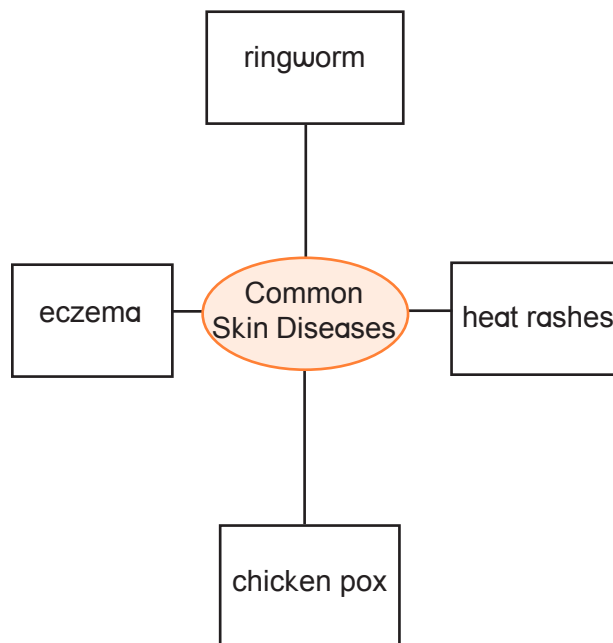
### Answers to Review Exercise

Learners are expected to colour:

1, 2, 4 and 5 - green, and 3 - red.

### Answers to Workbook Questions

#### Trial 1



#### Trial 2

1. bath regularly
2. avoid sharing personal items like towel
3. keeping our towels clean

#### Trial 3

1. It can give us eczema
2. It can give us ringworm
3. You will be attacked by diseases

#### Trial 4

Learners' correct drawings

### Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to "TRAP" the lesson taught.

**T: Teach:** Teach a lesson.

**R: Reflect:** Reflect on the lesson taught from the introduction to the conclusion.

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7. What three things did you do well during the lesson?

8. How are you going to build on this achievement in subsequent lessons?
9. What two challenges did you encounter during the lesson?
10. How are you going to rectify these in subsequent lessons?

**P:** **Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## LESSON 2: Air-borne diseases

LB: pages 145 - 151; WB: pages 74 - 77

### CONTENT STANDARD

**B3.5.2.1** Know common diseases of humans, causes, symptoms, effects and prevention.

### INDICATOR

**B3.5.2.1.1** Explain the term air-borne diseases and give examples.

### Learning Outcomes

Learners are expected to:

- ◆ Identify common air-borne diseases.
- ◆ Identify how to prevent air-borne diseases.

### RESOURCES

Pictures of people suffering from coughs, measles, chicken pox and rashes. Videos.

### NEW WORDS

Air-borne disease, cold, cough, measles, chicken pox, rashes, germs, skin, virus, infection.

### CORE COMPETENCIES

Critical Thinking and Problem Solving, Collaboration and Communication, Personal Development and Leadership, Digital literacy

### SUBJECT SPECIFIC PRACTICES

Observation, Communicating, Generating, Classifying, Planning, Analysing, Evaluating

### HELPFUL LINK

<https://youtu.be/BbsKkcsly38>

### Background Information

The air we breathe in contains dust particles which we sometimes do not see. Again, when people cough without covering their mouths with a handkerchief, germs enter into the air we breathe and we can also get the germs.

Diseases which are spread through the air or in the air, are called air-borne diseases. Some of these air-borne diseases are colds, coughs, measles, chicken pox.

### Starter

Have learners sing the song/poem "I have a little Cough sir"

### I Have A Little Cough

*I have a little cough, sir,  
In my little chest sir,  
Every time I cough, sir,  
It leaves a little pain, sir,  
Cough, cough, cough, cough,  
There it is again, sir.*

### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

### Activity 1

#### Identifying Common Air-borne diseases

- Show video on common air-borne diseases such as common cold, chicken pox and measles to learners.
- Engage them in a discussion to tell you what they saw in the video. Let them mention some of the air-borne diseases they know.

### Activity 2

#### Visit to a health centre

(Note: prepare in advance by contacting the health centre and agreeing on a date for the visit)

- Take learners on a visit to a nearby clinic or health centre.
- The health officer should give a talk on air-borne diseases and how they can be prevented.
- Or the school SHEP coordinator can give a talk to your class on how to prevent getting infected with air-borne diseases.
- The talk should focus on diseases such as Common Cold, Cough, Chicken Pox and measles.

