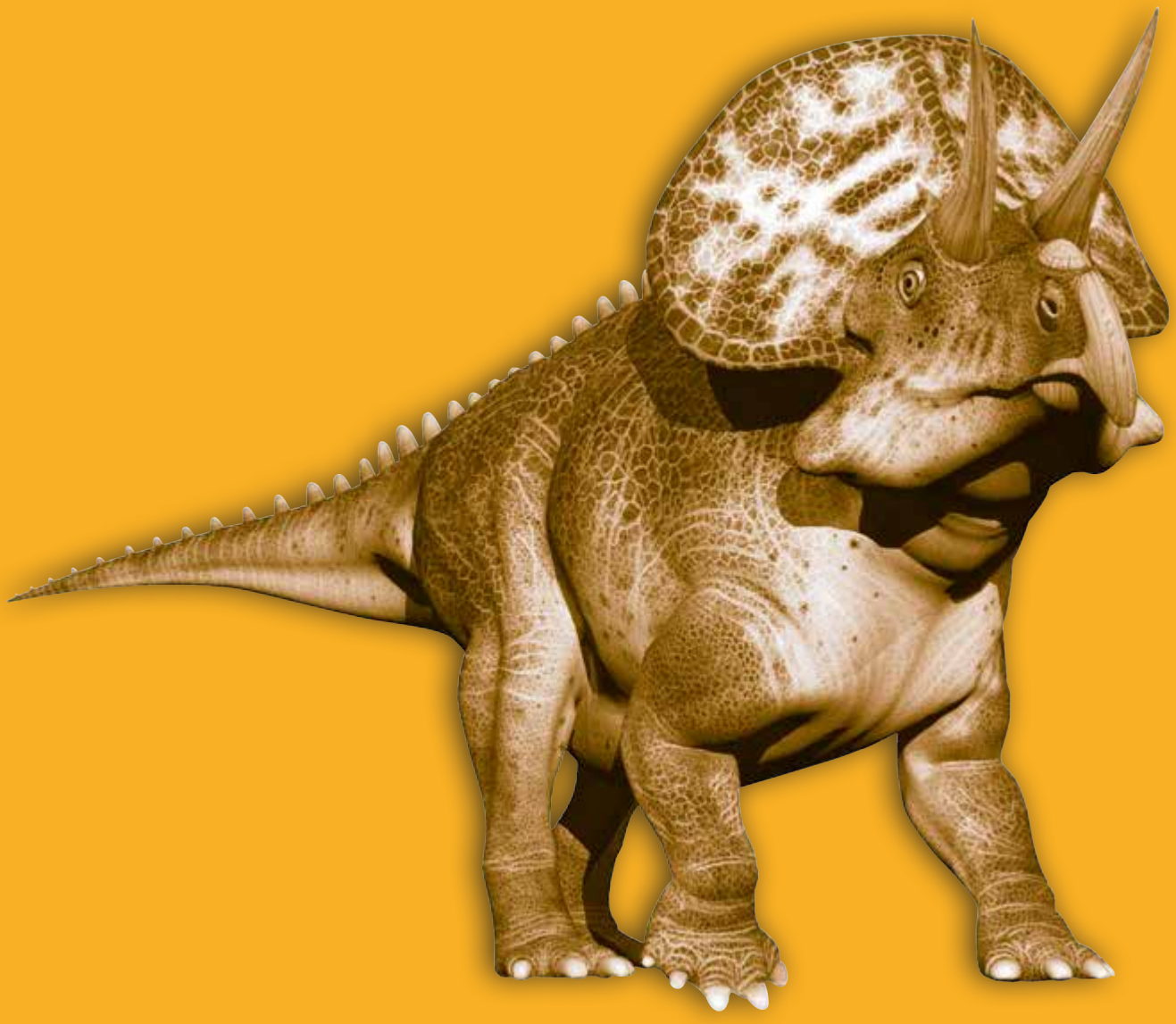
ESSENTIAL Science

NNF BOOKS

Primary 2

Teacher's Guide



CAMBRIDGE UNIVERSITY PRESS

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Primary 2

Teacher's Guide

John Wilberforce Essiah

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Structure of the Teacher's Guide

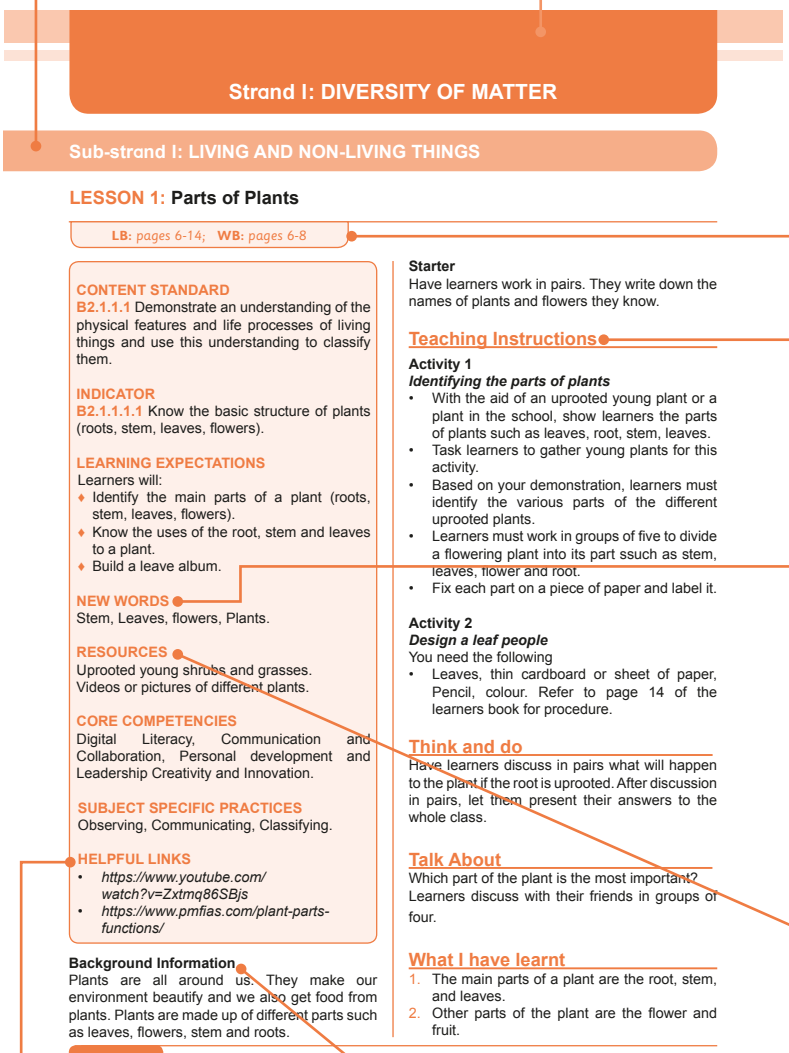
The concise Teacher's Guide is organized under the following headings and features.

Sub-Strand

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

Strand

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



Strand I: DIVERSITY OF MATTER

Sub-strand I: LIVING AND NON-LIVING THINGS

LESSON 1: **Parts of Plants**

LB: pages 6-14; 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 will:
- Identify the main parts of a plant (roots, stem, leaves, flowers).
- Know the uses of the root, stem and leaves to a plant.
- Build a leave album.

NEW WORDS
Stem, Leaves, flowers, Plants.

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 beautify and we also get food from plants. Plants are made up of different parts such as leaves, flowers, stem and roots.

28

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

Teaching Instructions

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, leaves.
- 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 ssuch as stem, leaves, flower and root.
- Fix each part on a piece of paper and label it.

Activity 2
Design a leaf people
You need the following
- Leaves, thin cardboard or sheet of paper, Pencil, colour. Refer to page 14 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.

What I have learnt
1. The main parts of a plant are the root, stem, and leaves.
2. Other parts of the plant are the flower and fruit.

