NEW AGE SCIENCE

FOR BASIC SCHOOLS

TEACHER'S GUIDE BOOK

B.S. Amu
J. K. Adoku
E.E.K. Gala

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Illustrated by Cyril Atiemo

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Tel: 0302 325057/8, 0573 232 344
Email. masterman48@yahoo.com / info@mastermanpl.com
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Preface

The teacher's guide has been written to assist the teacher to help learners to acquire the required skills and attitudes and also to help them understand the concepts as explained in the textbooks and workbooks.

The Teacher's Guides have been written to deliver the new curriculum for Basic Schools produced by the Ministry of Education for the National Council for Curriculum and Assessment (NaCCA). It has been developed by an expert team of Ghanaian facilitators and educators and its aim is to achieve the content standards and indicators and exemplars of the curriculum and to support the facilitators as they work with the learners throughout the six years.

The curriculum uses a learner-centered approach and works to develop the skills that the learner should acquire. The curriculum is designed to help learners acquire both scientific attitudes and process skills and cognitive ability and be able to apply them. The course is activity-based and proceeds on the knowledge that learners learn best when they are actively doing science and not just listening or reading about it.

The Teacher's Guide is designed to support facilitators as they create the facilitating and learning opportunities and activities through which the learners will develop their science skills, their attitudes and cognitive abilities.

For each indicator in the learner's book the guide provide a list of key words introduced in the indicator, advice on lesson planning, materials and resources required for the indicator to enable the facilitator achieve his or her aim. Local materials of low or no cost are suggested.

The facilitators are also provided with different kinds of assessments to enable them find out what the learners know already (diagnostic) and whether they are following the steps as the lesson progresses (progressive)

The answers to these assessment questions and those of study questions in the learners textbook as well as those in the workbook have all been provided in the teacher guide. These will help the facilitator to do his or her work effectively.

School-based Assessment (SBA) is an important feature of the new curriculum. The study questions at the end of each indicator in the learners book are written in the same line as the SBA. We hope that this will assist the facilitator in their assessment. We hope that you will enjoy using the guide and it will help in your work as a facilitator to help the learners develop their scientific abilities.

General Introduction

Science and Technology is the backbone of social, economic, political and physical development of a country. It is because of this realization that the Ministry of Education through the Ghana Education Service and the National Council for Curriculum and Assessment (NaCCA) has developed the curriculum for basic schools.

Aims and Objectives of Teaching Basic Science in the Primary School.

The curriculum is aimed at shaping individuals to become scientifically literate, good problem solvers, have the ability to think creatively and develop both the confidence and competences to participate fully in Ghanaian society as responsible local and global citizens. The Science curriculum is designed to help learners to;

- Develop the spirit of curiosity, innovation and critical thinking for investigating and understanding their environment;
- Develop skills, habits of mind and altitudes necessary for scientific inquiry;
- Communicate scientific ideas effectively;
- Use scientific concepts to explain their own lives and the world around them;
- Live a healthy and quality life;
- Develop humane and responsible altitude towards the use of all resources of Ghana and elsewhere
- Show concern and understanding of the interdependence of all living things and the environment in which they live;
- Design activities for exploring and applying scientific ideas and concepts
- Develop skills for using technology to enhance learning;
- Use materials in their environment in a sustainable manner.

Rationale for teaching Basic School Science.

Science forms an integral part of our everyday life, and it is a universal truth that development is hinged in science. Science consists of a body of knowledge which attempts to explain and interpret phenomena and experiences in rational terms. Science has changed our lives and it is vital to Ghana's future development.

To provide quality science education, facilitators must facilitate learning in the science classroom. This will provide the foundation for discovering and understanding the world around us and lay the basis for science and science-related courses of study 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 the origins, causes and effect of things in our environment.

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 has to be taught using hands-on and minds-on approaches, which learners will find as fun and adopt as a culture.

Philosophy

i. Teaching

Ghana believes that an effective science education 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 methodology and learning approaches that engage learners physically and cognitively in the knowledge-acquiring process in a niche and vigorous inquiry-driven environment.

ii. Learning

Science Learning is an active contextualized process of constructing knowledge based on learner's experiences rather than acquiring it. Learners are information constitutors who operate as researchers. Facilitators serve as facilitators by providing the enabling environment that promote the continuation 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 Expectation(Role of the Facilitator)

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 an arrangement to provide feedback to both learners and parents.
5. Design and manage learning environments that provide learners with time, space and resources needed for learning science.

Core Competencies

These describe a body of skills that learners at all levels should seek to develop in the learners. There are ways in which 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 process of teaching and learning.

Critical Thinking

This skill helps to develop learners' cognitive and reasoning abilities to enable them analyse and solve problems. This skill enables learners to draw their own experiences to analyse situations and choose the most appropriate out of possible solutions. It requires the learners embrace the problem at hand and persevere and take responsibility for their own learning.

Creativity and Innovation
This skill promotes the development of entrepreneur 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 skills are also able to think independently and creatively.

Communication and Collaboration.
The competence promotes in learners the skills to make use of language, 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
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 competencies and attitudes acquired to contribute effectively towards the socio economic development of the country and in 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
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. This skill (PL) helps learners to acquire the skill of leadership, Self-regulation and responsibility necessary for lifelong learning.

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

Scope of Content
The content standards in the curriculum have been carefully selected to introduce learners to the inquiry process of science as well as the basic ideas in science.

The Teacher's Guide are series of books written in a simple easy to read and understand language. Almost every scientific term used is simplified as much as possible. There are simple illustrations, examples, hands-on minds and eyes-on activities which are very necessary in teaching science.

Organisation of the Teacher's Guide

The Teacher's Guide has been organised to confirm with the Learners Text Book. It is made of strands, sub-strands, content standards, Indicators and examples. A unique annotation is used for numbering the learning indicators in the curriculum for the purpose of referencing. An example is shown in the table below.

Annotation	Meaning/Representation
B3	Year or class
2	Strand Number
4	Sub-Strand Number
1	Content Standard Number
2	Indicator Number

Strands – the broad areas/sections of the science content to be studied.

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

Content Standard – the predetermined level of knowledge, skill and attitude that a learner attains by a set stage of education.

Indicator – 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 facilitators/ facilitators in the delivery of the curriculum.

The Teacher's Guide has also been organized along the same line. In addition it has an introduction , key words, materials and resources, additional information, diagnostic and progressive assessment and their answers as well as answers to text book study questions.

Role of the Facilitator (Before A Lesson)

- Collect materials around the school environment with the help of learners
- Plan the best way to teach the lesson.
- With the help of indicators and exemplars select and plan activities for the learners.
- Try out the activity to find out its suitability to the achievement of the indicators.

The Role of the Facilitator/Teacher (during the lesson)

- Introduce the lesson and give out the materials
- Supervise and guide learners as they perform the activity
- Move round and ask questions or provide clues at times
- Evaluate learners work
- Act as a co-learner
- Encourage learners when the need arises.

The Role of the Facilitator/Teacher (After the lesson)

- Organize a general class discussion with learners to concretize concepts, skills, attitudes and correct misconception.
- Assess learners by giving them assignment, exercises and quizzes.
- Work assignment, quizzes and exercises

The Role of the Learners.

