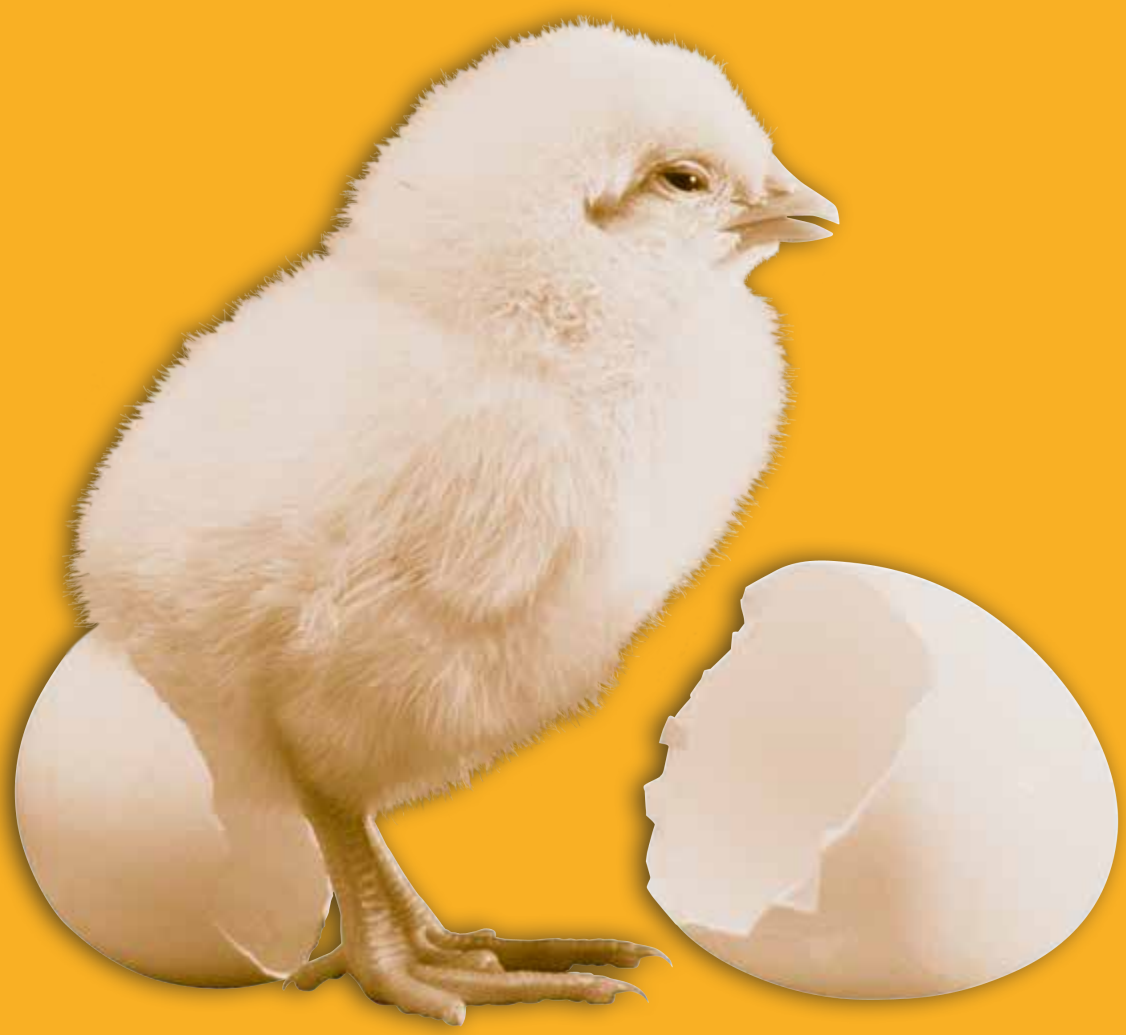
NNF BOOKS

ESSENTIAL Science

Primary 1

Teacher's Guide



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Primary 1

Teacher's Guide

John Wilberforce Essiah

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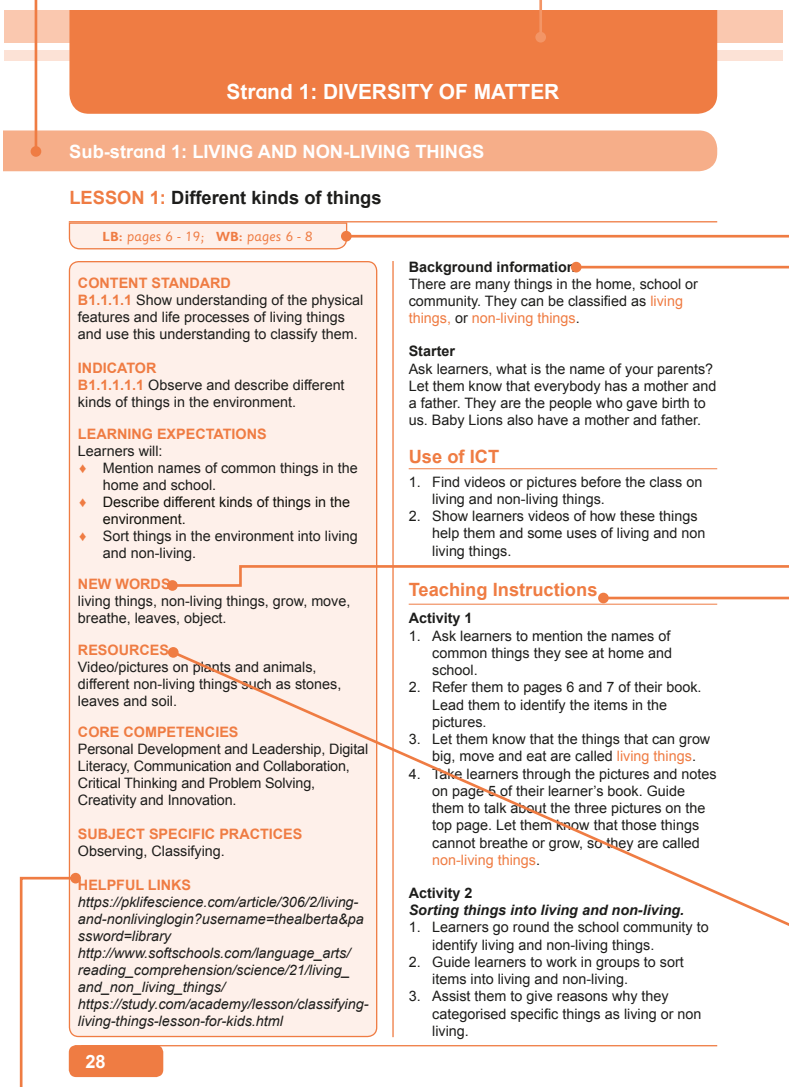
CONTENTS

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 1: DIVERSITY OF MATTER

Sub-strand 1: LIVING AND NON-LIVING THINGS

LESSON 1: **Different kinds of things**

LB: pages 6 - 19; WB: pages 6 - 8

CONTENT STANDARD
B1.1.1.1 Show understanding of the physical features and life processes of living things and use this understanding to classify them.

INDICATOR
B1.1.1.1.1 Observe and describe different kinds of things in the environment.

LEARNING EXPECTATIONS
Learners will:
- Mention names of common things in the home and school.
- Describe different kinds of things in the environment.
- Sort things in the environment into living and non-living.

NEW WORDS
living things, non-living things, grow, move, breathe, leaves, object.

RESOURCES
Video/pictures on plants and animals, different non-living things such as stones, leaves and soil.

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

SUBJECT SPECIFIC PRACTICES
Observing, Classifying.

HELPFUL LINKS
https://pklifescience.com/article/306/2/living-and-nonlivinglogin?username=thealberta&password=library
http://www.softschools.com/language_arts/reading_comprehension/science/21/living_and_non_living_things/
https://study.com/academy/lesson/classifying-living-things-lesson-for-kids.html

Background information
There are many things in the home, school or community. They can be classified as living things, or non-living things.

Starter
Ask learners, what is the name of your parents? Let them know that everybody has a mother and a father. They are the people who gave birth to us. Baby Lions also have a mother and father.

Use of ICT
1. Find videos or pictures before the class on living and non-living things.
2. Show learners videos of how these things help them and some uses of living and non living things.

Teaching Instructions

Activity 1
1. Ask learners to mention the names of common things they see at home and school.
2. Refer them to pages 6 and 7 of their book. Lead them to identify the items in the pictures.
3. Let them know that the things that can grow big, move and eat are called living things.
4. Take learners through the pictures and notes on page 6 of their learner's book. Guide them to talk about the three pictures on the top page. Let them know that those things cannot breathe or grow, so they are called non-living things.

Activity 2
Sorting things into living and non-living.
1. Learners go round the school community to identify living and non-living things.
2. Guide learners to work in groups to sort items into living and non-living.
3. Assist them to give reasons why they categorised specific things as living or non living.

28

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

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.

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.

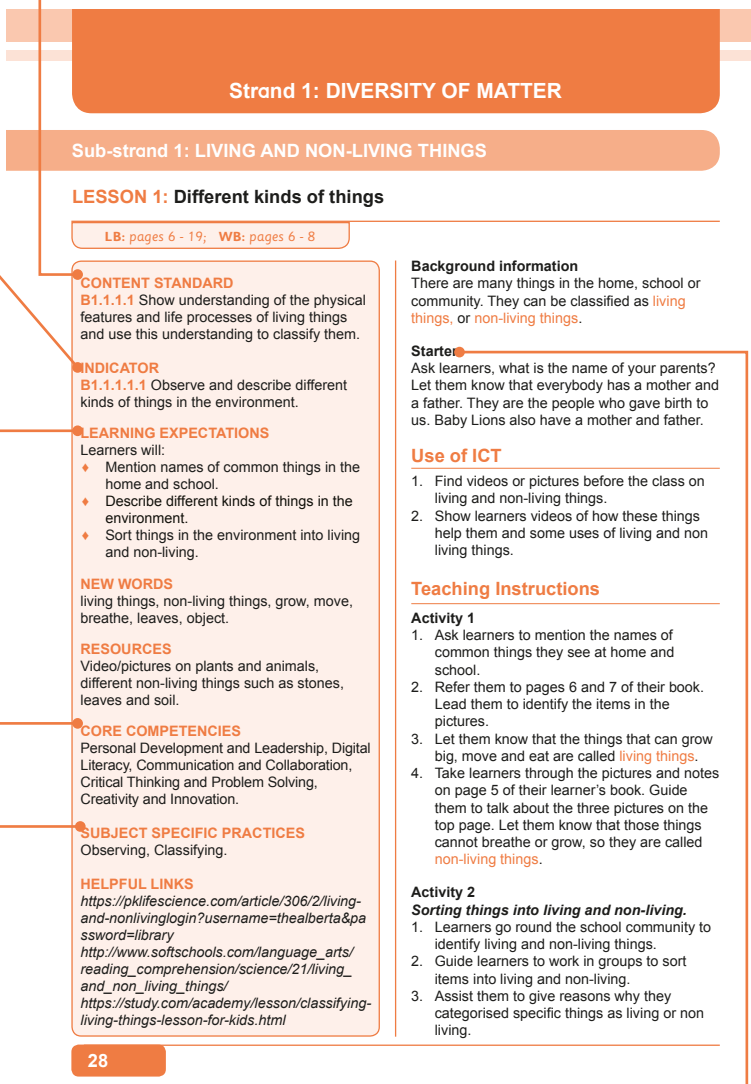
Indicator
This feature indicates the specific things that learners need to know and be able to demonstrate in order to achieve the content standards. Lessons are generated from these indicators.

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

Learning Expectations
are provided to help both teachers/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.



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2. Refer them to pages 6 and 7 of their book. Lead them to identify the items in the pictures.
3. Let them know that the things that can grow big, move and eat are called living things.
4. Take learners through the pictures and notes on page 5 of their learner's book. Guide them to talk about the three pictures on the top page. Let them know that those things cannot breathe or grow, so they are called non-living things.

Activity 2
Sorting things into living and non-living.
1. Learners go round the school community to identify living and non-living things.
2. Guide learners to work in groups to sort items into living and non-living.
3. Assist them to give reasons why they categorised specific things as living or non living.

28

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

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.

Activity 3

1. Classify living things as plants or animals
2. Give learners a list of living things such as Dog, lion, mango tree, pawpaw tree, lizard, Giraffe, Coconut tree, tomato Plant.
3. In pairs learners must classify them as plants or animals.

Talk about

1. Engage learners to discuss among themselves what will happen if there are no plants and animals on earth.
2. This can be done in pairs or in groups of 4 or 5.

What I have learnt

Deduce from learners what they learnt after the lesson.

In this unit, we learnt that:

1. Plants and animals are examples of living things.
2. Animals can move their whole body, but plants move only part of their body.
3. Plants can make their own food, but animals cannot.
4. Animals and plants that live on their own or in the forest are called wild animals and plants.

Project for home or school

Guide the learners to understand what is expected of them. This project should be done in pairs.

Assessment for learning

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

Answers to Review Exercise

Exercise 1

1. A 2. P 3. A 4. P
5. P 6. A 7. P 8. A

Exercise 2

M	A	N	G	O	
			U		
B	A	N	A	N	A
			V		
	O	R	A	N	G	E

Exercise 3

Rewrite the scrabbled names of animals.

a. monkey b. lion c. parrot
d. lizard e. goat

Workbook Answers

Trial 1

Plants	Animals
A	C
B	E
D	F
G	H

Trial 2

Home	Wild
A	D
B	E
C	F
	G
	H

Trial 3

1. Bird
2. Goat
3. Fish
4. Maize
5. Lion

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.

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..

Answers

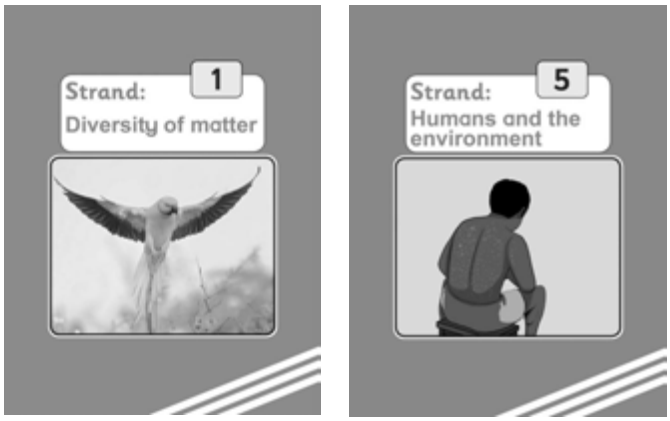
Expected answers are provided for all exercises under every lesson in the Learner's Book and Trials in the Workbook. Where answers are to vary from one learner to the other, it is mentioned.

Organisation and structure of the Learner's Book

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

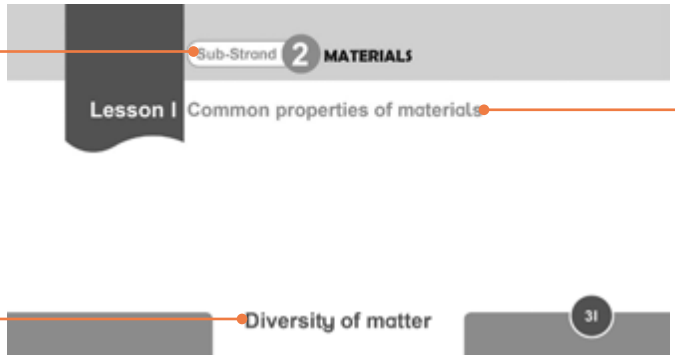


Header and footer labels

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.