Page reference

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

Teaching instructions

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

New words

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

Resources

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

Helpful links

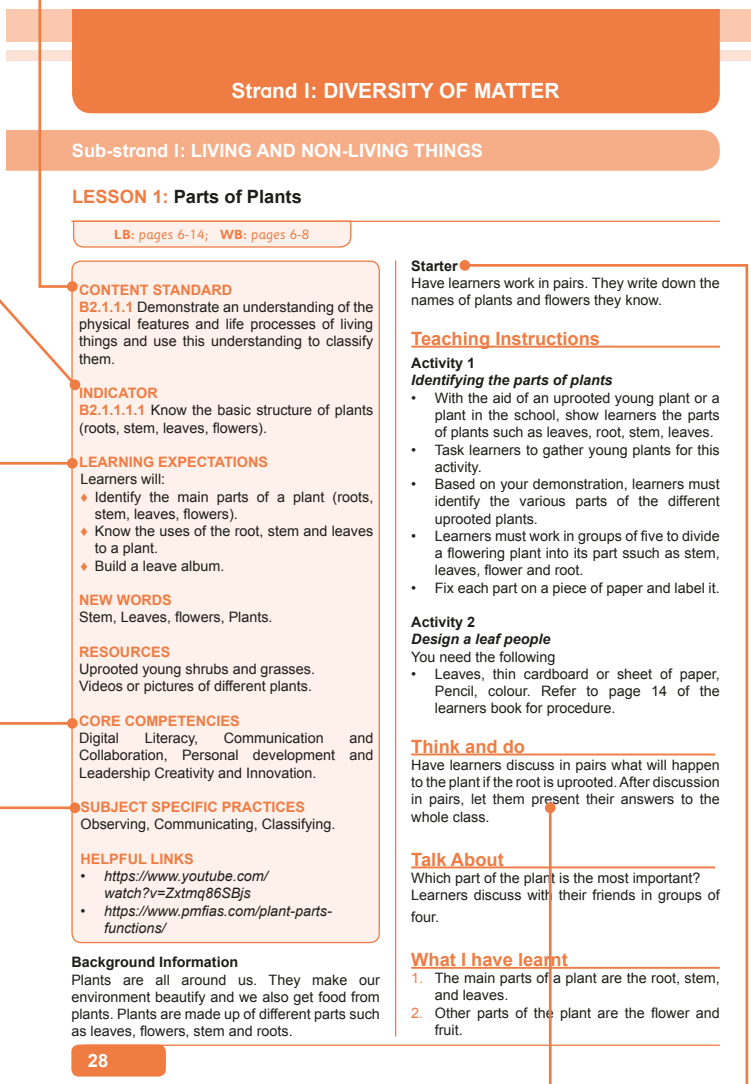
Comprehensive site of helpful links for educational or teaching tips and ideas are provided under some lessons. This are internet links to text, pictures and videos that you will use during the lessons. Download them ahead of the lesson.

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.



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Learning Expectations
are provided to help both teachers/facilitators 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 facilitator extra activities to do with learners after the main activities under each sub-strand. It requires deep thinking.

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 ugment and consolidate what has been learnt in the classroom and its real life application where neccesary..

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

- Uproot different young plants.
- Identify their stems, leaves, roots and flowers.
- Let your parents help you to name all the plants you have uprooted.
- Find-out whether the plants produce flowers or not.
- Refer to pages 13 and 14 of the Learner's Book.

Assesment for learning

Supervise learners to do the assesment task. Refer them to page 10-12 of the Learner's Book and page 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

Trial 1

1 → a
2 → c
3 → d
4 → b

Trial 2

1 → c
2 → d
3 → e
4 → b
5 → a

Trial 3

Identify and circle the following parts of a plant from the puzzle.

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

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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.

Assesment for learning

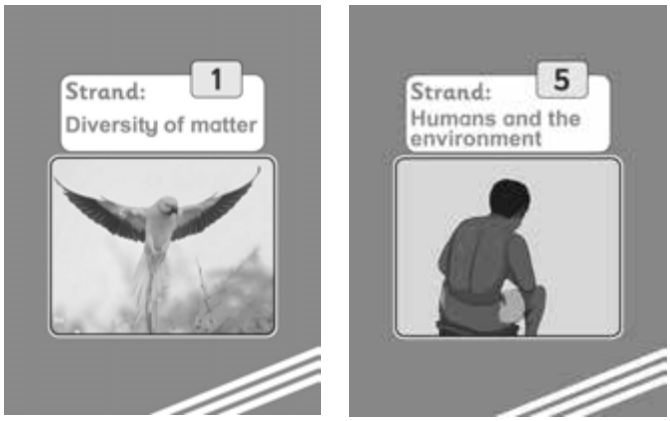
The feature directs teachers/ facilitators in checking learners' understanding of the lesson indicator(s) by way of assessing them. References are made to "Exercises" in the Learner's Book and Trials.

Organisation and structure of the Learner's Book

The user-friendly Learner's Book tackles the new standard-based Science curiculum 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.

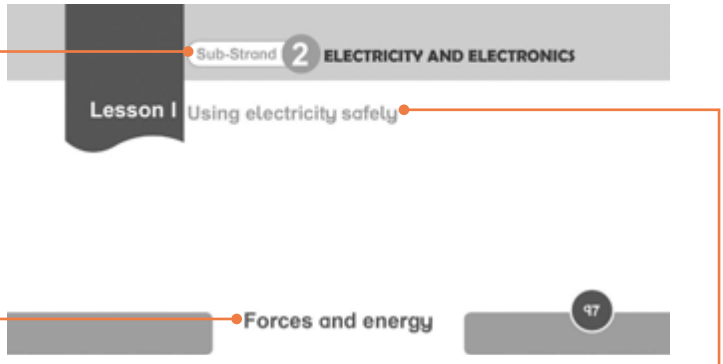


Header and footer labels

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.

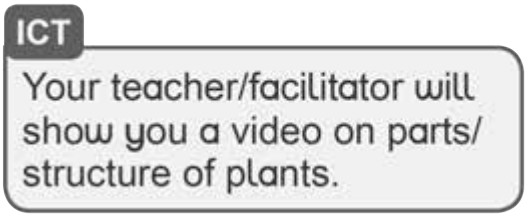


New words

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

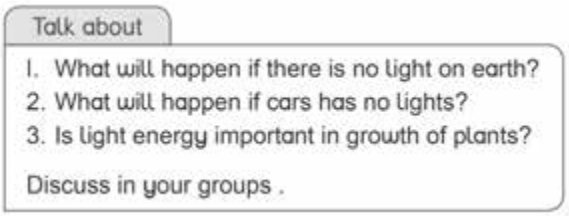
ICT boxes

- include research activities
- emphasise the core competencies

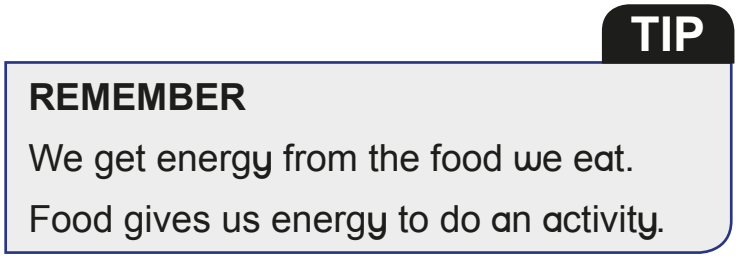


Talk about

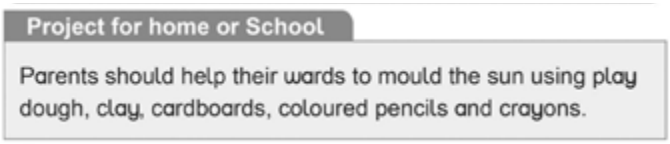
- Learners are expected to discuss questions either in groups or in pairs. It is a critical thinking section that also helps their communication and collaborative skills



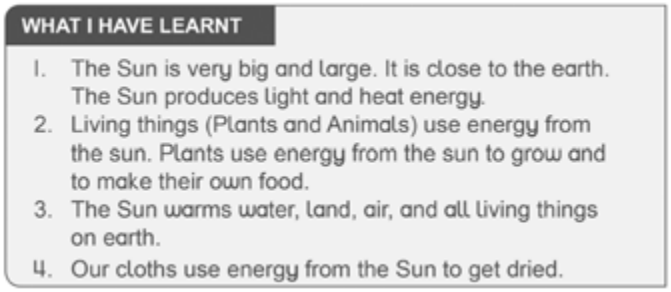
Tips box
- Give helpful tips and information.