1. Before the lesson.
    - They may be involved in the collection and gathering of materials necessary for the lesson.
    - They may be involved in the planning of the activities.

2. During the Lesson
    - Learners interact with the materials as they try to find out answers to their own question and that of the facilitator through the use of the materials.

Special Attention Learners

A class may consist of learners of different physical problems and mental abilities. Some of the learners may have high abilities whiles others may be slow learners, some may be dyslexic and not able to read or spell well as the others in the class. All these are special needs – learners and need special attention.

Ensure that you give equal attention to all leaners in the class to provide each of the equal opportunities for learning. Learners with disabilities may be hidden talents that can only come to light if you provide them with the necessary encouragement and support in class.

In the classroom, learners should

- Communicate among their group members and with the facilitator.
- Record their findings and observation by making models, sketches and drawings and writing.

After the lesson

- Learners participate in general class discussion with the facilitator
- Cause not their assignments
- Tidy up the classroom

Assessment

The facilitator must continuously assess himself or herself as well as the learners. This is a process of collecting and evaluating information about learners and using the information to improve their learning.

In this curriculum, it is suggested that the facilitator uses assessment to promote learning and so identifies the strengths and weaknesses of learners to enable him or her ascertain the learners response to instructions.

Assessment is both formative and summative. Formative assessment is viewed in terms of assessment as learning and Assessment for learning.

Assessment as Learning:
It relates to engaging learners to reflect on the expectations of their learning. Information that learners provide the facilitators form 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
This is an approach used to monitor learners progress and achievement. This occurs throughout the learning process. The facilitator employs assessment for learning to seek and interpret evidence which serves as timely feedback to refine their teaching strategies and improve learners' performance. Learners become actively involved in the learning process and gain confidence in what they are expected to learn.

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

Which assessment the facilitator uses depends on its purpose. 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 learner. When you develop assessment items based on a representative sample of the indicator taught the assessment is referred to as a 'Criterion-Referenced Assessment'. A facilitator cannot assess all indicators taught in a term. The assessment procedure you use i.e. class assessment, 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.

CONTENTS

STRAND 1: DIVERSITY OF MATTER

SUB-STRAND 1: LIVING AND NON-LIVING THINGS

LESSON 1: DIFFERENT KINDS OF THINGS IN THE ENVIRONMENT

Reference: Learner's Book 1 pages 2 -6

Expectations: At the end of this lesson learners will be able to:

- observe things in the environment
- describe the different kinds of things
- Sort things into living and non –livings based on common characteristics

Content Standards: B1.1.1.1: Show understanding of the physical features and life processes of living things and use this understanding to classify them

Indicators: B1 1.1.1. 1: Observe and describe different kinds of things in the environment

Core Competencies: Personal Development and Leadership,Digital Literacy, Communication and Collaboration, Critical Thinking and Problem Solving, Creativity and Innovation

Subject Specific Practices: Observing and Classifying

Resources: Any young plant uprooted, any animal(e.g insect), any non living thing such as books, pencils, crayon, beads, stone, glass, plastic and cups

Introduction

Learners have been seeing physical appearance of things around them. Every living thing has a physical appearance. There are certain features associated with this physical appearance. The physical features of how the living thing looks like include shape and size. It is important to know these physical features of every living thing. It is also important to know the life processes that the living things go through. In treating this lesson the importance of the physical features and the life processes of living things has to be stressed.

Key words: Environment, home, school, community, living, non-living, things, processes, observe, describe, feed, grow, move, breathe, reproduce, feel, die

Additional information

We see many things in our homes, schools and communities. These things are in two groups. The groups are living and non-living things. There are certain processes that some things we see go through to show that they are living things. If the things we see do not go through those processes then they are non-living things. We shall discuss those processes.

Starting the lesson

Start this lesson by drawing attention of learners to the things in the classroom including the learners themselves. Ask learners the things they can do which the things around them can not do.

Activity 1.1.1.1a: Going on nature walk with learners

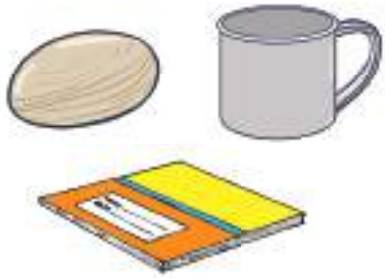
Materials/Resources (Low or no cost): No material required.

Procedure

- Lead learners to look round their classroom.
- Ask learners what they see around them? Ask learners to write what they see down.
- Lead learners to go round the school compound.
- Ask learners to look around and watch all the materials they see very well. Write them down.
- Ask learners whether the materials they see include leaves, books, pencils, crayon, beads, stone, glass, plastic cups, animals and plants?

Activity1.1.1.1(b): Observing and describing different kinds of things in the environment

- Ask learners in groups of four or five to describe the materials they see in the environment when they went round by answering the following questions:
  - i. do the things you see around move by themselves?
  - ii. do the things you see around breathe?
  - iii. can the things you see around you die?
  - iv. do the things you see around produce their young ones?
  - v. do the things you see around drink water?
  - vi. do the things you see around eat food?
  - vii. do the things you see around include living and non-living things?
  - viii. what other things do you observe about the things you see?



Tell learners if the things they see go through the following processes, then they are living things: Living things feed, grow, move, breathe air, reproduce, feel(they respond to stimulus), excrete.

Ask learners what they will say if the things they see do not feed, grow, move, breathe air, reproduce, feel(they respond to stimulus)

Activity1.1.1.1c: Sorting out things into living and non-living things

Materials/Resources (Low or no cost): materials from the environment such as any young plant uprooted, any animal(e.g insects), any non living thing such as books, pencils, crayon, beads, stone, glass, plastic and cups

Procedure

- Engage learners in groups of four or five, to sort the things they see into living and living things.
- Assist learners to classify things as living or non living as shown on page 3 of learners book 1.
- Ask learners to write them down in their notebooks.
- Ask learners to compare the things they see with those in the learners book.
- Ask learners whether their arrangement agrees with the drawings in the book?
- Ask learners to look at the different living and non-living things in the video that you will show to the learners.
- You can use google search engine to look for the appropriate video on the internet to show to the learners. For example facilitator can google Jack Hartmann video on living things on the internet.
- Ask learners to say why they need to know the characteristics of the different things in their environment.
- Use more questions and discussions to explain to learners about living and non living things in the school and home environments.
- Ask learners to draw one living thing and one non-living thing in their exercise books.

Summary

- Living things feed, grow, move, breathe air, reproduce, feel(they respond to stimulus), die.
- Non-Living things do not feed, grow, move, breathe air, reproduce, feel(they respond to stimulus), die.

Diagnostic assessment

Describe the differences in characteristics between a dog and a toy which looks like a dog.

Progressive assessment

Guide the learners to answer the following question.

1. If you have not seen a robot before and you have seen it for the first time doing things like a human being, how you will know that it is a living or non-living thing?

Answers to Diagnostic assessment

A dog feeds, grows, moves on its own, breathes air, can reproduce, feels and can excrete but a toy dog cannot feed, grow, move on its own, breathe air, reproduce, feel or excrete.

Answers to Progressive assessment

I will check to see if it can move on its own, feed, breathe air or respond if I touch(feel) it. If it does not do these things then it is a non-living thing.