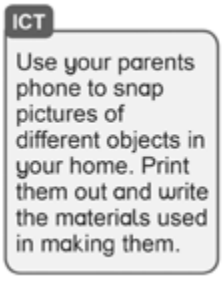


New words

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

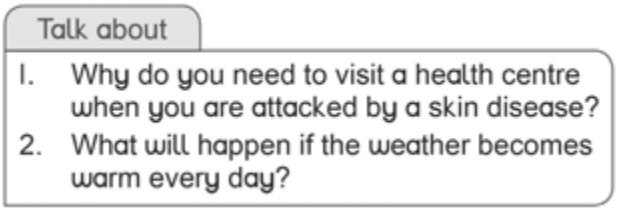
ICT boxes

- include research activities
- emphasise the core competencies



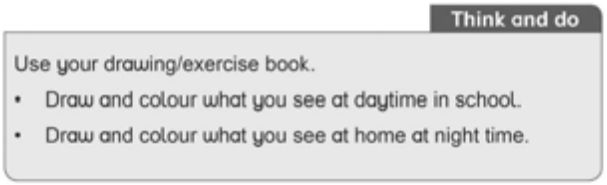
Talk about

- 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



Think and do

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



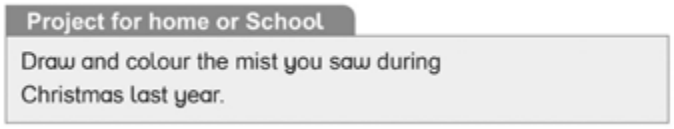
Think and do

Use your drawing/exercise book.

- Draw and colour what you see at daytime in school.
- Draw and colour what you see at home at night time.

Project for home and school

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

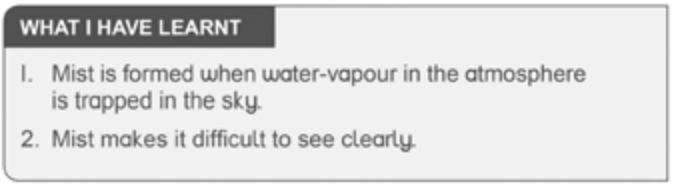


Project for home or School

Draw and colour the mist you saw during Christmas last year.

What I have learnt

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

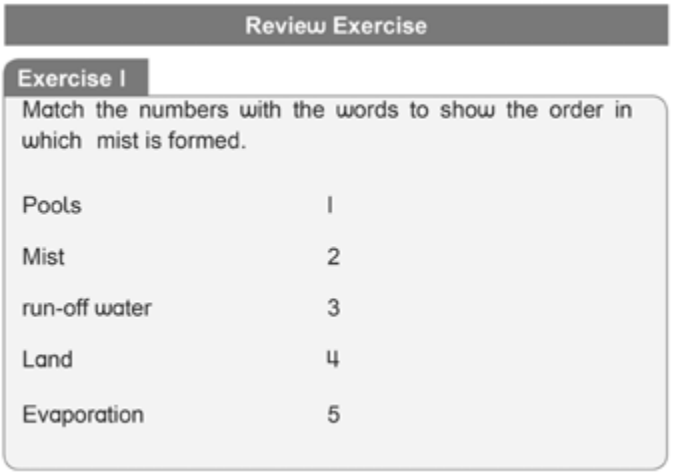


WHAT I HAVE LEARNT

1. Mist is formed when water-vapour in the atmosphere is trapped in the sky.
2. Mist makes it difficult to see clearly.

Review Exercise

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

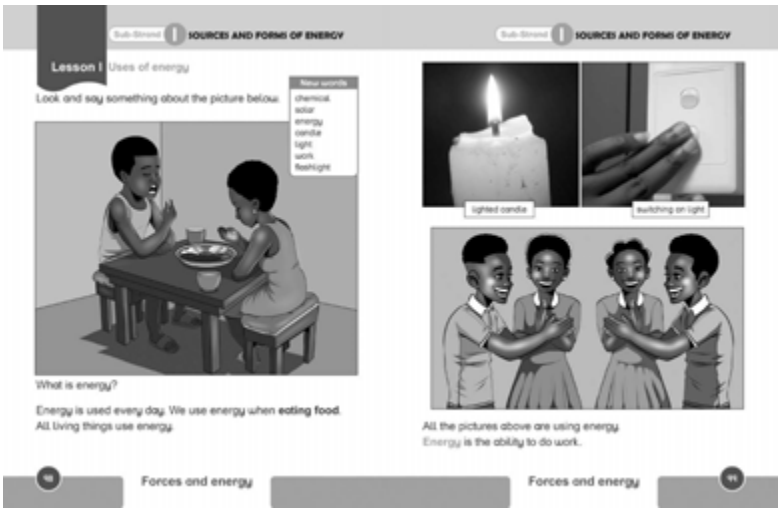


Review Exercise

Exercise I

Match the numbers with the words to show the order in which mist is formed.

Pools	I
Mist	2
run-off water	3
Land	4
Evaporation	5

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** • Draw a person suffering from ringworm in the hair and skin. • Draw and colour a boy suffering from chicken pox.
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	 Lesson 1 Uses of energy SOURCES AND FORMS OF ENERGY Look and say something about the picture below. What is energy? Energy is used every day. We use energy when eating food. All living things use energy. lighted candle switching on light All the pictures above are using energy. Energy is the ability to do work. Forces and energy Forces and energy

INTRODUCTION

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

The objective of this Teacher's Guide is to make teaching and learning more interactive, practical, useful and to bring out the ingenuity of teacher professionalism in the teacher/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 as a 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/

facilitators 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/facilitators in Ghana teach large classes. Such classes are in the range of 40 to 100 learners or more. The teachers/facilitators 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/facilitators 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/facilitators 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/facilitators 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

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

Example: **B3 .2.4.1.2**

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

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

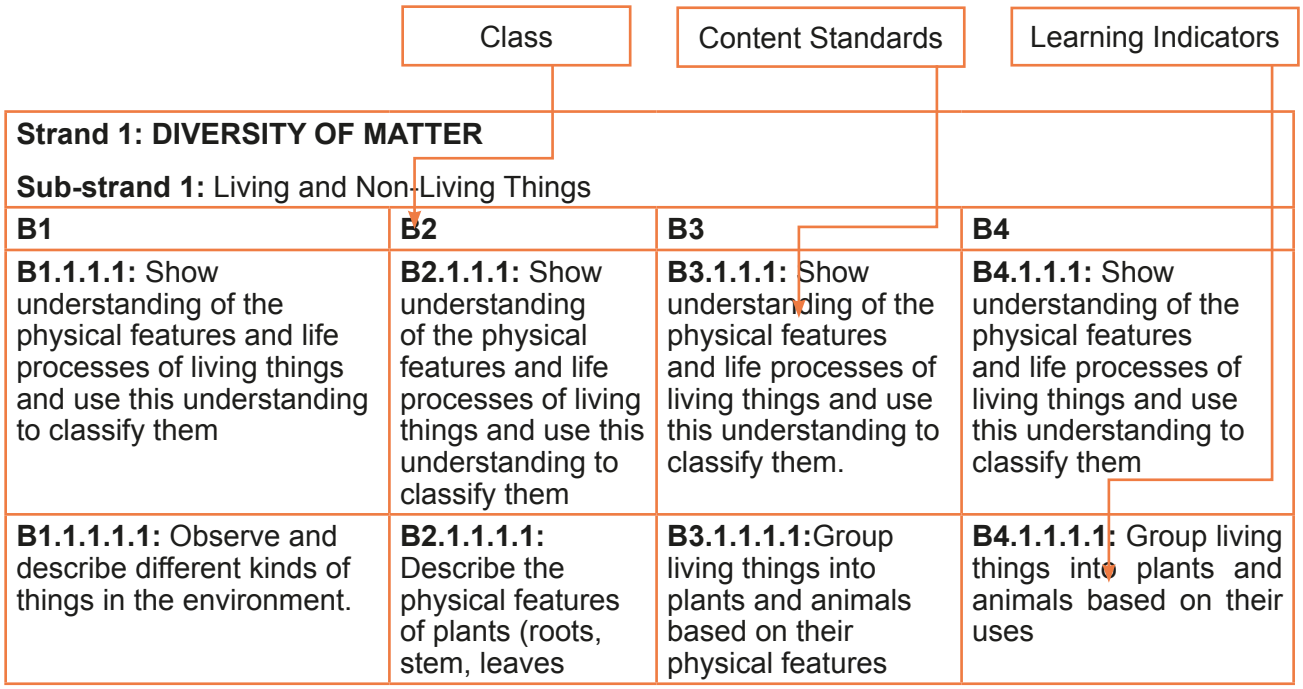
Sub-strands are the topics within each strand under which the content is organised.

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

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

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

ILLUSTRATION OF CURRICULUM STRUCTURE



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 emphasised. Learner's progression is based on score in exams.	Relies on different modes of assessment, progression is based on mastery of competency.
10.	Mainly focused on theoretical mode of teaching.	Plethora of learning modes.

Source: NaCCA, Ministry of Education 2019

SCOPE AND SEQUENCE

STRAND	SUB-STRANDS	B1
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 1

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 1

Date: 14/03/2019	**Period:** Double period	**Subject:** Science	
Duration: One hour		**Strand:** Systems	
Class: B1	**Class size:** 50	**Sub-strand:** The Human Body Systems	
Content Standard: **B1.3.1.1** Recognise that different parts of the human body work interdependently to perform a specific function.		**Indicator:** **B1.3.1.1.1** Identify the external human body parts by their appropriate names (e.g. eyes, ears, mouth, nose, legs, hands, shoulders, knees, fingers, toes and chest)	**Lesson:** 1 (Based on the demands of the indicator)
Performance Indicator: Learners can identify the human body parts with their appropriate names and understand the interdependency of the parts.		**Core Competencies/Values:** Personal Development and Leadership; Digital Literacy; Critical Thinking and Problem Solving; Creativity and Innovation.	
Keywords: External, eyes, ears, mouth, nose, legs, hands, shoulders, knees, fingers, toes and chest.			

Phase/Duration	Learners activities	Resources
Phase1: Starter (preparing the brain for learning) 5 minutes	Have the learners stand and form a circle. Sing the following words, have them use body actions to do the movements in the song. Teacher models, and leads the movements throughout the song. E.g., "my head, my shoulders, my knees and toes" or "show me your head, show me your eyes".	
Phase 2: Main (newlearning including assessment) 20 minutes	Have learners get into pairs and identify external parts of the human body on each other. Teacher/facilitator uses videos; charts/pictures to guide learners identify the external parts of the human body. Put learners into groups and give each group flash cards of parts of the human body. Asks learners in their groups to arrange the flash cards of body parts to form the human body on a cardboard. Ask each group to display their work for discussion. Ask each learner to draw an outline of the human body, put in the eyes, ears, mouth, nose, and chest, and use a colour of their choice to colour their drawing. Learners display their work for discussion.	Pictures/ flashcards of parts of the human body, an outline drawing of the human body, pencils, crayons, erasers, cello tape, broadsheets of paper.

	Learners build a human body using clay or blue tack. **Assessment** Why is it good to have all the parts of the human body working well?	
Phase 3: Plenary/ Reflections (Learner and teacher) 5 minutes	Teacher/facilitator moves round the groups to find out the progress learners are making with respect to the task given them and where necessary ask questions to guide them. Teacher facilitates the presentations and sum up the learning outcomes.	

Source: NaCCA, Ministry of Education 2019

1

Strand:

Diversity of matter

LESSON 1: Different kinds of things

LB: *pages 6 - 19;* **WB:** *pages 6 - 8*

CONTENT STANDARD
B1.1.1.1 Show understanding of the physical features and life processes of living things and use this understanding to classify them.

INDICATOR
B1.1.1.1.1 Observe and describe different kinds of things in the environment.

LEARNING EXPECTATIONS
Learners will:
- Mention names of common things in the home and school.
- Describe different kinds of things in the environment.
- Sort things in the environment into living and non-living.

NEW WORDS
living things, non-living things, grow, move, breathe, leaves, object.

RESOURCES
Video/pictures on plants and animals, different non-living things such as stones, leaves and soil.

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

SUBJECT SPECIFIC PRACTICES
Observing, Classifying.

HELPFUL LINKS
https://pklifescience.com/article/306/2/living-and-nonlivinglogin?username=thealberta&password=library
http://www.softschools.com/language_arts/reading_comprehension/science/21/living_and_non_living_things/
https://study.com/academy/lesson/classifying-living-things-lesson-for-kids.html

Background information
There are many things in the home, school or community. They can be classified as living things, or non-living things.

Starter
Ask learners, what is the name of your parents? Let them know that everybody has a mother and a father. They are the people who gave birth to us. Baby Lions also have a mother and father.

Use of ICT

1. Find videos or pictures before the class on living and non-living things.
2. Show learners videos of how these things help them and some uses of living and non living things.

Teaching Instructions

Activity 1
1. Ask learners to mention the names of common things they see at home and school.
2. Refer them to pages 6 and 7 of their book. Lead them to identify the items in the pictures.
3. Let them know that the things that can grow big, move and eat are called living things.
4. Take learners through the pictures and notes on page 5 of their learner's book. Guide them to talk about the three pictures on the top page. Let them know that those things cannot breathe or grow, so they are called non-living things.

Activity 2
Sorting things into living and non-living.
1. Learners go round the school community to identify living and non-living things.
2. Guide learners to work in groups to sort items into living and non-living.
3. Assist them to give reasons why they categorised specific things as living or non living.

Activity 3
Grouping different things
https://www.generationgenius.com/videolessons/classification-of-materials-video-for-kids/

1. Guide learners to sort-out different things from the school into groups based on colours, shapes and size.

> Use pictures of same Items with different colours, Shapes and sizes.

Activity 4
Picture album of different things.

1. Let learners work in groups to create their own picture album using pictures or drawings of different living things.

> Show learners pictures of dog, cats, humans, mango plant, pawpaw tree.

Think and do

1. Refer learners to page 12 of their Learners Book.
2. With what they have learnt from grouping different things, guide them to place the items under the given critiria.

Talk about

1. Ask learners this question. A car can move, is it a living thing.
2. Let learners share their ideas with their group members.
3. Each group should select a leader to tell the whole class their findings.

What I have learnt

After the lesson, engage learners and deduce from them what they have learnt.
Go round and let each person (selecting them at randon) tell you what they have learnt.
Ask them to read what is outlined on page 19 of their learners book. They can do this individually or in pairs.

1. All things in the world are said to be living or non-living.
2. Living things grow, take in food to create energy, make waste, and reproduce.
3. Plants and animals, including people, are living things.
4. Different kinds of living things behave in different ways.
5. All living things are important and should be treated with care and respect.

Project for home or school

Guide the learners to understand what is expected of them. They should bring their work to class for assessment.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 13 - 18 of the Learner's Book and page 6 - 8 of the Workbook.

Answers to Review Exercise

Exercise 1

1 **c**hairs
2 bed
3 house
4 elephant
5 all except the elephant

Exercise 2

1 small
2 square
3 big
4 green
5 round
6 yellow

Exercise 3

1 growing
2 moving/jumping
3 eating
4 reproducing or making babies

Exercise 4

Living things	Non-Living things
A	B
C	D
F	E

Exercise 5
Accept learners correct answers

Exercise 6

1. false
2. true
3. false
4. true
5. true

Answers to Workbook

Trial 1

Accept correct answer from learners

Trial 2

1. D
2. A
3. B
4. E
5. C

Trial 3

1. move
2. non-living thing'
3. water
4. living thing

LESSON 2: Plants and animals

LB: pages 20 - 24; WB: pages 9 - 11

CONTENT STANDARD
B1.1.1.2: Understand the differences between living things, non-living things and things which have never been alive.

INDICATOR
B1.1.1.2.1 Identify and name animals and plants in their locality.

LEARNING EXPECTATIONS
Learners will:
- Identify and name animals and plants within our school and home.
- Say some difference between plants and animals.
- Create album on plants.
- Create album on animals.

NEW WORDS:
Plants, animals, wild, forest and common.

RESOURCES
Pictures showing different animals. Uprooted plants.

CORE COMPETENCIES
Digital Literacy, Communication and Collaboration, Creativity and Innovation.

SUBJECT SPECIFIC PRACTICES
Observing, Classifying.

Background Information
We learnt that living things have life in them. Because they can move, have babies, eat and also grow big. All plants and animals that we see around are living things. There are many plants around us. We get food from plants. In our homes we see different Trees, and grasses. Some have very beautiful flowers, others have torns.