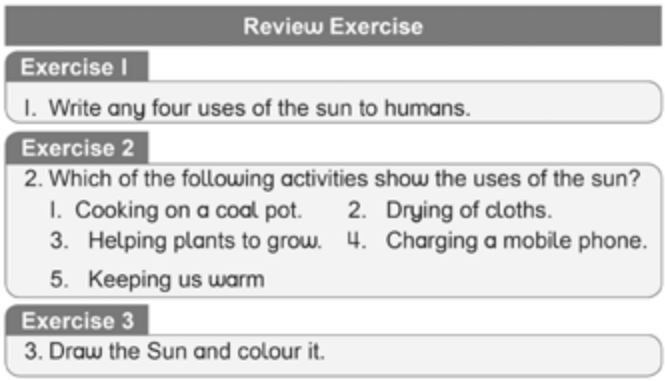
Project for home and school
- It helps consolidate what learners have already learnt in class. You are expected to direct learners on what they are to do either at home or in school



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



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



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

In groups of five:

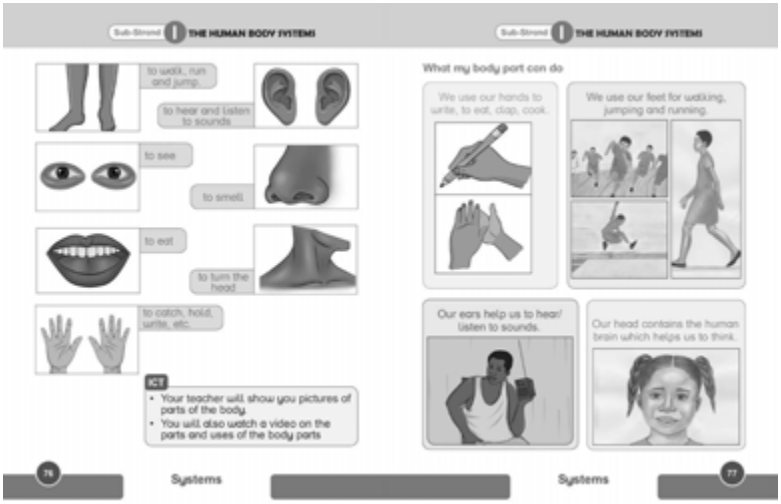
5. Throw a ball between you and your group members.
6. Run from the front of the classroom to the back.
7. Jump five times.
8. Discuss why you were able to do these activities.
9. Share with your friends.

Text and content

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

Illustrations and photos

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



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/facilitator professionalism in the teacher facilitator to produce well equipped learners for national development.

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

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

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

It is expected that after carefully studying the Teachers' Guide, teachers/facilitators 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/Facilitator 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/facilitator needs to create a learning environment that supports:

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

Rationale for Primary Science

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

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

Philosophy

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

Learning Philosophy
Science Learning is an active contextualized process of constructing knowledge based on learners' experiences rather than acquiring it. Learners are information constructors who operate as researchers. Teachers/facilitators 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/faciliatators in Ghana teach large classes. Such classes are in the range of 40 to 100 learners or more. The teachers/faciliatators, 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. Sometimes learners are better able to discuss sensitive areas in same - sex groups. Such work encourages co-operation and mutual support. Individual groups can study a picture together, or write a poem or discuss a topic like pollution in their village. You need to ensure that there is follow-up to group work so that work is not done in isolation but is instead considered by the class as a whole.

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

Working with a partner that you have allocated to the learner means that you can pair a slower learner with a faster learner, so that they can help one another. You may also choose to pair learners of similar abilities together, so that they can proceed more quickly with the work, while you assist the slower pairs.

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

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

- full class work
- individual work
- practical activities

Pedagogy and Assessment

Creative and Learning - Centred Pedagogies for Science

1. ***Activity-based learning, hands-on, creative, participatory method of learning.***
   - Science teachers/facilitators 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/facilitator 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/facilitators 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/facilitator to display professionalism through effective use of ICTs in teaching and learning.

The teacher/facilitator 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 interactie 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 teachers/facilitators 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/facilitator 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/facilitator 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/facilitator cannot assess all the indicators taught in a term or year. The assessment procedure you use i.e. class assessments, homework, projects etc. must be developed in such a way that the various procedures complement one another to provide a representative sample of indicators taught over a period.

Designing Assessment Tasks in the New Curriculum

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

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

SAMPLE RUBRIC FOR ASSESSING LEARNERS PERFORMANCE

Rubric -Primary School Science	LEVEL 1 With strong prompting from the teacher/ facilitator	LEVEL 2 With some prompting from the teacher/ facilitator	LEVEL 3 With minimal prompting from the teacher/ facilitator	LEVEL 4 Without prompting from the teacher/ facilitator
OBSERVATION	Learners use one of her senses to observe basic information	Learners use at least one of her senses to observe basic information	Learner notices detailed characteristics and phenomena	learners **extend/ apply her 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 expresse **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 she did	Learners present conclusions partially supported by data	Learners effectively use data to express her conclusions, and uses materials/ role play/other methods of communication to present them	Learners use data to **clearly articulate** her observations, approach and findings with detail, and she uses **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 teachers/facilitators at all levels should seek to develop in their learners. They are ways in which teachers/facilitator 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 this skill are also able to think independently and creatively.

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

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

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

Learning domains (expected learning behaviours)

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

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

Teachers/facilitators 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 gargets from imagination.

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

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

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

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

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

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

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

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

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

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

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

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

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

Time allocation

A total of four periods a week, each period consisting of thirty minutes, is allocated to the teaching of Science at the lower basic level **(B1- B3)**. It is recommended that the teaching periods be divided as follows:
Theory: 2 periods per week (30 minutes per period)
Practical: 2 periods per week (one double-period)

Inclusion

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

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

Differentiations and scaffolding

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

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

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

- Task
- One-on-one support
- Outcome

Differentiation by task involves teachers/facilitators setting different tasks for learners of different ability e.g. in sketching the plan and shape of their classroom some leaners 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/facilitator 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/facilitator 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/facilitator 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/facilitator 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

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.

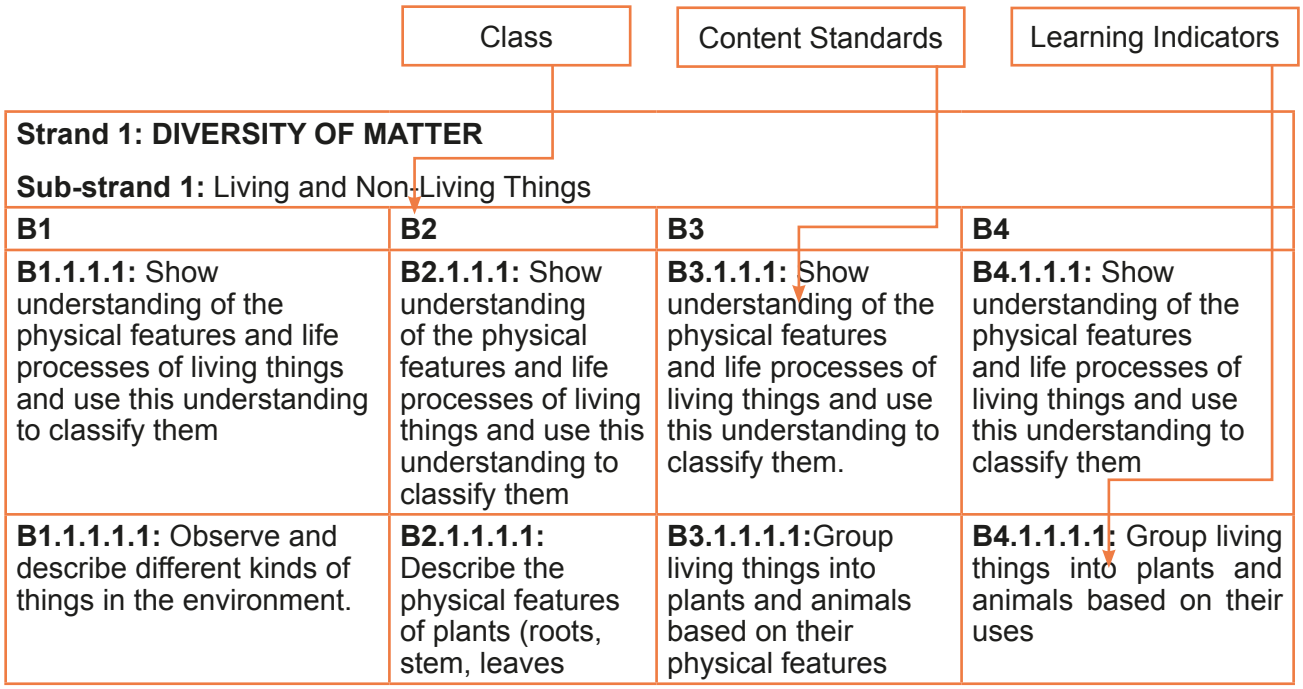
Sub-strands are the topics within each strand under which the content is organised.

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/facilitators in the delivery of the curriculum.

