

ESSENTIAL Science

Primary 2

Teacher's Guide



CAMBRIDGE



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Teacher's Guide

John Wilberforce Essiah



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NNF Esquire Limited
P.O. Box AN 8644, Accra - North, Ghana.
024 4608 305
020 2113 117

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University Printing House, Cambridge CB2 8BS, United Kingdom
One Liberty Plaza, 20th Floor, New York, NY 10006, USA
477 Williamstown Road, Port Melbourne, VIC 3207, Australia
314-321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre, New Delhi – 110025, India
79 Anson Road, #06-04/06, Singapore 079906
The Water Club, Beach Road, Granger Bay, Cape Town, 8005, South Africa

Cambridge University Press is part of the University of Cambridge.
It furthers the University's mission by disseminating knowledge in the pursuit of
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www.cambridge.org

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First published 2022

22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1

Printed in Ghana

ISBN 978-9988-8975-1-2 Paperback

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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 and Workbook 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: Parts of Plants

LB: pages 2 -10; WB: pages 6-8

CONTENT STANDARD

B2.1.1.1 Demonstrate an understanding of the physical features and life processes of living things and use this understanding to classify them.

INDICATOR

B2.1.1.1.1 Know the basic structure of plants (roots, stem, leaves, flowers).

LEARNING EXPECTATIONS

Learners are expected to:

- ♦ Identify the main parts of a plant (roots, stem, leaves, flowers).
- ♦ Identify the uses of the root, stem and leaves to a plant.
- ♦ Build a leaf album.

NEW WORDS

Stem, Leaves, flowers, plants, shallow, violet.

RESOURCES

Uprooted young shrubs and grasses.
Videos or pictures of different plants.

CORE COMPETENCIES

Digital Literacy, Communication and Collaboration, Personal development and Leadership Creativity and Innovation.

SUBJECT SPECIFIC PRACTICES

Observing, Communicating, Classifying.

HELPFUL LINKS

- <https://www.youtube.com/watch?v=Zxtmq86SBjs>
- <https://www.pmfias.com/plant-parts-functions/>

Background Information

Plants are all around us. They make our environment beautiful and we also get food from plants. Plants are made up of different parts such as leaves, flowers, stem and roots.

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Starter

Have learners work in pairs. They write down the names of plants and flowers they know.

Teaching Instructions

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

Activity 1

Identifying the parts of plants

- With the aid of an uprooted young plant or a plant in the school, show learners the parts of plants such as leaves, root, stem, fruits and flowers.
- Task learners to gather young plants for this activity.
- Based on your demonstration, learners must identify the various parts of the different uprooted plants.
- Learners must work in groups of five to divide a flowering plant into its part such as stem, leaves, flower and root.
- Fix each part on a piece of paper and label it.

Activity 2

Designing a leaf person

You need the following

- Leaves, thin cardboard or sheet of paper, Pencil, colour. Refer to page 10 of the learners book for procedure.

Think and do

Have learners discuss in pairs what will happen to the plant if the root is uprooted. After discussion in pairs, let them present their answers to the whole class.

Talk About

Which part of the plant is the most important? Learners discuss with their friends in groups of four. Refer to page 5 of the Learner's Book.

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.

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 teacher can easily acquire to make their lessons more meaningful and enjoyable.

Helpful links

Comprehensive site of helpful links for educational or teaching tips and ideas are provided under some lessons. This are internet links to text, pictures and videos that you will use during the lessons. Download them ahead of the lesson.

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.

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 teacher 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.

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.

Strand 1: DIVERSITY OF MATTER**Sub-strand 1: LIVING AND NON-LIVING THINGS****LESSON 1: Parts of Plants**

LB: pages 2 -10; WB: pages 6-8

CONTENT STANDARD

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- Learners must work in groups of five to divide a flowering plant into its part such as stem, leaves, flower and root.
- Fix each part on a piece of paper and label it.

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You need the following

- Leaves, thin cardboard or sheet of paper, Pencil, colour. Refer to page 10 of the learners book for procedure.

Think and do

Have learners discuss in pairs what will happen to the plant if the root is uprooted. After discussion in pairs, let them present their answers to the whole class.

Talk About

Which part of the plant is the most important? Learners discuss with their friends in groups of four. Refer to page 5 of the Learner's Book.

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..

What I have Learnt

Ask learners what they have learnt after the lesson. Refer them to page 10 of the Learner's Book to read out what is outlined there.

1. The main parts of a plant are the root, stem, and leaves.
2. Other parts of the plant are the flower and fruit.
3. The root is the part of the plant that holds it firmly to the ground.
4. The stem is the part of the plant that holds the leaves.
5. Most plants have green leaves. Other plants have leaves of different colours.

Project for home or school

Refer learners to pages 9 and 10 of the Learner's Book for their home project.

Extension Assessment

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

1. Copy and complete the table below

Parts of plant	Functions (Uses)
leaves	
stem	
roots	
flower	

2. Draw your favourite flower and colour it.

Assessment for learning

Supervise learners to do the assessment task. Refer them to pages 6 - 8 of the Learner's Book and pages 6-8 of the Workbook.

Answers to Review Exercises

Exercise 1

- a. b
- b. d
- c. a
- d. c

Exercise 2

1. root
2. flowers
3. leaves
4. stem

Exercise 3

1. Accept correct labelling
 2. Accept correct completion of puzzle
- The words in the puzzle are root, stem, leaves, flowers.

Answers to Workbook questions

Trial 1

1. a
2. c
3. d
4. b

Trial 2

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

Trial 3

F	L	O	W	E	R	S
F	R	S	O	P	E	I
K	O	E	U	K	R	O
L	O	P	S	T	E	M
N	T	L	E	L	T	L
M	E	A	C	N	C	N
L	E	A	V	E	S	B

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

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.

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.

Assessment for learning

The feature directs teacher 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.

Answers

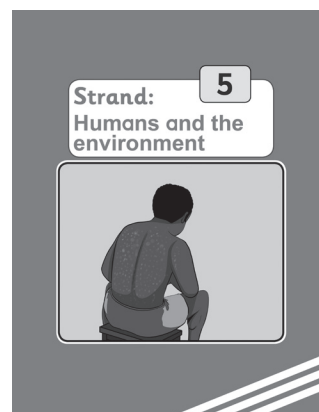
Expected answers are provided for all exercises under every lesson in the Learner's Book and Trials in the Workbook. Where answers are to vary from one learner to the other, it is mentioned.

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.

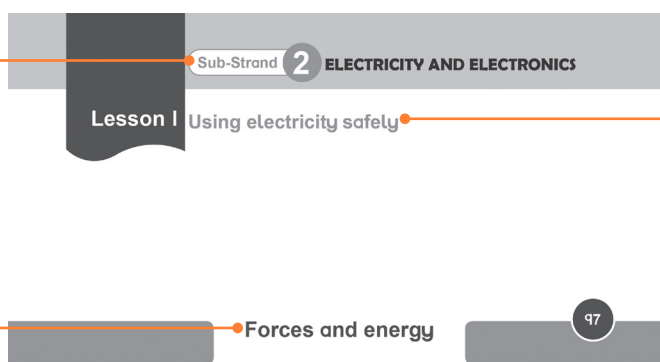


Header and footer labels

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

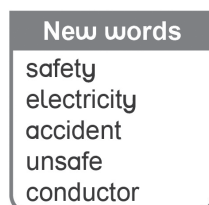
Sub-strand: These are larger groups of related science topics to be studied under each strand.

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



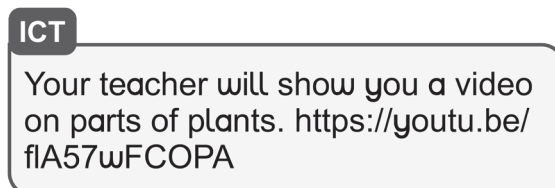
New words

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



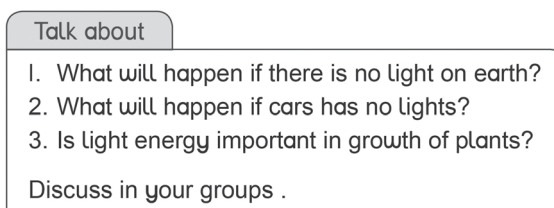
ICT boxes

- 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



Tips box

- Give helpful tips and information.

TIP

REMEMBER

We get energy from the food we eat.
Food gives us energy to do an activity.

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

Parents should help their wards to mould the sun using play dough, clay, cardboards, coloured pencils and crayons.

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

1. The Sun is very big and large. It is close to the earth. The Sun produces light and heat energy.
2. Living things (Plants and Animals) use energy from the sun. Plants use energy from the sun to grow and to make their own food.
3. The Sun warms water, land, air, and all living things on earth.
4. Our cloths use energy from the Sun to get dried.

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 Exercise

Exercise 1

1. Write any four uses of the sun to humans.

Exercise 2

2. Which of the following activities show the uses of the sun?
 1. Cooking on a coal pot.
 2. Drying of cloths.
 3. Helping plants to grow.
 4. Charging a mobile phone.
 5. Keeping us warm

Exercise 3

3. Draw the Sun and colour it.

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 I

Your teacher will help you to do the following.

In groups:

1. Throw a ball between you and your group members.
2. From the front of the classroom to the back.
3. Jump five times.
4. Discuss why you were able to do these activities.

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

to walk, run and jump.

to hear and listen to sounds

to see

to smell

to eat

to turn the head

to catch, hold, write, etc.

ICT

- Your teacher will show you pictures of parts of the body.
- You will also watch a video on the parts and uses of the body parts

Sub-Strand 1 THE HUMAN BODY SYSTEMS

What my body part can do

We use our hands to write, to eat, clap, cook.

We use our feet for walking, jumping and running.

Our ears help us to hear/ listen to sounds.

Our head contains the human brain which helps us to think.

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Systems

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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 teacher teach effectively using the Learner's Book and its accompanying Workbook.

The Teacher's Guide helps teacher 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, teacher 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. Teacher serve as facilitators 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 teacher 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 curriculum, it is suggested that assessment is used to promote learning. Its purpose is to identify the strengths and weaknesses of learners to enable teacher 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 SCIENCE PROCESS SKILL

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 their senses to observe basic information	Learners use at least one of their senses to observe basic information	Learner notices detailed characteristics and phenomena	learners extend/ apply their observations 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 strong sense of wondering 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 makes hypotheses about related objects and/or events
COMMUNICATION	Learners struggle to express what they 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 clearly articulate their observations, approach and findings with detail, and they use creative methods 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 evidence of in-depth understanding of relevant concepts, theories or principles

Source: NaCCA, Ministry of Education 2019

Core Competencies

The core competencies describe a body of skills that teacher 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 Teacher's Guide 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

Teacher 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 teacher 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
B3	Year or Class
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
DIVERSITY OF MATTER	1. Living and Non-Living Things 2. Materials	1. Living and Non-Living Things 2. Materials	1. Living and Non-Living Things 2. Materials
CYCLES	1. Earth Science 2. Life Cycles of organisms	1. Earth Science	1. Earth Science 2. Life Cycles of organisms
SYSTEMS	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
FORCES AND ENERGY	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
HUMANS AND THE ENVIRONMENT	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	B2
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 2

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 2

Date: 15/03/2019	Period: 3	Subject: Science	
Duration: One hour		Strand: Humans and the Environment	
Class: B2	Class size: 42	Sub-strand: Science and Industry	
Content Standard: B2.5.3.1 Recognise the impact of science and technology in society		Indicator: B2.5.3.1.1 Identify the technological devices used in the community and describe their impact	Lesson: 1 of 1 (Based on the demands of the indicator)
Performance Indicator: Match identified devices with their uses.		Core Competencies/Values: Personal Development and Leadership; Digital Literacy; Critical Thinking and Problem Solving; Creativity and Innovation.	
Keywords: Technology, Science, everyday life.			
Phase/Duration	Learners activities		Resources
Phase1: Starter (preparing the brain for learning) 5 minutes	Put the learners into groups. Play a game of seeing which group can list the highest number of technologies they have seen in society. Give them 5 minutes to write as many ideas down on paper as they can. The group with the highest number wins!		
Phase 2: Main (newlearning including assessment) 20 minutes	Present some products of technology that can be seen in the community, e.g. mobile phones, toy cars, laptops, watches, radio sets, fans, etc. Guide learners to identify the devices and their uses. Learners listen to stories on how some technological devices were invented. Explain that Science is the foundational subject that leads to technology. Describe some African inventors, such as the three learners at All Nations University who, in 2017, sent the first satellite into space from Sub-Saharan Africa and Prof. Francis Allotey. Let learners brainstorm to find out what will happen if there were no modern technological devices in the community.		Mobile phones, toy cars, laptops, watches, radio sets, fans, etc.
	Assessment Learners should think of a futuristic idea for a technological device or system that will improve their communities. They should sketch it out on paper and describe it.		

Phase 3: Plenary/ Reflections (Learner and teacher) 5 minutes	Assemble relevant technological devices prior to the lesson Supervise learners to operate the provided technological devices. Ensure fair distribution of questions (in terms of gender and learning abilities of learners)
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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: Parts of Plants

LB: pages 2 -10; WB: pages 6-8

CONTENT STANDARD

B2.1.1.1 Demonstrate an understanding of the physical features and life processes of living things and use this understanding to classify them.

INDICATOR

B2.1.1.1.1 Know the basic structure of plants (roots, stem, leaves, flowers).

LEARNING EXPECTATIONS

Learners are expected to:

- ◆ Identify the main parts of a plant (roots, stem, leaves, flowers).
- ◆ Identify the uses of the root, stem and leaves to a plant.
- ◆ Build a leaf album.

NEW WORDS

Stem, Leaves, flowers, plants, shallow, violet.

RESOURCES

Uprooted young shrubs and grasses.
Videos or pictures of different plants.

CORE COMPETENCIES

Digital Literacy, Communication and Collaboration, Personal development and Leadership Creativity and Innovation.

SUBJECT SPECIFIC PRACTICES

Observing, Communicating, Classifying.

HELPFUL LINKS

- <https://www.youtube.com/watch?v=Zxtmq86SBjs>
- <https://www.pmfias.com/plant-parts-functions/>

Background Information

Plants are all around us. They make our environment beautiful and we also get food from plants. Plants are made up of different parts such as leaves, flowers, stem and roots.

Starter

Have learners work in pairs. They write down the names of plants and flowers they know.

Teaching Instructions

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

Activity 1

Identifying the parts of plants

- With the aid of an uprooted young plant or a plant in the school, show learners the parts of plants such as leaves, root, stem, fruits and flowers.
- Task learners to gather young plants for this activity.
- Based on your demonstration, learners must identify the various parts of the different uprooted plants.
- Learners must work in groups of five to divide a flowering plant into its part such as stem, leaves, flower and root.
- Fix each part on a piece of paper and label it.