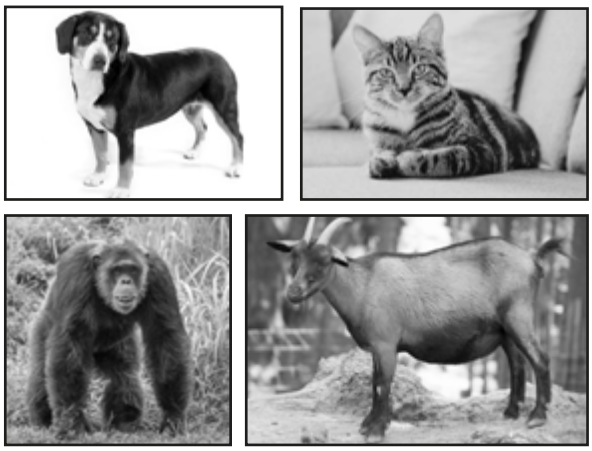
Starter
Start by asking learners to sing a song or rhyme on animals.

Use of ICT

1. Find videos or pictures before the class on different plants and animals.
2. Engage learners on these pictures and videos during thelesson.

Teaching Instructions

Activity 1
Identifying animals
1. Show learners pictures of different animals
2. Let learners identify the parts that are common to all animals.
3. In pairs, learners group animals into domestic and wild animals.



Activity 2
Identifying Plants
1. Take learners on a trip around the school community.
2. Guide learners to identify different grasses, small and big trees.

Activity 3

1. Classify living things as plants or animals
2. Give learners a list of living things such as Dog, lion, mango tree, pawpaw tree, lizard, Giraffe, Coconut tree, tomato Plant.
3. In pairs learners must classify them as plants or animals.






Talk about

1. Engage learners to discuss among themselves what will happen if there are no plants and animals on earth.
2. This can be done in pairs or in groups of 4 or 5.

What I have learnt

Deduce from learners what they learnt after the lesson. In this unit, we learnt that:

1. Plants and animals are examples of living things.
2. Animals can move their whole body, but plants move only part of their body.
3. Plants can make their own food, but animals cannot.
4. Animals and plants that live on their own or in the forest are called wild animals and plants.

Project for home or school

Guide the learners to understand what is expected of them. This project should be done in pairs.

Assessment for learning

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

Answers to Review Exercise

Exercise 1

1. A 2. P 3. A 4. P
5. P 6. A 7. P 8. A

Exercise 2

M	A	N	G	O	
			U		
B	A	N	A	N	A
			V		
	O	R	A	N	G	E

Exercise 3

Rewrite the scrabbled names of animals.

a. monkey b. lion c. parrot
d. lizard e. goat

Workbook Answers

Trial 1

Plants	Animals
A	C
B	E
D	F
G	H

Trial 2

Home	Wild
A	D
B	E
C	F
	G
	H

Trial 3

1. Bird
2. Goat
3. Fish
4. Maize
5. Lion

LESSON 3: Basic needs of living things

LB: *pages 25 - 30;* **WB:** *pages 12 - 14*

CONTENT STANDARD
B1.1.1.2: Understand the differences between living things, non-living things and things which have never been alive.

INDICATOR
B1.1.1.2.2 Know the basic needs of living things (food, water and air).

LEARNING EXPECTATIONS
Learners will:
- Mention the basic things that we all need to live.
- Demonstrate the presence of air in the environment.
- Identify the uses of water, air and food.
- Design poster card on air, water and food.

NEW WORDS
Air, breathe, water.

RESOURCES
Pictures showing a girl eating, lion eating meat, goat chewing grass, ballons, water, different food items

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

SUBJECT SPECIFIC PRACTICES
Observing, Analysis, Classifying.

Background Information
All living things need three main important things in order to survive on earth. These basic needs are food, water and air.

Bring samples of different foods such as vegetables, fruits and grains to class.

Starter
Start with a song on page 25 of the learners book.
Ask learners to mention their favourite food.

Teaching Instructions

Activity 1
Identifying the things we all need
1. Learners mention their favourite foods.
2. Learners work in groups of 5 to match some common animals with the food they eat.
3. List of Animals: hen, bird, lion, dog, goat.
4. List of Foods: grass, meat, maize,

Activity 2
The uses of Water
1. Show video on different sources of water in the world such as the sea, rivers, rain, lakes and lagoons.
2. Learners draw pictures of themselves showing one way that they use water.
3. Guide learners to mention the names of animals that live in water.

Activity 3
The uses of water to plants
1. Assist learners to plant two potted plants
2. One of the plants must be watered for a week
3. The other must not be watered.
4. Learners compare the plants after one week and come out with the differences.

Use pictures showing different ways that we use water.

Activity 4
Uses of Air
1. Assist learners to demonstrate different uses of air. Helps us to breathe, for whistling, inflating balloons, etc.

Show learners different pictures on uses of air: pumping a bicycle tyre, inflating a balloon, blowing a trumpet

Talk About

Engage learners to discuss what will happen if you do not drink water or eat food for a long period?

What I have learnt

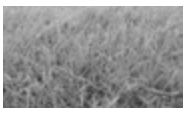
Go through this section with them to summarise the lesson.

1. The three most important things are Air, Water
2. and Food.
3. All animals, human beings and plants need Air, Water and Food
4. Air is everywhere and we breathe it in everyday.
   We eat food to grow strong and healthy.
5. We need to drink water every day to stay healthy.

Project for home or school

Guide learners to understand what is expected of them under project A and B.
Additionally:

1. They can draw and colour themslves eating a favourite food.
2. Match the animals with the kinds food they eat.



Assessment for learning
Supervise learners to do the assessment task. Refer them to page 28 - 29 of the Learner's Book and page 12 - 14 of the Workbook.

Answers to Review Exercise
Exercise 1
Check learners drawing

Exercise 2
1 a matches with c
2 b matches with a
3 c matches with b

Workbook Answers
Trail 1
Accept learners correct answer

Trail 2
1. D
2. C
3. B
4. A

Trial 3
1. Food
2. Water
3. Air
4. Food
5. Water

LESSON 4: Difference between living and non-living things

LB: pages 31 - 37; WB: pages 15 - 16

CONTENT STANDARD:
B1.1.1.2: Understand the differences among living things, non-living things, and things which have never been alive

INDICATOR:
B1.1.1.2.3 Describe the differences between living and non-living things

LEARNING EXPECTATIONS:
Learners will;
- Describe different kinds of things in the environment.
- Sort things in the environment into living and non-living
- Identify differences between living things and non-living things
- Mention common examples of living and non-living things

NEW WORDS
Living things, Non-living things, Grow, move, breathe, make babies, eat

RESOURCES:
Videos or pictures on Plants and animals, different non-living things such as stones, leaves, and soil, living things such as insects

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

SUBJECT SPECIFIC PRACTICES
Observing, Analysis, Classifying.

Background information
All things in the world are grouped as living or non-living.

Starter
Take learners on a nature walk around the school to identify common living and non-living things.

Teaching Instructions

Activity 1
Mention some of the things you saw when you went on the nature walk.
1. Recall the lesson on things around us,

Activity 2
Sorting things into living and non-living
1. Learners work in groups to list the things they observed
2. Present a video or pictures of different living and non-living things
3. In groups learners sort the identified objects into living and non-living things

Activity 3
Brainstorming on differences between living and non-living things
1. Through questioning ask learners to give reasons for classifying specific items as living or non-living.
2. In identifying differences, guide learners to make reference to life processes such as movement, growth, nutrition and reproduction.

Activity 4
Sorting items into living and non-living things
1. Present learners with samples of non-living things or pictures of living and non living things
2. Guide learners to work in pairs to sort the things provided
3. Let learners work in groups to create their own picture album using pictures or drawings of different living things

What I have learnt:

- All things in the world are said to be living or non-living
- Living things grow, take in food to create energy, make waste, and reproduce.
- Plants and animals, including people, are living things.
- Different kinds of living things behave in different ways.
- All living things are important and should be treated with care and respect

Answers to Review Exercise

1.
Suggested Answers: teachers, boys, girls, friends, insects, plants, animals, birds

2.
a. non-living thing
b. living thing
c. non-living thing
d. living thing
e. non-living thing

3.
Suggested Answers: walk, talk, mobe, grow, eat, see, sing, dance

Workbook Answers

Trial 1

Suggested answers: Pictures: ball, egg, ant, frog, tomato plant, toy car, lizard, bed, giraffe, shirt

Trial 2

1. living thing
2. cannot grow bigger
3. make babies
4. a non-living thing
5. blackboard

Trial 3

Learners to draw.

LESSON 1: Identification of materials

LB: *pages 38 - 43;* **WB:** *pages 17 - 18*

CONTENT STANDARD
B1.1.2.1 Recognise materials as important resources for providing human needs

INDICATOR
B1.1.2.1.1 Identify and name a variety of everyday materials in their immediate environment.

LEARNING EXPECTATIONS
- Learners will:
- Identify and name materials in your home and school.
- Know the materials used for making some common things.
- Design objects from some given materials
- Create your own collection of different materials .
- Describe and group materials by their appearance (shape, size, colour, texture, mass).

NEW WORDS
Plastic, Metal, Ceramic, Glass.

RESOURCES
material such as paper, clay, wood, metal, glass, leaves, fabric and straw.

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

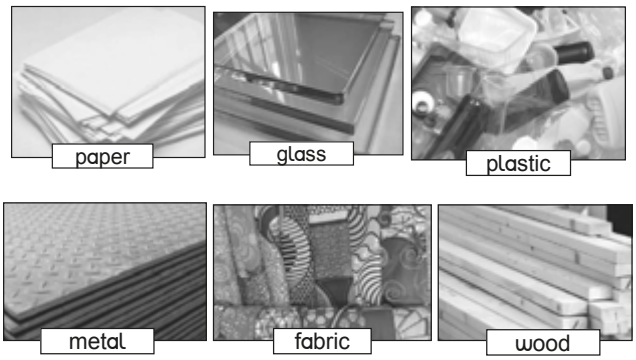
SUBJECT SPECIFIC PRACTICES
Observing, Classifying, Generalising, Communicating.

Background Information
Materials are all around us. We can see that materials are so useful to us. Materials are used to produce what we eat, wear and where we sleep.

Starter
Learners identify the things used to make the furniture in the classroom, the school building and the uniforms they wear to school.

Teaching Instructions

Activity 1
Identifying the material sources of objects
1. Show learners samples of materials such as wood, clay, metal and fabric
2. Guide learners to work in pairs to match objects such as chairs, cutlass, books, clothes with their material sources.



Activity 2
Designing objects from materials
1. In groups, learners design spoon, human being, pen and cup using clay.
2. Guide learners to produce different artifacts from paper.

Use of ICT

1. Show learners pictures and vidoes of different materials and what they are used for.
2. Guide learners to do a search on uses of some materials.
3. Learners can do the search at home and present their findings during the next lesson.

Talk about

This refers to the critical thinking questions. Learners are expected to reason and answer.

- Fabric is used to make clothes but cannot be used to make drinking cups. Why?

What I have learnt

Engage learners at the end of the lesson to tell you what they have learnt.
Ask learners to read what is in their learners book on page 43.

1. There are different kinds of materials around us.
2. Common everyday materials are wood, metals, plastic, paper, straw and clay. Materials have different properties.

Project for home or school

Refer to page 43 of the Learner's Book.
Direct learners of what is expected of them.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 40 - 42 of the Learner's Book and page 17 - 19 of the Workbook.

Answers to Reviews Exercise
Exercise 1
1. Wood
2. Metal
3. Clay
4. glass

Exercise 2
clay matches with earth ware
glass matches with bottles
paper matches with book
wood matches with chair

Exercise 3
1. the chair is made of wood, the other two are made of metal
2. utensil is made of clay, table and chair are wooden
3. saucepan is metallic other two are plastic

Exercise 4
1 i
2 a
3 e
4 c

Workbook Answers
Trial 1:

Materials	**Objects**
Glass	door
Leather	mattress
Fabric	car
Wood	television

Trial 2:
Possible answers
Fabric, wood, metal
Accept other answers from learners

Trial 3:
1. Wood
2. Metal
3. Clay
4. Glass

Trial 4:
1. c
2. d
3. b
4. c
5. a

LESSON 2: Grouping of materials by their appearance

LB: *pages 44 - 48.* **WB:** *pages 20 - 22*

CONTENT STANDARD
B1.1.2.1 Recognise materials as important resources for providing human needs.

INDICATOR
B1.1.2.1.2 Describe and group materials by their appearance (shape, size, colour, texture, mass).

LEARNING EXPECTATIONS
Learners will
- Describe materials by their appearance (shape, size, colour, texture, mass).
- Group different materials based on their properties .

NEW WORDS
rough, smooth, light, coloured.

RESOURCES
common materials such as wood, fabric, metals and paper.

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

SUBJECT SPECIFIC PRACTICES
Observing, Classifying, Generalising, Communicating.

Background Information
Materials are all around us. We can see that materials are so useful to us. Materials are used to produce what we eat, wear and where we sleep.

Assembly:
Pictures of rough objects
Pictures of soft objects
Pictures of coloured objects
Pictures of hard objects

Starter
Learners identify all hard items in the class. Afterwards they identify all items in the class that are light in weight.

Teaching Instructions

Activity 1
Assembling Different Materials
1. Gather different materials
2. This should include plastics, fabric, leaves, paper, wood, metal and glass.
3. Fix them on a sheet of paper and write their names under them.

Activity 2
Grouping Materials based on their properties
1. Look around the school, community and home.
2. Select materials that are
   bendable (3 pictures)
   hard (3 pictures)
   rough (3 pictures)
   smooth (3 pictures)

Talk about

This refers to the critical thinking questions. Learners are expected to reason and answer. Why is you chair harder than your exercise book? Why is your exercise book heavier than your eraser?

Let the learners do this in groups.

What I have learnt

Find out from learners what they have learnt after this lesson.
1. Materials have different properties.
2. Materials can be grouped based on their properties such as hard, smooth, rough.
3. I can produce my own material album.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 47 - 48 of the Learner's Book and page 20 - 22 of the Workbook.

Answers to Review Exercise
Exercise 1
1. hard 2. smooth 3. sticky 4. bendable

Exercise 2
1. heavy 2. smooth 3. hard

Workbook Answers

Trial 1:

1. Learners answers
2. Learners answers
3. Learners answers
4. Learners answers
5. Learners answers
6. Learners answers

Soft	round	light
Round	rough	rough

Trial 2:

Learners drawing

Trial 3:

1. Correct matching from learners
2. Bonus (No answer)
3. Correct matching from learners
4. Correct matching from learners
5. Bonus (No answer)

LESSON 3: States of materials

LB: *pages 49 - 53;* **WB:** *pages 23 - 25*

CONTENT STANDARD
B1.1.2.2 Know that substances can exist in different physical states (Solid, Liquid, Gas).

INDICATOR
B1.1.2.2.1 Identify and classify materials as solid, liquid or gas

LEARNING EXPECTATIONS
Learners will:
- Identify solids, liquids and gases
- Classify materials as solid, liquid or gas
- Give common examples of solid, liquid and gaseous substances

NEW WORDS
Solids, liquids and gas

RESOURCES
samples of solids such as stone, sand, chalk. Liquids such as water and fruit juice.

CORE COMPETENCIES
Creativity and Innovation, Personal Development and Leadership

SUBJECT SPECIFIC PRACTICES
Observation, Manipulating, Communicating Evaluating, Generalising

HELPFUL LINKS
https://courses.lumenlearning.com/introchem/chapter/three-states-of-matter/

Background Information
In our homes and communities, objects exist in different states. Many substances can be changed from one state to another by heating or cooling.

Starter
Start by asking learners to mention some materials they know.
Give learners different samples of solids and liquids. Ask them to sort the items into two groups with reasons.

Teaching Instructions

Activity 1
Identifying Solids
1. Engage learners on a walk around the school.
2. Assist learners to identify solid substances around the school.

> Use pictures of solids such as book, table, mobile phone

Activity 2
Identifying Liquids
1. Show pictures of some common liquids.
2. Let learners work in groups to mention common examples of liquids that they see around them and home.

Activity 3:
Demonstrating the presence of gas
1. Assist learners to demonstrate the presence of gases through activities such as whistling, inflating of balloons, fanning themselves, flying of kites.