ILLUSTRATION OF CURRICULUM STRUCTURE



Strand 1: DIVERSITY OF MATTER **Sub-strand 1:** Living and Non-Living Things			
B1	**B2**	**B3**	**B4**
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.	**B4.1.1.1:** 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/ facilitator and board.	The classroom is inviting. Desks can be rearranged to promote collaborative as well as independent work.
4.	Teacher/facilitator restricted to provisions in the curriculum.	Gives room for teacher/facilitator 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/facilitator-sponsored TLMs.	The classroom environment is laden with materials for sub-conscious learning.
7.	The teacher/facilitator 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 emphasissed. 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)

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 6-14;* **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 will:
- Identify the main parts of a plant (roots, stem, leaves, flowers).
- Know the uses of the root, stem and leaves to a plant.
- Build a leave album.

NEW WORDS
Stem, Leaves, flowers, Plants.

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 beautify 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

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, leaves.
- 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 ssuch as stem, leaves, flower and root.
- Fix each part on a piece of paper and label it.

Activity 2
Design a leaf people
You need the following
- Leaves, thin cardboard or sheet of paper, Pencil, colour. Refer to page 14 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 9 of Learner's Book.

What I have Learnt/Reflection

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

- Uproot different young plants.
- Identify their stems, leaves, roots and flowers.
- Let your parents help you to name all the plants you have uprooted.
- Find-out whether the plants produce flowers or not.
- Refer to pages 13 and 14 of the Learner's Book.

Assesment for learning

Supervise learners to do the assesment task. Refer them to pages 10-12 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

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

LESSON 2: Basic structure of animals

LB: *pages 15-19;* **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 will:
- 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=JCnAJlTc9SQ

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

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 15 -18 of their 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 17 of the Learner's Book.

What I have Learnt/Reflection

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 hands and feet 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 17 of the Learner's Book for their home project.

Assesment for learning

Supervise learners to do the assesment task. Refer them to pages 18-19 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

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

LESSON 3: Grouping Things Into Living and Non-Living

LB: *pages 20-25;* **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

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.
- Groups of learners 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/Reflection

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

8. All things are grouped as either **living** or **non-living**
9. Humans, plants and animals are examples of living things
10. Cars, books, chairs, soil and rocks are examples of non-living things
11. Living things can grow bigger, make babies and move from one place to another.
12. 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

Assesment for learning

Supervise learners to do the assesment task. Refer them to pages 23-24 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

Trial 1

Living things	**Non-living things**
1. trees	1. stones
2. monkey	2. wall
3. birds	

Other correct answers from learners

Trial 2

Living things	**Non-living things**
1. dog	1. Pen
2. tree	2. Cup

Other correct answers from learners

Trial 3

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

LESSON 1: Common Properties of Materials

LB: *pages 26-31;* **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.

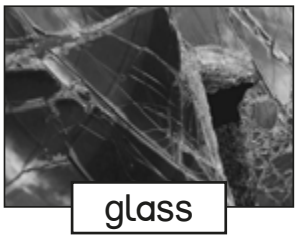
SUBJECT SPECIFIC PRACTICES
Manipulating, Classifying, Generalising, Analysing Evaluating.

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

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.



Think and do

Refer learners to activity on page 27 of the learners book.
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/Reflection

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 31 of Learner's Book.

Project for home or school

- Gather different materials such as paper, ceramics, metal, glass, wood and fabric
- Fix your materials on a cardboard and write the property of each material under it.

Refer learners to page 31 of their book.

Assesment for learning

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

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.

LESSON 2: Properties of Solids, Liquids and Gases

LB: pages 32-36; **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.

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

LESSON EXPECTATIONS
Learners will;
- 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

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 grops 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 34 of the Learner's Book.

What I have Learnt/Reflection

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 as follows:
Refer to page 36 of the Learner's Book for these.

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 your home.
- Write down any five items in your home which are in the liquid state.
- Write any 5 items in your home which are in the solid state.

This can be found on page 35 of the Learner's Book.

Assesment for learning
Supervise learners to do the assesment task. Refer them to pages 34-35 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
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

LESSON 3: How to Form Solid-Solid Mixtures

LB: pages 37-41; **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 will;
- Explain the term solid-solid mixtures.
- Mention common examples of solid-solid mixtures.
- Prepare some common examples of solid-solid mixtures.

NEW WORDS
mixtures, solid-solid mixtures.

RESOURCES
different solid substances such as coins, sand, milo, gari, gravels. Maize grains and chalk.

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. 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
Review the lesson on states of matter with learners.

Teaching Instructions

Activity 1
Forming solid-solid mixtures
- Provide different solid substances to learners in their groups.
- Ask learners to come-out with one characteristic which is common to all the substances provided.
- Guide learners to form as many different solid-solid mixtures as possible.

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 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 39 of Learner's Book.

What I have Learnt/Reflection
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, 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 41 of Learner's Book.

Project for home or school

Activity 1

Forming a mixture of 2 solids

- In this activity you will learn to form some solid-solid mixtures.
- 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.
- You can use the table below to complete the activity.

Name of Mixture	Substances that form it

Assesment for learning

Supervise learners to do the assesment task. Refer them to pages 39-40 of the Learner's Book and 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

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.

Strand: 2

Cycles

LESSON 1: Dry and Wet Seasons; Effects on Living Things

LB: *pages 44-56;* **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
- Know 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

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.
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

Activity 1
How does weather change?
Investigate.
- Pictures showing different weather conditions from Monday to Friday for 3 days.
- Sunny, Rainy, Windy and Cloudy.

WEATHER			
	DAY 1	DAY 2	DAY 3
MONDAY			
TUESDAY			
WEDNESDAY			
THURSDAY			
FRIDAY			

a. Make a weather chart like the one above.
b. Use the weather patterns in the picture above. Create and record a weather pattern from Day 1 – 3 on each day.
c. What kind of weather changes did you observe?

Share your information.

Activity 2

- Learners can be engaged in an activity that explains cyclic movement. (The second hand of an analogue clock, merry-go-round and circular cards, musical chairs could be used).
- Relate this activity to the occurrence of day and night and explain that the appearance of the sun, moon and stars follow a cyclic pattern.
- Learners make sketches displaying events that take place in the day and those that take place in the night.
- Let learners suggest other events in their environment that happen over and over again in a cycle.

Activity 2

Identifying the seasons observed in Ghana

For example, dry and wet seasons.

- Let learners identify some characteristics of the wet season.
- Learners also discuss the characteristics of the dry season .

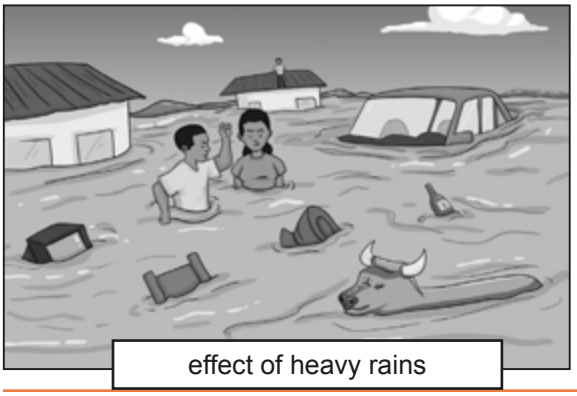
Activity 3

Effect of the dry and wet seasons

Engage learners in group activities to identify the effects of both the dry and wet seasons.

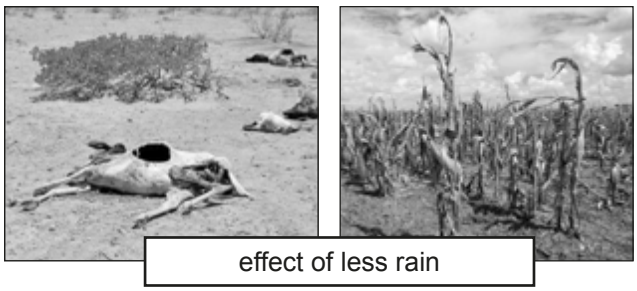
When there is too much rainfall it has a bad effect on human activities in the following ways:

- 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.



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.



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

How does the weather change from day to day? How does the weather change from season to season? Have learners discuss in pairs.

The weather can be described as sunny if there is plenty of sunlight.

On rainy days, lightning and thunder is usually seen before the falling rain.

What I have Learnt/Reflection

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

1. I have learnt that the coldest weather on Earth is in **Antarctica**.
2. What the air is like outside or in the environment is known as the weather.
3. 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.
4. In this dry season, the life of animals, plants and people are negatively affected.
5. Some plants do not get water to grow very well. Food therefore becomes scarce.
6. Most animals die as a result of not getting water to drink.
7. People also get diseases such as cholera and other water and air borne disease.
8. A wet season is seen by heavy rainfall.
9. The weather is hot, sunny and humid in the daytime.
10. The wet seasons helps most plants to grow very well. Food production is in abundance.
11. Most animals also grow very well.
12. 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 55 of the Learner's Book. let them design a poster on the wet season.