Activity 2

Designing a leaf person

You need the following

- Leaves, thin cardboard or sheet of paper, Pencil, colour. Refer to page 10 of the learners book for procedure.

Think and do

Have learners discuss in pairs what will happen to the plant if the root is uprooted. After discussion in pairs, let them present their answers to the whole class.

Talk About

Which part of the plant is the most important? Learners discuss with their friends in groups of four. Refer to page 5 of the Learner's Book.

What I have Learnt

Ask learners what they have learnt after the lesson. Refer them to page 10 of the Learner's Book to read out what is outlined there.

1. The main parts of a plant are the root, stem, and leaves.
2. Other parts of the plant are the flower and fruit.
3. The root is the part of the plant that holds it firmly to the ground.
4. The stem is the part of the plant that holds the leaves.
5. Most plants have green leaves. Other plants have leaves of different colours.

Project for home or school

Refer learners to pages 9 and 10 of the Learner's Book for their home project.

Extension Assessment

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

1. Copy and complete the table below

Parts of plant	Functions (Uses)
leaves	
stem	
roots	
flower	

2. Draw your favourite flower and colour it.

Assessment for learning

Supervise learners to do the assessment task. Refer them to pages 6 - 8 of the Learner's Book and pages 6-8 of the Workbook.

Answers to Review Exercises

Exercise 1

- a. b
- b. d
- c. a
- d. c

Exercise 2

1. root
2. flowers
3. leaves
4. stem

Exercise 3

1. Accept correct labelling
 2. Accept correct completion of puzzle
- The words in the puzzle are root, stem, leaves, flowers.

Answers to Workbook questions

Trial 1

1. a
2. c
3. d
4. b

Trial 2

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

Trial 3

F	L	O	W	E	R	S
F	R	S	O	P	E	I
K	O	E	U	K	R	O
L	O	P	S	T	E	M
N	T	L	E	L	T	L
M	E	A	C	N	C	N
L	E	A	V	E	S	B

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: Basic structure of animals

LB: pages 11-15, WB: pages 9-11

CONTENT STANDARD

B2.1.1.2 Understand the differences between living, non-living things and things which have never been alive.

INDICATOR

B2.1.1.2.1 Describe the basic structure of animals (head, limbs and trunk).

LEARNING EXPECTATIONS

Learners are expected to:

- ◆ Identify the main parts of animals that live in the air, water and land.
- ◆ Mention animals around our home or school and identify their body parts.

NEW WORDS

head, limbs, trunk, tail, body, feather, wings, scales, fins.

RESOURCES

Pictures of different animals such as dog, dove, fish. Salted fish, insects such as ants, butterfly.

CORE COMPETENCIES

Digital Literacy, Communication and Collaboration, Personal Development and Leadership.

SUBJECT SPECIFIC PRACTICES

Observing, Communicating, Classifying, Manipulating, Generating.

HELPFUL LINKS

- <https://study.com/academy/lesson/external-structures-of-animals-lesson-for-kids.html>
- <https://www.youtube.com/watch?v=JCnAJITc9SQ>

Background Information

Just as we have heads, animals also have heads. They have eyes, ears, mouths and nostrils. They have hands and feet. The hands and feet are called **limbs**. The main body of an animal is called the **trunk**.

Starter

Start the lesson with riddles on animals. E.g I'm an animal that lives in water, I swim with fins. Who am I? I am an animal that has a beak. My home is called a nest. I make my home on trees. What is my name?

Teaching Instructions

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

Activity 1

Identifying the parts of the body

- Guide learners to identify the parts of the body by showing them a picture of a dog.

Activity 2

Comparing the human body to animals

- Engage learners in an activity to compare the human body to different animals.
- Assist learners to know the parts they have in common with various animals.
- Learners must observe pictures of different animals. Assist learners to mention the unique parts of each animal.

Activity 3

- Show pictures of the three main body parts of animals to learners. ie. the head, the trunk and the limbs.
- Let them know that all animals have three main body parts.
- Refer them to pages 11 -12 of the Learner's Book to observe the pictures of the different animals and their parts.

Think and do

Have learners work in pairs. Let them discuss what makes up the limbs of animals.

Talk About

This refers to the critical thinking questions. Learners are expected to reason and answer. Are the wings of a bird part of its limbs? Refer to page 13 of the Learner's Book.

What I have Learnt

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

1. The main parts of animals are the head, trunk and limbs.
2. Parts of the head include the eyes, ears and mouth.
3. The arms and legs of animals make up their limbs.
4. The trunk is made up of the stomach, chest and waist.

Project for home or school

Refer learners to page 13 of the Learner's Book for their home project.

Extension Assessment

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

1. Select the part that form the head, limbs and trunk from the box below.

eyes, leg, hand, mouth, breast, abdomen, chest, ears, nose and nails

Head	Limbs	Trunk

2. Draw and colour your favorite animal.

Assesment for learning

Supervise learners to do the assesment task. Refer them to pages 13-15 of the Learner's Book and pages 9-11 of the Workbook.

Answers to Review Exercises

Exercise 1

- 1 → limb
- 2 → trunk
- 3 → head

Exercise 2

1. limbs
2. head
3. trunk
4. 4
5. trunk

Exercise 3

1. head
2. limb
3. trunk

Answers to Workbook questions

Trial 1

- 1 Suggested answers

- a. eyes
- b. ears
- c. mouth
- d. nose
- e. hair
- f. teeth
- g. tongue

- 2 Suggested answers

- a. chest
- b. navel
- c. abdomen
- d. waist

3

Parts of the Head	Parts of the Limbs	Parts of the trunk
eyes	nails	abdomen
ears	leg	chest
Nose, mouth	hand	breast

Trial 2

Look at Cedrick the crow.

1. wings
2. feathers
3. eyes

Trial 3

Learner's drawing

Diagnostic Assessment

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

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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?

LESSON 3: Grouping Things Into Living and Non-Living

LB: pages 16 - 22 ; WB: pages 12-13

CONTENT STANDARD

B2.1.1.2 Understand the differences between living, non-living things and things which have never been alive.

INDICATOR

B2.1.1.2.2 Group things collected from the environment into living and non-living things.

LEARNING EXPECTATIONS

Learner will:

- ♦ Identify the differences between living and non-living things.
- ♦ Mention some common living things and the characteristics that make them alive.
- ♦ Identify some common living and non-living things within our locality.

NEW WORDS

Grow, move, living, non-living

RESOURCES

Pictures of common living and non-living things. Uprooted plants and small animals such as insects.

CORE COMPETENCIES

Communication and Collaboration, Personal Development and Leadership.

SUBJECT SPECIFIC PRACTICES

Observing, Analysing, Classifying, Generating, Manipulating.

HELPFUL LINKS

- <https://pklifescience.com/article/306/2/living-and-nonlivinglogin?username=thealberta&password=library>
- https://www.youtube.com/watch?v=p51FiPO2_kQ

Background Information

All things in the world can be grouped as living or non-living. Things that can eat food, and move on their own are called living things. Living things can also grow and have babies. Non-living things cannot grow, eat or have babies.

Starter

Let learners watch a video on living things. Assist learners to identify some processes that are common to all living things.

Teaching Instructions

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

Activity 1

Comparing living and Non-living things.

- Give learners a potted plant and a piece of wood.
- Assist learners to compare them in terms of growth, movement, feeding, making babies.
- The groups must come out with answers to the activity above.

Activity 2

Sorting items into living and non-living things

- Show pictures of different things.
- Let learners work in pairs to sort them into living and non-living things.



Activity 3

Identifying living and non-living things in your community.

- Take a walk around the school community
- Identify as many living and non-living things as possible
- Say the differences between the living and non-living things you have identified
-
-

Think and do

Have learners work in pairs. They should discuss whether a newly cut down tree is a living thing.

Talk About

If cars and bicycles are able to move, why are they not living things? Is a mango fruit that has fallen from a tree to the ground a living thing? Have learners work in pairs to discuss.

What I have Learnt

Ask learners questions to come out with what they have learnt as follows.

1. All things are grouped as either **living** or **non-living**.
2. Humans, plants and animals are examples of living things.
3. Cars, books, chairs, soil and rocks are examples of non-living things.
4. Living things can grow bigger, make babies and move from one place to another.
5. When a living thing dies, it becomes a non-living thing.

Project for home or school

Let learners:

- Look for cut-outs of common plants, animals and objects.
- Paste them in a book and label them as living or non-living.
- Under the living things, write all the things that make them living.
- Write all the things that make non-living things unalive.

They are to design and make some living and non-living things from materials such as clay, blu tack, cardboard or paper.

Extension Assessment

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

1. Fatima and Musa visited zoo. Name any five (5) animals that they might seen in the Zoo.

Assesment for learning

Supervise learners to do the assesment task. Refer them to pages 20-21 of the Learner's Book and pages 12-13 of the Workbook.

Answers to Review Exercises

Exercise 1

Living things: a, c, d and f.

Non-living things: b and e

Exercise 2

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

Exercise 3

c	g	i	r	a	f	f	e	c
o	i	x	y	h	l	m	r	h
c	r	l	i	o	n	n	a	a
o	l	s	a	r	v	o	s	i
n	o	p	l	w	a	t	e	r
u	s	c	b	a	n	l	r	r
t	s	t	o	n	e	m	e	s
s	e	n	y	t	b	i	r	d

Answers to Workbook questions

Trial 1

Living things

1. trees
2. monkey
3. birds

Non-living things

1. stones
2. wall

Other correct answers from learners

Trial 2

Living things

1. dog
2. tree

Non-living things

1. Pen
2. Cup

Other correct answers from learners

Trial 3

1. dog
2. table
3. dog
4. dog
5. table

Diagnostic Assessment

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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?

Strand 1: DIVERSITY OF MATTER

Sub-strand 2: MATERIALS

LESSON 1: Common Properties of Materials

LB: pages 23-28; WB: pages 14-16

CONTENT STANDARD

B2.1.2.1 Recognise materials as important resources for providing human needs

INDICATOR

B2.1.2.1.1 Know the common properties of materials such as soft, hard, rough, smooth, opaque, transparent, bendable

LESSON EXPECTATIONS

Learners will:

- ◆ Mention some properties of materials.
- ◆ Classify materials based on their properties.

NEW WORDS

Rigid, bendable, opaque, transparent, rough, smooth

RESOURCES

materials such as glass, paper, wood, metal and straw. Objects such as shirts, books, glass cups, metallic spoons.

CORE COMPETENCIES

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

SUBJECT SPECIFIC PRACTICES

Manipulating, Classifying, Generalising, Analysing Evaluating.

Background Information

Materials are classified into groups based on whether they are hard, soft, light or heavy. The properties of materials help us to know how best to use those materials.

Starter

Ask learners to match the objects with their material sources.

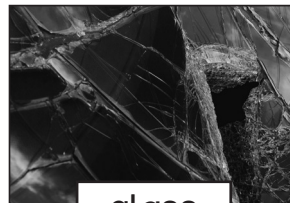
Teaching Instructions

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

Activity

Identifying Properties of Materials

- Show learners the samples of materials such as paper, wood, straw, metal and glass.
- Ask learners to identify those that are hard, light, soft etc.



glass



wood



metal



paper

Think and do

Have learners work in pairs. They discuss why some materials are soft and others hard.

Talk About

Ask learners to engage in a verbal discussion. Ask them, "If you are asked to build a house, what material will you like to use and why?"

What I have Learnt

At the end of the lesson, ask learners questions to come out with what they have learnt. Write some on the board.

Examples:

1. Common materials have properties that make them different from others
2. Materials can be hard or soft, smooth or rough, rigid or flexible and opaque or transparent.
3. The properties of materials help us to use them to for specific purposes.

Refer to page 28 of Learner's Book.

Project for home or school

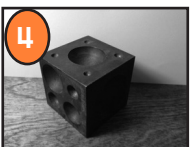
Learners are to:

- Gather different materials such as paper, ceramics, metal, glass, wood and fabric
 - They fix their materials on a cardboard and write the property of each material under it.
- Refer learners to page 28 of the Learner's Book.

Extension Assessment

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

1. Look at the pictures below. Describe them with two words from the word bank at the bottom of the page.



water proof	shiny	soft	flexible
transparent	hard	stiff	dull
strong	fragile	sharp	absorbant

2. Draw and colour one soft and one hard material found in your home.

Assesment for learning

Supervise learners to do the assesment task.

Refer them to pages 27-28 of the Learner's Book and pages 14-16 of the Workbook.

Answers to Review Exercises

Exercise 1

- 1 a. glass
b. metal
c. paper
d. stone
e. glass
- 2 a. rough
b. smooth
c. opaque
d. hard
e. rigid
- 3 a. Hard: a and b.
b. Soft: c and d.

Answers to Workbook questions

Trial 1

1. hard
2. bendable
3. opaque
4. light
5. smooth

Trial 2

1. soft/dull
2. stiff/hard
3. fragile/smooth
4. hard/strong
5. fragile/transparent
6. soft/flexible

Trial 3

Learner's drawing.

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: Properties of Solids, Liquids and Gases

LB: pages 29 - 33, WB: pages 17-18

CONTENT STANDARD

B2.1.2.2 Know that substances can exist in different physical states (solid, liquid, gas): many substances can be changed from one state to another by heating or cooling.

INDICATION

B2.1.2.2.1 Describe the properties of solids, liquids, and gases.

LESSON EXPECTATIONS

Learners are expected to:

- ◆ Identify the properties of the three states of matter.
- ◆ Explain the differences between materials in the solid, liquid and gaseous states.
- ◆ Give common examples of materials in the solid, liquid and gaseous states.

NEW WORDS

Solid, liquid, gas, vapour.

RESOURCES

Solid items such as stones, chalk, sand, liquids such as cooking oil, water, fruit juice. Inflated balloons.

CORE COMPETENCIES

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

SUBJECT SPECIFIC PRACTICES

Observing, Generalising, Classifying.

HELPFUL LINKS

- <https://www.youtube.com/watch?v=wclY8F-UoTE>
- <http://www.mccracken.kyschools.us/Downloads/2%20NGSS%20UNIT%20Matter.pdf>
- <https://www.youtube.com/watch?v=Asx1D31gRxA>
- <https://www.edu.gov.mb.ca/k12/cur/science/found/kto4/2c2.pdf>

Background Information

In our everyday living we see examples of things that are either solid, liquid or gas. These are what we called the states of matter.

Starter

Let learners compare ice block and water. Guide them to explain what happens when the water is heated or cooled down.

Teaching Instructions

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

Activity 1

Identifying the properties of Solids and Liquids

- Provide samples of solids, liquids.
- Write a number of properties of solids and liquids on cardboard or on the chalk board.
- Ask learners to map the properties with the solids or liquids presented.
- Let learners work in mixed ability groups to infer the differences between solids and liquids.

Activity 2

Identifying the properties of Gases

- Engage learners to undertake activities involving gases such as whistling, fanning themselves, inflating balloons.