Use of ICT

Take learners through a search to find the follwoing:
1. Is water solid, liquid or gas?
2. Five examples of gases.

Talk About

This refers to the critical thinking questions. Learners are expected to reason and answer.
How can water become solid or a gas?

What did you observe after blowing up the balloon?

Project for home or school

Instruct learners and guide them to understand what they will do:

1. to find out how liquid water turns to gas.
2. to demonstrate the presence of air.

What I have learnt

Take learners through these:

1. Materials can exist in three states solids, liquid and gas
2. Examples of solids are chalk, leaves, tables and chairs
3. Water, petrol, fruit juice and palm oil are examples of liquids.
4. Examples of gas is the air we breathe in and the gas used to fill balloons.

Assessment for learning

Supervise learners to do the assessment task. Refer them to page 23 - 25 of the Workbook.

Workbook Answers

Trial 1:

1. Liquid
2. Gas
3. Solid
4. Liquid
5. Gas

Trial 2:

1. → c
2. → b
3. → a
4. → c
5. → b
6. → a

Trial 3:

Learners drawings

LESSON 4: Mixtures of materials

LB: pages 54 - 56; WB: pages 26 - 27

CONTENT STANDARD
B1.1.2.3 Understand mixtures, the types, their formation, uses and ways of separating them into their components.

INDICATOR
B1.1.2.3.1 Demonstrate understanding that a mixture is two or more objects or materials put together.

LEARNING EXPECTATIONS
- Mention that a mixture is two or more objects or materials put together.
- prepare different kinds of mixtures.
- Separate some given mixtures.

NEW WORDS
Mixtures, solid-solid mixtures, solid-liquid mixtures, gas-gas mixtures.

RESOURCES
Beads of different colours and types, water, sand, sugar, gari, salt, gravels, bottle caps.

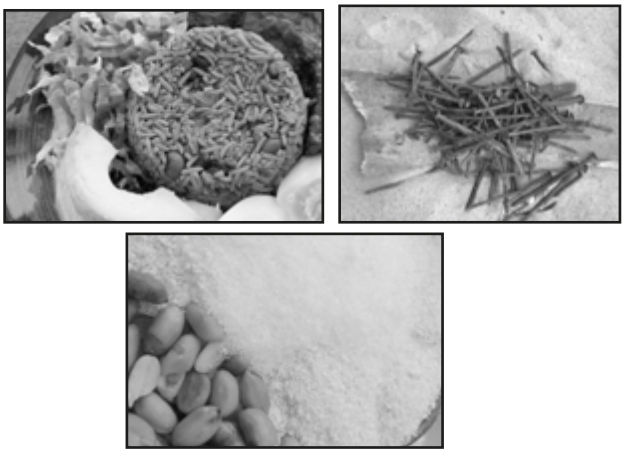
CORE COMPETENCIES
Communication and Collaboration, Personal Development and Leadership.

SUBJECT SPECIFIC PRACTICES
Manipulating, Observing, Evaluating, Generalising.

HELPFUL LINKS
http://www.chem4kids.com/files/matter_mixture.html
https://www.science-sparks.com/making-mixtures/

Background Information
We see mixtures every day. The air we breathe, the sea water and the beverage we drink in the morning are examples of mixtures.

Mixtures are very important to us. We mix two or more substances to form a mixture. Food is an example of a mixture.



Starter
Ask learners to tell how beverage is prepared in their homes.

Teaching Instructions

Activity 1
- Put learners in groups of 5 or 6.
- Provide each group with bottle caps, beads and an empty container.
- Ask each group to put the bottle caps and the beads in the container and mix them up.
- Let them know that they have made a mixture of bottle caps and beads.
- Now ask them to separate the mixture.
- Let each group tell you their observations.

Activity 2
- Now provide learners with different materials such as gari, sand, salt, milo, water, etc.
- Guide learners to prepare mixtures by adding any two substances such as water and milk, sand and gravels or gari and water.
- Let learners describe or talk about what happens in each case(mixture).
- Find out from learners if the mixture they have formed are the same as the original items.

Project for home or school

Learners are expected to do an activity by making their own mixture.

Guide learners and instruct them to do this activity in pairs.

What I have learnt

1. When two items are mixed together, a mixture is formed.
2. Mixtures are used everyday.
3. Examples of mixture are sand and stone, salt and water and soup.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 55 of the Learner's Book and page 26 - 27 of the Workbook.

Answers to Review Exercise
Exercise 1
sugar solution
gari and salt mixture
oil and milk mixture
other correct answers

Workbook Answers
Trial 1:
1. gari and sugar mixture
2. sad and water mixture
3. sand and iron nails

Trial 2:

Not a mixture	a mixture
Not a mixture	a mixture

Trial 3:
Learners drawing

Strand: 2

Cycles

LESSON 1: Day and night

LB: *pages 58 - 62;* **WB:** *pages 30 - 33*

CONTENT STANDARD
B1.2.1.1 Recognise that some events in our environment occur recurrently.

INDICATOR
B1.2.1.1.1 Explain that some natural phenomena such as day and night occur repeatedly.

LEARNING EXPECTATION
- Learners to know day and night occurrences as well as activities that is normally done during the day and night time.

NEW WORDS
day, warm, shine, light, bright, moon, night, clear, colours, warm.

RESOURCES
Circular cards, Round plastic containers, Ball.

CORE COMPETENCIES
Critical Thinking and problem solving, Creativity and Innovation, Personal development and Leadership.

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

HELPFUL LINKS
https://www.theschoolrun.com/homework-help/day-and-night
https://www.dkfindout.com/us/space/solar-system/day-and-night/
http://www.childfun.com/themes/world/day-and-night/

Background information
When the weather is very bright, it is daytime. Daytime weather is always clear so you can see. The sun shines brighter during the day.

A lot of people go out to work during the daytime. Every child can go to school during the daytime.

Starter
Put your learners in groups of four to six such that gifted learners' will support the slow learners.
Pose the following questions for learners to discuss within the groups.

1. Do you find it difficult to walk and see things clearly in your room after 7.00 pm?.....
2. Why do you find it difficult to see things clearly in your room after 7:00pm?.....
   .....
3. Guess what will happen if there was no daytime. Give learners thinking time and collect their responses.

Teaching Instructions

Activities
Note that for every period of science learning, you must take learners through a lot of activities.

4. Still in groups take learners to trace a round rubber bottle and a paper card.
5. Support learners to cut out the cards.
6. Support learners to fold the paper into two and write or colour Day time with what they see during day time.
7. Task learners to colour what they see at night time.
8. Guide learners to place the paper cards on their tables, and then turn the paper cards round for five times, observing the colours critically.
9. Talk about your observations.

10. Have learners talk about what they see and do during day and night time.
11. Have learners suggest other events that happen over and over again.
12. Have learners mention what they normally do during day time and at night time.

Think and do

Based on the activities you engaged learners on, task them to do the two drawings on day and night.

Talk About

Refer learners to page 59 of the learners book.

As a means to get their understanding of this lesson and also bring out their critical thinking ability, ask them what will happen if there was no daytime.

Encourage them to engage their friends in this discussions.

What I have learnt

Engage learners to say or write in brief what they have learnt.

Reflect as teacher to see whether the learning went well.

1. When the weather is clear and sunny it is daytime.
2. When the weather is dark and the sun goes away it is night time.

Project for home or school

Engage learners on the project on page 62. Encourage them to do these and submit on the next lesson.

1. Learners must draw two things they see at daytime.
2. Learners must draw one thing they see at nighttime.

Assessment for learning

Supervise learners to do the assessment task. Refer them to page 60 - 61 of the Learner's Book and pages 30 - 33 of the Workbook.

Ensure that learners can use the new words correctly. Ensure that learners work on their projects and home learning work.

Answers to Review Exercise

Exercise 1

1. u
2. h and n
3. r, g and t
4. c, e and r

Exercise 2

1. d and r
2. n, g and t
3. s and a
4. M and o

Workbook Answers

Trial 1

Learners answers

Trial 2

A	Day
B	Night
C	Day
D	Night

Trial 3

1. Sun, day
2. moon
3. day
4. sun, east
5. day
6. moon
7. sun
8. moon
9. day
10. sun

Trial 4

Learners drawing

LESSON 2: The sun

LB: *pages 63 - 67;* **WB:** *pages 34 - 35*

CONTENT STANDARD
B1.2.1.2 Recognise the relationship between the Earth and the Sun

INDICATOR
B1.2.1.2.1 Know that the sun is the main source of light to the earth

LEARNING EXPECTATION
- Learners are to know that the sun gives us light and provides us with warmth

NEW WORDS
Sun, Far, Shine, Set, Eat, Day, Warm, Bright, West.

RESOURCES
Torch light, Candle, Match stick, Lantern, Videos, Pictures.

CORE COMPETENCIES
Critical Thinking and problem solving, Creativity and Innovation, Personal development and
Leadership.

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

HELPFUL LINKS
http://www.sciencekids.co.nz/sciencefacts/space/sun.html
https://www.teacher.org/lesson-plan/learning-about-the-sun/

Background information
The sun is far and big. The heat from the sun warms the earth. The sun gives us bright light that shines on the surface of the earth. We see the sun during the day. It is the main source of light to the earth.

We can use it for many things. We can dry some food items like maize, pepper and cocoa in the sun.

Starter
Put learners in groups of four (4) or six (6). Learners can think-pair-share ideas.
1. Why is the sun important?
2. Predict what will happen if the sun was very close to the earth?
3. Where do we get light from?
4. How does the sun look like?
5. Where is the sun located?
6. Allow learners to think before you collect responses from them.

NOTE
For every simple or double period of science learning, you must take learners through a lot of activities.

Use of ICT

Gather pictures of sources of light before the lesson.
Encourage learners to make search on the internet with the help of their parents as stated on page 69 of their learner's book.

Teaching Instructions

Activities
1. Display various sources of light such as torch, candle, match stick, and lantern.
2. Engage learners to maintain sources of light in their environment (sunny stars, other stars).
3. Engage learners such that they will consider the largest source of light.
4. Task learners to design and create the sun as the source of light on the earth.
5. Engage learners to a poem on the sun.
6. Engage learners in more activities such as role playing. "I am the sun".

Think and do

Provide learners with the items mentioned under think and do on page 65 of learners book.

Supervise them as they do the activity stated there.

Talk About

This refers to the critical thinking questions.
Learners are expected to reason and answer.

1. Why is the sun important?
2. When do we use an umbrella?
3. Guess what will happen if the sun was very close to the earth.

What I have learnt

Engage learners to say or write what they have learnt.
Reflect as a teacher to see whether the learning went well.

1. The sun is useful.
2. It is big and it keeps the earth warm.
3. The sun gives light to the earth.
4. We use the sun to dry our things.

Assessment for learning
Supervise learners to do the assessment task.
Refer them to page 66 of the Learner's Book and page 34 - 35 of the Workbook.

Work on new words to make sure the learners can link the symbol of the sun to daytime and can draw the sun.

Ensure that all projects and home learning task in learner's book are done.

Project for home or school

Direct learners to draw and colour one activity they can do when the sun is shining.
Refer to page 67 of the Learner's Book.

Answers to Review Exercise
Exercise 1

1. Sun
2. Sets
3. Rises
4. Sun
5. Sun

Exercise 2
Learners own answers.

Workbook Answers
Trial 1:

1. sun
2. light and heat

Trial 2:

a. True
b. True

Trial 3:

1. Sun
2. Sun
3. East
4. Sun
5. Moon

LESSON 3: Mist and run-off water

LB: *pages 68 - 72;* **WB:** *pages 36 - 38*

CONTENT STANDARD
B1.2.1.3 Show understanding of the roles of condensation, evaporation, transpiration and precipitation in the hydrological cycle

INDICATOR
B1.2.1.3.1 Observe the disappearance of mist and pools of water after it rains.

LEARNING EXPECTATION
- Learners are expected to know how mist is formed and where water run-offs go.

NEW WORDS
Mist, Atmosphere, Pool, Underground, Water run-offs, Sky, Evaporate.

RESOURCES:
Videos, Pictures, Natural observations in the environment.

CORE COMPETENCIES
Critical Thinking and problem solving, Creativity and Innovation, Personal development and
Leadership

SUBJECT SPECIFIC PRACTICES
Manipulating, Generalising, Observing, Analysing, Evaluating

HELPFUL LINKS
- The Water Cycle | The Dr. Binocs Show | Learn Videos For Kids: https://www.youtubekids.com/watch?v=ncORPosDrjI&hl=en-GB
- The water cycle song (video): https://www.youtubekids.com/watch?v=TWb4KIM2vts&hl=en-GB
- The difference between mist and fog (video): https://www.youtube.com/watch?v=AZFmV7F3R_A
- How does rain form and what is the water cycle? (video): https://www.youtube.com/watch?v=zBnKgwnn7i4

Background information
The sky is sometimes not clear in the morning so people who travel in the morning cannot see clearly. When it happens like that, we say that mist is formed. Rain water that falls run into water bodies.

Water run-offs goes into the atmosphere, and gets trapped in the atmosphere by evaporation. This is called mist.

In some parts of Ghana, we see mist mostly early in the morning especially, when travel on a high way early in the morning in places like Aburi, we normally see mist.

Starter
Ask learners to tell you where the rainwater that falls goes to.
NB: Note that for every single or double period of science learning, you must take learners through a lot of activities.

Use of ICT

Ahead of the class, get a video of cars driving through the mist (*https://www.youtube.com/watch?v=i95XV5uYh44).*
Show the video to learners after the initial activities. See helpful links for more videos about the water cycle.

Teaching Instructions

Activity 1
1. Put learners in groups of four (4) to six (6) or even more depending on the number of learners in your class.
2. Groups must be done knowing the learning abilities of learners so that you keep gifted learners in each group to support group members.
3. Show a short video or provide pictures of water run-off scenes in the learner's text book for learners to observe critically and say what they see.
4. Ensure to allow learners to do group presentations and write key learning scientific ideas on either white board, chalk board or other.
5. You can also have learners write what they see in the picture so that they paste on the wall to make it a talking wall.

6. Engage learners again to predict where mist and run-off go?
7. Learners are expected to share ideas to provide response.
8. Explain to learners how mist is formed. Telling them that water run-offs in streams and rivers evaporates into the atmosphere as they saw in the video. This is then trapped in the atmosphere and cooled to form mist.
9. Have learners to understand that mist forms from evaporation but run-off water flows into surface water bodies or collects us stagnant pools of water.
10. Have learners to observe the environment anytime it rains and then link the knowledge learnt to everyday occurrences in their environment.

Activity 2

1. Use Think-pair-share so that learners can guess what will happen if water run-offs are not collected in pools of rivers or streams.
2. Give learners time to think through their predictions. Eg. two minutes, then they share their answers with their pair
3. You can also provide another question for learners to change their pairs and think-pair-share with a different pair on the question below.
4. "How does mist forms? Use only two words from the pictures on pages 68 - 69 in the learner's book to answer the second question.
5. Have learners who can write their predictions of guesses on stickers on the wall and tell the whole class, whiles those who cannot write say their predictions.
6. Have learners talk about their ideas and write few on the white or chalk board.
7. Avoid too much clapping it takes time and also disturbs the other classes.
8. Use other means to motivate learners like thumbs up all of you for a good job you all did by guessing. Hence no learner is signed out. They all receive a holistic motivation which is the thumbs up.

Think and do

Guide learners to to create a run-off water into pools. Refer to learners book page 70 for things needed.

Talk About

Guide learners to critically think through and answer the 2 questions stated on page 70.

What I Have Learnt

Have learners say or write what they have learnt. This helps you to also reflect on your facilitation approach.
You can also add on by making learners copy key scientific ideas from the white board or chalk board into their books. This should be brief.

1. Mist is always formed when water run-offs set into water bodies, evaporated, trapped in the atmosphere and cooled.
2. Mist makes it difficult to see clearly.

Review Exercise

Use the review exercise in learners' book pages 71 - 72 and workbook. Work on new words to make sure that learners know, spell and can use the words to everyday life as they interact with the environment.

Project for home or school

Learners are to draw and colour mist they saw during Christmas lthe previous year.

Assessment for learning

Supervise learners to do the assessment task. Refer them to page 71 - 72 of the Learner's Book and page 36 - 38 of the Workbook.