Answers to Study Questions (Refer to LB page 6)

1. a) processes, living, processes, non-living.
   b) pencil, table, door
2. No, it is not a living thing.
3. living thing, feed and feel.
4. (i) Grow (ii) Feel (iii) Breathe

Diagnostic assessment for facilitator

1. Were you able to manage the time allocated for this lesson to accommodate the nature's walk and other activities.
2. Did you skip any activity in managing the time?

STRAND 1: DIVERSITY OF MATTER
SUB-STRAND 1: LIVING AND NON-LIVING THINGS

LESSON 2: IDENTIFYING AND NAMING ANIMALS AND PLANTS IN YOUR LOCALITY

Reference: Learner's Book 1 pages 7 - 12

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

Indicators: B1.1.1.2.1 Identify and name Animals and Plants in your locality.

Expectations: At the end of this lesson learners will be able to:
- identify the local names of plants and animals in your locality.
- identify the local names of plants and animals in videos and pictures.
- mention the local names of other plants and animals in your locality and in videos and pictures.
- Draw and colour any local plant or animal.

Core Competencies
- Digital Literacy.
- Communication and Collaboration.
- Creativity and Innovation.

Subject Specific Practices
- Observing.
- Classifying.

Resources: A young plant and any animal(e.g an insect)

Introduction
Now that the learners could describe the different things in the environment and were able to sort them out into living and living things in the previous lesson, it is now equally important for them to concentrate on living things and their unique features that put them into categories of plants and animals and mention them by their local names.

Key words: Identify, name, plant, animal, locality, living, non-living.

Additional information
In every locality there are plants and animals. These plants and animals can be identified by looking at their physical appearance. The physical appearance of plants is different from that of animals. Plants have root under the ground, stem and leaves above the ground but animals only

have legs to move about instead of roots. You can therefore identify what a plant is and what an animal is easily when you see them. Seeing what the plants and the animals look like, certain local names are given to them after identifying them. When a local name of a plant or animal is mentioned, its physical appearance immediately come into your mind.

Starting the lesson

Start the lesson by asking learners if they have seen animals such as lions, elephants, monkeys on television or in a video before. Ask learners if they have also seen mango, orange, cocoa and shea nut trees on television or video before. Ask learners if they have seen the pictures of these animals and plants before. Show learners a video about plants and animals to watch. Use a smart phone and google plants and animals and show the pictures and videos. Some of the videos are in Youtube on the internet. Ask learners to look at the pictures of the plants and animals on page 8 in the learners textbook 1. Ask learners if they could identify the categories of living things they see in the video. Assist the learners to identify the categories.Explain that living things can be put into two general groups which are plants and animals. Draw attention of learners to the fact that:

- Animals move from place to place by themselves but plants do not move from place to place by themselves. Only part of the plant moves.
- Plants make their own food but animals do not make their own food and rather feed on plants.

Local names of plants and animals

Activity 1.1.2.1: Identifying the local names of plants and animals

Ask learners

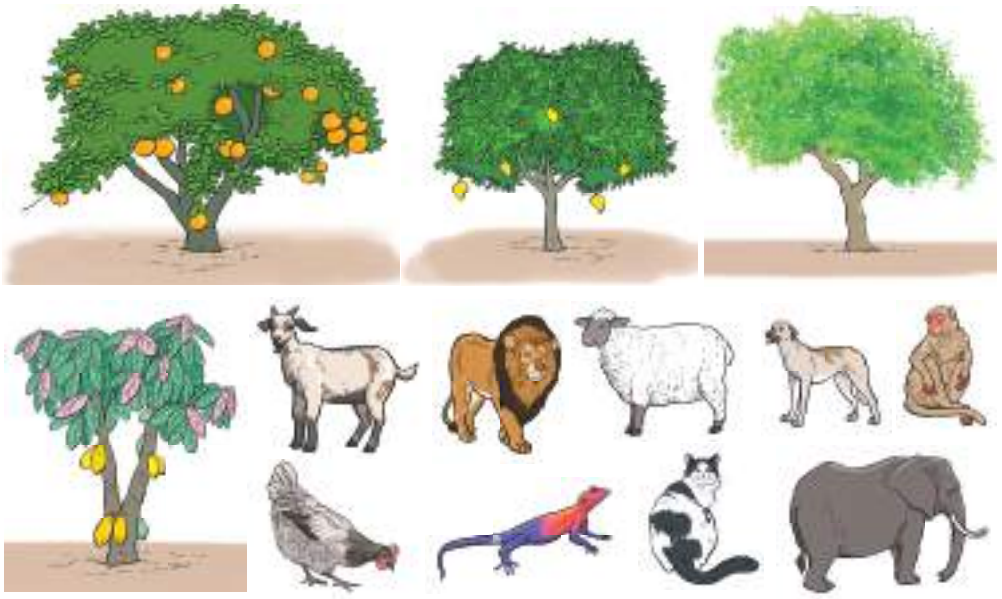
- To name some plants and animals they have seen before.
- What the local names of the plants and animals they watch in the video are.
- What the local names of the plants and animals they see in the picture are.
- To think about other plants and animals which are not found in the video or in the pictures and write their local names down.

Ask each learner to:

- pick a friend close to him or her.
- show the local name he or she wrote down to his or her friend.
- let his or her friend also show the local names he or she has written down to him or her.

Ask learners:

- which of the names are the same as theirs?
- which of the names are different from theirs?
- to add the names that they do not have to their list.



Ask learners to:

- draw any local plant or animal and colour it.
- show what they have drawn to their classmates.
- look at what their classmates have drawn.
- what local plant or animal their classmates have drawn.

Ask learners if:

- they are able to identify what they have drawn.
- their classmates also are able to identify what they have drawn.

Summary

- Living things can be put into two general groups which are plants and animals.
- Animals move from place to place by themselves, but plants do not move from place to place by themselves.
- Plants make their own food but animals do not make their own food. They rather feed on plants.
- Plants and animals have local names.

Diagnostic assessment

In groups of four or five discuss and state whether a monkey is a plant or animal. Give reasons.

Progressive assessment

Guide the learners to answer the following questions.

1. How will you know that a living thing you see on your way to school is a plant or an animal?

Answers to Diagnostic assessment

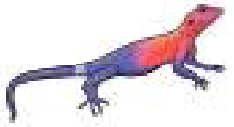
It is an animal. It can move by itself.

Answers to Progressive assessment

If it can feed and move by itself, then it is an animal. If it can feed but cannot move by itself, then it is a plant.

Answers to Study Questions (Refer to LB pages 10 - 12)

1. a) Fowl
   b) Mango tree
2. Accept any appropriate drawing.
3.

Plants/ animals	**Local name**
	Mango tree
	Cocoa tree
	Elephant
	Lizard
	Coconut tree
	Dog

4. Lion, Goat, fowl etc.
   i. dog
   ii. cocoa
   iii. lion
   iv. orange

Diagnostic assessment for facilitator

1. Did every learner identify local names of plants and animals?
2. Were there some learners who could not identify local names of plants and animals? What did you do to help such learners.

STRAND 1: DIVERSITY OF MATTER
SUB-STRAND 1: LIVING AND NON-LIVING THINGS

LESSON 3: THE BASIC NEEDS OF LIVING THINGS (FOOD, WATER AND AIR)

Reference: Learner's Book 1 pages 13 - 17

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

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

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

Expectations: At the end of this lesson learners will be able to:
- give some examples of living things .
- identify the basic needs of living things.
- mention the importance of basic needs of living things.