Assesment for learning

Supervise learners to do the assesment task. Refer them to pages 54 - 55 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

LESSON 2: Sources of Light to the Earth

LB: pages 57- 62; 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 EXPECTATION
Learners will be able to;
- Mention sources of light at home and in school.
- Assemble different sources of light displayed.
- Classify artificial and natural light.
- Design an activity to block light on earth.
- Know 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://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. School pupils need light energy for reading and for doing home learning assignment.

There are two main sources of light energy. They are natural source of energy. They are natural source of light, include light from the sun, stars and fireflies.

Artificial light energy include; candles, lamps, lantern, LED bulbs, touch light and “bobo”.

The core competencies that learners need to acquire in this lesson through learner centred approach of teaching using think pair share, peer review, basket ball questioning techniques and talking circles as a form of assessment for learning would help the learners acquire personal development and leadership skills, communication and collaborative skills and above all learners would be able to acquire critical thinking and problem solving attitude using specific practices such as classifying, predicting, observing and engaging.

Starter
Learners sing a song on light.

SONG
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
hahahhhahhah.

Teaching Instructions

Activity 1

In groups, learners identify some activities people and other livng things are using light for.

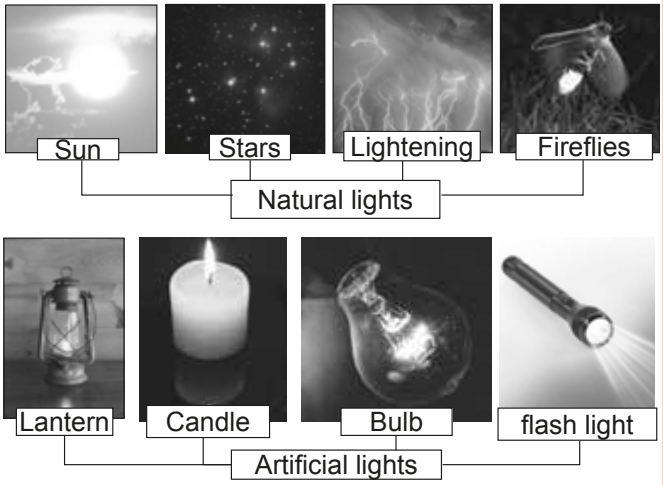
- Show learners a picture of a green plant receiving sunlight.
- A picture of learners reading using a bulb or lantern.

Activity 2

(Refer learners to page 58 of their learners book)

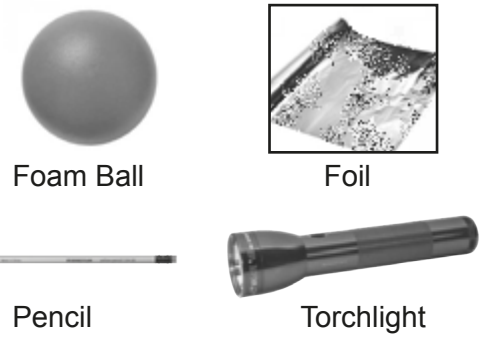
Classify the lights into artificial and natural.

Show pictures of natural and aertificial sources of light to learners. Let them group the pictures into natural and artificial sources.



Activity 3

Investigate light from the moon, you will need



Think and do

Using gallery walk, learners paste on the board the uses of light to them as individuals.

Talk About

This refer to the critical thinking questions, learners are expected to reason and answer questions.

m. To prepare their own food for growth.
n. To see clearly both in the day time and in the night.
o. To see clearly, to help us to read, write and do our home learning work correctly.
p. During the day time.
q. Throughout the day from morning till evening.
r. Human beings also need light throughout the day till evening.
s. Plants would not get energy to make food.
t. Animals and human beings who depend on plant for food would become hungry and we shall all fall sick and die.

Reflection

Using talking circles as a strategy for assessment for learning.

Learners are tasked to interact with their peers in a circle to share their ideas on the importance of light to plants and animals and human beings. Light energy give support to both plants and animals. Animals use energy for vision and for warmth. Plants use it to prepare its food for growth.

What I have Learnt/Reflection

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

21. Light is a form of energy. The sources of lights are from the sun, bulb, lanten, fireflies etc.
22. Light supports both plants and animals. Light energy from the sun helps plant to make it food.
23. 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 milo 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 compound in the kitchen. Water both set ups 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
Seedly 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. It leaves would become very green and fresh.

Assesment for learning
Supervise learners to do the assesment task. Refer them to pages 60 - 61 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.

Answers to Workbook
Trial 1

Atificial 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

LESSON 3: Qualities of Good Drinking Water

LB: *pages 63-68;* **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 will
- Identify and name some sources of water.
- Give an explanation to a 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.

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. Using scientific method of making water clean and safe for drinking. Learners are able to think critically by designing an approach to solve this problem.

Boiling of water to make it clean and safe for drinking, helps the learner to use this method to enable the learner use the same to solve a problem at home, main core competencies gained by learners include, collaboration and communication, personal development and leadership through observation, analyzing and generalization of ideas as learners carry out activities on water.

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

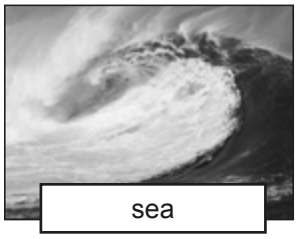
Teaching Instructions

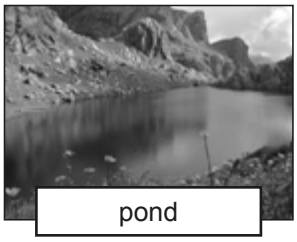
Activities:
- In pairs, learners discuss the sources of water.

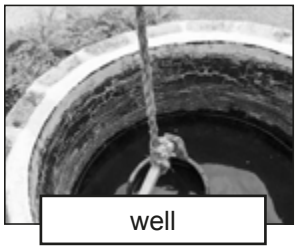
Expected answers are as follows:
River, rain, sea, pond, lagoon, well, borhole.


river

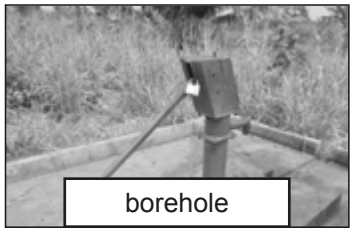

rain


sea


pond


well

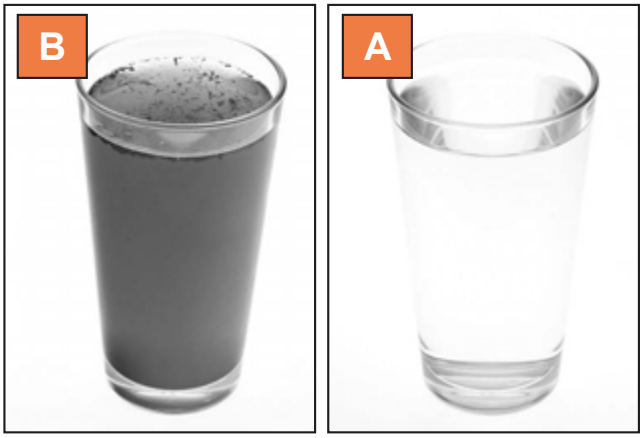

tap


borehole

In a whole class discussions, let learners discuss in groups of four the sources of water.

Activity 2
(Refer to learners questions on page 65)

- In groups of four, learners talk about the two glasses with different water; muddy and clean water. They decide which one is good for drinking.



The colorless water in the glass (glass B)

Activity 3
Refer to Activity 1 on page 66 of the Learner's Book.
Engage learners to complete the table in groups.

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

ANSWER

LIQUIDS	SMELL		TASTE		COLOUR	
	YES	NO	YES	NO	YES	NO
Coconut Juice	√		√		√	
Sugar Solution	√		√		√	
Salt in water	√		√		√	
Voltic bottled water		√		√		√
Sprite	√		√		√	
Note:	Do not taste any of the liquids					

Activity 4
How do I use water?

HOW I USE WATER DAILY	HOW MANY TIMES
DRINKING	
WASHING HANDS	
WATERING PLANTS	
CLEANING	

Individually, learners answer the questions above.

Learners discuss their answers with their partners. Learners record the number of times they drink, wash hand, water plants and clean; daily using water.

In a gallery walk, paste their work on the walls in the classroom for others to read.

Guide learners as they collect data in a chart. Learners make a tally, make each time they use water in a day. Learners count the marks.