Activity 3

Demonstrating the change of states of matter

Materials: Iced block, plastic bottle

- Put ice blocks into a transparent plastic bottle.
- Place the bottle in the sun and observe occasionally till it melts into liquid.
- Allow the liquid water to remain in the sun for several hours.
- You will observe that the liquid water evaporates into vapour around the neck of the bottle.

Think and do

Let learners work in pairs to discuss why gases have no shape. Let them report to the class.

Talk About

Let learners work in groups of four to discuss the three stages of matter. Let them report to the class. Refer to page 31 of the Learner's Book.

What I have Learnt

Find out if learners have understood the lesson by asking them what they have learnt. Let them work in groups of four. Write some of their answers on the board.

Refer to page 33 of the Learner's Book.

1. Substances exist in three states namely, solids, liquid and gas.
2. Examples of solids are a piece of wood, pencils and crayons. Solids have a fixed shape.
3. Examples of liquids are water, palm oil and kerosene. Liquids take the shape of their container.
4. Gases have no fixed shape. Examples of gases are the air we breathe and the gas used to cook in our homes.

Project for home or school

Ask learners to:

- Observe everyday materials and items in their homes.
- They are to write down any five items in their homes which are in the liquid state.
- They are to write down any five items in their homes which are in the solid state.

This can be found on page 33 of the Learner's Book.

Extension Assessment

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

Thinking cap questions

1. Kofi put his water in the fridge. It changed from liquid.
2. Adzovi wants to inflate his balloon. What is the physical state of the air that she will blow into the balloon?

3. Amadu put water on fire, after a while the water began to boil. As it boiled the water changed state from liquid.

4. Kwame loves to drink fruit juice. The fruit juice he drinks is likely to in state.

Assesment for learning

Supervise learners to do the assesment task. Refer them to pages 32 of the Learner's Book and pages 17-18 of the Workbook.

Answers to Review Exercises

Exercise 1

- a. liquid
- b. gas
- c. solid
- d. solid
- e. gas

Exercises 2

- a. gas, liquid
- b. liquid
- c. liquid
- d. solid
- e. gas

Exercise 3

Learner's drawing

Answers to Workbook questions

Trial 1

Solid (s) → 4, 5, 8 and 9.

Liquid (l) → 1, 6 and 7.

Gas (g) → 2 and 3.

Trial 2

1. a. table

b. chair

2. a. water

b. oil

Trial 3

1. solid

2. gas

3. vapour

4. liquid

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LESSON 3: How to form Solid-Solid Mixtures

LB: pages 34 - 39; WB: pages 19-21

CONTENT STANDARD

B2.1.2.3 Understand mixtures, the types, their formation, uses and ways of separating them into their components.

INDICATOR

B2.1.2.3.1 Describe a solid–solid mixture and explain how to separate the components.

LESSON EXPECTATIONS

Learners are expected to:

- ◆ Explain the term solid-solid mixtures.
- ◆ Mention common examples of solid-solid mixtures.
- ◆ Prepare some common examples of solid-solid mixtures.
- ◆ Demonstrate how to separate solid-solid mixtures.

NEW WORDS

Mixtures, solid-solid mixtures.

RESOURCES

Different solid substances such as coins, sand, milo, gari, gravels, maize grains and chalk, etc.

CORE COMPETENCIES

Digital literacy, Personal Development and Leadership, Communication and Collaboration, Critical Thinking and Problem Solving.

SUBJECT SPECIFIC PRACTICES

Observing, Experimenting, Manipulating, Analysing.

HELPFUL LINKS

- <https://www.youtube.com/watch?v=qYzjg5nRMOg>
- http://www.chem4kids.com/files/matter_solid.html

Background Information

In our previous lesson we learnt about the properties of the three states of matter. We found out that all substances exist as solids, liquids or gases.

When we add sand to stones, a mixture of sand and stone is formed. In our homes, groundnut is roasted in sand and gari. This is also an example of a solid-solid mixture. Sometimes, the food we eat is in the form of solid-solid mixtures. An example is a mixture of sugar and gari.

Starter

Let learners tell you the three states of matter and give one example each.

Teaching Instructions

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

Activity 1

Forming solid-solid mixtures

- Show a video and pictures of different solid-solid mixtures to learners. Let them talk about what they saw.
- Put learners into groups and provide them with different solid materials such as stones, gari, sand, chalk, etc.
- Ask learners to come-out with one characteristic which is common to all the substances provided.
- Guide learners to combine two materials at a time and discuss what they have done.
- Let them know that they have formed a solid-solid mixture.

Activity 2

Separating solid-solid mixtures

- Give out more solid materials for learners to do more group activities by combining two or more materials. Example sand and stone, gari and groundnut, sand and iron nails. etc.
- Guide learners to explore ways they can separate the components of the solid-solid mixtures they have prepared.

- Task them to separate some of the mixtures they have prepared, such as sand and stone, iron nails and sand, gari and groundnut.

Think and do

Have learners brainstorm to find out what is formed if gari, water and groundnuts are mixed together.

Talk About

In our homes there are different types of solid-solid mixtures. An example is a mixture of roasted groundnut and the sand or gari which is used to roast it. Can you say how a mixture of roasted groundnut and sand is separated in our homes?

Refer to page 37 of the Learner's Book.

What I have Learnt

Working in groups of five, let learners write down what they have learnt. Write some on the board.

Examples:

1. When two different solids are mixed together, a solid-solid mixture is formed.
2. Examples of solid-solid mixtures are sand and stone, gari and sugar, groundnut and sand.

Refer to page 39 of Learner's Book.

Project for home or school

Learners are expected to do a home project. Direct them on what is expected of them by given the following instructions.

- Gather some common solid materials such as gravels, maize grains, sand, pieces of paper, rice grains and iron nails.
- Add any two different substances to form a solid-solid mixture. E.g. Mixture of rice and maize.
- Learners can use the table below to complete the activity.

Name of Mixture	Substances that form it

Extension Assessment

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

Fill in the blank spaces with the right answer.

1. When two different substances are put together physically, they form (mixture / solid)
2. A mixture of sugar and salt is an example of mixture. (solid-solid / solid-liquid)
3. A mixture of sand and iron nails can be separated with a (magnet/ sieve)
4. A solid-solid mixture cannot contain (sand/ water)
5. Sand and cement is a common solid-solid mixture for..... (building homes/ preparing food).

Assesment for learning

Supervise learners to do the assesment task. Refer them to pages 37-38 of the Learner's Book nd pages 19-21 of the Workbook.

Answers to Review Exercises

Exercise 1

c, d

Exercise 2

1. gravel and sand
2. gari and groundnut
3. sand and gari

Exercise 3

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

Answers to Workbook questions

Trial 1

6, 8, 1

Trial 2

1. a
2. c
3. b

Trial 3

1. mixture
2. solid-solid
3. magnet
4. water
5. building homes.

Diagnostic Assessment

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2

Strand:

Cycles

Strand 2: CYCLES

Sub-strand 1: EARTH SCIENCE

LESSON 1: Dry and wet seasons; Effects on living things

LB: pages 42 - 54; WB: pages 24-25

CONTENT STANDARD

B2. 2.1.1. Recognise that some events in our environment occur recurrently.

INDICATOR

B2. 2.1.1.1 Recognise the importance of some cyclic natural phenomena such as dry and wet seasons.

LEARNING EXPECTATIONS

Learner will,

- ◆ Recall the meaning of cyclic events.
- ◆ Identify some common cyclic events within their locality.
- ◆ Identify the characteristics of the dry and wet seasons.
- ◆ Identify the advantages and disadvantages of each of the two seasons.

NEW WORDS

Seasons, Weather, Harmattan, Clouds, Wind, Antarctica Environment.

RESOURCES

Check of dry/wet seasons, card board, crayon and pencil

CORE COMPETENCIES

Personal Development and Leadership, Critical Thinking and Problem Solving.

SUBJECT SPECIFIC PRACTICES

Classifying, Communicating, Predicting, Analysing, Evaluating.

Background Information

Cyclic events are events that occur repeatedly. That is to say, they have no end or beginning. Festivals, day and night, seasons are common examples of events that occur repeatedly.

Starter

The whole class recite the poem on rain and weather below.

A poem on Rain

The rain is raining all around
It falls on field and tree,
It rains on the umbrella here,
And on the ships at sea.

A poem on Weather

What the air is like outside is weather. The air may be warm or cool. It may also be rainy, sunny, windy, or cloudy. Weather can change quickly.

Teaching Instructions
















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

Activity 1

How does weather change?

Investigate.

- Show a picture of different weather conditions to learners.
- Put them in groups of five or six and provide them with a weather like the one below.

WEATHER			
	DAY 1	DAY 2	DAY 3
MONDAY	 sunny	 sunny	 partly cloudy
TUESDAY	 sunny	 cloudy	 rainy
WEDNESDAY	 rainy	 rainy	 sunny
THURSDAY	 windy	 sunny	 stormy
FRIDAY	 windy	 rainy	 cloudy

- Task learners to:
 - a. Make a weather chart like the one above.
 - b. Use the weather patterns in the picture above to create and record a weather pattern from Day 1 – 3.

- Ask them what kind of weather changes they observed?
- Ask each group to share their information with the rest of the class.

Activity 2

- Engage learners in an activity to explain what a cyclic movement is.
- Show them the seconds hand of an analogue clock. Let them tell you what they observed.
- Take learners out to the palyground to perform an activity on a merry-go-round. (You can show them a picture If you dont have one in your school). You can also engage them in musical chairs activity.
- Relate this activity to the occurrence of day and night and explain to learners that the appearance of the sun, moon and stars follow a cyclic pattern.

Activity 3

Identifying the seasons observed in Ghana

For example, dry and wet seasons.

- Show learners pictures of the different weather conditions.
- Let them identify some characteristics of the wet season. Example, rains, cold, floods, etc.
- Learners also discuss the characteristics of the dry season. Example, windy, hot, dusty, etc.

Activity 4

Effect of the dry and wet seasons

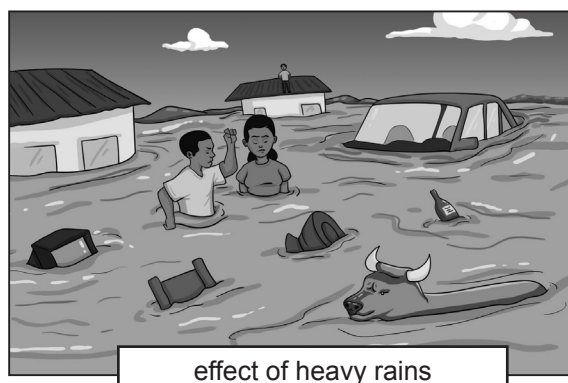
Engage learners in group discussions to come out with the effects of both dry and wet seasons.

Wet season

Let learners know that when there is too much rainfall it can have bad effects on human activities in the following ways:

- it can cause flooding. Flooding can destroy crops and homes. Sometimes people and animals die due to the flooding of the land.
- It affects the transportation of food items to market centres because of flooding caused by continuous rainfall.
- It affects the movement of people to work or school due to flooding caused by heavy rains or continuous rainfall.

- People find it difficult to get their washed clothes dried due to continuos rains.
- The school compound can get very muddy doing the wet season.



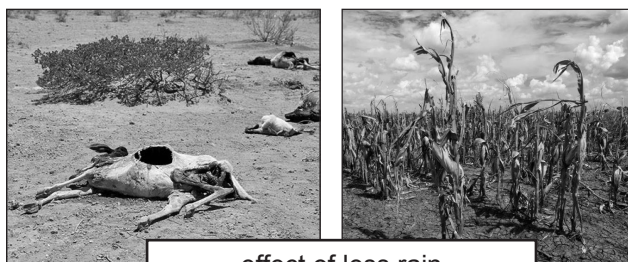
effect of heavy rains

However, less rain can also lead to decrease in food supply because of poor harvest brought about by lack of rainfall.

Dry season

Inform learners that, during the dry season, the following effects are likely to be felt by humans:

- some plants do no get water to grow very well leading to scarcity of food.
- most animals also die for lack of drinking water.
- people are infected with diseases like choleraq.
- the weather becomes very hot, sunny and dusty.



effect of less rain

Think and do

Learners discuss amongst themselves the effects of both dry and wet seasons on both plants and animals.

Talk about

Refer learners to page 46 and 52 of the Learner's Book to discuss and answer the question.

Additionally, engage learners in a critical thinking session to discuss:

1. How does the weather change from day to day?
2. How does the weather change from season to season?

Have learners discuss in pairs.

What I have Learnt

After the lesson, ask questions about what they have learnt. Write some of their answers on the board as shown below.

1. The weather changes from season to season. Dry season is when the weather is hot and sunny. There is little or no rainfall for several months.
2. In this dry season, the life of animals, plants and people are negatively affected.
3. Some plants do not get water to grow very well. Food therefore becomes scarce.
4. Most animals die as a result of not getting water to drink.
5. People also get diseases such as cholera and other water and air borne disease.
6. There is heavy rainfall during the wet season.
7. The weather is hot, sunny and humid in the daytime.
8. The wet seasons helps most plants to grow very well. Food production is in abundance.
9. Most animals also grow very well.
10. People get enough water to use. There are also a lot of floods that affect properties, people and animals.

Project for home or school

Refer learners to page 53 of the Learner's Book. let them design a poster on the wet season.

Extension Assessment

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

Use the words in the box below to answer questions 1-4.

rainy

sunny

cloudy

windy

1. Afua and Kwame are wearing raincoats to school.
What does this tell you about the weather?

The weather is.....

2. Papa Kofi is a cocoa farmer, how does the weather tell him to plant?
Papa Kofi will plant during the season.
3. Which weather condition is good for Papa kofi to dry his cocoa?
Papa kofi will dry his cocoa in the season.
4. The papers on your teacher table are flying and falling. What does this tell you about the weather?
The weather is
5. Give reason why you like or dislike the following season.
a. dry seasons b. wet seasons

Assesment for learning

Supervise learners to do the assesment task. Refer them to pages 52 - 53 of the Learner's Book and pages 24-25 of the Workbook.

Answers to Review Exercises

Exercise 1

First and last picture

Exercise 2

- a → sunny
- b → cloudy
- c → rainy
- d → windy
- e → stormy

Answers for Workbook

Trial 1

- 1. → d
- 2. → a
- 3. → b
- 4. → c

Trial 2

- 1. rainy
- 2. rainy
- 3. sunny
- 4. windy

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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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: Sources of light to the earth

LB: pages 55 - 60 ; WB: pages 26-29

CONTENT STANDARD

B2. 2.1.2. Recognise the relationship between the Earth and the Sun.

INDICATOR

B2.2.1.2.1 identify sources of light to the earth.

LEARNING EXPECTATIONS

Learners are expected to:

- ◆ Mention sources of light at home and in school.
- ◆ Assemble different sources of light displayed.
- ◆ Classify artificial and natural light.
- ◆ Identify the importance of light to plants, animals and human beings.