Subject Specific Practices: Observing, Analysis, Classifying.

Resources: Potted plant, chats and videos of animals feeding and drinking water.

Introduction
The learners can now identify plants and animals and even mention their local names. Now they need to know that all living things, whether plants or animals have certain basic needs.

Key words: needs, basic, food, water, air, light, shelter, warmth, living, non-living, survive.

Additional information
If you can imagine the things that you need to continue living, then you can also know the things that all living things need. If you cannot continue to live without breathing, drinking and eating food, then other living things cannot do otherwise. Living things do not like living at places which is either too hot or too cold for them.

Starting the lesson
Teacher can start this lesson with a poem, a song, riddle, game or a rhyme.

Ask learners the following questions:
- Do you know some living things?
- Can you give some examples of living things?
- What do all living things have in common?

- What do you think living things need to continue living?
- Are you also a living thing?

Tell learners if they can identify the things that they need to continue living then they can also identify the things that all living things also need.

Tell learners all living things need the following things to survive:

- air
- water
- light
- food
- shelter
- appropriate warmth

Tell learners all living things:

- grow
- eat
- drink
- move by themselves
- have babies (reproduce)

Use the following activities to explain the above characteristics.

Need for Air
Before undertaking the activity to determine whether living things need air, ask learners whether living things need air to survive.

Activity 1.1.2.2a: Need for Air
Materials/Resources (Low or no cost): No material needed
Procedure

Ask learners to:

- pick a friend and carry out this activity.
- let each of the learners hold his or her nose and close the mouth tightly for ten (10) seconds.

Ask learners after the activity:

- how they felt.
- to tell their friends what they felt.
- to let their friends also tell them what they felt.

Guide learners in discussion to come out with their conclusion from the activity. You can also proceed to ask learners whether:

- they felt the need to breathe.
- living things breathe.
- living things need air to breathe

Finally ask learners what will happen to them if they do not have air to breathe.

Need for Water

Tell learners to look at the diagrams on page 13 of learner's textbook 1 in which one shows a plant without water and the other a plant with water.

A plant growing well

A plant not growing well

Ask learners why

- plant (a) is growing well.
- plant (b) is not growing well.

Ask learners whether water is necessary for living things to grow well. Use the response of learners to conclude the fact that water is a basic need of living things.

Need for Food and Light

Refer learners to look at the diagrams on page 15 of learner's textbook 1. Activity

1.1.2.2b: Need for Food and Light

Ask learners the following questions:

- why do plants need light?
- do plants need light to make their food?
- is food important for living things to grow well?

Use the responses learners give to conclude the fact that plants need light to make their own food and animals eat the food that plants make.

Summary

- All living things need air, water, light, food, shelter and appropriate warmth.
- All living things grow, eat, drink, move and have babies (reproduce) and that is why they need air, water, light, food, shelter and appropriate warmth.

Diagnostic assessment

What activity will a boy and a girl in basic 1 class do to show that human beings and other living things need air to continue living?

Progressive assessment

Guide the learners to answer the following question.

1. There is a potted plant at the corridor of Kofi's house. Mention three things that it needs everyday to continue living.

Answers to Diagnostic assessment

The boy and the girl should close their mouth and hold their nose tightly for about five minutes and see if they can breathe.

Answers to Progressive assessment

Light, air and food

Answers to Study Questions (Refer to LB page 17)

1. basic, water, plants
2. (i)grow
   (ii) air
3. 

   a. air, water and food

Diagnostic assessment for facilitator

1. How did you start the lesson?
2. Were learners able to do identify things that living things need to continue living?
3. Did you share learning expectations with learners?
4. Can the learners state the learning expectations when asked to do so?

STRAND 1: DIVERSITY OF MATTER
SUB-STRAND 1: LIVING AND NON-LIVING THINGS

LESSON 4:THE DIFFERENCES BETWEEN LIVING AND NON-LIVING THINGS

Reference: Learner's Book 1 pages 18 - 25

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

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

Expectations: At the end of this lesson learners will be able to:

- observe living and non-living things in the school community.
- mention the names of the specific living things and non-living things observed.
- describe the differences between living and non- living things using think –pair share.
- give reasons for grouping things into living and non-living.
- come out with differences between non-living things and things that are dead.

Core Competencies: Critical Thinking and Problem Solving, Communication and Collaboration, Personal Development and Leadership, Digital Literacy

Subject Specific Practices: Observing, Analysis, Classifying

Resources: Pictures of lizards, insects, plants and birds, goat, dog, cow, cat, beads, plastic, paper, glass, plastic, stone, wood.

Introduction

After the learners know the basic needs of living things, they need to appreciate the fact that living things are different from non-living things which do not need these things.

Key words: living, non-living, differences, reproduce, grow, excrete, move.

Additional information

Living things and non-living things are not the same. They are different. You can use life processes to tell the differences between living things and non-living things. A cockroach is a living thing. A stone is a non-living thing. The things that a cockroach can do, a stone cannot do. What is the difference between a cockroach and a stone? These differences will be the same as the differences between living things and non-living things. The names of some living things are lizards, insects, plants and birds, goat, dog, cow, cat. The names of some non-living things are beads, plastic, paper, glass, plastic, stone, wood.

Starting the lesson

Start this lesson by asking learners to say some of the things they can do which their table cannot do.

Show video to learners to watch. Show things on page 21 of learner's textbook 1 to learners to watch.

Lead learners to go round the school community to look at the living things and the non-living things.

Ask learners after going round the school community the things they saw which are

- living things.
- non-living things.

Activity 1.1.2.3(a): Names of living things and non-living things.

Ask learners to write down the names of everything they saw which are

- living things.
- non-living things.

Activity 1.1.2.3(b): Describing the differences between living and non-living things.

Tell learners to think about the living things and the non-living things that they saw when they went round. Tell learners to pick a friend close to them and tell the friend what they think are the differences between living things and non-living things.

Activity 1.1.2.3(c): Living Things Grow but non-living things do not grow.

Ask learners whether a tree and a book grow. Guide the learners to realise that because a tree is a living thing that is why it can grow and a book is a non-livng thing that is why it cannot grow.

Show learners pictures from page 20 of learner's textbook 1.

After watching the pictures in the learner's textbook, teacher ask learners the following

questions:
What is the difference between the tall plant and the short plant?
Can you see any difference between the boy and the young girl in (ii)?
Why is the plant in (i) taller than the plant in (ii)?
Why is the boy in (i) taller than the girl in (ii)?

Living things move by themselves but non-living things do not move by themselves
Show to learners pictures on page 21 of learners textbook 1. Tell learners to look at the things in the picture and think about them. Tell learners to write down what they think about the things they see in the picture. Tell learners to pick a friend near them and tell him or her what he or she thinks about what he or she sees in the picture. Tell learners to let their friend also tell them what they think about what they see in the picture. Ask learners the following questions:

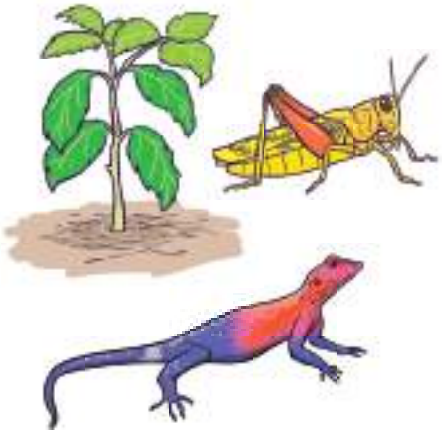
- Are the things you are thinking about the same?
- Which of the things you see can move by themselves?
- Which of the things you see cannot move by themselves?