### Activity 3

#### Sharing Ideas on Air-borne diseases

- In groups of four, ask learners to brainstorm and come out with the meaning of air-borne disease. Assist them.

- Each group must share their answers with the rest of the class.
- Take their feedback and reinforce the concept of air-borne diseases.

### Activity 3

#### **Demonstration of how to prevent air-borne diseases**

- Guide learners to act out different things that can be done to prevent air-borne diseases such as:
  - \* Washing hands with running water, soap and using hand sanitizers.
  - \* Avoiding contact with infected persons.
  - \* Avoiding the practice of sharing personal belongings with people suffering from air-borne diseases.
  - \* Avoid seating or playing with someone infected with air-borne disease.

### Talk about

Refer them to page 149 of the Learner's Book to answer the questions.

Engage learners in pairs or groups under this activity.

### Project for home or school

Refer learners to page 151 of the learner's book. Task them to work in groups of four to tackle the first project.

Direct them on what is expected of them on the other projects listed on the page.

### What I have learnt

Discuss with learners to tell you what they have learnt during the lesson.

Refer learners to page 151 of the Learner's Book. Let them read out loud.

### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to pages 149 - 150 of the Learner's Book and pages 74 - 77 of the Workbook.

### Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. How will one know that he or she has measles?

2. What must I do when i see a friend suffering from cough or common cold in the classroom.

### Answers to Review Exercise

#### Exercise 1

1. a. Chicken pox.  
b. Common cold.  
c. Cough.  
d. Measles.

#### Exercise 2

1. a. Chicken pox.  
b. By coming into contact with an infected person.  
By using personal belongings with an infected person.  
c. Stay indoors till he recovers/ Avoid contact with others  
Report to the health centre with his parents  
Avoid using personal belongings with other people

#### Exercise 3

1. a. False  
c. True  
e. True
- b. True  
d. False

#### Exercise 4

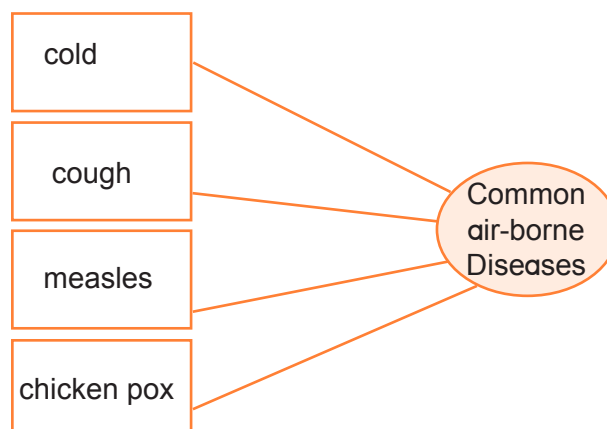
1. Air-borne
2. Coughs without covering his or her mouth.
3. Germs
4. Reddish

### Answers to Workbook Questions

#### Trial 1

1. a
2. a
3. b

#### Trial 2



### Trial 3

1. You start coughing
2. You get cold
3. Your skin becomes reddish

### Trial 4

1. Sleep in an airy place
2. Avoid contact with infected person.
3. Avoid sharing towels with infected people

## Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to “**TRAP**” the lesson taught.

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**P: Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## Strand 5: HUMANS AND THE ENVIRONMENT

### Sub-strand 3: SCIENCE AND INDUSTRY

#### LESSON 1: Ways foods get spoilt

LB: pages 152 - 155; WB: pages 78 - 80

##### CONTENT STANDARD

**B3.5.3.2** Exhibit knowledge of food processing and preservation.

##### INDICATOR

**B3.5.3.2.1** Describe the ways food get spoiled.

##### Learning Outcomes

Learners are expected to:

- ◆ Identify ways through which food can get spoilt.

##### RESOURCES

Food samples such as bread, tomatoes, kenkey, yam, rice, pictures and videos showing spoilt food.

##### NEW WORDS

Mouldy, cooked yam, mouldy fish and bread, vegetables, preserve.