NEW WORDS

Light, Natural, Artificial, Stars, Candle, Torchlight, Lanten, Lamp, Fireflies etc. Pictures

RESOURCES

Lamps, pictures of fireflies, candle, match, cardboard, video of the sun and stars, torchlight, spirit lamps, bulbs (LED).

CORE COMPETENCIES

Personal Development and Leadership, Cultural Identity and Global Citizenship, Communication and Collaboration, Critical Thinking and Problem Solving, Creativity and Innovation.

SUBJECT SPECIFIC PRACTICES

Classifying, Predicting, Observing, Analysing

HELPFUL LINKS

- <https://www.youtube.com/watch?v=-IKFSEzs1Ik>
- [youtube.com/watch?v=d65mdTJaJTI](https://www.youtube.com/watch?v=d65mdTJaJTI)
- <https://k8schoollessons.com/sources-of-light/>

Background Information

All living things need light. Plants need light energy to prepare it food for growth. Both animals and people need light energy to see clearly in the night. Learners need light for reading and for doing home learning assignment.

There are two main sources of light. They are natural and artificial.

Starter

Learners recite a poem on light.

POEM

Light, light, light
Where is your natural source?
I come from the sun
The sun? Yes, from the sun.
I give out light and heat energy to plants,
animals and human beings.
I dry clothings when they get wet
I give light to plants to make it food.
Food? Yes, food! So that animals and human
being can get food to eat 2x
hahahhhahah.

Teaching Instructions

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

Activity 1

- Put learners into groups.
- Task each group to list the sources of light in their homes and in school.
- Let each group compare their list with the other groups.

Activity 2

- Provide learners with different sources of light (real and pictures). Example: sun, stars, torch, lantern, lightning, fireflies, forest fires, light bulbs, candle light, etc.
- Guide them to classify the sources of light into artificial and natural. (Refer learners to page 56 of their learners book).

Activity 3

- In their previous groups, engage learners to discuss why we need light and when we need light.
- Each group should make a presentation to the class on what they have listed.

(Light gives support to both plants and humans. Humans use light for vision and for warmth. Plants use it to prepare its food for growth).

Activity 4

- Put the following items in front of the class, cardboard and flashlight.
- Close all windows and doors and put off any light in the classroom.
- Call out a learner at random and give him or her the flashlight.
- Ask the learner to put on the light. Let the class members tell you what they observed when the light was turned on.
- Give the cardboard to another learner. Let him or her place the cardboard in front of the light from the flashlight.
- Engage learners in a discussion to tell you what happened when the source of light was blocked with the cardboard.
- Based on their responses, let them now discuss why light is important to living things.

Talk About

Refer learners to page 57 of the Learner's Book. Engage them in group discussions to answer the three questions outlined under Talk About.

What I have Learnt

After the lesson, ask learners to come out with what they have learnt. Write some of their answers on the board as follows:

1. Light is a form of energy. The sources of lights are from the sun, bulb, lantern, fireflies etc.
2. Light supports both plants and animals. Light energy from the sun helps plant to make it food.
3. People and animals see clearly with the help of light energy.

Project for home or school

Let learners do the following activities and write their reports.

- Put loamy soil into two empty milk tin containers.

- Uproot two young maize plants and place both in each container label the containers as X and Y.
- Place one (X) in the opening of your compound.
- Place the other (Y) in a cupboard in the kitchen. Water both plants for seven (7) days. Observe the growth of the 2 seedlings daily and record your observation.
- Make drawings of the two seedlings (X and Y).
- Write your conclusions on the two seedlings.
- Give one reason each for your conclusion on each seedling.

Observation

Seedling (Y) in the cupboard would not grow well. The reason is because it needs light energy from the sun to prepare food for growth. Sample (X) will grow very well. Its leaves would become very green and fresh.

Extension Assessment

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

1. Why do plants need light?
2. When and why do you need light as a learner?
3. Draw a burning candle.

Assessment for learning

Supervise learners to do the assessment task. Refer them to pages 58 - 59 of the Learner's Book and pages 26 - 29 of the Workbook.

Answers to Review Exercises

Exercise 1

Picture 1: Natural light

Reason: Things are dried in the sun.

Picture 2: Natural light

Reason: A farmer drying cocoa beans in the sun.

Picture 3: Artificial light

Reason: A boy and girl learning under bulb.

Picture 4: Artificial light

Reason: The boy is by a lighted fire.

Picture 5: Artificial light

Reason: A hand holding a lighted flash light.

Picture 6: Natural light
Reason: A man working in the sun.

Exercise 2

1. Light from the sun helps plants to grow. Light from the sun helps plants to make their food.
2. Light helps us to see.
3. As a learner I need light when I'm at home, at school and other places. I need light when I'm supposed to do any work or play.
4. As a learner, I need light to help me read my books.
I also need light to do my homework. Light also helps me to see at night time when the sun is not in the sky

Answers to Workbook questions

Trial 1

Artificial sources of light	A	B	F	H	I
natural sources of light	C	D	E	G	

Trial 2

1. make food
2. Learners Answer
3. see

Trial 3

Learner's drawings

Trial 4

Learner's drawing

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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8. How are you going to build on this achievement in subsequent lessons?
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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: Qualities of good drinking water

LB: pages 61 - 67, WB: pages 30-31

CONTENT STANDARD

B2.2.1.4 Recognise water and air as important natural resources.

INDICATOR

B2.2.1.4.1 Find out the qualities of good drinking water.

LEARNING EXPECTATIONS

Learners are expected to:

- ◆ Identify and name some sources of water.
- ◆ State the qualities of good drinking water.
- ◆ Mention at least three importance of drinking water.
- ◆ Perform an experiment to show how to make unclean water clean for domestic use.

NEW WORDS

Sea, river, tap water, lake, lagoon water, natural, artificial, stream.

RESOURCES

Water samples from a river, stream, bore-hole, bottle water, hand lens, pictures of different sources of water, etc.

CORE COMPETENCIES

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

SUBJECT SPECIFIC PRACTICES

Observing, Analysing, Generalising.

HELPFUL LINKS

- <https://cleanleap.com/elements-good-drinking-water>

Background Information

Water is a universal solvent. It is needed by all living organisms for growth and development. Water is very important for animals and plants, they find so many uses for it. Some even say that “water is life”

Without water some activities may not be able to take place.

Water quality is determined by physical, chemical and microbiological properties of water. These water quality characteristics throughout the world are characterized with wide variability. Therefore the quality of natural water sources used for different purposes should be established in terms of the specific water-quality parameters that most affect the possible use of water.

Starter

Let learners recite the poem on rain.

Rain

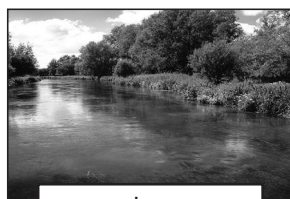
Rain rain go away
Come again another day
Little learners want to play
Rain, rain go away 2x

Teaching Instructions

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

Activity 1

- Put learners into groups. Let them mention and list the sources of water they drink and use in their communities. Examples are:



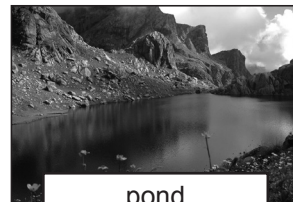
river



rain



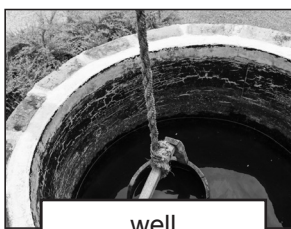
sea



pond



borehole



well



tap

- In their groups, refer learners to page 62 of the Learner's Book to look at the pictures and talk about them.

Activity 2

- Provide two glasses of water to learners. One clean and one dirty/muddy.



- Learners talk about the two different glasses of water; and determine the one which is good for drinking.
- Refer to Activity 1 on page 65 of the Learner's Book. Engage learners to complete the table in groups.

	Water A	Water B
Smell		✓
Colour		✓
Safe for drinking	✓	

Activity 3

- Provide learners with samples of water from different sources like river, pond, well and bottled water. **Caution:** Make sure learners do not taste any of the water samples.
- In their groups, task learners to examine the water samples for the following: solid particles (using hand lens), colour and odour (smell). Each group should present their findings to the whole class.

Activity 4

- Provide learners with samples of good drinking water. Assist them to deduce that good drinking water has no colour, and no odour and is free from solid particles.
- As learners to explain what will happen when they drink water that has particles, odour and colour in it.

Talk About

Learners discuss in convenient groups the need to use clean water for drinking. They should report to the whole class.

What I Have Learnt

Using talking circle strategy learners share with their partners what they have learnt. Invite a number of learners to share with the whole class, what they learn from their partners.

Ask learners questions on what they have learnt and write them on the board.

You can refer them to pages 66 and 67 of the Learner's Book to read out what is outlined.

Project for home or school

Give this assignment to learners to do at home. How do you make unsafe water safe for drinking?

Answer

- By boiling
- By filtering with a clean white cotton cloth
- By adding alum to the water.

Also refer learners to page 66 of the Learner's Book for additional project.

Let them present their assignments to class on the next lesson.

Extension Assessment

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

- What makes water safe for drinking?
- Why should we drink clean water? Give two reasons.
- Give three uses of water.

Assesment for learning

Supervise learners to do the assesment task.
Refer them to pages 30-31 of the Workbook.

Answers to Workbook questions

Trial 1

1. Sea
- 2.

Man-made	Natural
Well	rain
Tap	river
	Sea

Trial 2

1.
 - a. It has no colour.
 - b. It has no taste.
 - c. It has no smell.
2.
 - a. Drinking
 - b. Cooking
 - c. Bathing
3.
 - a. It will make me healthy
 - b. So that I do not fall sick

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?

LESSON 4: Uses of air

LB: pages 68 - 73; WB: pages 32-34

CONTENT STANDARD

B2.2.1.4 Recognise water and air as important natural resources.

INDICATOR

B2.2.1.4.2 Identify uses of air.

LEARNING EXPECTATIONS

Learners are expected to:

- ♦ Identify that air is everywhere.
- ♦ Observe that air occupies space.
- ♦ List the uses of air.

NEW WORDS

Breathe. Conclusion, mixture, demonstrate.

RESOURCES

Balloons, plastic bottle, standing fan, kite, pieces of paper, etc.

CORE COMPETENCES

Communication and collaboration.

SUBJECT SPECIFIC PRACTICES

Observing, generalizing, communicating.

HELPFUL LINKS

- <https://www.youtube.com/watch?v=Vkjz44-aa14>
- <https://www.quora.com/What-are-the-10-uses-of-air-in-our-life>
- <https://www.legit.ng/1143858-10-uses-air-daily-life.html>

Background Information

Air is a natural virtue on earth which sustains life. It exists in the atmosphere and it basically contains a mixture of numerous gases like oxygen, nitrogen and carbon dioxide in higher proportions and much smaller levels of argon, water vapour, and other gases. Air also contains bacteria, suspended dust, and spores. However, the chemistry of air is really fascinating.

Air is a natural resource and is available abundantly. When we talk about the uses of air, the first thing that we can say that it is the

most important element that supports the vitality and well being of all living things on the Earth. Having said that, just like water, the air is very useful and it has a lot of applications.

Starter

Ask learners to stand up and close their mouths and noses and stop breathing. After a few seconds, ask them to tell you how they feel. They should discuss with their friends.

Teaching Instructions

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

Activity 1

- Give each learner an “olonka” plastic rubber. Have learners open the bag and look inside. Let them tell you if there is anything in the rubber.
- Now let learners blow air into it and hold the mouth tight with their hands. Ask them how the rubber looks like. They should tell you what is in the bag now?
- Learners discuss in their groups. Let learners know that even though air is invisible, it takes up space.

Activity 2

- Take learners outside to watch the trees and discuss what is happening to the leaves and branches.
- Let them also observe pieces of papers or rubbers on the floor and tell you what they observed.
- Assist learners to fly a kite and discuss what happens.

Activity 3

- Put out the standing fan or let learners use fan to fan themselves. Let them discuss how they feel.
- Give out balloons to learners. Ask them to blow air into the balloon and tie the end. Ask “What is in the balloon”?

Activity 4

- Refer learners to page 69 of the Learner's Book. Have them look at the pictures and talk about them.

Think and do

Have learners work in convenient groups. Let them discuss what will happen to them if they are put in a salon car with all the doors and windows closed.

Talk About

In their various groups, have learners come out with activities they themselves have been performing which uses air. Let the groups report to the whole class.

What I have learnt

Ask questions to elicit from them what they have learnt after the lesson.

Expected answers: Air is everywhere. Without air we shall die.

Refer learners to read examples of what they learnt on page 73 of the Learner's Book.

Project for home or school

Let learners perform this activity at home.

Refer learners to page 72 of the Learner's book.

Bottle Blow Out

Materials needed:

One small empty plastic soda bottle.

One balloon.

Let them follow the procedure below, with guidance from their parents or guardian:

Push a deflated balloon into the bottle and stretch the open end of the balloon back over the bottle's mouth.

They are to guess what will happen to the balloon if they were to blow up the balloon inside the bottle.

They are also to report if the balloon will break, pop, or do nothing? Task them to write down their findings and present them to class. Have each child blow up their balloon.

In class, during the next lesson, discuss with learners why the balloon did nothing.

This is because air takes up space, the bottle was full of air. When one tries to blow up the balloon, the air trapped inside the bottle prevents the balloon from inflating.

Extension Assessment

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

- Give two reasons why living things can not live without air.
- Draw an aeroplane flying in the air.

Assessment for learning

Supervise learners to do the assessment task. Refer them to pages 32-34 of the Workbook.

Answers to Workbook questions

Trial 1

No, because without air we cannot breathe and may die.

Trial 2

Learner's drawings

Trial 3

- 1 matches to e
2 matches to b
3 matches to d
4 matches to a
5 matches to c

- air

Trial 4

Learners draw an airplane flying in the air.

Diagnostic Assessment

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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: HUMAN BODY SYSTEMS

LESSON 1: Functions of the human body parts

LB: pages 76 - 84; WB: pages 36-38

CONTENT STANDARD

B2.3.1.1 Recognise that different parts of the human body work interdependently to perform a specific function.

INDICATOR

B2.3.1.1.1 Know the functions of the human body parts such as eyes, ears, mouth, nose, arms, legs and hands.

LEARNING EXPECTATIONS:

Learners are expected to:

- ◆ Name and identify the external parts of the human body.
- ◆ Identify the functions of the external parts of the human body.
- ◆ Tell the effects of losing part(s) of the human body.

NEW WORDS

Walk, Eat, See, Hear, Smell, Human, Body parts, Clap, Jump.

RESOURCES

Picture books on human body parts, dolls, cardboard, markers, colored pencils, play dough, videos.

CORE COMPETENCIES

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

SUBJECT SPECIFIC PRACTICES

Observing, Analysing, Evaluating.