Ask learners after watching the pictures the following questions:

- What is the difference between the young girl walking and the stone?
- Do living things move by themselves?

Living things Reproduce and die but non-living things do no reproduce and do not die
Ask learners which of the following things can give birth to their young ones and can also die: dogs, cats, stones and chairs. Ask learners whether living things reproduce.

Ask learners why they need to know the characteristics of different things in the environment? Based on the response of the learners to the question, makes learners understand that they need to know them so that they can put them into different groups.



To conclude the lesson, asks learners the following questions after learning about living and non-living things:

- What are examples of living things?
- Is aeroplane a living thing?
- What are examples of non-living things?
- Is shea butter tree a non-living thing?
- Is there a difference between living things and non-living things?
- Is there a difference between living things and things that are dead?
- Is there a difference between living things and things that were once alive?
- Is there a difference between a tree in your community and a wooden table in your classroom?

Project work: Tell learners to draw the following in their drawing book.

i. short animal
ii. tall tree

Summary

- Living things grow but non-living things do not grow
- Living things move by themselves but non-living things do not move by themselves.
- Living things reproduce(produce babies) and die but non-living things do no reproduce. and do not die

Diagnostic assessment

Write down two differences between mosquito and needle.

Progressive assessment

Guide learners to answer the following question.

1. Aeroplane flies. A bird also flies. Are they living things? Give one reason for each one.

Answers to Diagnostic assessment

Mosquito can move by itself but needle cannot move by itself. Mosquito can produce young ones but needle cannot produce young ones.

Answers to Progressive assessment

Aeroplane is not a living thing because it cannot fly on its own. A bird is a living thing because it can fly on its own.

Answers to Study Questions (Refer to LB pages 24 and 25)

1. i) non-living
   ii) animals
   iii) pen
   iv) non-living thing
   v) alive
2. Cockroach can feel. Stone cannot feel
3. i) ant and bird
   ii) stone, firewood and ball
   iii) stone, firewood and ball
   iv) ball and firewood
4.

Things in environment	Can breathe	Can feed	Move by itself	Cannot grow
	√	√	√	X

	X	X	X	√
	√	√	√	√
	X	X	X	√
	√	√	√	X

Diagnostic assessment for facilitator

1. In what ways did you engage the learners in critical thinking?
2. Were the learners able to display observations skills during the lesson?
3. How did your lesson delivery cater for different learner abilities?
4. Did every learner benefit from the lesson?

STRAND 1: DIVERSITY OF MATTER

SUB-STRAND 2: MATERIALS

LESSON 5:EVERYDAY MATERIALS IN THEIR IMMEDIATE ENVIRONMENT

Reference: Learner's Book 1 pages 26 - 32

Content Standard: B1.1.2.1 Recognise materials as important resources for providing human needs.

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

Expectations: At the end of this lesson learners will be able to:

- observe materials in the school environment.
- collect materials in the school environment.
- sort materials collected from the school environment.
- identify materials collected from the school environment.
- name materials collected from the school environment.
- relate the lesson to everyday uses of the materials.

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.

Resources: plastic, wood, glass, rubber, paper, stone, metal, textile and others.

Introduction

The learners should appreciate the fact that the things in their environment are not only living things but non-living things of different varieties as well. These non-living things serve as materials which human beings use in everyday life.

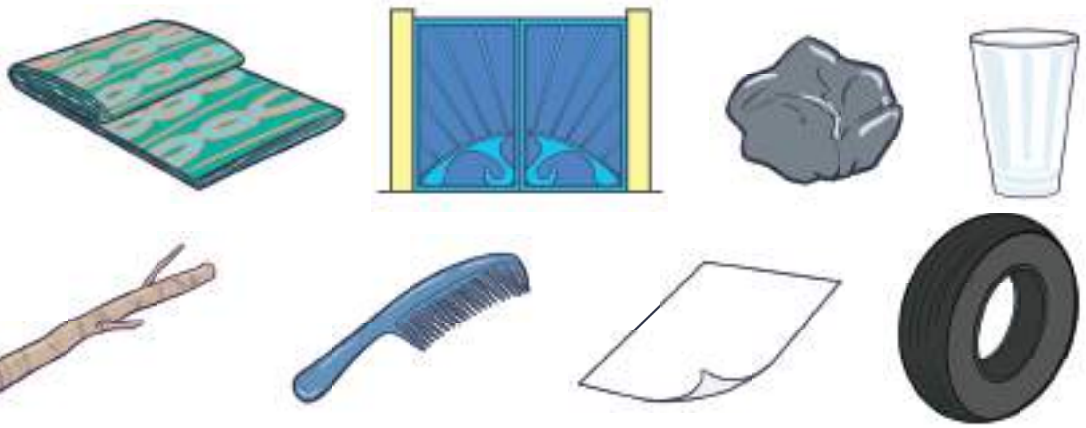
Key words: material, identify, metal, rubber, stone, textile, plastic, wood, glass, paper, environment, collect.

Additional Information

Human beings cannot live without materials in the environment. There are different types of materials around you. There are different types of materials that can be found in your home too. Some of the materials you see are in the classroom, outside the classroom and on the play ground. These materials can be identified and named. These materials include plastic, wood, glass, rubber, paper, stone, metal, textile and others.

Activity: 1.2.1.1(a) Collecting materials in our environment
Materials/Resources (Low or no cost): plastic, wood, glass, rubber, paper, stone, metal, textile and others.
Procedure

- Lead learners to go out of the classroom and walk around the school compound in groups of four or five.
- Let each group appoint a leader.
- Tell learners to look at everything that they see very well and collect as many of the things as possible.
- Tell learners to bring the things they collected to the classroom and name each of them.
- Tell learners to sort out the materials they collected into categories.
- Ask learners what reason they will give for sorting out the materials into those categories.
- Ask learners which of the materials they sorted out is wood, plastic, soil, metals, glass, textile, water and stone.



Ask learners which of the materials

- can be found on them.
- can be found in their home.
- cannot be found in their home.

Show learners diagram of different kinds of materials on page 27 of learners textbook. Ask learners what things are made from these materials in their environment.
Lead learners to discuss uses of some materials. Use the following checklist of uses of some materials to check the response of learners to facilitator's questions:

Uses of some materials
Materials have many uses in daily life. This depends on the type of material.
Water- drinking, cooking food, washing clothes, watering plants.
Soil- cement block, clay cooking pot.
Plastic- chairs, bowls, pipes, polytanks.

Rubber-rubber bands, catapult, lorry tyres.
Glass-drinking glasses, louver blades, car windscreens.
Textile- shirt, trousers, bed sheet.
Paper- exercise book, envelope, newspaper.
Metal- iron rod, cooking pot, car body.
Wood-table, wooden chair, door.
Stone- beads, sharpening cutlasses.