Learners use the data to answer the questions.

a. How many ways did you as an individual use water?

b. Which way did you use water most?

Possible Answers
Drinking
Washing Hands

Think and do

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

Talk About

Ask learners these questions.
Question 1. How do people use water to care for plants and animals?
Plants: By watering, irrigation, washing of fruits and vegetables before using.
Animals: for transport (ship/boat) for drinking, washing, bathing, cooling engines (car), swimming, fish farming etc.

Question 2. What are some other ways people use water?
Water is used for preparing food, medicine, for making swimming pools, for aquarium, for dissolving substances, for making fabrics example clothes, batik, tyre/dye, for making electricity.

What I have learnt/Reflection

Using talking circle strategy learners share with their partners what they have learnt. This is what is known as assessment for learning. This is a learner centered approach of getting feedback from their peers.

Invite a number of learners to share with the whole class, what they learn from their partners.

Project for home or school

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

Answer

- Boiling
- Filtering with a clean white cotton cloth
- By adding alum to the water.

Also refer learners to page 67 for additional project.

Assesment for learning

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

Answers to Workbook

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

LESSON 4: Uses of air

LB: pages 69-74; 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 EXPECTATION
Learners will be able to
- Identify that air is everywhere.
- Air occupy space.

NEW WORDS
Breathe. Conclusion, mixture, demonstrate.

RESOURCES
Balloons, plastic bottle, standing fan.

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 all around us. Air is essential for us to live. You may not be able to see air but after going through the various activities you will know that air does exit.

Starter

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

Teaching Instructions

Activities

- 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 robber. Now let learners blow air into it and hold the top tight with their hands. What is in the bag now? Learners discuss in their groups. Let learners know that even though air is invisible, it takes up space.
- Take learners outside to watch the trees and discuss what is happening to the leaves.
- Put out the standing fan or let learners use fan to fan themselves. Let them discuss how they feel.
- Give out balloons and kite to learners. Ask them to blow air into the balloon and tie the end. Ask “What is in the balloon”?
- Refer learners to page 69 of their learners’ book. Have them talk about the pictures and draw conclusion.

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/Reflection

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 74.

Project for home or school

Let learners perform this activity at home.
Refer learners to page 73 of the learners book.

Bottle Blow Out

Materials:

One small empty plastic soda bottle for each student.

One balloon for each student.

Procedure: Help each student push a deflated balloon into the bottle and stretch the open end of the balloon back over the bottle's mouth. Have the students guess what will happen to the balloon if they were to blow up the balloon inside the bottle.

Will the balloon break, pop, or do nothing? Write down the students' responses. Have each child blow up their balloon.

After each child completes the experiment, discuss why the balloon did nothing. Because air takes up space, the bottle was full of air. When you try to blow up the balloon, the air trapped inside the bottle prevents the balloon from inflating.

Assesment for learning

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

Answers for Workbook

Trial 1

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

Trial 2

Learner's drawings

Trial 3

a

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

b. air

Trial 4

Learners draw an airplane flying in the air.

3

Strand:

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 will;
- Name and identify the external parts of the Human Body.
- Know the functions of the external parts of the Human Body.
- Understand 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.

Communication and collaboration, critical thinking, creativity and innovation are the major' core competencies when learners observe analyze and evaluate their external body parts. The biological uses of the human body parts would again inform learners to take very good care of themselves to avoid loss of any of their body parts.

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

Refer learners to learners book on designed activities on page 81. Have learners go through the activities there.

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

Working in pairs ask critical questions like;
a. What will you do to prevent losing any of your body part(s).
b. How can people who have lost any part of their bodies be helped in the home and school.

N:B Encourage more learners to give their reasons in a group.

Allow learners to paste their responses on a displayed card. In a gallery will learner's reasons responses in turns.

Reflection: By using assessment learning strategy, such as peer review, basketball questioning techniques, world cafe, learners are tasked to share their ideas on a lesion with their peers.

What I Have Learnt/Reflection

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

Refer learners to page 82 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 learner's book.

Assesment for learning
Supervise learners to do the assesment task. Refer them to pages 83-84 of the Learner's Book and pages 36-38 of the Workbook.

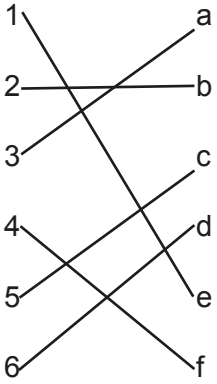
Answers to Review Exercises
Exercise 1
1. → c
2. → d
3. → b
4. → e
5. → a

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
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

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 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 will;
- Identity the sun as the main source of light and warmth on earth.
- Know importance of the sun to living things
- 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 so large that more than a million earths could fit inside it. Each day, the sun seems to move across the sky. The son does not really cross the sky. It is the earth that is moving, because the earth moves we have day and night.

This very lesson would help learners to develop core competencies such as creativity and innovation, critical thinking and problem; and effective communication and collaboration skills through the use of scientific process skills such as analysis and evaluating.

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, generators our weather patterns and gives energy to the growing green plants that provide the food and oxygen for life on earth. https// history.nasa.gov

Starter
In think pair share learners find out from their peers about the position of the sun.
Main ideas; refer to pupil's book

Teaching Instructions

Activities
- Talking about learner's book

Answers
The sun looks bigger and brighter then any other star because it is closes to the earth. NB its brightness means that we can see it, even though it is far away. We can only see the sun when we are on the side of the earth that faces the sun. When we face away from the sun, it is night time.

When a wet object dries, it is because the liquid waters that is on the object evaporates to waters vapor and diffuses out into the a theirs. All this is possible with the help of heat energy from the sun.

The heat from the sun helps the dry our wet bags books and shoes quickly. Wind is another drying factor. If it is a windy day the water in evaporation is more quickly due to the air moving/passing through the wet items.

Think and do

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

Talk About

Refer to learners book questions 1-4 page 87. Have learners discuss and answer the questions.

1. How does the sun look like?
2. How do our wet dresses get dried?
3. How do we make our wet bags, books and shoes dry?
4. If there was no sun, what do you think will happen?

Reflection

In gallery walk strategy form of assessments; learners brainstorm in groups and talk about the importance of the sun to life on earth. Learners paste their responses on the walls for their peers to road. Learners ask questions on special points or challenging points displayed.

More room is given to learners to add on some points displayed.

You can give these extra statements to help learners understnd the concept more

- The sun is a star closest to the star. It is so much larger than the earth. It is made up of hot gases (Accept any one of this).
- Any two is accepted
- Plants use energy from the sun to prepare its food .
- Animals get warmth from the sun.
- We get heat energy from the sun to power our machines.
- The sun energy helps us to see clearly.

What I Have Learnt/Reflection

Refer learners to page 88 of the Learner’s Book. Go through the points outlined there.

Project for home or school

You are expected to seek parents help to encourage learners to mould the sun by getting material resource to their wards learner’s project work is sent to school for the desire comments.

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

Trial 1

1. light
2. heat

Trial 2

a. sun
b. to dry
c. warm
d. the sun

Trial 3

Learner’s drawing

4

Strand:

Forces and 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 EXPECTATION
Learners will,
- 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.

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.

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

Activity 1
- Find out from learners what helped them to do all the activities.
- Let learners look at pictures from the text book about the use of energy. Show learners pictures/charts/videos of the use of energy.

Activity 2
- Ask learners what happens if we do not have energy. Take feedback from learners.

Activity 3
- Summarise the lesson by going through talk about questions to reinforce the use of energy. Refer learners to pictures from the text book on page 90.

Think and do

Have learners work in groups to discuss why energy is essential part of our daily lives.

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/Reflection

1. Reflect with learners on what they have learnt. 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.

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

Answers to Review Exercises
Execise 1
1. Energy

Exercise 2
Home, School, Church, Market, Mosque.

Answers to Workbook
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

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 EXPECTATION
Learners will,
- Understand how things lose heat.
- Understand 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.

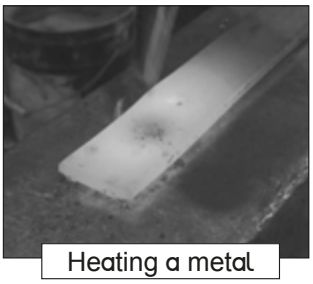
Teaching Instructions

Activity 1
Put learners into sizeable groups and let them rub their palms together and 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 picture 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 dscuss how metal get 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/Reflection

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.

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
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

LESSON 1: Using Electricity Safely

LB: *pages 99-104;* **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 EXPECTATION:
Learners will,
- Mention electrical items they use at home.
- Recognise the importance of safety when using electricity.
- Know basic safety tips on electricity.