HELPFUL LINKS

- https://www.youtube.com/watch?v=q4NIEG_ygiM
- <https://www.youtube.com/watch?v=SFLJFgmD-Ms>
- <https://www.youtube.com/watch?v=hFIGwwE1uAM>

Background Information

The human body part has many parts that we can see. These parts are called the external parts. Examples are the ears, eyes, nose, legs, hand, head.

These parts perform different types of work, for example our hands for writing, eating, throwing, cooking, clapping, etc.

Starter

In pairs, learners examine their partners and ask each other the use of the eyes, nose, mouth, ears hands and the legs. Find out from their partners why the eyes, hands, noses, ears, mouths, hands are important.

Teaching Instructions

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

Activity 1

- Learner's work in pairs. Let them face each other and ask the following questions: Show me your hands, nose, mouth, leg, stomach, etc.
- Each learner is to touch the body part you mentioned.

Activity 2

- Put learners into groups. Let them list the parts of the body and write their functions.
- Refer them to pages 77 and 78 of the Learner's Book to look at the pictures and talk about them. Let them read out loud the functions listed against each body part on page 78.

Activity 3

- Still in their previous groups, engage learners to discuss the effects of losing the eye, losing one leg, losing the hands or the ears.
- Let each group present their findings to the whole class for discussion.

Activity 4

- Task learners to draw and colour any two parts of the body they like.
- Let them display their drawings for a whole class discussion.

Think and do

Learners look at pictures and videos or perform activities using their body parts and explain the importance of their external body parts.

Talk about

Engage learners in the the following questions.

1. What will you do to prevent losing any of your body part(s).
2. How can people who have lost any part of their bodies be helped in the home and school.

What I Have Learnt

Engage learners to tell you what they have learnt during the lesson.

Refer learners to page 84 of the Learner's Book. Go through the points outlined there with them.

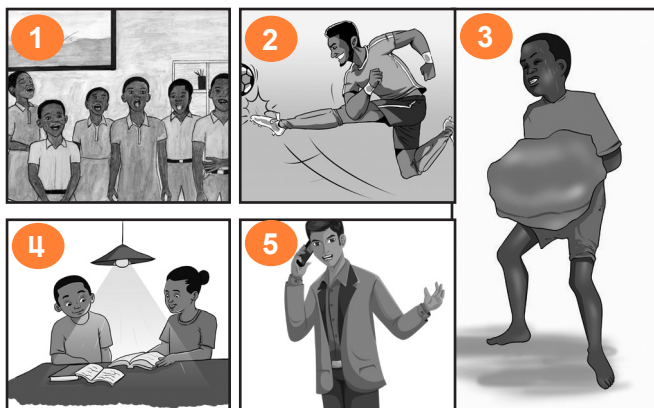
Project for home or school

Parents are encouraged to support their wards by ensuring that learners do their homework and send to school for prompt assessment. Refer to page 84 of the learner's Book.

Extension Assessment

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

Look at the pictures below.



Write the name(s) of the body part(s) being used to perform the above activities (hand, eyes, ears, legs, mouth, head, chest, nose)

Assesment for learning

Supervise learners to do the assesment task. Refer them to pages 82-84 of the Learner's Book and pages 36-38 of the Workbook.

Answers to Review Exercises

Exercise 1

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

Exercise 2

1. We use our hands to **clap**
2. We use our nose to **smell**
3. We use our eyes to **see**
4. We use our legs to **walk**

Exercise 3

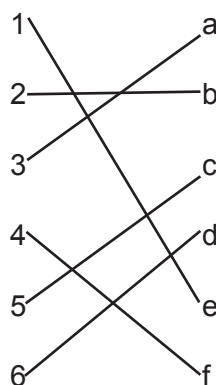
1. Smell → nose
2. See → eyes
3. Clap → hand
4. Jump → leg
5. Eat → mouth

Answers to Workbook questions

Trial 1

1. mouth
2. legs
3. hands
4. eyes
5. ears

Trial 2



Trial 3

1. nose
2. hand/legs
3. writing, clapping
4. seeing, reading
5. ear

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:

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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: THE SOLAR SYSTEM

LESSON 1: The Sun as the source of light and warmth on earth

LB: pages 85 - 88; WB: pages 39-40

CONTENT STANDARD

B2.3.2.1 Show an understanding of the orderliness of the sun, planets and satellites in the solar system as well as the important role of the solar system.

INDICATOR

B2.3.2.1.1: Identify the sun as the main source of light and warmth on earth.

LEARNING EXPECTATIONS:

Learners are expected to:

- ♦ Identify the sun as the main source of light and warmth on earth.
- ♦ Draw the sun and color.

NEW WORDS

Sun, solar system, moon, stars, earth, energy.

RESOURCES

Play dough, cardboard, felt pens, flip charts of the sun, crayon, colored papers, scissors and masking tape.

CORE COMPETENCIES

Critical Thinking and Problem Solving, Communication and Collaboration, Creativity and Innovation.

SUBJECT SPECIFIC PRACTICES

Analysing, Evaluating.

HELPFUL LINKS

- <https://www.youtube.com/watch?v=RzkJkEKV8Yk&t=80s>

Background Information

The sun is the main source of heat, warmth, and light for organisms living on Earth. Without the sun's energy, Earth would be completely dark and freezing cold. Living organisms use heat and light from the sun. Plants need sunlight to make food.

Without the sun's heat and light the earth would be a lifeless ball of ice-coated rock. The sun warms our seas, stirs our atmosphere, generates our weather patterns and gives energy to the growing green plants that provide the food and oxygen for life on earth.

Starter

Ask learners to mention the sources of light and tell you which ones are natural and which ones are artificial.

Teaching Instructions

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

Activity 1

- Put learners into groups. Let them discuss how the sun looks like and where it can be found.
- Let them share their findings with the whole class.

Activity 2

- In their groups, task learners to discuss how they feel when the sun is shining. Do they feel warm or cold? Do they sweat or not?
- Let them share their answers with the other groups.
- Still in their previous groups, let them discuss the importance of the sun to the people on earth. (Expected answers: the sun gives us light, the sun keeps us warm, the sun makes our clothes dry, the sun is used for drying food, etc)

Activity 3

- In their groups, assist learners to discuss and present to the whole class, what they use the light and warmth from the sun for.

Expected answers:

The heat from the sun helps to dry our wet bags, books and shoes quickly.

Activity 4

- Let learners draw and colour the sun as individuals.
- Assist them to display their drawings for discussion

Think and do

Learners in pairs talk about “Why the sun is the main source of heat and light energy?”

Talk About

Refer learners to page 87 of the Learner’s Book. Have learners discuss and answer the questions.

1. How does the sun look like?
2. How do our wet dresses get dried?
3. If there was no sun, what do you think will happen?

What I Have Learnt/Reflection

Ask learners question to find out what they have learnt during the lesson.

You can refer them to page 88 of the Learner’s Book to go through the points outlined there.

Project for home or school

Direct learners to page 88 of the Learner’s Book for the project.

Encourage parents to help their wards to mould the sun by providing material resource for their project .

Extension Assessment

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

1. Write two things you know about the sun. choose the correct answer in the bracket (water, light, rain, heat)
 - a. The sun gives us
 - b. The sun gives us



Identify the activities in the pictures. Use them to answer the questions.

- a. Where does the plant gets energy (light) from?
- b. Why do the clothes on the dry line need sunlight
- c. Animals need the sun to keep them.....
- d. The animals get their warth from

Assesment for learning

Supervise learners to do the assesment task. Refer them to page 88 of the Learner’s Book and pages 39-40 of the Workbook.

Answers to Review Exercises

Exercise 1

1. for drying clothes.
2. it keeps us warm.
3. for drying food crops
4. gives us light during the day

Exercise 2

2, 3, 5

Answers to Workbook questions

Trial 1

1. light
2. heat

Trial 2

1. sun
2. to dry
3. warm
4. the sun

Trial 3

Learner’s drawing

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?

4

Strand:

Forces and energy

Strand 4: FORCES AND ENERGY

Sub-strand 1: SOURCES AND FORMS OF ENERGY

LESSON 1: Uses of energy

LB: pages 90 - 94; WB: pages 42-47

CONTENT STANDARD

B2.4.1.1: Demonstrate understanding of the concept of energy, its various forms, sources and the ways in which it can be transformed and conserved.

INDICATOR

B2.4.1.1.1: Identify everyday applications of energy.

LEARNING EXPECTATIONS

Learners are expected to:

- ◆ Identify everyday applications of energy.
- ◆ Explain what happens if we have no energy.
- ◆ Create posters of persons engaging in activities involving energy.

NEW WORDS

Energy.

RESOURCES

Pictures / videos / charts drawings of activities involving the use of energy, ball, etc.

CORE COMPETENCIES

Cultural Identity and Global Citizenship, Communication and Collaboration, Critical Thinking and Problem Solving, Creativity and Innovation.

SUBJECT SPECIFIC PRACTICES

Analysing, Observing, Creating.

HELPFUL LINKS

- <https://study.com/academy/lesson/what-is-energy-lesson-for-kids.html>

Background Information

Everyday applications of energy include watching television, washing of clothes, heating and lighting the home, running appliances and cooking. Energy is an essential part of our daily

lives. Food is fuel for our bodies' energy needs like muscle power. We need energy to help repair, build and maintain cells and body tissues and support the external activities. If we lack energy, it means certain nutrients like iron will be missing. Our red blood cells cannot pump blood to various parts of our body.

The body needs energy for everything it does: breathing, eating, sleeping, walking, working and any other activity that we perform in our everyday lives. This energy is provided by food in the form of calories. The body uses energy to eat, digest and metabolize food, and to burn kilojoules during physical activity, but it also needs a large amount of energy to exist in a state of complete rest.

Starter

Engage learners to jump, clap hands, push objects, walk and switch on lights in the class. Let them share their observations in class.

Teaching Instructions

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

Activity 1

- Put learners into convenient groups.
- Task each group to find out what helped them to do all the activities in the starter above.
- Let each group share their findings with the whole class.

Activity 2

- Show learners pictures or videos of people engaging in activities that involve the use of energy. Example, running, pounding fufu, skipping, etc.
- Refer them to page 91 of the Learner's Book. Let them look at the pictures and talk about them in groups.

Activity 3

- Take learners outside the classroom.
- Let them stand in a circle.
- Give balls to two learners who should stand in the middle.
- They throw the ball between them and the other classmates in the circle.
- Refer them to the Activity 1 on page 93 of the Learner's Book to do the activities there.

Activity 4

- Learners are to draw or make a poster of someone engaging in an activity that involves energy.
- Let them display their poster/drawing for a class discussion.

Think and do

Have learners work in groups to discuss:

- Why energy is essential part of our daily lives.
- Ask learners what happens if we do not have energy. Take feedback from learners.

Talk About

Engage learners in a discussion to talk about what will happen to them if they do not eat for three days.

What I Have Learnt

Reflect with learners on what they have learnt by asking them questions. Support them to read the text on page 94 of the Learner's Book.

Project for home or school

Explain to learners what they will do under Project for home or school. Let learners share their work in class for discussion.

Extension Assessment

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

1. Energy is the ability to do
2. List down three activities that involve energy in:
 - a. home
 - b. school

Assessment for learning

Supervise learners to do the assessment task. Refer them to pages 93 - 94 of the Learner's Book and pages 42-47 of the Workbook.

Answers to Review Exercises

Exercise 1

1. Energy

Exercise 2

Home, School, Church, Market, Mosque.

Answers to Workbook questions

Trial 1

1. Learner's colour drawings (Give marks according to beauty of colouring)

2. A. energy
B. energy
C. energy

3. work

Trial 2

Learner's drawing

Trial 3

1. Learner's drawing
2. walking
cooking

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?

LESSON 2: How objects become hot or cold

LB: pages 95 - 98; WB: pages 48-49

CONTENT STANDARD

B2.4.1.2: Show understanding of the concept of heat in terms of its importance, effects, sources and transfer from one medium to another.

INDICATOR

B2.4.1.2.1: Understand that objects become hot or cold through the loss or gain of heat.

LEARNING EXPECTATIONS

Learners are expected to:

- ♦ Observe how things lose heat.
- ♦ Observe how things gain heat.

NEW WORDS

Heat, energy, lose, gain.

RESOURCES

Spoon, Kettle, water, fire, candle, matches

CORE COMPETENCIES

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

SUBJECT SPECIFIC PRACTICES

Observing, Experimenting, Generalising.

Background Information

Objects become hot or cold through the loss or gain of heat. Heat is a form of energy. When an object loses heat the temperature reduces. The temperature rises when an object gains heat. Hot objects have high energy and cold objects have less energy.

Starter

Ask learners in groups to mention cold objects and hot objects they see every day. Take feedback from learners and write the answers on the board.

Teaching Instructions

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

Activity 1

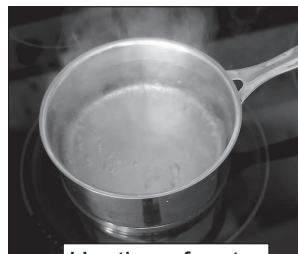
- Put learners into sizeable groups and let them rub their palms together.
- Let them place their hands on their cheeks. Ask learners about their observations.

Activity 2

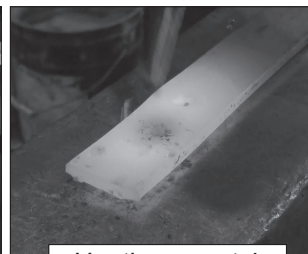
- Refer learners to pages 95 - 97 of the Learner's Book to observe the pictures.
- Learners should discuss what they are seeing in the pictures about gaining and losing of heat.

Activity 3

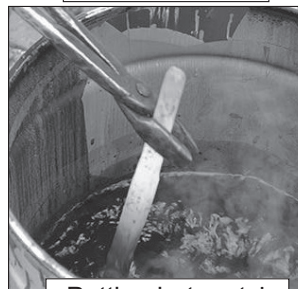
- Engage learners in a practical activity by creating heat and losing heat. Eg. Boiling of water, burning candle, adding cold water to hot water, leaving a hot substance to stand for some time.



Heating of water



Heating a metal



Putting hot metal into cold water



Adding cold water to hot tea

Discuss with learners their observations. Provide learners with water and ask them to plan how to make it hot or cold.

Think and do

Have learners work in pairs. Let them discuss how metal gets hot.

Talk About

Discuss with learners questions under talk about on page 97 of their learners book. How will you make hot water cool. Make sure every learner contribute.

What I Have Learnt

To reinforce concept of lose or gain of heat, find out from learners what they have learnt. Let them be in pairs/peers to present their ideas.

Project for home or school

Encourage learners to find out how heat is gained or lost. They should report to class for discussion.

Extension Assessment

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

1. Write three things that are:
 - a. cold
 - b. hot
2. What do you feel when you rub your palms together?

Assesment for learning

Supervise learners to do the assesment task. Refer them to page 98 of the Learner's Book and pages 48-49 of the Workbook.