[Thinking time: I went to the hospital and I saw many materials around me. Do some of the materials look like those I identified with my friends at school?]

Build a stock of materials in one corner of the classroom. Direct learners to look at the stock of materials in the science corner of the classroom. Asks learners to see if there are materials there which they have not collected.

Summary

- There are different types of materials around you. There are different types of materials that can be found in your home too.
- The materials you have studied have many uses in daily life.
- An example of the uses of materials is that water is used for drinking, cooking food, washing clothes and watering plants.

Diagnostic assessment
Write down the names of three materials in your school community.

Progressive assessment
Guide learners to answer the following question.

1. What materials are used to build your house?

Answers to Diagnostic assessment
Paper, glass, wood(Refer to page 27 of learners textbook for more materials in the environment)

Answers to Progressive assessment
Stone, sand, metal, wood

Answers to Study Questions (Refer to LB pages 31 and 32)

1. Accept any correct drawing of a cloth that has been coloured.
2. State one use of the following materials around you:
   Paper = to make exercise books
   Metal = to make cutlass
   Wood = to make furniture
   Stone = to build houses
   Rubber = to make lorry tyre

Glass = to make windscreen of cars

3.

Uses of material	Material in your locality
Making car key	Metal
Making bicycle tyres	Rubber
Making a pair of spectacles	Glass
Making football jersey	Textile
Making toilet roll	Paper
Making class register	Paper

4.

Material	**What it is made of**
	It is made of glass
	It is made of rubber
	It is made of plastic
	It is made of metal

Diagnostic assessment for facilitator

1. Were you able to present the lesson in order?
2. Did you discuss diagnostic and progressive assessment meant for learners?
3. Were there more hands-on to make use of resources?
4. Did the learners cooperate with the leaders of their group?

STRAND 1: DIVERSITY OF MATTER
SUB-STRAND 2: MATERIALS

LESSON 6: DESCRIBING AND GROUPING MATERIALS BY THEIR APPEARANCE

Reference: Learner's Book 1 pages 32 - 37

Content Standard: B1.1.2.1 Recognise materials as important resources for providing human needs.

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

Expectations: At the end of this lesson learners will be able to:

- collect different materials from the school environment and bring them to class.
- describe the appearance of the materials (in terms of colour, size, feel, length etc.).
- group materials based on what they observe about them.
- draw and colour several objects/ materials based on their appearance such as colour and shape.
- relate the lesson with everyday experiences (appearance and properties of common items).

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

Resources: plastic, wood, glass, rubber, paper, stone, metal, dried leaves,textile and others.

Introduction
Knowing that the different varieties of non-living things referred to as materials have unique appearances with respect to their shape, size, colour, texture and mass. The knowledge of all this enhances the learner's ability to observe any material he or she sees and be able to observe it well and classify it.

Key words: appearance, describe, group, shape, size, colour, texture, mass.

Additional Information
Materials in the environment serve as sources to meet the needs of human beings. It is because of this that it is necessary to identify, name, describe and group them. You can group these materials by their appearance. Some materials are big. Others are small. There are hard, soft, smooth, rough, light, heavy, sticky or grainy materials. Some materials can be described as long or short. Materials also have different colours. Some are red, yellow, orange, white, blue, black and many other colours.

The materials we use every day have certain physical appearance. A stone is hard. Its surface may be rough or smooth. Fresh leaves of plants are green. Dried leaves (tea leaves) are brown. Wet clay which is used to make pot is soft and sticky. Most metals are hard. Electric cables and ropes are long. Water melon and oranges are round and soft.Water melon and coconut are big. Mangoes are green but when they are ripe they are yellow.

Starting the lesson
Start this lesson by picking an exercise book and ask learners to describe it with respect to its shape, size, colour, texture and mass.

Activity1.2.1.2: Grouping materials by their appearance

Materials/Resources (Low or no cost): plastic, wood, glass, rubber, paper, stone, metal, textile and others.

Procedure
- Tell learners to look at the materials they collected the previous day again.
- Tell learners to group the materials that have the same appearance at one place.

Ask learners
- what the colour of each material is
- whether the material are big or small
- which of the materials are long and which of them are short

Tells learners to use their fingers to feel the materials.

Ask learners whether the materials they felt with their fingers are
- hard or soft.
- smooth or rough.
- sticky or grainy.

Tell learners to lift up each material in their hand.
Ask learners if the material is light or heavy.
Tell learners to count the materials in the same group and write the number down.
Ask learners how they will call those materials in the same group.
Ask learners whether some of the materials are wood, plastics, glasses, textiles and rubbers.
Ask learners what other types of materials they have grouped together.
Show a material to the learners and tell them to draw it.
Tell learners to show their drawing to their classmates.

Ask learners:

- what their classmates say about what they have drawn.
- what their drawing look like.
- whether their drawing looks like the material they have drawn.

Tell learners to draw other materials and colour them.

Tell learners to allow their classmates to look at what they have drawn and coloured.

Summary

- Materials we use every day have certain physical appearance.
- You can group materials by their appearance.
- Some materials are big. Others are small.
- There are hard, soft, smooth, rough, light, heavy, sticky or grainy materials. Some materials can be described as long or short.
- Materials also have different colours.
- Some are red, yellow, orange, white, blue, black and many other colours.

Diagnostic assessment

Consider football and tennis ball.

i. Which of them is heavier?
ii. What is their shape?
iii. Which of them is big?
iv. Which of them is small?

Progressive assessment

Guide learners to answer the following question.

1. If you found a material, how will you know whether it is heavy or light?

Answers to Diagnostic assessment

i. Football is heavier.
ii. They are round.
iii. Football is big.
iv. Tennis ball is small.

Answers to Progressive assessment

You have to lift the material up to know if it is heavy or light.

Answers to Study Questions (Refer to LB pages 36 - 37)

1. A rock is hard. Its surface may be rough or smooth. Fresh leaves (Kontomire) are green. Dried leaves (tea leaves) are brown. Wet clay which is used to make flower pot is soft and sticky.
2. Write the name of a material in your community that is

(i) hard = stone
(ii) soft = mattress
(iii) heavy = rock

3. Accept any correct drawing
4.

Materials	**Shape (round or not round)**	**Size(small or big)**	**colour**	**Texture(rough, smooth, hard, soft or sticky)**	**Mass(heavy or light)**
	Not Round	Small	White	Smooth	light
	Not Round	Small	Brown	Rough	Light
	Not round	Big	Brown	Hard, Rough	Heavy
	Round	Big	Brown	Rough	Heavy
	Not round	Big	Brown	Hard	Heavy

5. (a) Clay
   (b) Stone
   (c) metal

Diagnostic assessment for facilitator

1. Did every learner show good drawing skills?
2. Were there learners who need help in drawing?
3. Were the learners able to demonstrate good skills in grouping things and classifying them?
4. Did the pedagogy you used help you present the lesson?

STRAND 1: DIVERSITY OF MATTER
SUB-STRAND 2: MATERIALS

LESSON 7: IDENTIFYING AND CLASSIFYING MATERIALS AS SOLID, LIQUID OR GAS.