Answers to Review Exercise

1. pool - 3 2. mist - 5 3. run-off water - 2
4. land - 1 5. evaporation - 4

Workbook Answers

Trial 1:

1. Morning
2. True
3. True

Trial 2:

Accept correct matching from learners

Trial 3:

Learners drawing

LESSON 4: Sources and uses of water

LB: *pages 73 - 77;* **WB:** *pages 39 - 40*

CONTENT STANDARD
B1.2.1.4 Recognise water and air as important natural resources.

INDICATOR
B1.2.1.4.1 Identify sources and uses of water in the home and at school.

LEARNING EXPECTATIONS
- Learners are to know the numerous uses of water as well as the sources, and also know the use of water.

NEW WORDS
Bore-hole, sea, rainfall, river, tap water, Well.

RESOURCES
(Samples of sea water if possible) Pictures of bore-hole, river water etc.
Videos showing sources and uses of water.

CORE COMPETENCIES
Critical Thinking and problem solving, Creativity & Innovation, Personal development and Leadership.

SUBJECT SPECIFIC PRACTICES
Generalising, Observing, Analysing, Evaluating.

HELPFUL LINK
https://www.quora.com/What-are-5-sources-of-water-How-are-they-different-from-each-other#

Background Information
Water is one of the important things we need in our lives every day. Every day we drink water and bath with water. So water is important to human beings, animals and plants. We need water to live on earth.

Starter
Engage learners in a think-pair share activity to mention where they get water from (Sources of water).

Then allow learners to talk about what their friends told them about the source of water they use at home.

If learners can write, let them write and paste on the wall in class OR write the sources of water on the chalk or white board as and when learners mention responses to their think-pair-share activity.

Teaching Instructions

Activities
1. Show pictures of different sources of water to learners in groups and let learners talk about it, if it is safe to drink from the sources that they have mention.
2. In groups of four to six depending on the class size, have learners talk about at least ten uses of water or even more. This gives opportunity for them to think critically to mention more by linking to everyday uses of water at home, school and in the community.
3. Assist learners to present their group work orally and in written form, then display on the wall in class.
4. As a teacher, ensure to write all additional new words learners may mention during their oral presentation or written work and build a stock of vocabularies.
5. Engage learners to do more activities to cover all periods of the term. Learners demonstrate the uses of water. Learners can prepare tea, mix drink with water, wash their face with water etc.
6. Engage learners to use local materials to create different sources of water in an outdoor activity. E.g. Artificial wells, rivers, rain fall and tap.

Think and do

Engage each learner to draw a boy/girl washing his face with water. See learners book page 76.

Talk About

Direct learners to observe what is happening in the two pictures on page 76.

In a discussion, let them tell each other why it is important to use water wisely.

What I Have Learnt

Make learners stand in a circle in class to say what they now know about the sources and uses if water.
Write key scientific ideas for learners to copy to serve as a quick reference guide for them.

1. Water is useful.
2. We drink water and use it for bathing, washing, cooking, farming and for many other things.
3. We get water from many sources.
4. We must not waste water.

Review Exercise
Use the review exercise in learner's workbook and learner's book on the topic under study.

Project for home or school

Engage learners in their project/home learning assignment, to draw a poster to show two sources of water they have seen.
They can do this at home and submit during the next science lesson.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 77 of the Learner's Book and page 39 - 40 of the Workbook.

Answers to Review Exercise
Exercise 1

1. C, i and g.
2. c, e, n and n
3. w, s, i and g

Workbook Answers
Trial 1:
Cooking
Bathing
Drinking
Washing
(other answers)

Trial 2:

1. sea
2. river
3. rain
4. well
5. (other correct drawings)

Trial 3:
Learners drawing

LESSON 5: Air in the environment

LB: pages 78 - 81; **WB:** pages 41 42

CONTENT STANDARD
B1.2.1.4 Recognise water and air as important natural resources

INDICATOR
B1.2.1.4.2 Demonstrate the existence of air in the environment

LEARNING EXPECTATIONS
- Learners are expected to understand that air exist everywhere and again, demonstrate the existence of air in fun activities.

NEW WORDS
Air, Fun, Breath, Atmosphere, Balloons, Blow.

RESOURCES
Paper, Cellotapes, balloons, cloth, thread etc.

CORE COMPETENCIES
Critical Thinking and problem solving, Creativity & Innovation, Personal development and Leadership.

SUBJECT SPECIFIC PRACTICES
Generalising, Observing, Analysing, Evaluating.

Background Information
Can you tell what makes balloons become big so that we use as decorations or play with them? Air makes balloons become big when we blow air into balloons.

We breathe in air from our environment. Air is everywhere. Air can be felt but cannot be seen or touched. Human beings, plants and animals need air to live.

Starter
Do think-pair-share activities with learners to find out why air is important to human beings. Seek responses from learners and write on the chalk or white board.

Teaching Instructions

Activities
1. Engage learners in fun activities to demonstrate the existence of air by waving a paper across the face, inflating balloons in an open space, watching the trees of plants shake.
2. Then in groups, assist learners discuss why balloons inflate and why tree leaves sometimes shake. Quickly take their responses and write correct responses on the white or chalk board.
3. Engage learners to use their hands or a book to fun themselves and discuss what they experience.
4. Take learners outside the classroom to observe a hoisted flag if the school has one, then they talk about their observations in a think-pair-share activity. Explain what causes leaves and hoisted flags to move.
5. Ask learners to outline the uses of air in their lives eg. Whistling, blowing of trumpets, flying kites, sailing of boats.
6. Then make learners perform breath in and out exercise to know the greatest importance of air.
7. Engage learners to do an activity by drawing two things that air can move.

Think and do

Engage learners to make a flag. See learners book under think and do on page 79 for instructions.

Talk About

Have learners think through and discuss why air is important to human beings. Engage them in another discussion to tell you what will happen if air does not blow.

What I Have Learnt

Have learners say or write what they have learnt. This helps you to also reflect on your facilitation approach.
1. Air is everywhere, air makes things move.
2. We breathe in air every day.

3. Uses of air include whistling, flying kite, blowing trumpet, sailing boat and breathing.

Review Exercise
Use the review exercise in learner's book and work book to ensure that learners understand the key concepts and write them. Ensure that learners do the home learning designed for this indicator.

Project for home or school

Engage learners in their project/home learning assignment, let them report back in class what happened in both scenarious.

Let learners draw and colour two things that air can move.
Ask them to name the things that you have drawn.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 80 of the Learner's Book and page 41 - 42 of the Workbook.

Answers to Review Exercise
Exercise 1
1. Everywhere.
2. True.
3. Look out for neat drawings.

Workbook Answers
Trial 1:
1. True
2. False
3. True

Trial 2:
2 a. air
b. blow, air
c. air, move
d. cold, cold

Trial 3:
1. We breathe
2. Plants and animal need air to live
3. It makes living things move
4. Makes kite fly

LESSON 1: Structure of plants

LB: *pages 82 - 86;* **WB:** *pages 43 - 44*

CONTENT STANDARD
B1.2.2.1 Demonstrate understanding of the life cycle of plants

INDICATOR
B1.2. 2.1.1 Examine the structure of plants.

LEARNING EXPECTATION
- Learners are expected to understand that a plant has several parts and also know the functions of each plant.
- They are also expected to draw and label and even make their own plant book with different small plants.

NEW WORDS
Leaves, stem, roots, soil and flowers.

RESOURCES
Different plants (some plants might be poisonous, so be careful), gloves, note, soap and water (meant to be used for hand washing after handling plants).

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

SUBJECT SPECIFIC PRACTICES
Observation, Recording.

HELPFUL LINKS
https://www.ducksters.com/science/biology/plants.php
https://www.dkfindout.com/us/animals-and-nature/plants/parts-plant/

Background Information
Do you see plants at where you live? Plants are mostly seen everywhere. Plants are of different kinds and different sizes. Some grow tall and others do not.

Mostly, plants stay in the soil because the roots hold it. Plants have different parts which have different functions.

Starter
Do think-pair share activities with learners to say what will happen if there were no plants on earth.
Allow learners to present their ideas and document these on the board.

Allow learners to explain why they responded in a particular way. For example; if a learner say there were no plants, we will all die. Figure that the "why" response is given such as that learner can say "we get food from corn or cassava ie; we get food from plants".

Use of ICT

1. Find videos or pictures before the class on plants.
2. You can find one on youtube here *https://www.youtube.com/watch?v=TD60-3rqPXg*

Teaching Instructions

Activities
1. Put learners in groups ensuring that each group has a gifted learner to support the group.
2. Make learners examine or observe different plants within different groups.
3. Then allow them to discuss the nature of the leaves, roots and what they think all the different parts play.
4. Collate their responses through group presentations.
5. Reshape learners' thinking to ensure that learners get the right key concept on the indicator.
6. Make learners copy key science concepts in their books and help them to use the vocabularies correctly.

7. Engage learners to draw and colour either of the parts they have observed.
8. Make learners display their drawings in class.
9. Make learners go on a gallery walk to observe heir mate's work and make inputs to the work.

Think and do

Engage learners to do the activities in the learners book under think and do on page 84.

Talk About

Have learners think through and discuss what will happen if there were no plants on earth.

What I Have Learnt

Have learners say or write what they have learnt for the day.

1. Plants are everywhere.
2. Plants have several parts. These are the roots, leaves, fruits and flowers.

Review Exercise

Use the review exercise in the learners' book and work book. Ensure that learners understand the key science concepts.

Project for home or school

Ensure that learners do a project. They will collect plants as many as they can, cellotape them in their drawing books and label the parts of the plant.

Assessment for learning

Supervise learners to do the assessment task. Refer them to page 85 of the Learner's Book and page 43 - 44 of the Workbook.

Answers to Review Exercise

Inspect learners answers.

Workbook Answers

Trial 1:

Accept correct labelling from learners (Refer to learners book)

Trial 2:

1. roots
2. organge
3. stem
4. leaves

Trial 3:

1. false
2. true
3. flowers
4. fruits

LESSON 2: Different kinds of seeds

LB: *pages 87 - 90;* **WB:** *pages 45 - 47*

CONTENT STANDARD
B1.2.2.1 Demonstrate understanding of the life cycle of plants

INDICATOR
B1.2. 2.1.2 Observe different kinds of seeds

LEARNING EXPECTATION
- Learners are expected to know, draw, mold different seeds.
- Learners are also expected to identify seeds and like them to their respective seeds, and briefly know the importance of seeds in everyday life.

NEW WORDS
Seed, pawpaw, pear, orange, mango.

RESOURCES
Varied seeds of pawpaw, pear, oranges, mangoes, water melon etc. pictures of these fruits or even more fruits.

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

SUBJECT SPECIFIC PRACTICES
Observation, Recording.

Background Information
Fruits are seen at market places, shopping malls and even hawkers sell them on our streets every day. Different fruits have different seeds in them.Some fruits seeds are small whiles others are big. Seeds of pawpaw, pear, orange, mango, water melon are all different.

Starter
Ask learners the fruit they like best.
Ask them to tell you what they find in the fruits they like best.

Teaching Instructions

Activities
1. Make learners form groups to observe different kinds of seeds (eg. Orange, pawpaw, mango, bean seeds, etc.
2. Have learners share their observations with the class, critically at the external parts of the seeds.
3. Learners draw and display the seeds they have observed and display their work in class for discussions. Through a match game, learners identify fruits and their seeds.
4. Engage learners in a think-pair-share activity to talk about why seeds are important. “Why are seeds important?”
5. Give thinking time to learners for them to bring out quality answers to share to the class.
6. Ensure to write key answers on the board.

Think and do

Engage learners to do the activity in the learners book under think and do on page 88.

Talk About

Learners are expected to discuss why seeds are important. Encourage everyone to partake in this discussion.

What I Have Learnt

Have learners say or write what they have learnt for the day.
1. Different fruits have different seeds in them.
2. Some fruits seeds are small and others are big.
3. Some fruits seeds are round and some are oval in shape.
4. Pawpaw, mango, pear, water melon are all fruits.

Project for home or school

Ensure that learners do the drawing of a mango seed at home or school.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 89 of the Learner's Book and page 45 - 47 of the Workbook.

Answers to Review Exercise
Exercise 1
1 ⟶ c
2 ⟶ b
3 ⟶ a
4 ⟶ d

Workbook Answers
Trial 1
a. Mango
b. orange
c. Pawpaw
d. water melon

Trial 2
Learners drawing

Trial 3
Learners drawing

3

Strand:

Systems

LESSON 1: Identifying the external human body system

LB: *pages 92 - 97;* **WB:** *pages 50 - 53*

CONTENT STANDARD
B1.3.1.1 Recognise that different parts of the human body work interpedently to perform specific functions

INDICATOR
B1.3.1.1.1 Identify the External Body Parts by Their Appropriate Names (Eye, Nose, Ears)

LEARNING EXPECTATIONS
Learners will:
- Recognise that different parts of the human body come together to make a system to perform specific function
- Know the external human body parts by their appropriate names.

NEW WORDS
eyes, nose, mouth, hand, legs and head

RESOURCES
Dolls, drawing of human beings on cardboard, cut outs of external human body parts (head eye, nose, ears, mouth, learners, and videos of human body showing external parts, colored pencils, playing dough for molding, papers, pencils, crayons, scissors and masking tape.

CORE COMPETENCIES
Personal Development and Leadership, Digital Literacy, Critical Thinking and Problem Solving
Creativity and Innovation.

SUBJECT SPECIFIC PRACTICES
Recording, Generating.

HELPFUL LINKS
momjunction.com/articles/body-parts-for-kids_00395946/#gref
https://www.theschoolrun.com/homework-help/parts-body

Background Information
The human body is made of many parts. When the many parts come together, they become or form a system. The external parts of the body are natural.

There are other systems that are not natural: they are known as artificial systems. These are manmade e.g. electrical and electronic system.

The many parts include the hands, nose, ears, eyes, mouth, legs etc. These are known as external parts. These parts come together to perform a specific function or function(s).

Observing, identifying and knowing the external parts of the human body is a fundamental skill of personal development and leadership, digital literacy. Learners are able to solve the problems of avoiding losing off any parts of their external body parts by taking good care of themselves e.g. not playing with sharp objects such as pencils/pens/compass, not putting small objects into their nose and ears.

Starter
Learners sig a song or poem on the body is sang to motivate learners and to prepare them for a lesson.

***Song*:** My head, my shoulders, my knees, my toes (2×)
They all belong to Jesus(2×).

Use of ICT

1. Prepare pictures of the body and parts of the body before the lesson.
2. Guide learners to watch videos on parts of the body and its functions using these links *https://www.youtube.com/watch?v=4oNOA3HnGG4* and *https://www.youtube.com/watch?v=25BPTbyOEp4*.

Teaching Instructions

Activity 1

- Show learners a picture of a boy and girl.
- Have learners tell you what they can see in the pictures.
- Ask them to point and mention parts of the body that are singles. Eg, mouth, head, etc.

Activity 2

- Let Learners observe the pictures from books showing the external human parts for learners to identify.
- Have learners mention the external body parts that are in pairs. Eg, legs, eyes, ears, etc.
- Let learners know that these are all external body parts. When they are put together they are called “a system”.

Think and do

We have to think and do. Learners look at each other in pairs, observe their partners and name the parts they see.
Learners are to observe carefully and draw and name two body parts.

Talk About

Learners are asked critical thinking questions. In this lesson, the question is, do human beings have body parts? If yes give a reason, if no give a reason. Encourage more learners to give their reasons.

What I Have Learnt

A way of finding out from learners what has been learnt after a lesson delivery by using assessment learning strategy, such as peer review approach, learners are tasked to share their ideas on a lesson with their peers in groups. Refer to learner’s book page 97 on what they have learnt.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 95 - 96 of the Learner’s Book and page 50 - 53 of the Workbook.

Answers to Review Exercise
Exercise 1
Learners are expected to circle eyes, hands, ears, nose and legs and cross out the mouth, neck and head.