Answers to Review Exercises

Exercise 1

- 1a. gain
- b. lose

- 2a. True

Answers to Workbook questions

Trial 1

1. True
2. False
3. learners answers.

Trial 2

Write 3 things that are cold

1. Ice cream
2. Ice cubes
3. unplugged iron

Write 3 things that are hot

1. heated metal
2. boiled water
3. burning wood

Diagnostic Assessment

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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: Using electricity safely

LB: pages 99-103; WB: pages 50-51

CONTENT STANDARD

B2.4.2.1: Demonstrate knowledge of generation of electricity, its transmission and transformation into other forms of energy.

INDICATOR

B2.4.1.1: Recognize the importance of safety when using electricity.

LEARNING EXPECTATIONS:

Learners are expected to:

- ◆ Mention electrical items they use at home.
- ◆ Recognise the importance of safety when using electricity.
- ◆ Identify basic safety tips on electricity.

NEW WORDS

Safety, electricity.

RESOURCES

Charts showing safety ways of using electricity. Video and pictures of safe / unsafe use of electricity.

CORE COMPETENCIES

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

SUBJECT SPECIFIC PRACTICES

Analysing, Evaluating, Observing, Generalising.

HELPFUL LINKS

- <https://www.youtube.com/watch?v=Pr9YntO7V1U>
- <https://www.youtube.com/watch?v=aCvScgl1MCs>
- <https://www.bchydro.com/safety-outages/electrical-safety/safety-at-home/safety-for-kids.html>
- <https://www.youtube.com/watch?v=eIYVTUCpVP4>

Background Information

Electricity is a form of energy. It helps all electrical items to work well. When using electricity, safety is important. This prevents accidents at home, school and work places. Due to safety, electrical gadgets are covered with plastics and wooden materials. Plastics and wooden materials do not allow electricity to pass through.

Starter

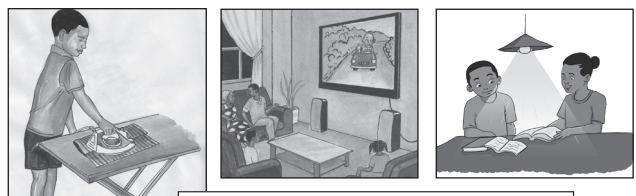
Ask learners to come out with electrical items they use in their homes. Let them do it in groups, pairs or individually. Take their responses as they present their work.

Teaching Instructions

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

Activity 1

- Show learners pictures or videos on safe use of electricity in the home, school and community.
- Refer to pictures on pages 99 in the Learner's Book. Let them talk about the pictures.



some ways of using electricity

Activity 2

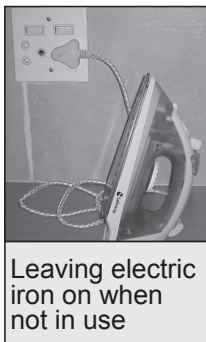
- Show learners pictures of unsafe use of electricity in the home, school and community.
- Refer to pictures on page 100 in the Learner's Book. Let them talk about the pictures.



touching hot iron by way of checking hotness



touching electrical items with wet hands



Leaving electric iron on when not in use

Activity 3

- Let learners compare Activities 1 and 2. Let them tell you any similarities or differences and find out which ones are safe to do.

Activity 4

- Guide learners to mention safety ways of using electricity eg. Wearing of insulator, and plugging sockets with the aid of insulating materials rather than metals.

Think and do

Have learners find out:

- Why it is important to wear shoes or slippers when ironing.
- Why its necessary to keep the hands clean and dry before plugging electrical gadgets in the socket.

They should work in groups of five and report to the whole class.

Talk About

Engage every learner to contribute to questions under talk about. The questions will promote critical thinking. Refer to page 101 of the Learner's Book.

What I Have Learnt

Have plenary discussion on importance of safety when using electricity. Teacher reinforces learners' ideas on the safe use of electricity.

Let learners form two circles (inner/outer) and turn to each other for discussion. They should write what they have learnt in their jotters.

Project for home or school

Explain to learners how they are going to find out why safety is important when using electricity. Encourage them to report their findings in class for discussion.

Extension Assessment

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

- Why must One not tauch naked (bare) electrical wires
- Why the handle of cooking items are made of plastics and woods

Assesment for learning

Supervise learners to do the assesment task. Refer them to pages 102-103 of the Learner's Book and page 50 of the Workbook.

Answers to Review Exercises

Exercise 1

- Safe use of electricity: a, c, e and f.
- b. They do not allow heat and electricity to pass through.

Exercise 2

- The learner may tick 1, 2, or 3.
The learner may tick all.
- Accept the answers.

Answers to Workbook questions

Trial 1

- True
- True
- A, because children must avoid electrical devices.

Trial 2

Accept appropriate drawing from learners

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?
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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: How batteries work

LB: pages 104 -109; WB: pages 52-55

CONTENT STANDARD

B2.4.2.2: Know the functions and assemblage of basic electronic components.

INDICATOR

B2.4.2.2.2: Investigate the function of batteries in electronic devices.

LEARNING EXPECTATIONS

Learners are expected to:

- ◆ Mention common examples of household electronic appliances.
- ◆ Investigate the function of batteries in electronic devices.

NEW WORDS

Battery, light, sound, movement, energy, electronic, device.

RESOURCES

(batteries, electronic toys), Pictures / video
Charts / drawings.

CORE COMPETENCIES

Personal development and Leadership,
Communication and collaboration, Critical
Thinking and Problem Solving.

SUBJECT SPECIFIC PRACTICES

Manipulating, Recording.

HELPFUL LINKS

- <https://www.youtube.com/watch?v=6ipWmdB7xxE>
- <https://www.science.org.au/curious/technology-future/batteries>

Background Information

Electricity or batteries are used in electronic devices to help them work. Batteries have energy in them called chemical energy. They have two main terminals called positive and negative terminals. Batteries are of different sizes and shapes. They can explode and leak.

Starter

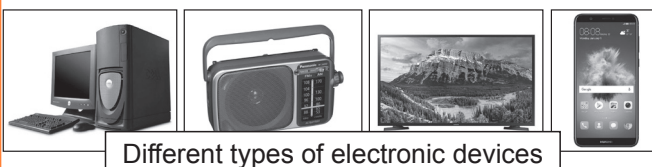
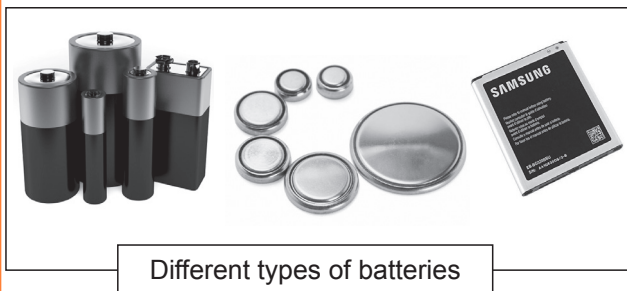
Ask learners to write or mention examples of household electronic devices. Take feedback and write their answers on the board.

Teaching Instructions

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

Activity 1

- Show learners pictures or real batteries and electronic devices. Let them share their ideas in a group discussion.



Activity 2

- Provide learners with toys that operate on batteries.
- Engage learners in an activity of fixing batteries in the toys provided.
- Let them observe and record their findings. Share their findings in groups or in pairs.

Activity 3

- Find out from learners how toys will behave without batteries.
- Let learners in groups discuss other gadgets in the home that use batteries.
- Let each group present their report for a whole class discussion.

Activity 4

- Supervise learners to draw and colour any electronic gadget of their choice. They should display and talk about their drawings.

Think and do

Have learners work in pairs to discuss why batteries are put in toys and other electronic devices.

Talk About

Refer learners to page 106 of the Learner's Book to discuss the questions:

1. How will a clock behave if it has no battery in it?
 2. Can we use a car battery in a toy car?
- Let them discuss in pairs.

What I Have Learnt

Discuss with learners what they have learnt about how batteries work. Let them share their ideas in groups/pairs.

You can refer them to page 109 of the Learner's Book to read what is provided.

Project for home or school

Explain to learners how they will do the Project for home or school.

Let learners find out how they can build a paper circuit using a graphite pencil, battery and LED.

Refer them to page 108 and 109 for instructions.

Extension Assessment

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

1. Mention three uses of batteries
2. Batteries in electronic devices can
Produce
Make.....
Produce.....
Cause.....

Assesment for learning

Supervise learners to do the assesment task. Refer them to pages 107 of the Learner's Book and pages 52-55 of the Workbook.

Answers to Review Exercises

Exercise 1

Learner's drawing

Exercise 2

1. b, d
2. battery
3. sound
move
light

Answers to Workbook questions

Trial 1

Learner's drawing

Learner's correct description.

Trial 2

1. light
2. move
3. sound
4. mobile phone, radio, toy cars (any)
5. True
6. False
7. True
8. False

Trial 3

Learner's drawing

Trial 4

1. light
2. sound
3. music
4. movement

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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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 110 - 112; WB: pages 56-57

CONTENT STANDARD

B2.4.3.1: Know that movement is caused by applied forces due to the release of stored energy.

INDICATOR

B2.4.3.1.1: Discover the effects of forces on object.

LEARNING EXPECTATIONS

Learners are expected to:

- ◆ Discover the effects of forces on objects.
- ◆ Explain the meaning of force.

NEW WORDS

Force, push, pull, movement, describe.

RESOURCES

Pictures/chars/video showing the effects of forces on objects.

CORE COMPETENCIES

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

SUBJECT SPECIFIC PRACTICES

Manipulating, Analysing, Generating.

HELPFUL LINKS

- <https://www.youtube.com/watch?v=8Zqda2jBoac>
- <https://www.youtube.com/watch?v=mEg5GOVpUIE>
- <https://betterlesson.com/lesson/640138/what-is-force>

Background Information

Forces act on objects in everyday life. Force is a push or pull on objects. Forces can cause objects to move to different places.

Starter

Ask learners what will happen if a door is pushed, if a ball is thrown at the wall or if a chair is pushed.

Teaching Instructions

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

Activity 1

- Engage learners in different activities that involve effects of forces Example:
 - * Squeezing empty plastic bottles.
 - * Pulling a rope.
 - * Kicking a ball.
 - * Pushing objects.
 - * Folding of papers.

Activity 2

- Put learners in convenient groups.
- Let them write the changes they observed from the activities they performed.
- Emphasise that those changes are effects of forces.

Activity 3

- Help learners to summarize the effects of forces by using concept map or mind map. Encourage learners to present their ideas in class for discussion.

Think and do

In pairs, have learners discuss the effects of forces on objects. Also refer them to the activity on page 111 of the Learner's Book.

Talk About

Elaborate on learners ideas to discuss Talk About questions on page 112 of the Learner's Book .

What I Have Learnt

Have your lesson reflection with learners on what they have learnt. Let learners share with you what they know about effects of forces. Write some on the board for learners to copy into their books.

Extension Assessment

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

1. Mention four things that force can do to objects
2. Draw a friend pushing a car

Assesment for learning

Supervise learners to do the assesment task. Refer them to page 112 of the Learner's Book and pages 56-57 of the Workbook.

Answers to Review Exercises

Exercise1

Picture A Pull

Picture B Push

Answers to Workbook questions

Trial 1

1. force
2. force

Trial 2

1. move
2. direction
3. shape

Trial 3

Learner's drawing

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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: Simple Machines

LB: pages 113 - 117; **WB:** pages 58-60

CONTENT STANDARD

B2.4.3.2: Recognise some simple machines and their uses in making work easier.

INDICATOR

B2.4.3.2.1: Identify simple machines used for specific work.

LEARNING EXPECTATIONS

Learners are expected to:

- ◆ Identify simple machines.
- ◆ Demonstrate how to use simple machines.
- ◆ Draw their favourite simple machines.

NEW WORDS

Simple machines, faster.

RESOURCES

Pictures or real simple machines, like scissors, bottle opener, tin cutter, screwdriver, etc.

CORE COMPETENCIES

Communication and Collaboration, Digital Literacy, Critical Thinking and Problem Solving, Personal Development and Leadership.

SUBJECT SPECIFIC PRACTICES

Observing, Classifying, Manipulating.

HELPFUL LINKS

- <https://www.youtube.com/watch?v=ByLXZCP4ixc>

Background Information

Simple machines are important for our daily work at home, school and work places. There are different types of simple machines. These machines make work easier and faster. They do not have complex parts.

Starter

Ask learners to tell you materials or tools that a farmer uses in his farm: cutlass, hoe. Tell them that these are simple machines. Ask learners to call out two simple machines they know. Write some on the board.

Teaching Instructions

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

Activity 1

- Display simple machines for learners in groups to identify their names. Examples scissors, bottle opener, tin cutter, screwdriver, broom, etc.
- Refer them to page 113 of the Learner's Book to look at the pictures and talk about them.

Activity 2

- Let learners write or say what simple machines are and give examples. Take learners feedback and write their answers on the board.

Activity 3

- Show simple machines to learners at a time. Let them tell you their uses when you raise any of them up.
- Demonstrate to learners how to use the simple machines. Eg. Cutting a piece of paper/cloth with a scissors, etc.
- Guide learners to practise how to use simple machines. Ensure they do not use sharp machines.

Activity 4

- Engage learners to design and make their favourite machines using appropriate materials.
- Let them draw and colour their machines. Motivate your learners to present their drawings for discussion.

Think and do

Have learners work in pairs and discuss why they should ask permission before using simple machines.

Talk About

Let learners brainstorm and discuss the Talk About questions on page 115.

1. What will happen if we do not have simple machines at home?
Take feedback from learners.

What I Have Learnt

Reinforce the use of simple machines for specific work. Ask learners questions for them to come out with what they have learnt. Let them write some of the points below in their jotters.

1. Simple machines make work easier and faster.
2. When I sweep, I use a simple machine called broom.

Project for home or school

Encourage learners to do the project work outlined on page 117 of the Learner's Book.

1. Design and make a simple machine of your choice using cardboards, paper.
2. Draw your machine and colour it.
3. Talk about your drawing to your friends.

Extension Assessment

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

Match the simple machines to their pictures

1. Bottle opener a



2. Pair of scissors b



3. Spanners c



4. Cutlass d



Assesment for learning

Supervise learners to do the assesment task. Refer them to page 116 of the Learner's Book and pages 58-60 of the Workbook.

Answers to Review Exercises

Exercise 1

Bottle opener → c
Spanner → d
Cutlass → a
Pair of scissors → b

Exercise 2

1. Faster
2. Bottle opener, pair of scissors, spanner, wheel barrow, broom, claw hammer, screwdriver, Accept any five.

Exercise 3

1. Accept correct drawings of 2 simple machines.

Answers to Workbook questions

Trial 1

1. c
2. a
3. d
4. b

Trial 2

Learner's drawing

Trial 3

1. Spanners, bottle openers, scissors, cultlass, (Take other correct answers from learners)
2. pin, name, man, same, him, nine (Take other correct words from learners)
3. a. It makes work faster.
b. It makes work easier.