##### CORE COMPETENCIES

Critical Thinking and Problem Solving, Collaboration and Communication, Personal Development and Leadership, Digital Literacy, Creativity and Innovation

##### SUBJECT SPECIFIC PRACTICES

Observing Communicating, Generating, Analysing, Evaluating.

##### HELPFUL LINKS

- <https://www.toppr.com/guides/evs/mangoes-round-the-year/food-spoilage/>

##### Background Information

If food items are kept for a long period of time and not stored properly, they get spoilt. Such food items are bad for health. Food items get spoilt as germs start growing on it. Once the food is spoiled, it cannot be eaten and has to be thrown away.

What will happen if we eat this food? Is it edible? Spoilage is a process in which food items deteriorate to the point in which it is not edible to human.

##### Starter

Have learners use think-pair-share strategy and discuss if they have ever seen food that has gone bad or gotten spoilt before.

##### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

##### Activity 1

- Show real food samples such as bread, kenkey and boiled yam that has gone bad to learners to observe.
- Allow learners to talk about their observations.
- Refer them to page 152 of the Learner's Book to look at the pictures and talk about them.

##### Activity 2

- In groups of four, let learners discuss ways by which food gets spoilt. Example, uncovered food attracts flies that drops bacteria on the food, food that is left unpreserved for a long time, fungi can grow on food, high temperatures can cause some food to spoil.
- Let each group present their answers for the whole class to discuss and provide feedback.
- Write their responses on the board.

##### Activity 3

- In previous groups, have learners talk about what will happen if they eat spoilt food. Example, they will fall sick, experience severe stomach ache, have diarrhoea or they may even die. Ensure that learners brainstorm to give correct responses.



- Call on each group to make a presentation on their findings to the class.

#### Activity 4

- Assist learners to act a drama or tell a story about a child who ate spoilt food. Make sure everyone takes part.
- Take feedback from them on some key issues.

### Think and do

Engage learners to perform an activities in the learners book.

Refer them to page 153 of the Learner's Book.

### Talk about

Refer learners to page 154 of the Learner's Book to discuss the question under "talk about."

They can work in groups or in pair.

### What I Have Learnt

Have learners discuss what they have learnt in groups of four. Write a summary on the board.

Refer learners to page 155 of the Learner's Book and let them read through "What I have learnt" there.

### Project for home or school

Learners are to draw and colour bread that is mouldy. They need to observe a sample of mouldy bread and draw.

Learners are to make a poster to show why it is important to keep foods in the fridge. They must display their work in class.

Ask them to present their project in class during the next lesson.

#### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to page 154 of the Learner's Book and pages 78 - 80 of the Workbook.

### Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. What will happen to wakye when left fo a long time without care?

2. What do you think will happen to you if you eat apoil food?

#### Answers to Review Exercise

1. Germs
2. Heat
3. Dust
4. Spoilt

#### Answers to Workbook Questions

##### Trial 1

Learners' correct drawing(s).

##### Trial 2

	Food	How you will know
1.	Fish	it gives bad smell
2.	Bread	you will find mould on it
3.	Tomatoes	it becomes soft and watery

##### Trial 3

1. Bread which is spoilt  
I will fall sick or  
My stomach will pain me or  
I will vomit
2. Fish which is spoilt  
I will fall sick or  
My stomach will pain me or  
I will vomit

### Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

In other words, you have to "TRAP" the lesson taught.

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**P:** **Plan:** If you get the chance to teach the same lesson, what **plans** (strategies) will you implement to enhance teaching so that learners will understand and enjoy it?

## Strand 5: HUMANS AND THE ENVIRONMENT

### Sub-strand 4: CLIMATE CHANGE

#### LESSON 1: Human activities that pollute the atmosphere

LB: pages 156 - 158; WB: pages 81 - 82

##### CONTENT STANDARD

**B3.5.4.1:** Know that climate change is one of the most important environmental issues facing the world today and is a long-term change in the pattern of average weather of a specific region of the earth.

##### INDICATOR

**B3.5.4.1.1** Identify human activities that pollute the atmosphere.

##### Learning Outcomes

Learners are expected to:

- ◆ Identify the human activities that pollute the atmosphere.

##### NEW WORDS

Climate, Air, Dust, Burn, Charcoal, Exhaust.