Exercise 2
a. See-eyes
b. Eat-mouth
c. Smell-nose
d. Laugh-mouth

Exercise 3
Down: Mouth, ear, hand, eye
Horizontal: Nose

Workbook Answers
Trial 1
Learners drawing

Trial 2
1. a. Mouth
   b. learners drawing

2. a. hands / legs
   b. learners drawing

Trial 3
Accept correct labelling
Refer to learners book pages 92 - 93.

LESSON 1: Home for living things

LB: *pages 98 - 102;* **WB:** *pages 54 - 56*

CONTENT STANDARD
B1.3.2.1 Show understanding and appreciation of the interactions and interdependencies of organisms in an ecosystem

INDICATOR
B1.3.2.1.1 Know the places where living things live (land, air, and water)

LEARNING EXPECTATIONS
Learners will:
- Know that living and non-living organisms interact in their environment.
- Appreciate that animals and plants need each other's support in the environment.
- Identify a simple food chain from picture books and videos.

NEW WORDS Air, Habitat, Animals, Water, Ecosystem.

CORE COMPETENCIES
Digital Literacy, Critical Thinking and Problem Solving, Communication and Collaboration Creativity and Innovation.

SUBJECT SPECIFIC PRACTICES
Observation, Analysing, Predicting, Evaluating, Recording.

Background information
Observing, predicting, recording, exploring, engaging and interacting with the environment is a fundamental skill of critical thinking and problem solving, communication and collaboration.

Learners are able to appreciate nature and again here a critical thinking ability of conserving, preserving, protecting natural things in the environment in other to maintain a stable ecosystem.

They are able to explain why different organisms with specific features could be found in different habitat within an ecosystem.

Living things (plants and animals) are in our community. Plants and animals depend on each other for help. The supports includes shelter, food and protection. Both plants and animals have their own place to live for survival. The place where both plants and animals live for survival successfully is known as a Habitat.

Starter
A song or poem on the environment is sang to motivate and prepare learners for the lesson.

Poem
Environment
Environment 2x.
Why are you so important to plants, people and animals?.
Am important because, plants need me as their home (soil).
Animals need me as their home (Birds on trees, earthworm in the soil, fishes are found in the water, people on land.
Oh am so important.

Use of ICT

1. Prepare pictures of trees, marshy areas, ponds, etc.
2. Show a video of places where living thins live during the lesson to learners.

Teaching Instructions

Activities
Through these activities learners will be able to explore and interact with the environment.
- Go for nature walk.
- Observe what is on the school compound.
- Observe the school garden and use a hand lens to look for living things.
- Mention things found within the school

compound. In a whole class discussion, learners share their experiences about the environment.

Think and do

After observing the schooll garden, task learners to draw what they saw.

Talk about

Learners are asked critical thinking questions. In this lesson on ecosystem, why do Plants and Animals depend on each other?

Encourage learners to give more reasons, using peer review strategy in groups and in think pair share.

What I Have Learnt

By using talking circles strategy, learners in circles share with more than four partners what they have learnt on a topic for the day.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 101 of the Learner's Book and page 49 - 51 of the Workbook.

Project for home or school

Encourage parental support by engaging parents to ensure that learners do their homework or project work effectively.

Refer learners to page 102 of their learners book for their projects.

Answers to Review Exercise

1. Goat, butterflies
2. Green plants
3. The cock picks insects and earthworm from the soil.
4. A food chain is the order in which animals eat plants and other animals.
5. A habitat is a place where an organism finds the food and water it needs to live.

Workbook Answers
Trial 1:
Learners correct identification

Trial 2:

1. Home
2. Habitat
3. Adaptation
4. Water
5. a. Forest/Tree
   b. pond c. forest

Trial 3:
Learners drawing

Strand: 4

Forces and energy

LESSON 1: Uses of energy

LB: *pages 104 - 110;* **WB:** *pages 58 - 59*

CONTENT STANDARD
B1.4.1.1 Demonstrate an understanding of the concept of energy, its various forms and sources and the ways in which it can be transformed and conserved.

INDICATOR
B1.4.1.1.1 Understand energy and give examples of its uses.

LERANING EXPECTATIONS
Learners will:
- talk about why they eat food
- understand the uses of energy

NEW WORDS
Energy solar, light work, flashlight.

RESOURCES
Candle, torchlight, batteries sources of heat, drawing/charts/pictures showing activities involving energy

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

SUBJECT SPECIFIC PRACTICES
Observing, Predicting, Analysing, Evaluating, Generalising, Communicating.

Background information
Energy is used by both plants and animals in their activities. The energy we use comes from various places and is either renewable or non-renewable. Energy cannot be created or destroyed. Rather it takes other forms Lighting of a candle or torch, eating food every day, switching on light both at home and school, running and walking, all involve the use of energy. Energy is the ability to do work.

Starter
Find out from learners why they eat food every day. Take feedback from learners and summarise the answers on the board. Expected answers: to be strong, to be healthy, to have energy, etc.

Teaching Instructions

Activity 1
Gide learners to do activities that involve the use of energy. Example:
1. Switching on light in the classroom.
2. Clapping of hands, jumps and walking.
3. Lighting of a candle or a torch.
4. Let learners share their observations with the class.

Activity 2
1. Assist learners to come-out with the meaning of Energy from the activities performed in Activity 1 above.
2. Take the class out to observe other activities that involve the use of energy.
3. Take feedback from their observation. Example, energy is the ability to do work.

Activity 3
1. Summarise the learner's responses by explaining to them that energy is what enables us to do work.
2. Without energy we cannot do a lot of activities. E.g. Going to School, Market, Church, Mosque and work places.

Talk About

In a critical thinking section, engage learners to talk about and discuss among themselves:
- What will happen if they dont eat food
- Why they need energy.

What I have learnt

Ask learners what they have learnt about energy and activities that involve the use of energy.
Let learners read the text in groups/pairs from page 110 of their learners book.

Review exercise
Explain to learners that they will do the exercises from their workbooks on pages 58 - 59 or the learners book pages 108 - 109.

Supervise them and give support to the special children.

Project for home or school

Guide learners to understand what is expected of them under home learning.
Tell them to refer to page 110 of their learners book for instructions.

Assessment for learning
Supervise learners to do the assessment task.
Refer them to page 108 - 109 of the Learner's Book and page 58 - 59 of the Workbook.

Answers to Review Exercise
Exercise 1
1 a. Solar - sun
b. Chemical energy - batteries
2. Energy is the ability to do work.

Exercise 2
1. Accept appropriate drawing of sun.

Exercise 3
1. Learners to write the words in the boxes provided.

Workbook Answers
Trial 1:
Learners drawing

Trial 2:
1.
2. food, sun, water, battery
a. Energy
b. Solar
c. Food
d. Chemical energy

LESSON 2: Hot and cold

LB: *pages 111 - 117;* **WB:** *pages 60*

CONTENT STRANDARD
B1.4.1.2 Show an understanding of the concept of heat energy in terms of its importance, effects sources and transfer from one medium to another.

INDICATOR
B1.4.1.2.1 Explain the terms hot and cold.

LEARNING EXPECTATION
Learners will:
- Sort items into hot and cold
- Know how we keep hot things hot and cold things cold

NEW WORDS
Hot, Cold, Light, Warm, Water

RESOURCES
Hot tea, ice cream, ice block, hot water, water at room temperature.

CORE COMPETENCIES
Creativity and innovation, Personal Development and leadership, Critical Thinking and Problem Solving

SUBJECT SPECIFIC PRACTICES
Manipulating, Predicting, Analysing, Generalising, Communicating

Background information
Things around us are usually hot or usually cold. We normally keep things in fridges, thermos flask, ice chest and food warmers to make them stay long.

Starter
Ask learners to come out with things that are usually hot and cold. Let them present their ideas orally in groups, in pairs or individually.

Expected answers: hot metal, ice cream, ice water, hot tea, etc.

Teaching Instructions

Activity 1
1. Using the resources (hot tea, ice cream, ice block, hot water, water), display hot and cold things for learners to talk about.
2. Find out from learners which ones are cold and hot.

Activity 2
- Give out the following to learners in groups, Hot tea, ice cream, ice block, hot water, water.
- Engage learners to sort the items into hot and cold in groups or in pairs.
- Supervise this activity and provide support.

Activity 3
1. In groups/in pairs, learners should talk about how we keep hot things hot and cold things cold for a long time.
2. Encourage learners to do group presentation.

Note: *Provide safety when dealing with these activities.*

Talk About

Elaborate on learners ideas to discuss talk about questions in the learner's book page 114.

What I have learnt

Find out from learners what they have learnt about hot and cold.

Use talking circle or whole group of think-pair-share to discuss.

Refer learners to page 117 of their learners book to read out what is outlined there.

Review exercise
Engage learners to do review exercises in their workbook on pages 60 or from learner's book pages 114 - 116.

Project for home or school

Learners are to design and make a fridge. Encourage them to do their projects using any suitable material like cardboard, clay or play dough.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 114 - 116 of the Learner's Book and page 60 of the Workbook.

Let learners observe what happens to a metal spoon after it has been left of the sun for 2 hours.

Answers to Review Exercise
Exercise 1

Hot things	Cold things
A	B
D	C
F	G
E	

2. Accept any 2 from A, D, F, E.
3. Accept any 2 from B, C and G
4. Because the metal was hot
5. Accept correct circling of answers

Exercise 2
1. Because he is feeling cold
2. Burn
3. Accept appropriate drawing of any hot thing.

Workbook Answers
Trial 1:
boiled water
heated pressing iron
burning wood
other answers

Trial 2
yoghurt, fish

LESSON 1: Importance of electricity

LB: *pages 118 -122;* **WB:** *pages 61 - 62*

CONTENT STRANDARD
B1.4.2.1 Demonstrate knowledge of generation of electricity, its transmission and transformation into other forms of energy.

INDICATOR
B1.4.2.1.1: Know the importance of electricity and identify common household appliances that require electricity to work.

LEARNING EXPECTATIONS
Learners will:
- Know the importance of electricity.
- Sort items into those that use electricity and those that do not use electricity.

NEW WORDS
Electricity, energy, battery.

RESOURCES
Pictures, charts, flashcards word cards and things that use electricity and things that do not use electricity. Example, fridge, iron (box/ electrical), kerosene stove, tc, laptop, mobile phone, etc.

CORE COMPETENCIES
Cultural Identity and Global Citizenship, Creativity and innovation, Personal Development and Leadership, Critical Thinking and Problem Solving, Digital Literacy.

SUBJECT SPECIFIC PRACTICES
Analysing, Predicting, Generating.

HELPFUL LINK
http://blog.rallison.com/electricity-importance-in-daily-life/

Background information
Electricity is important in our daily lives. Most People give credit to Benjamin Franklin for discovering electricity.

A lot of household appliances require electricity to work.

Starter
Ask learners to say something about electricity. Encourage them to mention things in their homes that use electricity. Example fridges, television, electric iron, fan, etc.

Teaching Instructions

Activity 1
1. Provide pictures of television, box iron, electric iron and fan, fridges, compuotrs, etc. Where you can get the real objects bring them to class.
2. In groups let learners sort items that use electricity and those that do not use electricity.
3. Use flashcards, charts, pictures, word cards for the activity.
4. Refer learners to page 118 of their learners book to look at the pictures and answer the questions.

Activity 2
1. Using pictures, charts, let learners match electrical items to their uses.
2. E.g. Washing machine, electronic iron, sound system, mobile phone, rice cooker, fridge, television and electronic fan.
3. Encourage learners to present their ideas in groups.

Activity 3
1. Guide learners to brainstorm on why electrical appliances are connected to source of electricity.
2. Find out from learners what happens without electricity at home, schools and industries.
3. Encourage learners to talk about the importance of electricity. Examples, for ironing clothes, for cooking, freezing water, etc.

Talk About

Engage learners in a thought section to discuss what will ahppen in schools, homes and work places if there was no electricity.

What I have learnt

Let learners read what they have learnt from the learners book on page 122 and share their readings with their friends.

Review exercise
Supervise learners to do review exercises from their workbooks or learners books pages 121 - 122.

Project for home or school

Read the home learning activity with learners to understand what they have to do. Refer them to page 106 of their book.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 121 - 122 of the Learner's Book and page 61 - 62 of the Workbook.

Answers to Review Exercise
Exercise 1
1. a. energy b. work c. safely

Exercise 2
1, 3 and 5 → does not use electricity
2, 4 and 6 → use electricity

Exercise 3
1. Accept correct drawing of a and b.
2. a, c and d

Workbook Answers
Trial 1:
Use electricity → A, C
Do not use electricity → B,D

Trial 2:
It helps us use light to see
It helps us iron our clothes
It helps us power our radio
other answers

Trial 3:
Learners drawing

LESSON 2: Uses of electronic devices

LB: *pages 123 - 128;* **WB:** *pages 63 - 65*

CONTENT STANDARD
B1.4.2.2 Know the functions and assemblage of basic electronic components.

INDICATOR
B1.4.2.2.1 Know examples of common electronic devices and their uses.

LEARNING EXPECTATION
Learners will:
- Know examples of common electronic devices.
- Match electronic devices with their use.
- Model any electronic device of their choice.

NEW WORDS
Electronic, device, camera, electricity.

RESOURCES
Pictures / charts showing electronic devices.

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

SUBJECT SPECIFIC PRACTICES
Analysing, Predicting, Generating

Background information
There are a lot of electronic devices. Some use batteries and others also use electricity.

Electronic devices include Television, mobile phones, DVD players, laptops, desktop computers, printers, fans, cameras, IPad, washing machines, game consoles and radio.

Technology adoption finds that mobile phone is the electronic device that is mostly used.

Starter
Display electronic devices, eg television, mobile phone, laptop, radio, etc. in class.
Refer learners to page 123 of their learners book.

Ask learners to point to those they see every day or use at home.

They should talk about them.

Teaching Instructions

Activity 1
1. Involve learners to help display real or pictures of electronic devices such as televisions, radio, laptops, wall clock, wrist watches, etc.
2. Let learners identify the electronic devices in groups.
3. Let them know that all that they have identified are called electronic devices.

Activity 2
1. Put learners into groups of 5.
2. Provide cards with uses of electronic devises to each group.
3. Engage learners in a matching game to match the devices with their uses.
4. Mention an electronic device and each groups picks up the card that has the uses written on it.

Activity 3
1. Provide learners with appropriate material such as Blu tack, clay or card board.
2. Supervise learners to model any electronic device of their choice.
3. Guide them to draw and colour devices.
4. Let them share their drawings.

Talk About

Encourage learners to talk about electronic devices they have at home and why they need electronic devices.

What I have learnt

Encourage learners to talk about electronic devices and their uses. Help them to read the text on page 128 of their learners book.

Project for home or school

Assist learners to understand what they have to do under home learning.

Assessment for learning

Supervise learners to do the assessment task. Refer them to page 127 of the Learner's Book and page 63 - 65 of the Workbook.

Answers to Review Exercise

Exercise 1

a. Radio: for listening to news and music.
b. Television: for watching programs.
c. Mobile phone: for communications.
d. Camera: for taking pictures.
e. Clock: for telling the time.

Workbook Answers

Trial 1:

1. learners drawings
2. a. true
   b. true
3. battery, electricity

Trial 2:

1 - C
2 - E
3 - D
4 - A
5 - B

Trial 3:

Learners answer (Answers will vary)

Trial 4:

1. Learners to draw
2. True

LESSON 1: Force as a pull or push

LB: *pages 129 - 133;* **WB:** *pages 67 - 69*

CONTENT STANDARD
B1.4.3.1 Know that movement is caused by applied forces due to the release of stored energy.

INDICATOR
B1.4.3.1 Explain force as a pull or push on an object.

LEARNING EXPECTATION
Learners will:
- Explain force as a pull or push of an object.
- Understand why pushed objects move.

NEW WORDS
Force, Push, Pull.

RESOURCES
Pictures of activities involving push or pull. E.g. People pushing a car, fishermen pulling their net, a boy or girl pulling a dog, charts/ drawings

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

SUBJECT SPECIFIC PRACTICES
Observing, Analysing, Predicting, Generalising.

HELPFUL LINKS
https://www.generationgenius.com/videolessons/pushes-and-pulls/
https://study.com/academy/lesson/push-pull-forces-lesson-for-kids-definition-examples.html

Background information
Force as a pull or push has magnitude and direction. It involves an interaction between two or more objects. When objects are pushed they move because of force. When the interaction between two objects ceases, the objects no longer experience force.