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5

Strand:

**Humans and the
environment**

Strand 5: HUMANS AND THE ENVIRONMENT

Sub-strand 1: PERSONAL HYGIENE AND SANITATION

LESSON 1: Keeping the body clean

LB: pages 120 - 125; WB: pages 62-63

CONTENT STANDARD

B2.5.1.1 Recognise the importance of personal hygiene.

INDICATOR

B2.5.1.1.1 Explain how to keep the body clean and describe why it is important.

LEARNING EXPECTATIONS

Learners are expected to:

- ◆ Explain why we must keep our body clean.
- ◆ Identify materials for keeping our bodies clean.

NEW WORDS

Scissors, nail cutter, germs, frequently.

RESOURCES

Scissors, toothpaste, toothbrush, chewing sponge, chewing stick, soap, water, nail cutter, comb, etc,

CORE COMPETENCIES

Communication and collaboration, critical thinking.

SUBJECT SPECIFIC PRACTICES

asking, observing, evaluating.

HELPFUL LINKS

- <https://www.youtube.com/watch?v=-CIYTf7Oky4>
- <https://www.youtube.com/watch?v=xcYs6ubgrug>
- <https://www.youtube.com/watch?v=qDxDLZ8g438>

Background Information

Good personal hygiene involves keeping all parts of the external body clean and healthy. It is important for maintaining both physical and mental health.

In people with poor personal hygiene, the body provides an ideal environment for germs to grow, leaving it vulnerable to infection.

Proper grooming and healthy personal habits can help you ward off illnesses and feel good about yourself.

Starter

Lead learners to recite a poem on keeping clean.

Keeping clean

Every morning we get up
There are things that we must do!
Keeping clean can be much fun
For you and everyone!
We wash our hands, we rub and rub
We wash our faces as you can see.
Brush up and down, up and down
Come brush your teeth with me!

Teaching Instructions

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

Activity 1

- Put learners into groups. Let them discuss and mention activities that help in keeping the body clean. Examples: brushing the teeth, bathing, cutting and combing the hair, trimming the finger nails, washing and ironing their dresses, etc.
- Let each group compare their answers with the others.

Activity 2

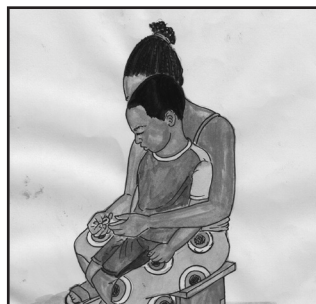
- Still in their groups, Engage learners in an activity to identify items for cleaning the body such comb, scissors, towel, soap, sponge.

Activity 3

Let learners match the items listed in Activity 2 to the activities they are used for in Activity 1.

Activity 4

- Let learners mention some activities they undertake with their nails. Let them know that it is important to keep the finger nails clean because of these activities its used for.
- Demonstrate how to trim the finger nails using a nail cutter in order to keep the nails clean. Call one learner and demonstrate with him or her for the others to watch.



Activity 5

- Engage learners in a group activity to demonstrate how to comb the hair and clean the teeth.

Think and do

Let learners work in pairs. Let them discuss what will happen if they don't clean their teeth for two days.

Talk About

Have learners work in pairs and talk about the questions below.

1. Why do you think it is not good to share your comb and towel with your friends?
2. What will happen if you leave your finger nails without cutting it for a long time?
3. What do you think will happen if your friend keeps his/her hair bushy?

What I Have Learnt

Ask learners questions for them to come out with what they have learnt. Write them on the board and ask them to copy into their jotters or note books.

1. We have to keep ourselves clean at all times.
2. Parts of our bodies such as the nails, hair, teeth must be cleaned always.
3. We need to use soap, sponge, water to keep clean.

Also refer them to page 125 of the Learner's Book for additional points.

Project for home or school

Refer learners to page 124 of the Learner's Book for the home project.

Extension Assessment

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

1. What item is used in cutting our finger nails?
2. Why do we have to keep our finger nails clean and short?
3. What items is used to cut our hair
4. Why do we need to keep our hair clean
5. Write four (4) ways you can keep your body clean.

Assesment for learning

Supervise learners to do the assesment task. Refer them to page 123 of the Learner's Book and pages 62-63 of the Workbook.

Answers to Review Exercises

Exercise 1

1. → toothbrush
2. → scissors
3. → comb
4. → nail cutter

Exercise 2

1. a. By bathing
b. By brushing our teeth
c. By trimming our hair
d. By cutting finger nails
2. germs, play
3. nails, germs, cut

Answers for Workbook

Trial 1

1. nail cutter.
2. to keep them free from germs.
3. scissors, hair clipper.
4. to prevent ringworm.

Trial 2

1. cutting my hair.
2. brushing my teeth.
3. taking my bath regularly.
4. cutting my nails.

Trial 3

Learner's drawing

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LESSON 2: Keeping the classroom and school compound clean.

LB: pages 126 - 129; **WB:** pages 64-65

CONTENT STANDARD

B2.5.1.1: Recognize the importance of personal hygiene.

INDICATOR

B2.5.1.1.2 Know the need for keeping classrooms and school compound clean.

LEARNING EXPECTATIONS

Learners are expected to:

- ◆ Tell how to keep the classrooms and school compound clean.

NEW WORDS

Clean, Sweep, Dustbin, Rubbish, Paper, Wipe, Window, soap

RESOURCES

Pictures, Videos, Broom, Dustpan, window

CORE COMPETENCIES

Critical Thinking and Problem Solving, Collaboration and Communication, Personal Development and Leadership, Digital Literacy.

SUBJECT SPECIFIC PRACTICES

Analysing, Evaluating.

Background Information

The most important benefit of a clean classroom is the fact that it maximizes the learning experience of the students. According to recent studies, dirty environments negatively affect the learning of students and in turn, the overall performance in the classroom. Students who are in environments that observe cleanliness closely get better grades and have higher rates of graduation..

The number of absences due to sickness by teachers and students are higher if the classrooms are not properly kept clean. Hiring a professional to do the cleaning of the classrooms will ensure that the classrooms are free from agents that may cause diseases. All the areas are kept clean, disinfected and sanitized all the year-round.

This protects the health of those who are in the school, especially during flu season.

Starter

Engage learners in a whole class activity to mention items used in their homes for cleaning. Write their responses on the board.

Teaching Instructions

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

Activity 1

- Have learners observe the surroundings around them, Example ceiling, windows, floor, walls, cupboards and their seating areas.
- In groups of guide learners to talk about what they observed.
- Let each group share their findings with the class for peer review.

Activity 2

- Take learners outside to observe the school surroundings.
- Let them find out the places that are weedy, dirty, muddy, smelly or neat.

Activity 3

- Back to that classroom, put them into their previous groups to discuss what they found about the compound.
- Each group should present their findings to the class.

Activity 4

- Still in their previous groups. Let learners discuss why it is important to keep the classroom and school compound clean.
- Let them present their report for a whole class discussion.
(avoid sickness, to destroy the hiding places of mosquitoes, snakes, wall geckos and to ensure good ventilation).

Activity 5

- Have learners draw one of the items used in cleaning the classroom and school compound.
- Let them display their drawing for a class discussion.



some items used in cleaning

Think and do

Have learners work in pairs to discuss why they have to destroy the breeding places of mosquitoes.

Talk About

Have learners work in pairs or groups to answer this question.

1. What will happen if you don't clean your classroom every day?

What I Have Learnt

Allow learners to talk about what they have learnt by writing it on pieces of paper to read or display in class. Summarize the key learning concepts to learners and have them write them in their books.

Refer to page 129 of the Learner's Book.

Project for home or school

Learners are to observe the items their parents use to clean their homes. They draw two of the items and colour them.

- Learners are to create a new thing that can be used to clean the classroom.

Extension Assessment

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

1. Draw and colour a clean classroom.
2. Why must you keep a classroom clean?

Assessment for learning

Supervise learners to do the assessment task. Refer them to page 128 of the Learner's Book and pages 64-65 of the Workbook.

Answers to Review Exercises

Exercise 1

This is a matching exercise. Learners will draw lines from the picture to touch the respective words to show their understanding.

1. → dust pan
2. → broom
3. → duster
4. → dust bin

Exercise 2

Accept appropriate drawings from learners.

Answers to Workbook questions

Trial 1

Learner's drawing

Trial 2

Learner's drawing

Trial 3

1. a. broom
b. dustbin
c. duster
d. dust pan
2. a. sweeping our environment.
b. putting all rubbish in a dustbin.
3. a. to keep us healthy.
b. to remove dirt to avoid germs.

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Strand 5: HUMANS AND THE ENVIRONMENT

Sub-strand 2: DISEASES

LESSON 1: Ringworm disease

LB: pages 130 -135; **WB:** pages 66-67

CONTENT STANDARD

B2.5.2.1 Know common diseases of humans, causes, symptoms, effects and prevention.

INDICATOR

B2. 5.2.1.1 Identify causes and prevention of ringworm.

LEARNING EXPECTATIONS:

Learners are expected to:

- ♦ Identify the causes of ringworm disease.
- ♦ Explain how the disease can be prevented.

RESOURCES

Pictures of people suffering from ringworm.

NEW WORDS:

Ringworm, fungi.

CORE COMPETENCIES

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

SUBJECT SPECIFIC PRACTICES

Observation, Prediction.

HELPFUL LINKS

- <https://www.healthline.com/health/ringworm#causes>
- <https://www.medicalnewstoday.com/articles/158004#1>

Background Information

Ringworm is a common infection of the skin and nails that is caused by fungus. The infection is called “ringworm” because it can cause an itchy, red, circular rash. Ringworm is also called “tinea” or “dermatophytosis.” The different types of ringworm are usually named

for the location of the infection on the body. Areas of the body that can be affected by ringworm include: feet, groin, inner thighs, or buttocks, scalp, hands, finger nails, beard, arms and Legs.

Facts about Ringworm

- Ringworm is nothing to do with worms.
- Ringworm is caused by a fungus that eats keratin, a protein found in skin, hair, and nails.
- Children under 15 are particularly susceptible to ringworm.

Starter

Show pictures of people suffering from skin diseases and let children identify them.

Teaching Instructions

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

Activity 1

- Show pictures of people suffering from ringworm to learners. Refer them to pages 130 and 131 of the Learner’s Book to look at the pictures and talk about them.



ringworm in the head



ringworm on the face

Activity 2

- Find out from learners who has contracted the ringworm infection before. Ask them to share their personal experiences with the class.

Activity 3

- Put learners into sizeable groups to brainstorm on the possible causes of ringworm and other skin diseases like eczema. (Causes: ringworm is caused by a fungi, coming in contact with soil/sand that is infected, playing with an infected pet, or sharing belongings with someone suffering from the disease.)

Refer learners to page 131 of the learners book.

- Let each group discuss their outcomes with the whole class.

Activity 4

- In their previous groups, ask learners to discuss what to do to prevent themselves from contracting any skin disease. Example, observing good personal hygiene and not sharing personal items with an infected person.

Activity 4

Making posters on ringworm disease

- In groups, share materials such as cardboard, pencils and poster colours to learners.
- Write these messages for them: bath regularly, avoid sharing clothes with others" wash your hands after playing in the sand", etc.
- Assist them to copy any one of the message and design it.
- Ask them to colour the poster beautifully and display them for a whole class discussion.

Talk About

Refer learners to page 133 of the Learner's Book. Engage them to discuss the question stated under talk about.

- Can I get ringworm when I play with someone suffering from the disease?
- What must I do when I see my friend suffering from ringworm?.

What I Have Learnt

Ask learners questions to find out what they have learnt.

Lead them to read what is written on page 135 of the Learner's Book as follows:

- Ringworm is a disease that affects the skin.
- It can spread when we use personal items of people that are suffering from the disease.
- We must keep ourselves clean and avoid sharing personal items with others.

Project for home or school

Under project for home and school, learners are expected to make a poster on ringworm disease. Refer them to page 135 of the Learner's Book for instructions.

Extension Assessment

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

- Say whether each of the following statements about the ringworm disease is **true** or **false**.
 - It is caused by a germ called bacteria.
 - It can be spread through food.
 - It affects the skin.
 - It spreads in clean environments.
 - It can affect some animals

Assesment for learning

Supervise learners to do the assesment task. Refer them to pages 133 - 134 of the Learner's Book and pages 66 - 67 of the Workbook.

Answers to review exercise

Exercise 1

- skin, fungi, hands, bath and clothes in that order.
- wear clean clothes
wash my hands with soap
keep myself neat at all times

Exercise 2

- dirty clothes
 - animals
 - athlete's foot disease
 - head
 - avoid contact with infected persons

Answers to Workbook questions

Trial 1

Suggested answers

- I will bath regularly.
- I will wear clean clothes.

- c. I will wash my clothes always
- d. I will wash my hands with soap and water when they get dirty.
- e. I will avoid sharing personal belongings with infected people.
- f. I will not play with animals suffering from ring worm.

Trial 2

- a. False
- b. False
- c. True
- d. False
- e. True

Trial 3

- 1 Learners to draw
- 2 Suggested answers
 - a. He/she does not bath regularly.
 - b. He/she does not wear clean clothes.
 - c. He/she does not wash his hands with soap and water when they get dirty.
 - d. He/she shares personal belongings with infected people.
 - e. He/she plays with animals suffering from ring worm.
 - f. He/she plays with people suffering from the ring worm disease.

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LESSON 2: Prevention of common water-borne diseases

LB: pages 136 - 141; **WB:** pages 68-69

CONTENT STANDARD

B2.5.2.1: Know common diseases of humans, causes, symptoms, effects and prevention.

INDICATOR

B2.5.2.1.2: Name some common water-borne diseases and their prevention.

LEARNING EXPECTATIONS

Learners are expected to:

- ◆ Recognise some common water-borne diseases.
- ◆ Identify how to prevent water-borne diseases.

NEW WORDS

Disease, Tiny, micro-organisms, cholera, typhoid, diarrhoea

RESOURCES

Water samples from pipe, well, river, pictures, videos.

CORE COMPETENCIES

Critical thinking and Problem Solving, Collaboration and communication, Personal Development and Leadership, Digital literacy.

SUBJECT SPECIFIC PRACTICES

Predicting, Analysing, Generating.

HELPFUL LINKS

- <https://lifewater.org/blog/7-most-common-waterborne-diseases-and-how-to-prevent-them/>
- <https://www.health.state.mn.us/diseases/waterborne/basics.html>

Background Information

Each year, waterborne diseases afflict hundreds of millions of people, primarily those living without safe, accessible water in developing countries.

Of the seven most common waterborne diseases in the world, diarrhea is the central symptom.