NEW WORDS
Safety, electricity.

RESOURCES
Charts showing safety ways of using electricity.
Video
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=aCvScgI1MCs*
- 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 the home. Let them do it in groups / pairs / individually take their responses as they present their work.

Teaching Instructions

Activity 1
- Show learners pictures or videos on safe use of electricity in the home, school and community. Refer them to pictures from their textbooks. 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 them to pictures from the text book.

touching hot iron by way of checking hotness

touching electrical items with wet hands

Leaving electric iron on when not in use

- Let learners discuss the pictures and compare with the safe use of electricity. Ask learners what will happen from the two scenarios they have seen.

Activity 3

- 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. Find out from learners why electrical gadgets are covered with plastics and wooden materials.

Think and do

Have learners find out why Electrical gadgets are covered with plastic and wooden materials. 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 learners book on page 101.

What I Have Learnt/ Reflection

1. Have plenary discussion on importance of safety when using electricity. Teacher reinforces learners' ideas on the safe use of electricity.
2. 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.

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

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

Exercise 2

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

Answers to Workbook

Trial 1

1. True
2. True
3. None

Trial 2

Accept appropriate drawing from learners

LESSON 2: How do Batteries Work

LB: *pages 105-110;* **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 will,
- 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.

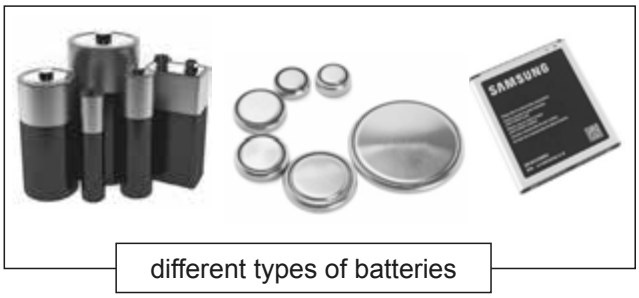
HELPFUL LINKS
- https://www.youtube.com/watch?v=6ipWmdB7xxE
- https://www.science.org.au/curious/technology-future/batteries

Background Information
Batteries are used in electronic devices to help them work. Some electronic devices use electricity 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

Activity 1
- Show learners pictures of batteries and electronic devices. Let them share their ideas on the pictures.



different types of batteries


different types of electronic devices

Activity 2
Provide learners with toys that operate on batteries.
- Engage them 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. Supervise learners to draw and colour any electronic gadget of their choice. They should talk about their drawings.

Think and do

Have learners work in pairs to discuss how a toy behaves without the battery.

Talk About

Refer learners to page 107 of their learners book to discuss the questions in pairs.

What I Have Learnt/Reflection

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

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.

Assesment for learning
Supervise learners to do the assesment task. Refer them to pages 107-108 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
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

LESSON 1: Effects of Forces on Objects

LB: *pages 111-113;* **WB:** *pages 56-57*

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

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

LEARNING EXPECTATIONS
Learners will,
- 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 forcers 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 force in groups/pairs. Take feedback from learners.

Teaching Instructions

Activity 1

Engage learners in different activities that involve effects of forces eg. Squeezing of empty plastic bottles.
- Pulling a rope.
- Kicking a ball.
- Pushing of objects.
- Folding of papers.
- Let learners talk about their observations on the activities.

Activity 2
- Put learners in convenient groups. Let them write what changes they saw from the activities. 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 113.

Talk About

Elaborate on learners ideas to discuss Talk About questions on page 113 of learner's book .

What I Have Learnt/Reflection

- 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.

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
Trial 1
1. force
2. force

Trial 2
1. move
2. direction
3. shape

Trial 3
Learner's drawing

LESSON 2: Simple Machines

LB: *pages 114-117;* **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 will,
- Identify simple machines.
- Demonstrate how to use simple machines.
- Draw their favourite machines.

NEW WORDS
Simple machines, faster.

RESOURCES
Pictures of simple machines.

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

Activity 1
Let learners write or say what simple machines are with examples. Take learners feedback and write their answers on the board.

Activity 2
Display simple machines for learners in groups to identify them.

Demonstrate to learners how to use the simple machines. Eg. Cutting a piece of paper / cloth. Guide learners to practise how to use simple machines. Ensure they do not use sharp machines.

Activity 3
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 electrical appliances.

Talk About

Let learners brainstorm and talk about questions on page 113. Take feedback from learners.

What I Have Learnt/Reflection

Reinforce the use of simple machines for specific work. Ask learners questions for them to come out with what they have learnt.

Project for home or school

Encourage learners to do the project work outlined on page 117.

Assesment for learning
Supervise learners to do the assesment task. Refer them to page 114 of the Learner's Book and pages 57-59 of the Workbook.

Answers to Review Exercises
Exercise 1
Bottle opener → c
Spanner → d
Cutlass → a
Pair of scissors → b

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

Exercise 3
4. Accept correct drawings of 2 simple machines.

Answers to Workbook
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.

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 120-124;* **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
Explain why we must keep our body clean
Identify materials for keeping our bodies clean

NEW WORDS
Scissors, nail cutter, germs, frequently.

RESOURCES
Scissors, germs tooth paste, soap, sponge, water, nail cutter, comb

CORE COMPETENCIES
Communication and collaboration, critical thinking.

SUBJECT SPECIFIC PRACTICES
asking, observing, evalasting.

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
It is very necessary to keep the body clean to avoid sicknesses and skin diseases. Regular bathing is very necessary.

Starter
Inspect learners finger nails. Group them into categories; those with short and neat finger nails and those with long and dirty nails. Keeping nails short and neat one ways of keeping the body clean. Therefore, everybody should keep their nails short and clean at all times.

Teaching Instructions

Activity 1
Engage learners in an activity to identify items for cleaning the body such comb, scissors, towel, soap, sponge.

Activity 2
Engage learners in a group activity to demonstrate how to clean the teeth using brush and paste.
Go round to see if they are doing it well.

Activity 3
Demonstrate how to trim the finger nails using a nail cutter. Call one learner and demonstrate with him or her for the others to watch.

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

What will happen if we dont keep our bodies clean?
Have learners work in pairs and talk about the question.

What I Have Learnt/Reflection

We have to keep ourselves clean at all times. Parts of our bodies such as the nails, hair, teeth must be cleaned always.
We need to use soap, sponge, water to keep clean. Ask questions about what they have learnt.

Project for home or school

Refer learners to page 123 of the Learner's Book.

Assesment for learning
Supervise learners to do the assesment task. Refer them to page 122 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

LESSON 2: Keeping the Classroom and School Compound Clean.

LB: *pages 125-128;* **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 EXPECTATION
- Learners are expected to properly know how to keep 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
How do you clean your school and your classroom? It is very important to keep your school and classroom environment clean every day for personal hygiene, in the classroom and on the school compound. You must sweep with a broom. You must dust tables, chairs and windows with a clean duster. The floors must also be wiped every day.

Starter
Do think-pair-share activity. Help learners to find out how they have been keeping their classroom and school compound clean.
Listen and write key responses on the board to ensure that key words are also learnt.
Have learners discuss and present what will happen if they do not sweep their classrooms.

Teaching Instructions

Activities
In groups, have learners perform different activities at a time and report to the class.
- PRESENTATION: Have some learners observe the floor, another group observe ceiling and windows and the last group observe sitting area.
- Have learners present their observations orally.
- Learners are to tour the school compound and tell whether it is clean or dirty.
- Ensure to write learners responses on the board.
- Now in groups have learners discuss the need to keep
- 1 The classroom and school surroundings clean to avoid sickness,
- To destroy the hiding places of mosquitoes, snakes, wall geckos in order to ensure good ventilation.
- Have learners draw a paper dustbin.

Think and do

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

Talk About

What will happen if you dont clean your classroom well? Have learners work in pairs and write down their answers.

What I Have Learnt/Reflection

1. Allow learners to talk about what they have learnt by writing it on pieces of papers to read or display in class. Summarize the key learning concepts to learners and have them write them in their books.
2. It is good to sweep your classroom with a broom.
3. Collect the dirt with a dust-pan and put the rubbish in a dustbin.

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.

Assesment for learning

Supervise learners to do the assesment task. Refer them to page 127 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

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.

LESSON 1: Ring worm Disease

LB: *pages 129-134;* **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 will:
- Know the causes of ringworm disease.
- Explain how the disease can be prevented.

RESOURCES
Pictures of people suffering from ringworm.

NEW WORDS:
Ring worm, fungi.

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

SUBJECT SPECIFIC PRACTICES
Observation, Prediction.