Force is measured in Joules (J). A force can change shape of an object. It can cause objects to slow down, to accelerate. A push is the force that moves an object away from something. A pull is the force that brings objects closer.

Starter
Take your learners out of the class to participate in several activities involving pulling and pushing. Eg. Tug of war, throwing of balls, movement of things e.g. Leaves.

Use of ICT

1. Find videos or pictures before the class on living this lesson.
2. During the lesson, you will have to show learners a video of fishermen pulling their net. Get this ready from *https://www.youtube.com/watch?v=haJxV8UcySI.*

Teaching Instructions

Activity 1
1. Put learners into sizeable groups to discuss their observations about the activities from the starter.
2. Show pictures/charts/drawings or video of activities that involve push and pull. Refer learners to pictures from the learners book on page 129.

Activity 2
1. Engage learners to discuss other actions that will cause objects to move. Example, pulling, pushing, stretching and dragging.
2. Find out from learners why pushed objects move.

3. From learners responses explain to them that force is a pull or push of an object.

Activity 3

1. Let learners draw activities involving pushing and pulling eg. Pushing a table, pulling a rope.
2. Supervise their drawings and give support.

Talk About

Deduce from learners their understanding of the lesson by engaging them in these verbal exercise.

Refer to page 130 of learners book and lead the class to answer the questions.

What I have learnt

Have your reflection with learners on what they have learnt. Ask learners to discuss in groups or in pairs about the lesson.

Refer them to page 133 of their book to read out what is written. Encourage them to present their ideas in groups.

Project for home or school

Refer learners to page 133 of theri learners book.

Explain to learners what they will do under home learning.

Assessment for learning

Supervise learners to do the assessment task. Refer them to page 131 - 132 of the Learner's Book and page 67 - 69 of the Workbook.

Answers to Review Exercise

Exercise 1

1. a. they are pushing the car
   b. To help the car move.

Exercise 2

OBJECTS WE CAN PUSH	OBJECTS WE CAN PULL
Car	Rope
Chair	Dog
Table	Gate
Door	
Drawer	

Exercise 3

1. Accept appropriate drawings.
2. Force is a push or pull.
3. Force.

Workbook Answers

Trial 1:

	Object We Can Push	Object We Cannot Push
1	Car	
2	Chair	Rope
3	Table	
4	Gate	Dog
5	Door	

Trial 2:

1. Learners answers
2. Push pull
3. C
4. false
5. A
6. true

Trial 3:

1. pushing the ball
2. Pushing the table
3. It will move

LESSON 2: Simple machines

LB: *pages 134 - 138;* **WB:** *pages 70*

CONTENT STANDARD
B1.4.3.2 Recognise some simple machines used for making work easier, analyse their advantages and know their uses. Eg. levers, inclined planes and pulleys.

INDICATOR
B1.4.3.2.1 Understand what simple machines are and cite common examples.

LEARNING EXPECTATION
Learners will:
- Understand what simple machines are.
- Cite common examples of simple machines.
- Draw any of the simple machines of their choice.

NEW WORDS
Simple machine, work

RESOURCES
Cut-out pictures/Charts/Video/Drawings/Real pictures of simple machines.

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

SUBJECT SPECIFIC PRACTICES
Manipulating, Classifying, Analysing.

HELPFUL LINKS
https://www.ducksters.com/science/simple_machines.php
https://www.livescience.com/49106-simple-machines.html

Background information
Simple machines make work easier and faster. They are found in our homes and schools. Simple machines do not have complex parts. Wheelbarrow, table knife, scissors, claw hammer, broom, plier, spanner, cutlass, rake, opener are all examples of simple machines.

Starter
Let learners in groups or in pairs mention common simple machines in their homes and School. Let them present their ideas in class.

Teaching Instructions

Activity 1
1. Show learners pictures/video/cut-out of pictures/drawings of simple machines.
2. Let learners observe the simple machines and explore their uses.

Activity 2
1. Demonstrate the use of some common simple machines. Example, bottle opener to open a bottle of drink, broom to swwep, etc.
2. Engage learners to practise with your supervision the use of simple machines. Eg. Cutting a piece of paper, opening a bottle, sweeping.

Activity 3
1. Ask learners to come out with the importance of simple machines they are handling in their daily lives.
2. Brainstorm with learners to come out with the meaning of simple machines. Example makes work easier, faster, etc.
3. Let learners know that they must not use their teeth in opening bottles.
4. Engage learners to draw any simple machine of their choice.
5. Let learners share their drawings in class for discussion.

Talk About

Let learners work in groups to tell the class what type of simple machines they have used at home or school.

Let them also discuss why they think the items are simple machines.

What I have learnt

Summarise your lesson with learners. Ask them questions on what they have learnt. Read the

text with them. Use peer sharing under what I have learnt on page 138 of their learners book.

Project for home or school

Ask learners to do the home task when they get home.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 137 - 138 of the Learner's Book and page 70 of the Workbook.

Answers to Review Exercise
Exercise 1
1. a. Broom
   b. Wheelbarrow
2. Learners answers.

Exercise 2
1. True
2. Simple machines

Workbook Answers
Trial 1:
1. Simple machines
2. him, same, chase (other answers)
3.
a. Machine
b. work
c. simple

5

Strand:

Humans and the environment

LESSON 1: The need for bathing

LB: pages 140 - 146; WB: pages 72 - 74

CONTENT STANDARD
B1.5.1.1 Recognise the importance of personal hygiene.

INDICATOR
B1. 5.1.1.1 Explain the need for bathing and how it is done.

LEARNING EXPECTATION
- Learners are expected to know how and why bathing is important.

NEW WORDS
Bathroom, bath, body, sponge, soap, soap dish, hygiene.

RESOURCES
Real items used for bathing; water, etc. Pictures, Videos (Home learning task), a doll.

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

SUBJECT SPECIFIC PRACTICES
Analysing, Predicting, Evaluating.

HELPFUL LINK
- *http://www.hygieneexpert.co.uk/washingbathing.html*
- *https://www.freddyfit.co.uk/kids/articles/good-hygiene-habits.php*

Background Information
We need to keep our bodies clean every time. Personal hygiene talks about the things that we do to stay healthy every time.

We must know that it is very important to bath, every time to keep our bodies healthy.

Think and do

Engage learners to perform the activity on the indicator in the learner's book on pages 140 - 143.

Starter
Do think-pair-share activity to find out from learners to predict what will happen if they do not bath every day.

Listen and write key responses on the board to ensure that key wards are also learnt.

Use of ICT

Find photographs or videos on the internet before the class begins.

Show these to learners during the class and at relevant times in class discussions.
Examples include:
• pictures of items used in bathing.
• pictures or videos demonstrating how to bath.

Teaching Instructions

Activities
1. Put learner in groups to talk about the number of times they bath in a day and why?
2. Explain to learners the ideal number of times we must bath in a day. ie twice a day.
3. Make learners mention items used for bathing and talk about them.
4. Guide learners to talk about what will happen if they do not use soap in bathing.
5. In groups have learners present their answers.
6. Have learners discuss how they bath at home and do a group presentation.
7. Reshape learners' ideas by showing learners the proper way to bath through demonstration or by watching videos or pictures.

8. Refer them to pages 140 to 143 of the learners book to read and look at the pictures on how to bath.
9. Have learners do bathing activities to master the proper way of bathing by looking at the step by step guide in the Learner's Book and by role play.

Talk About

Let learners discuss as a class on why they use soap in bathing and what will happen if they dont bath everyday.

What I have learnt

Have learners say or write what they have learnt for the day.

1. We must bath everyday to smell good.
2. We use clean water, sponge and soap to bath.
3. We use the towel to clean water from our body after bathing.

Review exercise

Use the learners' book. See review exercise there. Learners will draw a bathroom showing all things used for bathing.

Use learners work book and engage learners to work out the review exercises.

Project for home or school

Learners are expected to demonstrate how to bath using a doll.

Assessment for learning

Supervise learners to do the assessment task. Refer them to page 145 of the Learner's Book and page 72 - 74 of the Workbook.

Answers to Review Exercise

Exercise 1

This is a simple matching exercise. Learners will draw lines from words to match the respective correct picture.

Workbook Answers

Trial 1:

Soap
Bucket
Sponge
Towel

Trial 2:

1 a. True
b. True
c. False

2. A. b. twice
B. a. we smell good

3. Towel

4. Smell bad

Trial 3:

Learners drawing

Trial 4:

Learners drawing

LESSON 2: Clean and healthy teeth

LB: *pages 147 - 150.;* **WB:** *pages 75 - 76*

CONTENT STANDARD
B1.5.1.1 Recognise the importance of personal hygiene.

INDICATOR
B1.5.1.1.2 know the need for and how to clean the teeth.

LEARNING EXPECTATION
- Learners are expected to know how to properly clean their teeth to maintain personal hygiene.

NEW WORDS
Water, toothpaste, tooth brush, chewing sponge, chewing sponge.

RESOURCES
Tooth paste, tooth brush, water, chewing sponge, chewing stick, cup, videos or pictures on cleaning the teeth.

CORE COMPETENCIES
Critical thinking and Problem Solving, Collaboration and Communication, Personal Development and Leadership, Digital Literacy, Creativity and Innovation, Cultural Identity and Global Citizenship.

SUBJECT SPECIFIC PRACTICES
Analysing, Predicting, Evaluating.

HELPFUL LINKS
https://kidshealth.org/en/kids/teeth-care.html
https://www.nia.nih.gov/health/taking-care-your-teeth-and-mouth

Background Information
Our teeth are very useful. It helps us to chew food and be able to eat well.
Without our teeth, we will find it very hard to eat well so we must keep our teeth clean every time.
We can keep it neat if we brush our teeth every morning and evening. We must always wash our mouth after eating and never put anything in our mouth that will harm our teeth.

Starter
Begin with a familiar song on cleaning the teeth.

Think and do

Engage learners to perform activity in the learners book page 147 - 148.

Teaching Instructions

Activities
1. Have learners mention the items they use at home in cleaning their teeth. E.g. Tooth brush, tooth paste, chewing stick etc.
2. Engage the whole class to watch a video or pictures of a person cleaning his or her teeth.
3. Engage learners in a think-pair-share activity to talk about what they saw in the video or picture and why the tooth brush is moved in an upward and downward motion when the teeth is being cleaned.
4. Engage learners to think-pair and share their ideas and maintain key science concepts and relevant vocabulary on the board.

Talk About

Still in their paired groups, engage learners to talk about what will happen if they do not brush their teeth regularly.

They should also discuss why it is very important to brush their teeth.

What I have learnt

Learners are to talk or write about what they have learnt for the day.
Also engage learners to copy key science ideas in their books.
1. We must clean our teeth two times in a day.
2. We clean with a tooth brush using a tooth paste.
3. We can also clean with a chewing stick or chewing sponge.
4. We must use clean water to rinse our mouth after cleaning our teeth.

Review Exercises
Use the learners' book. See review exercise there. Learners will draw and colour a tooth brush and a tooth paste.

Project for home or school

Learners are to design a poster to show what they use in cleaning their teeth at home.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 150 of the Learner's Book and page 75 - 76 of the Workbook.

Answers to Review Exercise
Exercise 1
a ⟶ Toothbrush
b ⟶ Chewing stick
c ⟶ Water
d ⟶ Toothpaste

Workbook Answers
Trial 1
1. Toothbrush
2. Water
3. Chewing sponge
4. Chewing stick

Trial 2
1. Learners answers
2. Learners drawing

Trial 3
1.
a to chew
b to talk

2.
i Chewing stick
ii Toothbrush and paste
iii Chewing sponge

LESSON 3: Keeping your hands clean and healthy

LB: *pages 151 - 158;* **WB:** *pages 77 - 79*

CONTENT STANDARD
B1.5.1.1 Recognise the importance of personal hygiene

INDICATOR
B1. 5.1.1.3 Demonstrate an understanding of the need for and how to wash the hands.

LEARNING EXPECTATION
- Learners are expected to know the proper way of hand washing.

NEW WORDS
Soap dish, soap, rub, sink, kitchen, toilet, palm, fingers, nail cutter, towel, water, wash, wipe, palm.

RESOURCES
Water, tissue, videos, pictures, bottles, veronica buckets, liquid soap or soap in a soap dish.

CORE COMPETENCIES
Critical Thinking and Problem Solving, Collaboration and communication, Personal Development and Leadership, Digital Literacy

SUBJECT SPECIFIC PRACTICES
Analysing, Predicting, Evaluating.

HELPFUL LINKS
https://www.cdc.gov/healthywater/hygiene/hand/handwashing.html
https://www.peacehealth.org/healthy-you/why-how-keep-your-hands-clean

Background Information
Why do you think we have to wash our hands? When we move around, we touch a lot of things and play everyday, so we must always watch our hands very often to take all the germs dirt and germs away from our hands.

Starter
Lead learners through think-pair-share activities to say the importance of washing the hands.

Let learners mention some things they use in washing their hands.

Think and do
Learners to perform the activity in their learners book

Use of ICT
Find photographs or videos on the internet before the class begins. Show these to learners during the class and at relevant times in class discussions.
Examples include:
- pictures of items used in cleaning the hands.
- pictures or videos demonstrating how to wash the hands.
- pictures of dirty hands.

Teaching Instructions
Activities
1. Lead learners to discuss when and how to wash the hands.
2. Allow learners to present their ideas and re-shape them, whiles writing key concepts and words on the board.
3. Engage learners to name items used in hand-washing.
4. Demonstrate to learners the proper way of hand washing. Refer to learners book pages 155 - 156.
5. Then engage learners in groups to demonstrate the proper way of hand washing.
6. Assist learners to brain storm the possible health effects associated with failure to wash the hands.
7. Write key concepts on what will happen if learners fail to wash their hands very often.

Talk About
In groups, engage learners to talk about why it is important for them to wash their hands.

Ask them to brainstorm and tell each other what will happen to their hands if its not washed regularly.

What I have learnt

Learners are to talk or write about what they have learnt for the day.
Also engage learners to copy key science concepts for the day.

1. We must wash our hands after playing, before eating, after eating and after using the wash room.
2. We must always wash our hands very often.

Review Exercise
Use learners book first.
Learners are to draw and color a hand washing soap they use at school to wash their hands.

Use learners' workbook and engage learners do all the review exercises.

Again engage learners to do their home learning task seen in learners' book.

Project for home or school

Learners are expected to practice how to wash their hands. Direct them to what they are expected to do here.

Let learners do this home learning task by re-arranging these words.
Poas
Wtea
Calen
Swah
Ahnsd
Plma

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 147 - 154 of the Learner's Book and page 77 - 79 of the Workbook.

Answers to Review Exercise
Home learning
Missing letters are as follows:
U
O and p
L, a, a and e
A and h

Exercise 1
1. a helps to wash germs and the dirt away from our hands.
   b It prevents the germs from entering our stomach.
2 a. True
   b. True
   c. False

Workbook Answers
Trial 1
1. Soap
2. Germs
3. Palm
4. Dirty
5. Fingers

Trial 2
1. Not to fall sick
2. To remove germs
3. Our hands becomes dirty when we play

Trial 3
1. a. soap
   b. water
2. towel
3. hands, eating
   Washroom, wash, playing

Trial 4
Learners to draw.

LESSON 4: How to keep the environment clean

LB: *pages 159 - 164* ; **WB:** *pages 80*

CONTENT STANDARD
B1.5.1.2 Appreciate the natural and human features of the local environment and the need for keeping the environment clean

INDICATOR
B1.5.1.2.1 Know how to keep the environment clean

LEARNING EXPECTION
- Learners are expected to know how to keep their environment clean and will gain one skills of cleaning

NEW WORDS
Environment, scrub, weed, dust, dustbin

RESOURCES
Brooms, Dust pan, Duster, Rake, scrubbing brush, mop, pictures, videos etc.

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

SUBJECT SPECIFIC PRACTICES
Analysing, Predicting, Evaluating.