Reference: Learner's Book 1 pages 38 - 44

Content Standard: B1.1.2.2 Know that substances can exist in different physical state (Solid, Liquid, Gas). Many substances can be changed from one state to another by heating or cooling.

Indicators: B1.1.2.2.1 Identifying and classifying materials as solid, liquid or gas.

Expectations: At the end of this lesson learners will be able to:

- list materials they see in their environment.
- sort the materials into solids and liquids.
- demonstrate the presence of gas by using paper cards /sheets of paper and wave them across their faces.
- carry out activities to investigate and identify substances in the solid, liquid and gaseous states.

Core Competencies: Creativity and Innovation, Personal Development and Leadership.

Subject Specific Practices:Observation, Manipulating, Communicating, Evaluating, Generalising.

Resources: Any solid material(stone, sand, paper), any liquid(water), inflated balloon.

Introduction

The materials that the learner is able to see in the environment, identify , describe and classify are not only solids or liquid. There are also gases which the learners do not see. At this point the learners should be able to appreciate this.

Key words: Identify, classify, solid, liquid, gas, collect, environment, sorting, grouping.

Additional Information

You are surrounded by many materials. You can see and touch some of the materials. There are some of the materials you cannot see but they exist. Solid has shape but liquid has no shape. Solid does not flow but a liquid flows. If you pour liquid in any container, it will take the shape of the container. If you put solid in a container, its shape does not change.

Starting the lesson

Begin this lesson by reviewing lesson about materials in the previous lesson. Tell learners to list, as many materials as possible, that can be found in their environment.

Activity 1.2.2.1a: Collecting materials from the environment

Materials/Resources (Low or no cost): Any solid material(stone, sand, paper), any liquid(water).

Procedure

- Lead learners to go out and walk around the school compound and look for materials in different forms and bring some of them into the classroom.
- Tell learners to look at the different forms of the materials they have brought to the classroom.
- Ask learners which material is in the environment and in the classroom as well but cannot be seen and collected.
- Tell learners to take a sheet of paper and wave it across their face.

Ask learners after waving the sheet of paper across their face

- what they feel.
- which material they can identify but they cannot see.

Activity1.2.2.1b: Sorting and grouping materials from the environment.

Materials/Resources (Low or no cost): Any solid material(stone, sand, paper), any liquid(water)

Procedure

- Review activity 1.2.2.1a in learners textbook page 37 where the learners brought different forms of materials into the classroom.
- Tell learners in groups of four or five, to sort out and group the materials into solid, liquid or gas.

Tell learners to write down

- the names of the materials which are solids.
- the materials which are liquids.
- the materials which are gases.

Ask learners whether there are materials which are solids, liquids or gases.

Note: Remind learners to realise that when they go round to collect materials to bring to the classroom, they will only find solids and liquids. They will not find gases to collect. This does not mean that gases do not exist.

Activity1.2.2.1c: To show that some materials exist as gas.

Materials/Resources (Low or no cost): Sheets of paper.

Procedure

- Tell learners to use a paper card or a sheet of paper and wave it across their face.
- Tell learners to use a paper card or a sheet of paper and wave it across their friend's face.
- Tell learners to tell their friends what they felt.
- Tell learners to let their friends also tell them what they felt.

Refer learners to page 38 of learners textbook 1.
Note: What the learners feel is air which is blown by the paper card or piece of paper on their face. Air is a mixture of gases. This shows that materials exist as solid, liquid or gases. These are the three states of matter.

Activity1.2.2.1d: Sorting out materials into solid, liquid and gas.

Materials/Resources (Low or no cost): Any solid material(stone, sand, paper), any liquid(water)

Procedure
Give learners different materials.

- Organise learners in groups of four or five.
- Tell learners to sort out the materials into solid, liquid and gas.
- Tell learners to give reason for sorting the materials as solid, liquid or gas
- Tell each group to present what they have done to the whole class.

Ask learners to explain what makes a solid different from a liquid.
You can pick ice block in a bucket with your hands and put it in another bucket but you cannot pick water in a bucket to another bucket. You can only pour it. Refer learners to page 40 of learners textbook 1.

Activity1.2.2.1e: Materials in the gaseous state
Materials/Resources (Low or no cost):Balloon
Procedure

- Organise learners in groups of four or five.
- Give balloon to each group of learners.
- Tell one member of each group to inflate the balloon by blowing air into it.
- Tell learners to ask their classmates what made the balloon big.
- Tell each learner in a group to breathe in and out.
- Ask learners what they breathe in and out?

Conclude with learners that:

- The balloon is solid.
- The air in the balloon is a mixture of gases.
- The air in the balloon makes it big.
- We breathe in air which is a mixture of gases.
- We also breathe out air.
- A liquid is different from a gas because the liquid cannot occupy every space.
- Gas can occupy every space.
- When you heat a liquid, it can change into a gas.
- When you cool a gas, it can change into a liquid.
- Ice is solid. It does not flow.
- When ice is heated it melts and becomes liquid. The liquid is called water. It flows. Liquid can flow but solid cannot flow.

Summary

- Many materials surround you.
- You can see and touch some of the materials.
- There are some of the materials you cannot see but they exist.

Diagnostic assessment

1. When the rain is falling, is the rain solid, liquid or gas?
2. Consider ice block and ice water.
   (i) which of them has a shape?
   (ii) which of them does not have a shape?
   (iii) which of them cannot flow?

Progressive assessment

The gas stove in Anita's mother's kitchen is connected to a gas cylinder. When Anita's mother wants to cook banku, she turns on the stove and starts cooking.

(i) Is what in the cylinder solid, liquid or gas?
(ii) What comes out from the cylinder, is it solid, liquid or gas?
iii) Is banku solid, liquid or gas?

Answers to Diagnostic assessment

1. Liquid
2. (i) ice block
   (ii) ice water
   (iii) ice block

Answers to Progressive assessment

(i) Gas.
(ii) Gas.
(iii) Solid

Answers to Study Questions (Refer to LB pages 43 - 44)

1. Ice is solid. It does not flow. When ice is heated it melts and becomes liquid. It flows. Liquid can flow but solid cannot flow.
2. (i) table and chair
   (ii) Cooking oil and water
   (iii) Air and gas for cooking
3. Stone cannot flow
4.

Solid	Liquid	Gas
Stone ice block, milk tin, paper, sand, car key, clay, dried leaf, rubber, rag, pen, pencil, plastic,	palm oil, perfume, water, milk, soup, Fanta, coke.	Air, inflated balloon, wind

5. (a) gas
   (b) solid
   (c) liquid

Diagnostic assessment for facilitator

1. What did you do to make sure every learner benefit from the lesson
2. Were all the learners able to engage in hands-on activity?
3. Were you able to deliver the full content of the lesson within the stipulated time ?
4. How did I conclude the lesson?

STRAND 1: DIVERSITY OF MATTER
SUB-STRAND 2: MATERIALS

LESSON 8: A MIXTURE AS TWO OR MORE OBJECTS OR MATERIALS PUT TOGETHER

Reference: Learner's Book 1 pages 45 - 49

Content Standard: B1.1.2.3 Understand mixtures, the types, their formation, uses and ways of separating them into their components.