Waterborne diseases are illnesses caused by microscopic organisms, like viruses and bacteria, that are ingested through contaminated water or by coming in contact with feces.

If every person on the planet was able to practice safe sanitation and hygiene and have access to clean water, these diseases would not exist.

Starter

Engage learners in a whole class discussion to find out why we need to drink and use clean water.

Write their responses on the board.

Teaching Instructions

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

Activity 1

- Display different samples of water (well, river, pipe, bottle water, dirty water) in front of the class for learners to observe. Let them come round in turns.
- Put them into groups to discuss what they observed. Let them identify the ones that are dirty and types that are clean.
- Let them identify the type of water that is likely to contain micro-organisms that causes disease.
- Each group should present their findings to the class for review.
- Explain to learners that unclean water contains micro-organisms which we cannot see that causes diseases.

Activity 2

- Refer learners to page 136 of the Learner's Book to look at the pictures, talk about them and answer the questions there.

Activity 3

- Show pictures or videos of people suffering from diarrhoea, cholera, and typhoid to learners to watch/observe.
- Let them give you a feedback of what they saw and what might cause that.

Activity 4

- In groups let learners discuss how they can prevent themselves from contracting water-borne disease. Examples are by boiling and filtering water, etc.)
- Let each group show their work to each other to share ideas.

Activity 5

- Have learners design and colour a poster to show to you and their friends on what they will do to prevent water-borne diseases.

Think and do

Have learners discuss how they will prevent themselves from getting water-borne diseases. Let them work in groups of five. They later report to the whole class.

Talk About

Have learners talk about what will happen to them if we do not wash our drinking cups everyday before we use them?

Have learners work in pairs or in groups.

What I have Learnt

Ask learners questions to talk about what they have learnt.

Summarize the key learning ideas for learners to copy into the books.

1. I have learnt about water-borne diseases such as cholera, dysentery and typhoid and how I can prevent these diseases from attacking me.
2. I also learnt that if I show signs of cholera, typhoid or diarrhoea, I must let my parents take me to the hospital to see the doctor.

Project for home or school

Let learners draw and colour a water bottle which they will use for school.

Additionally, refer them to page 141 of the Learner's Book for a project.

Extension Assessment

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

1. What will happen to you if you drink water which contains germs
2. Write 3 ways that you can prevent water-borne diseases
3. Write two ways you will feel when you are attacked by water-borne diseases

Assesment for learning

Supervise learners to do the assesment task. Refer them to page 140 of the Learner's Book and pages 68-69 of the Workbook.

Answers to Review Exercises

Exercise 1

1. Diarrhoea
2. Cholera
3. Clean
4. Typhoid
5. Dirty

Exercise 2

1. False
2. True
3. True
4. False

Answers to Workbook questions

Trial 1

- a. you will get cholera.
- b. you will get diarrhoea.

Trial 2

Learner's drawing

Trial 3

1.
 - a. boiling water before drinking.
 - b. wash our hands with soap and water.
 - c. we must drink from clean cups.

Trial 4

- a. you will vomit.
- b. you will have diarrhoea.

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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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?
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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 5: HUMANS AND THE ENVIRONMENT

Sub-strand 3: SCIENCE AND INDUSTRY

LESSON 1: Impact of technological devices

LB: pages 142 - 145; WB: pages 70-71

CONTENT STANDARD

B2.5.3.1: Recognize the impact of science and technology in society.

INDICATOR

B2.5.3.1.1: Identify the technological devices used in the community and describe their impact.

LEARNING EXPECTATIONS

Learners are expected to:

- ♦ Identify technological devices used in the community.
- ♦ Describe the impact of technological devices on the community.

NEW WORDS

Pens, car, mobile phone, electric kettle, computer, blender, bicycle.

RESOURCES

Pictures of cars, toy cars, mobile phones, electric kettle, blender, computer, bicycle, pictures of electronic devices as well as videos showing electronic devices in the community, pen, pencil, bag, shoe, etc.

CORE COMPETENCIES

Critical Thinking and Problem Solving, Collaboration and communication, Personal Development and Leadership, Digital literacy, Creativity and Innovation.

SUBJECT SPECIFIC PRACTICES

Observing, Evaluating, Analysing.

HELPFUL LINKS

- <https://www.youtube.com/watch?v=JMmsSTszi0Y>

NOTE:

One week ahead of this lesson, give learners an assignment to investigate how people communicated, travelled, sought medical care, etc. in the olden days (in the absence of modern-day technological inventions).

Background Information

In the past, how did people travel? They mostly travelled by foot. Women grinded pepper for their soups and stews using the grinding stone. Today, most people use the blender to grind pepper, tomatoes and onions. This is as a results of technology.

Starter

Ask learners how they come to school everyday.

Teaching Instructions

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

Activity 1

- Engage learners in a whole class activity to discuss their findings based on the assignment given a week ago.
- Write the key points on the board for reference.

Activity 2

- Display different technological tools, examples, toy cars, mobile phones, electric kettle, blender, computer, headphones, bluetooth speakers, etc. on your desk in front of the class.
- Pick one item at a time and ask learners to mention the name and another learner says what its used for.

Activity 3

- Guide learners to operate some of the devices, such as mobile phones, blender, bluetooth speaker, etc.
- Let them tell you their experiences.

Activity 4

- Put learners in convenient groups. Task each group to list some technological devices found in the following places. The school, at the home, in the market places, hospitals, mosque, churches, bus stations, airport, etc. Give each group one place.
- Let each group read out their list to the class. Let the other class members add any devices the group might have omitted in their presentation.

Activity 5

- Refer learners to page 142 and 143 of the Learner's Book to identify and talk about the pictures.
- Let them discuss how they are used and what they are used for.



Activity 6

- Ask learners to draw a technological device that can bring an improvement in the community they live in.

Think and do

Have learners work in groups to brainstorm to find out what will happen if there were no mobile phones.

Talk About

Let learners discuss and answer these question:

1. What will happen if there were no cars and bicycles in our communities?

Have learners work in pairs and discuss the topic.

What I Have Learnt

Ask learners questions to come out with what they have learnt. Then summarise key ideas on the board, so that learners can copy into their books.

1. Technologies are very useful.
2. Technological devices makes our life very easy for everyone.
3. Examples of technological devices are cars, mobile phones, Television set, radio, electric kettle, computers, blender etc.

Project for home or school

- Have learners draw a big vehicle that is used to collect rubbish in their community, they should colour their work.
- Have learners design a new technological device that they can use to keep their pencils safe.

Extension Assessment

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

1. Write names of technologies you can use in
 - a. home
 - b. community
 - c. school
2. Name any two technologies and tell how useful it is.

Assesment for learning

Supervise learners to do the assesment task. Refer them to page 145 of the Learner's Book and pages 70-71 of the Workbook.

Answers to Review Exercises

Exercise 1

The following words will be formed after correct fill in.

- a. bicycle
- b. phone
- c. bag
- d. blender
- e. pencil
- f. shoe

Answers to Workbook questions

Trial 1

Learner's drawing

Trial 2

Radio

Mobile phone

car

Blender

bicycle

Computer

Trial 3

1. Yes

2. Yes

3. No

Trial 4

Technology	How useful it is
a. car	take us from one place to another
b. school bag	Helps us carry our books

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?

LESSON 2: Processing of foods

LB: pages 146 - 149; **WB:** pages 72-73

CONTENT STANDARD

B2.5.3.2: Exhibit knowledge of food processing and preservation.

INDICATOR

B2.5.3.2.1: Know the ways foods are processed for consumption.

LEARNING EXPECTATION

Learners are expected to:

- ♦ Identify ways food are processed for consumption.

NEW WORDS

Flour, cassava fish, bake, cocoyam, plantain (fry, boil dry, roast).

RESOURCES

Real raw food items including pepper, powdered pepper, cassava, corn, corn dough, plantain etc. Pictures of some more foods including fish, flour etc.

CORE COMPETENCIES

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

SUBJECT SPECIFIC PRACTICES

Generalising, Generating

HELPFUL LINKS

- <https://www.eufic.org/en/food-production/article/processed-food-qa>

Background Information

Food can be processed foods in many different ways. Raw foods that our parents buy from the market are processed before we eat at home. Raw foods can be processed by baking, boiling, roasting, frying and drying.

Food processing is any method used to turn fresh foods into food products. This can involve one or a combination of various processes including washing, chopping, pasteurising,

freezing, fermenting, packaging, cooking and many more. Food processing also includes adding ingredients to food, for example to extend shelf life.

Starter

Have learners mention some foods they eat everyday. Let them tell you the one they like best.

Teaching Instructions

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

Activity 1

- Display raw foodstuffs on your desk, in front of the class for learners to identify and talk about them.

Activity 2

- In groups have learners state why foods must be processed before it is consumed.
- Let each group present their points to the whole class for discussion.
- Write learners response on the board and explain further.

Activity 3

- Still in their groups, have learners list the different ways raw food can be processed. Example, frying, boiling, roasting, grilling, drying, etc.
- Let them share their answers with the others groups for comparison and class discussion.

Activity 4

- Refer learners to pages 146 and 147 of the Learner's Book to observe the pictures of raw and processed foods and talk about what they see.

Activity 5

- Demonstrate to learners how yam is processed. Either by boiling or frying.
- Follow these steps:
 - * Peel the yam.
 - * Wash the peeled yam.
 - * Cut into your preferred sizes
 - * Cook/boil or fry.

- Ask learners to tell you what they saw from your demonstration.
- Call some at random to tell the whole class the process one need to follow in processing raw yam for food.

Activity 6

- Let learners draw and colour one food they eat.
- Let them display their drawings for a whole class discussing.

Think and do

Engage learners in convenient groups to brainstorm what will happen if they eat spoilt food.

Talk About

Refer learners to page 147 of the Learner's Book to discuss on:

1. Why we have to process the raw food we buy from the market.

Have them work in groups. They brainstorm and discuss their views with the whole class.

What I Have Learnt

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

Summarize the lesson for learners to know that there are different ways through which foods can be processed. These are by boiling, frying, roasting, baking and drying.

Project for home or school

Refer learners to page 149 of the Learners Book for their home project.

Extension Assessment

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

1. Why must food be processed before we consume them?
2. List one way food is processed and explain in a short sentence how it is done.

Assesment for learning

Supervise learners to do the assesment task. Refer them to page 149 of the Learner's Book and pages 72-73 of the Workbook.

Answers to Review Exercises

Exercise 1

1. Learners to match 'BOILING' with a, b, c, d, e and g.

Answers to Workbook questions

Trial 1

- a. frying
- b. boiling
- c. grilling
- d. roasting

Trial 2

1. a. many
2. b. baked
3. a. to make it soft.
b. to kill germs that may be in the food.

Trial 3

1. b
2. d
3. a
4. c

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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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 5: HUMAN AND THE ENVIRONMENT

Sub-strand 4: CLIMATE CHANGE

LESSON 1: Human activities that are harmful on the environment

LB: pages 150 -154; **WB:** pages 74-76

CONTENT STANDARD

B2.5.4.1: Know that climate change is one of the most important environmental issues facing the world today.

INDICATOR

B2.5.4.1.1: Explain some common human activities that are harmful to the environment.

LEARNING EXPECTATION

Learners are expected to:

- ◆ Explain some common human activities that are harmful to the environment.

NEW WORDS

Bush burning, rubbish, throwing rubbish, water bodies, smoke, air, fossil fuel, car, petrol, weather, pollute, atmosphere.

RESOURCES

Pictures and videos on bad environmental activities like burning, sewage into rivers, bush fires, natural environment, etc.

CORE COMPETENCIES

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

SUBJECT SPECIFIC PRACTICES

Observing
Communicating

HELPFUL LINKS

- <https://www.toppr.com/guides/biology/our-environment/effects-of-human-activities-on-environment/>

Background information

Humans impact the physical environment in many ways: overpopulation, pollution, burning fossil fuels, and deforestation. Changes like

these have triggered climate change, soil erosion, poor air quality, and undrinkable water. These negative impacts can affect human behavior and can prompt mass migrations or battles over clean water.

Starter

Have learners tell you how they dispose off rubbish in their homes.

Teaching Instructions

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

Activity 1

- Show pictures or videos of the natural environment to learners. Let them tell you what they see and how the environment looks like.

Activity 2

- Put learners into groups. Ask them to brainstorm and list activities they think can harm the beautiful environment they saw in Activity 1.
- Take feedback from each group in a form of presentation. Lead the class to discuss each group's list.

Activity 3

- Refer learners to page 150 and 151 of the Learner's Book. Let them look at the pictures and talk about them.
- Let learners determine if they could be harmed by the activities seen in the pictures.

Activity 4

- Refer learners to page 151 of the Learner's Book. Let them do the activity there.
- They are to design and make a poster to advise their friends not to burn and throw rubbish in the environment.
- Let them display their poster for a whole class discussion.

Think and do

Put learners into convenient groups. Let them discuss what will happen if they drink water from a contaminated source.

Talk About

Have learners work in pairs or groups and discuss the two questions below.

1. How can we stop producing more carbon dioxide in the atmosphere?
2. What will happen if you stand by a burning bush and breathe in the smoke?

Refer to page 152 of the Learner's Book.

What I Have Learnt

Ask learners questions to find out what they have learnt. Also, summarise main ideas for learners. Example:

1. Burning of fuels in cars can cause climate change.
2. Burning of farm lands cause climate change.
3. Dropping rubbish in the sea and other water bodies are all common human activities that are harmful to the environment.

Project for home or school

Ask learners to design a poster for their friends to show the causes of climate change.

Refer them to page 153 of the Learner's Book for instructions.

Additional Project

Put learners into groups.

Have learners observe their community and their home surroundings carefully to find out and record some of the harmful human activities people do.

Observe on Monday, Tuesday and Wednesday. Then each group should write what they saw on a cardboard.

Create an awareness week in your community to tell people to stop the harmful behaviour.

Extension Assessment

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

1. What will happen if we do not stop the burning of farm lands?
2. How can we protect our climate?
3. Draw a car with smoke at the back

Assessment for learning

Supervise learners to do the assessment task. Refer them to pages 152-153 of the Learner's Book and pages 74-76 of the Workbook.

Answers to Review Exercises

Exercise 1

A boy burning papers – Bad Human Activity.

An old car with black fumes – Bad Human Activity.

A girl with a dust pan pouring rubbish into a dustbin – Good Human Activity.

A woman using firewood in cooking - Bad Human Activity.

Answers to Workbook questions

Trial 1

1.
 - a. rubbish
 - b. smoke
2.
 - a. it will pollute the air.
 - b. it will cause climate change.
3.
 - a. we must stop using firewood for cooking.
 - b. we must stop burning farmlands.

Trail 2

Learner's drawing.

Trail 3

Learner's drawing.

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ESSENTIAL Science

Primary 2

Teacher's Guide

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The series consists of a Learner's Book, Workbook and Teacher's Guide.

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- 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.

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ISBN 978-9-988-89751-2



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