##### RESOURCES

Pictures and videos on human activities that pollute the atmosphere, candle, pieces of paper, matches, mosquito coil.

##### CORE COMPETENCIES

Critical Thinking and Problem Solving, Collaboration and Communication, Personal Development and Leadership, Digital Literacy

##### SUBJECT SPECIFIC PRACTICES

Observing, Predicting, Analysing, Planning, Evaluating

##### HELPFUL LINK

<https://youtu.be/U4avqvkLnqo>

##### Starter

Ask learners to tell you what they see when someone is burning rubbish.

##### Teaching Instructions

- Before the lesson drill the new words and ask learners to form sentences with it.

##### Activity 1

- Have learners watch pictures or videos of human activities that pollute the atmosphere.
- In groups, task learners to write down some of the activities they observed in the pictures and videos.
- Refer them to page 156 of the Learner's Book to look at the pictures and talk about them.

##### Activity 2

- Put learners into groups of five. Let them discuss and talk about some activities in our communities that pollute the atmosphere.
- Let each group read out their answers for the whole class to discuss.

##### Activity 3

- Create a short story or talk about scenarios that pollute the atmosphere. Example, burning of waste, bushes and rubbish.
- Ask learners questions about your presentation, in order to ascertain whether they understood you.

##### Activity 4

- Take learners outside the classroom and demonstrate a simple activity on how the atmosphere gets polluted.
- Light a candle, mosquito coil or burn some pieces of paper.
- Let learners tell you where the smoke from the things you are burning goes to.
- Explain to learners that the atmosphere refers to the air around us.

##### Background Information

Activities of many people destroy and pollute the atmosphere. When this continues for a long time, it can destroy the climate pattern. These activities include burning of fossil fuel, rubbish, farm lands, release of smoke from factories.

## Think and do

Refer learners to the activity on page 157 of the Learner's Book. They are to design a notice to be put on the school notice board.

The notice is to educate their friends on why they should not burn things anyhow.

## Talk about

Refer learners to page 157 of the Learner's Book to discuss the question under "talk about."

Learners work in pairs to discuss what they think will happen if burning cases increase in our community.

## What I Have Learnt

Allow learners to write and share what they have learnt with their friends in class. Then write key concepts on the board for learners to copy in their books.

You can also refer them to page 158 of the Learner's Book to read out what is outlined there.

## Project for home or school

Have learners draw and colour an environment they will like to live in which is free from pollution.

Have learners design a poster to talk about good behaviours to protect their communities from climate change.

### Assessment for learning

Supervise learners to do the assessment tasks. Refer them to page 158 of the Learner's Book and pages 81 - 82 of the Workbook.

## Extension Assessment

Let gifted learner(s) work on their own. Let them read and complete the exercise without help.

1. List down three activities that pollute the atmosphere.
2. What advice will you give someone who is burning the bush?

### Answers to Review Exercise

These are critical thinking questions, so teacher/facilitator should read learners' suggestions very well.

## Answers to Workbook Questions

### Trial 1

1. Smoke from cars
2. Bush burning
3. Smoke from firewood
4. Smoke from mosquito coils

### Trial 2

1. Stop using old cars that produce smoke
2. Stop bush burning
3. Stop using fire wood for cooking

### Trial 3

1. Learners' correct answers.
2. Learners' correct answers.

## Diagnostic Assessment

The diagnostic assessment will enable you the teacher assess yourself and know whether the lesson was successful or not.

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# ESSENTIAL Science

## Primary 3

Teacher's Guide

The **ESSENTIAL Science** series is written to meet the full requirements of the current New Standards-based curriculum by the National Council for Curriculum and Assessment (**NCCA**) with a critical thinking approach to learning Science.

The series consists of a Learner's Book, Workbook and Teacher's Guide.

**ESSENTIAL Science Primary 3** is well crafted to ensure that the core values (core competencies) of the Standards-based curriculum are imbued in learners.

### The Teacher's Guide offers:

- Clear directives on activities and lesson plans.
- Additional recommended activities for better transfer of knowledge.
- Helpful links have been provided to help the teacher find and acquire additional knowledge to help the learners.
- Answers to all assessments.

**ESSENTIAL**, your guarantee of success!



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