Background Information
In basic one we learnt about some examples of skin diseases. A skin disease is a disease that affects the skin. Examples are eczema, ring worm and heat rashes. In this lesson, we will learn about ringworm. Ring worm is one of the most common skin diseases in children.

Starter
Show pictures or video of people suffering from skin diseases. Engage learners in a discussion to get their understanding on the topic.

Teaching Instructions

Activity 1
- Ask learners to share personal experiences on skin diseases.

Activity 2
- Brainstorming on the causes and Prevention of Ringworm.
- Guide learners in groups to discuss the signs that show that someone is suffering from ringworm.
- Let learners discuss the ways that a person can be infected by ring worm such as playing with an infected pet, or sharing belongings with someone suffering from the disease.
- based on the suggested causes, assist learners to come out with ideas on what can be done to prevent ring worm infections.

Activity 3
- Ask individual learners to narrate what they will do to avoid themselves and their family members from suffering from Ringworm.

Activity 4
- Making posters on Ringworm Disease
- Gather materials such as cardboard, pencils and poster colours.
- Ask your teacher to help you write messages on how to prevent ringworm.
- You can write messages such as " bath regularly to prevent ringworm", avoid sharing clothes with others" wash your hands after playing in sand".
- Colour your poster beautifully and show it to your friends.

Talk About

Refer learners to page 132. Engage them to discuss the question stated under talk about. That is:
- 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/Reflection

Lead the class to read what is written on page 133 as follows:

- Ringworm is a disease that affects the skin.
- It can spread when we use personal belongings 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 132 for instructions.

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

1. skin, fungi, hands, bath and clothes in that order.

2. wear clean clothes
   wash my hands with soap
   keep myself neat at all times

Exercise 2

1. a. dirty clothes
   b. animals
   c. athlete's foot disease
   d. head
   e. avoid contact with infected persons

Answers to Workbook
Trial 1
Suggested answers

a. I will bath regularly.
b. I will wear clean clothes.
c. I will wash my clothes always
d. I will wasjh my hands with soap and water when they get dirty.
e. I will avoid sharing personal belongings with infected people.
f. I will notplay 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.

LESSON 2: Prevention of Common Water-Borne Diseases

LB: *pages 135-140;* **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 EXPECTATION
- Learners are expected to know some common water-borne diseases and their prevention.

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.

Background Information
Do you know that it is important to keep our water we drink clean? We can do that if we observe personal hygiene habits. Anytime we drink water which contains germs, we can suffer from diahorrea, cholera or typhoid. These are very common water-borne diseases.

Starter
In a think-pair-share activity, have learners guess or predict what will happen to them if they do not drink clean water.
Allow learners to provide responses and write key words on the board.

Teaching Instructions

Activities
In groups have learners observe pictures in the learners book and talk about what they see in the picture.
- Have learners do oral presentation on water they see in the second picture.
- Explain to learners that drinking unclean water can make you sick.
- In groups have learners observe containers of dirty and clean water, and then discuss which of the water is safe for drinking and why?
- Explain to learners that unclean water contains micro-organisms which we cannot see that causes diseases.
- In groups let learners discuss how they can prevent themselves from contracting water-borne disease (boiling water, filtering water) etc.
- 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 geting 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 if you do not know about common diseases and their prevention.
Have learners work in pairs.

What I have Learnt/Reflection

1. Allow learners to talk or write in brief about what they have learnt.
2. Summarize the key learning ideas for learners to copy into the books.
3. I have learnt that cholera, diahorrea and typhoid are some common water-borne diseases. Vomiting and continuous diarrhoea symptoms must be reported to the doctor for treatment.

Project for home or school

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

Project

Have learners design a poster to show or display what will happen if they were attacked by cholera, diarrhoea or typhoid fever.

Assesment for learning

Supervise learners to do the assesment task. Refer them to page 139 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

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.

LESSON 1: Impact of Technological Devices Used in Our Communities

LB: *pages 141-143;* **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 EXPECTATION
- Learners are expected to properly know technological devices used in the community and describe their impact.

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*

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
Use think-pair-share activity for learners to predict what will happen if there were no blenders, cars and bicycles in their communities?
Allow learners to present their answers and write key ideas on the board.

Teaching Instructions

Activities
Put learners in convenient groups and allow learners to observe and name some technological devices they see in the school, at the home, in the market places, hospitals, mosque, churches, bus stations, airport, etc.
- Have each group name at least ten of the technological devices and write key ideas on the board.
- Show pictures in learners' textbook of technological devices to learners or show videos of technological devices used in the community for learners to discuss in groups.
- Show real technological devices to learners and allow them to identify, name and know what those technological devices are used for in the community or their communities.
- Write all key ideas on the board and explain to learners.
- Ask learners to draw two technological devices that can help them travel from one place to another.

Think and do

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

Talk About

What will happen if there are no cars in our communities? Have learners work in pairs and discuss the topic.

What I Have Learnt

Have learners talk about or write briefly about 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. Technologies make life very easy for everyone.
3. Examples of technologies 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 create a new technological device that they can use to keep their pencils safe.

Assesment for learning

Supervise learners to do the assesment task. Refer them to page 143 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

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

LESSON 2: Processing of Foods

LB: *pages 144-147;* **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 know the 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.google.com/search?q=-food+processing+in+ghana&sxsrf=ALeK-k01UvJDcZ7CeWKNH2AdjUJKTUDeZl-w:1583335085088&source=lnms&tbm=isch&sa=X&ved=2ahUKEwiTh7rqjoHoAhX-SyYUKHYbWC00Q_AUoAXoECA8QAw&biw=1366&bih=576

Background Information
We can process 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.

Starter
Have each learner draw and display the food they eat every day.
Let each learner mention the name of the food they have drawn.

Teaching Instructions

Activities
In groups have learners state why foods must be processed before it is consumed.

- Write learners response on the board and explain further.
- Now have learners observe pictures of the raw and processed foods in their textbooks and talk about what they see in the pictures in groups. Write their responses on the board.
- Present samples of raw food stuffs to learners and then let them talk about how they can process them for consumption.
- Emphases on key processing methods to learners such as washing, boiling, frying, baking, roasting etc.
- Show video to learners to observe the processes as well.

Think and do

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

Talk About

What will happen if we do not know ways of preserving food? Have learner work in groups of five. They brainstorm and discuss their views with the whole class.

What I Have Learnt/Reflection

1. Have learners talk about or write key ideas learnt.
2. Summarize the lesson for learners to know that there are different ways through which foods can be processed. These are boiling, frying, roasting, baking and drying.

Project for home or school

Refer learners to do Project for home or school work in their text book on page 147.

- Have learners make a poster of different ways flour can be processed and used.

Assesment for learning
Supervise learners to do the assesment task. Refer them to page 147 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
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

LESSON 1: Human Activities Harmful on the Environment.

LB: *pages 148-152;* **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 EXPECTATIONS
- 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, videos, natural environment.

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
What do we see in our communities? Is it a neat place? Can you describe how neat your school community is? Some people throw rubbish around to make the environment very dirty. People burn in gutters near streets and near moving cars. Smoke enters our rooms and the atmosphere when we burn. Smoky cars give off carbon gas which also gets into the atmosphere. This can change the climate.

Starter
Have learners come out with different activities that could harm the environment (bush burning, burning of rubbish, throwing rubbish into water bodies. This should be done in a think-pair-share activity.

Teaching Instructions

Main Activities
Write key responses from learners on the board.

- Have learners watch all the three pictures in learners' book showing different activities and scenes that destroy our environment.
- Have learners talk about their observations and write key ideas on the board.
- Let learners determine if they could be harmed by those activities and environmental situations like smoke in the air.
- Explain to learners that fossil fuels like the petrol used in cars is causing the world to become warmer, affecting the weather.
- Now still in groups have learners discuss and talk about the weather, farming and fishing activities. Find out from learners whether crops are able to grow well through the year.
- Write learners' response on the board as they present their responses in groups.

Think and do

Put learners into convenient groups. Let them talk of other activities that pollute the atmosphere.

Talk About

What will happen if you do not know about climate change. Have learners work in pairs and discuss the topic.
Refer them to page 150 of the Learner's Book.

What I Have Learnt /Reflection

Have learners talk about what they have learnt individually. Also, summarise main ideas for learners. Burning of fuels in cars can cause climate change. Burning of farmlands and dropping rubbish in the sea and other water bodies are all human activities that cause climate change.

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 150 of the Learner's Book.

Project
Group project.
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.

Assesment for learning
Supervise learners to do the assesment task.
Refer them to pages 150-151 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
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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