HELPFUL LINKS
- *http://thebrightquest.com/how-to-keep-the-environment-clean*
- *https://www.greenchildmagazine.com/7-eco-friendly-tips-to-keep-the-environment-safe-and-clean/*

Background Information
The environment in which we live in must be kept clean every time. At school and at home and in our communities, we must always keep our environment clean by sweeping, wiping, weeding and scrubbing to keep our environment clean.

Starter
Engage learners in a think-pair-share activity to guess what will happen if they do not keep their environment clean.

Take responses from learners and write key responses on the board.

Teaching Instructions

Activities
1. Put learners in groups to talk about what they do in the morning to keep the school environment clean before they go for morning assembly.
2. Engage learners to talk about their ideas and then write key science ideas on the board alongside new or key vocabularies.
3. Task learners to identify pictures of cleaning and name them. This is a group activity. Each group then talk about the function of the item they have named.
4. Collect responses from learners and re-shape learners ideas by writing and explaining key concepts to learners.
5. Make learners rotate pictures such that each group has a feel of a different cleaning item to name and tell or say how to use it.
6. Then show real pictures of items or cleaning items being used by other children in cleaning to learners to observe and discuss among themselves.
7. Engage learners in groups to demonstrate the proper use of the cleaning items, then re-shape their ideas.
8. Now task learners to go on a nature walk to observe things in the environment.
9. Upon return, let learners talk about what they observed in groups.
10. Ensure to write key findings on the black board or white board.
11. Make learners brainstorm on what will happen if they do not weed or keep their school, home or community clean.
12. Write key responses from learners on the board.
13. In groups engage learners to compose a short sentence to create awareness on how to keep the environment clean.

Think and do

Engage learners to perform activity in their learners book based on the indicator.

Talk About

What will happen if you do not know how to make the environmen clean?

What I have learnt

Learners are to talk or write about what they have learnt for the day, and also what did not go well in terms of learning.

Use that to strategise for paper feedback.
Give key science concepts for the day in a summary to learners. We must sweep, dust, wipe, scrub and weed our environment clean.

Home Learning
Have learners draw and colour two items they use for learning at home.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 80 of the Workbook and 162 - 163 of the Learner's Book.

Review Exercise
Use learners' book and engage learners to draw and colour two items they use for cleaning at home.

Answers to Review Exercise
Exercise 1
1. A
2. B

Exercise 2
suggested words
1. on
2. ten
3. none
4. men
5. not
6. move

Exercise 3
1. learners to point
2. suggested answer
- human being
- building
- animals

Workbook Answers
Trial 1:
1. sweeping
2. scrubbing
3. weeding
4. cleaning

Trial 2:
1.
a. sweep
b. weed

2.
a. cutlass
b. broom
c. mop

Sub-strand 2: DISEASES

LESSON 1: Common skin diseases

LB: *pages 165 - 168;* **WB:** *pages. 81 - 82*

CONTENT STANDARD
B1.5.2.1 Know common diseases of humans, causes, symptoms, effects and prevention

INDICATOR
B1.5.2.1.1 Identify some common diseases that affect the skin and their causes

LEARNING EXPECTION
- Learners are expected to know common skin diseases such as ringworm, chicken pox, measles and eczema. Their causes, symptoms and prevention.

NEW WORDS
Weather, heat rashes, skin, ringworm, chickpox, eczema, measles

RESOURCES
Videos, Pictures, Health officer.

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

SUBJECT SPECIFIC PRACTICES
Observing, Generalising.

HELPFUL LINKS
https://www.healthline.com/health/skin-disorders#pictures
https://www.medicalnewstoday.com/articles/316622.php#internal-conditions

Background Information
Skin diseases affect our skin and change the colour of our skin. When the weather is warm, we get skin rashes.

Some other skin diseases that can affect us are ringworm, chicken pox, measles and eczema.

Some skin diseases can spread from one person to another.

Starter
Engage learners to watch a video or pictures of common skin disease through a gallery walk.

Then continue with a think-pair-share activity to tell a story about common skin diseases.

Use of ICT

- Use this youtube link to get a vidoe on chicken pox ahead of the lesson. *https://www.youtube.com/watch?v=t3Jm6kPTRhY.*
- Get pictures of other skin diseases ready for the lesson.

Teaching Instructions

Activities
1. Put learners in groups and engage them to name some common skin diseases that affect people in their communities. eg. Heat rashes, measles, eczema, ringworm, chicken pox etc.
2. In groups let learners share their ideas with the whole class through oral presentations. Reinforce learners' ideas by writing all common skin diseases on the board and then re-shape their ideas.
3. Engage learners to talk about the causes of the common skin diseases through think-pair-share activities whiles in groups.
4. Learners talk about the ways they can prevent skin diseases.
5. Ensure to write down key ideas from learners as they talk about their ideas.
6. Also engage learners to role play some of the prevention scenarios.

Think and Do

Engage learners to perform the activity in their learner s book based on the indicator.

Talk About

In groups, engage learners to talk about what will happen if they do not visit health centre when they are affected by a skin disease.

Ask them to also discuss what will happen if the weather becomes warm everyday.

What I have learnt

Learners are to talk or write about what they have learnt for the day and also what they did not fully understand for the day. Use that to strategise for proper feedback.

1. Some skin diseases that can affect us are ringworm, chicken pox, measles and eczema.

Review Exercises

Use learners' book and engage learners to match the picture to the names of the disease.

Use learners' workbook and engage learners to do all the review exercises.

Engage learners to do their project or home learning work. See learners' book. Learners will draw or use cut out pictures to show a child who has chicken pox and ringworm. Then they will make a poster with their picture or drawing.

Project for home or school

Instruct learners to draw or use cut out pictures to show a child who has chicken pox and ringworm.

They then will make a poster with their picture or drawing.

Assessment for learning

Supervise learners to do the assessment task. Refer them to page 168 of the Learner's Book and page 81 - 82 of the Workbook.

Answers to Review Exercise

Exercise 1

1 → Eczema
2 → Ringworm
3 and 5 → Heat rashes
4 → Chicken pox

Workbook Answers

Trial 1

1. eczema
2. ringworm
3. worm

Trial 2

1. fungi
2. fungi

Trial 3

Learners drawing

LESSON 1: Impact of technology devices in our environment

LB: *pages 169 - 173;* **WB:** *pages 83 - 85*

CONTENT STANDARD
B1.5.3.1 Recognise the impact of science and technology on society.

INDICATOR
B1.5.3.1.1 Identify technologies in the immediate environment and describe the impact of the technology on society.

LEARNING EXPECTIONS
Learners are expected to know common technology and how to use them efficiently as well as possibly create new technologies that will benefit them in their daily lives.

NEW WORDS
Fun, radio, fridge, television, mobile phone, car, computer, DVD player, toy car.

RESOURCES
Pictures, Videos of other technologies in operation, mobile phones, toy cars, computers, DVD, Sound systems, microphone etc.

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

SUBJECT SPECIFIC PRACTICES
Observation, Evaluating, Analysing.

HELPFUL LINKS
https://www.useoftechnology.com/technology-today-tomorrow/
https://www.aginginplace.org/technology-in-our-life-today-and-how-it-has-changed/

Background Information
Technologies make our lives very easier. When the weather is warm, we switch on the fun to blow air. We listen to the radio to get information in our communities and in all parts of the world. We store food stuffs in our fridge.

We use the mobile phone to call our friends and do many other things. We sit in a car to travel from one place to the other.

Starter
Engage learners to watch videos or pictures showing technologies and their impact on the society.

Bring electronic devices such as toys, laptops, smart phones, watches, radio and DVD players to class.

Through think-pair-share, make learners talk about why technology is important.

Use of ICT

Get pictures and videos on different

technological items like mobile phones, television, computor, etc ahead of the class.

You can use the link below to get a video on the first medical drone delivery in Ghana. Show the video to learners during the lesson.
https://www.youtube.com/watch?v=X8-aMWLgBHQ

Teaching Instructions

Activities
1. Learners in groups discuss the technologies in their various groups and how it has impacted in their lives or community or environment.
2. Learners present their ideas in groups.
3. Ensure to write key science ideas on the board.
4. Have learners mention some technological equipments and their uses.

5. Ask learners to talk about what will happen if such technologies were absent in the society.
6. Guide learners to re-shape their ideas and present key concepts on common technologies in the environment on the writing board.
7. Now allow each learner to mention some technological devices and how those have impacted their lives.
8. In groups engage learners to design and make simple technological devices of their choice using material such as blue tack, clay, cardboard and paper.

Think and Do

Engage learners to perform activity in the learners book.

Talk About

Ask learners this question, If there were no technologies in the community, what do they think will happen.

Learners are expected to do this in a group discussion and share with the class.

What I have learnt

Learners are to talk or write about what they have learnt for the day.

1. Technologies make our lives very easy.
2. Some technologies we see around us are the television, fun, radio, mobile telephones, cars, microphones etc.
3. A drone can be used to deliver medicines.

Project for home or school

Pair learners to design any technology that is useful and can make life easier for learners.

Have learners draw, design and make it with local materials.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 172 - 173 of the Learner's Book and page 83 - 85 of the Workbook.

Answers
Exercise 1
1. car
2. mobile phone
3. fridge
4. radio
5. fan

Exercise 2
1. i, e
2. o, u, e
3. o, e
4. a
5. a

Workbook Answers
Trial 1:
1. Phone
   Car
   Radio
   Television

2.
Technology makes our lives easier
It keeps food cold
It helps in communication
It helps us move from one place to another faster

Trail 2
1 → d
2 → e
3 → f
4 → b
5 → a
6 → c

Trial 3
Learners drawings

LESSON 2: Identifying food that can be processed and preserved

LB: *pages 174 - 178;* **WB:** *pages 86 - 87*

CONTENT STANDARD
B1.5.3.2 Exhibit knowledge of food processing and preservation

INDICATOR
B1.5.3.2.1 Identify foods that can be processed and preserved at home.

LEARNING EXPECTIONS
Learners are expected to know foods that can be preserved at home and also learn the skill and method of preservation.

NEW WORDS
Fish, pepper, groundnut, tomatoes, ginger, freezer, mill, dry, roasted, smoked.

RESOURCES
Food items such as pepper, tomatoes, cassava, yam, fish, ginger etc.

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

SUBJECT SPECIFIC PRACTICES
Classifying, Generalising.

HELPFUL LINKS
https://www.finedininglovers.com/article/how-preserve-food-methods-and-techniques
https://best.lovetoknow.com/Top_Methods_of_Home_Food_Preservation
https://www.familysurvivalplanning.com/home-food-preservation.html

Background Information
It is good to preserve food so that it does not spoil. The food we eat can be processed at home and stored for some time in the fridge.

Rice is milled and stored at home for making rice porridge for breakfast. Corn is socked and milled to make corn dough and stored in the fridge.

Starter
Ask learners to mention foods they ate in the morning and what was used to prepare the food through a think-pair-share activity.

Collect learner's responses and write key food items linking it to those food items that can be preserved.

Teaching Instructions

Activities
1. Put learners in groups and let them name vegetables, fruits and after types of food that can be preserved at home. eg. Pepper, cassava, tomatoes, onions, plantain, ginger etc.
2. Allow learners to talk about how food is prepared in their homes in groups. Then the group share with the whole class.
3. In a think-pair-share discussion engage learners to talk about how food is preserved in their homes. Either by drying, smoking, frying, roasting, baking or refrigeration.
4. Each learner can share their thought in class. Then they draw and colour common foods.
5. Learners should talk about what will happen if there were no food stuffs in the community.

Think and Do

Enage learners to perform activity in the learners book based on the indicator.

Talk About

Have learners engage in the following.
- What will happen if we don't preserve food?
- Discuss one way your parents preserve food at home with your friends.

What I have learnt

After the lesson, engage learners and get feedback from them of what they have learnt.
1. The food we eat can be preserved at home,
2. Pepper, fish, groundnuts, corn, ginger can be preserved and stored at home.

Project for home or school

Have learners observe the foods that their parents process at home, name three of these foods.

Let learners draw three foods in their home that can be preserved.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 178 of the Learner's Book and page 86 - 87 of the Workbook.

Answers to Review Exercise
Exercise 1
1. Fridge
2. Fish
3. Drying
4. Fry
5. Roasted

Workbook Answers
Trial 1
drying
freezing

Trial 2
1. No
2. No
3. Yes
4. Yes
5. Yes
6. No
7. Yes

Trial 3
Learners drawings

LESSON 1: Describing weather conditions

LB: *pages 179 - 184;* **WB:** *pages 88 - 89*

CONSTANT STANDARD
B1.5.4.1 Understand that climate change is an important environmental issue facing the world today.

INDICATOR
B1.5.4.1.1 Describe the conditions of the weather.

LEARNING EXPECTIONS
- Learners are expected to describe the weather conditions, draw and colour to show the weather conditions, perform activities and wear clothes that are weather appropriate.

NEW WORDS
Cloudy, windy, rainy, sunny.

RESOURCES
Pictures, Videos, the natural environment.

CORE COMPETENCIES
Critical Thinking and Problem Solving, Collaboration and Communication, Digital Literacy Creativity and Innovation

SUBJECT SPECIFIC PRACTICES
Observing, Predicting, Analysing, Evaluating

HELPFUL LINKS
https://busyteacher.org/4091-how-to-teach-weather.html
https://www.teachervision.com/all-kinds-weather

Background Information
We see different weather conditions every day. Today it may rain and the weather may be cold. Before it rains, the weather always become unclear and we say that the weather is cloudy. Sometimes the sun appears and the weather can be very warm by mid-day, in the afternoon. Again, it may sometimes be windy, that is when the air blows strongly and we say it is the wind blowing.

Starter
Take learners out to observe the weather and talk about whether they feel hot or cold.

Use of ICT

1. Find videos or pictures before the class on the different weather conditions.
2. Get pictures of wind vane and rain guage.
3. Download a video from youtube for the lesson: *https://www.youtube.com/watch?v=-bBqBV0bcA4*

Teaching Instructions

Activities
1. Guide learners to talk about other weather conditions. Eg. Rainy, windy, sunny and cloudy.
2. Collect their responses and write key learning ideas on the board.
3. Ask learners to think-pair and share to talk about activities people do under different weather conditions.
4. Still collect responses from learners and reshape their ideas.
5. Then show pictures or videos of different weather conditions and activities people do under different weather conditions.
6. Learners should then talk about what they observed in the pictures or videos to share with the class.
7. Allow learners to sing songs on the weather. eg. Rain rain go away.
8. Engage learners to act a play on the lesson taught.

Think and Do

Enage learners to perform activity in the learners book based on the indicator.

Talk About

In a critical thinking section, learners also guess what will happen if it does not rain for a whole year.
Engage them to tell their friends the weather condition they like best and why.

Review Exercises
Use learners' book and engage learners to do the review exercises on climate change.

Use learners work book to engage learners to do all review exercises and project and home learning work.

What I have learnt

Learners are to talk or write about what they have learnt for the day.

Project for home or school

Direct learners to page 182 of their learners book for this homework.

Additionally, let learners observe the weather in their school today.

Assessment for learning
Supervise learners to do the assessment task. Refer them to page 182 - 184 of the Learner's Book and page 88 - 89 of the Workbook.

Then draw and colour on an A4 sheet how the weather they observed looked like when they go home.

Remeber to tell learners that they will display their work in class.

Answers to Review Exercise
Exercise 1
1. a and i.
2. u and n.
3. l, u and y
4. i and d.

Exercise 2
1. Windy
2. Sunny
3. Sunny
4. Rainy

Exercise 3
1. rainy
2. winds
3. cloudy
4. sunny

Workbook Answers
Trial 1:
1. Windy
2. Cloudy
3. Rainy
4. Sunny

Trial 2:
Learners drawings

ESSENTIAL Science

Primary 1

Teacher's Guide

The **ESSENTIAL Science** series is written to meet the full requirements of the current New Standards-based curriculum by the National Council for Curriculum and Assessment **(NaCCA)** with a critical thinking approach to learning Science.

The series consists of a Learner's Book, Workbook and Teacher's Guide.
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- Clear directives on activities and lesson plans.
- Additional recommended activities for better transfer of knowledge.
- Helpful links have been provided to help the teacher find and acquire additional knowledge to help the learners.
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