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

Expectations: At the end of this lesson learners will be able to:

- combine materials to form a mixture.
- describe what happens when two or more materials are combined.
- find-out whether the products you have formed are the same as the individual materials you have combined.
- give names to the combinations of the materials you have formed.
- separate a mixture of different coloured beads or chocolate pellets of different colours.
- Say whether a new thing is formed when you mix different materials.

Core Competencies: Communication and Collaboration, Personal Development and Leadership.

Subject Specific Practices: Manipulating, Observing, Evaluating, Generalising.

Resources: Iron filings, sand, powdered chalk, water, common salt, vinegar, oil, a bottle of coca cola, "sobolo", sugar or pictures of these materials if they are not available.

Introduction

The learners at this juncture know that the materials they see are solids, liquids and gases. They need to know that most of these materials are a mixture of two or more materials. Learners can also appreciate the fact that two or more substances can be put together to form what is called a mixture.

Key words: Mixture, materials, form, new, solid, liquid, gas, separate.

Additional Information

When you mix two or more things together, they form a mixture. No new thing is formed when two or more things are mixed together. The starting and ending substances may look different from each other but no new substance is formed.

Whether you mix red beads with black beads they remain the same.
We are surrounded by many materials. When you mix two or more of these materials together the substance formed is a mixture. Look at the material in the pictures on page 43 of leaner's textbook 1.

You have been using mixtures in your home. There are several types of mixture. The type of mixture depends on the materials that are mixed together. These mixtures include:

- Solid-solid: iron filings and sand. The two substances are solids.
- Solid-liquid: sugar and water. Sugar is a solid but water is liquid.
- Liquid-liquid: kerosene and water, vinegar and water. These substances are all liquids.
- Liquid-gas: gas in coca cola. There is water and gas in Coca Cola.
- Gas-gas: oxygen, nitrogen, carbon dioxide in air.
- Solid-gas: dust particles in air.

Starting the lesson
Start this lesson by drawing the attention of the learners to a favourite Ghanaian meal called Red-red which is a mixture of stew made with palm oil, beans and fried plantain.

Activity1.2.3.1a: Forming mixtures.

Materials/Resources (Low or no cost): Iron filings, sand, powdered chalk, water, common salt, vinegar, oil, a bottle of coca cola, "sobolo", sugar.
Procedure

- Organise learners into groups of four or five with one of them appointed as a leader of the group.
- Call the leader of each group to collect the following materials from the teacher's desk: Iron filings, sand, powdered chalk, water, common salt, vinegar, oil, a bottle of coca cola, "sobolo", sugar
- Tell learners to mix iron filings and sand well.

Ask learners after mixing the iron filings and sand:

- what type of mixture they have formed.
- whether they can separate the mixture they have formed.
- what they can use to separate this mixture.

Go on further, and tell learners to mix water and sand well. Ask learners after mixing the water and sand:

- what type of mixture they have formed.
- whether they can separate the mixture they have formed.
- what they can use to separate this mixture.

Go on further, and tell learners to mix vinegar and water well. Ask learners after mixing the vinegar and water:

- what type of mixture they have formed.

- whether they can separate the mixture they have formed.
- what they can use to separate this mixture.

Now go on and tell learners to select any other two materials of their choice and mix them. Tell learners to answer questions as in the previous activities.
Ask learners which material in the list provided is a mixture.

Activity1.2.3.1b: No new thing is formed when two or more things are mixed together.
Materials/Resources (Low or no cost): A mixture of different coloured beads, a mixture of chocolate pellets of different colours.
Procedure

- Give to learners the following items from his or her desk: A mixture of different coloured beads, a mixture of chocolate pellets of different colours.
- Tell learners to separate the beads into different colours.
- Tell learners to separate the chocolate pellets also into different colours.

In the absence of these materials facilitator can use a mixture of red and white beans instead of beads. Teacher can also use a mixture of maize grains and beans.

Summary

- Combine materials to form a mixture.
- Describe what happens when two or more materials are combined.
- Find-out whether the products you have formed are the same as the individual materials you have combined.
- Give names to the combinations of the materials you have formed.
- Separate a mixture of different coloured beads or chocolate pellets of different colours.
- Say whether a new thing is formed when you mix different materials.

Diagnostic assessment

Select mixtures from the following list of substances: soup, Gari, sand, water, saw dust, stone, milo, urine, sugar, salt, iron filings, magnet, sea water.

Progressive assessment

Guide learners to answer the following question.

1. Is your urine a mixture? Give reason.

Answers to Diagnostic assessment

Soup, milo, urine, sea water.

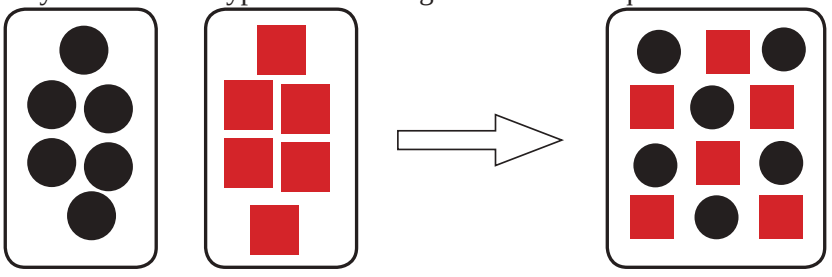
Answers to Progressive assessment

Urine is a mixture. It contains water and salt.

Answers to Study Questions (Refer to LB pages 48 - 49)

1. When you mix two or more things together, they form a mixture. No new thing is formed when two or more things are mixed together.
2.

Material	Type of mixture
Water + sugar	Liquid-solid
Sand + gari	Solid-solid
Salt + sand	Solid-solid
Gari + sugar	Solid-solid
Saw dust + iron filings	Solid-solid

3. Any other correct type of mixture eg. water+salt = liquid-solid
4. 

5. i) Rice ii) Stone iii) Gari iv) Water

Diagnostic assessment for facilitator

1. Were the exemplars used relevant to the lesson?
2. Did you present the lesson in order?
3. Did you discuss diagnostic and progressive assessment meant for learners?
4. Were there more hands-on to make use of resources

STRAND 2: CYCLES

SUB-STRAND 1: EARTH SCIENCE

LESSON 9: SOME NATURAL PHENOMENON SUCH AS DAY AND NIGHT OCCUR REPEATEDLY.

Reference: Learner's Book 1 pages 50 - 57.

Content Standard: B1.2.1.1.1. Explain that some natural phenomenon such as day and night occur repeatedly.

Indicator: B1. 2.1.1.1: Recognise that some events in our environment occur recurrently.

Expectations: At the end of this lesson learners will be able to:

- do an activity that explains cyclic movement.
- relate an activity to the occurrence of day and night.
- explain that the appearance of the sun, moon and stars follow a cyclic pattern.
- suggest other events in their environment that happen over and over again in a cycle.
- make sketches to display events that take place in the day and those that take place in the night.

Core Competencies: Critical thinking and problem solving, creativity and innovation, personal development and leadership.

Subject Specific Practices: Manipulating, Generalising, Observing, Analysing, Evaluating.

Resources: Analogue clock, with the second hand, circular cards, merry-go-round

Introduction

Things that repeat themselves are said to be cyclic. There are many events in nature that keep on coming after a certain period of time. After a day, night comes and this is repeated every 24-hours. This happens because the earth on which we live also keeps on moving around on its axis. It rotates. The earth also revolves round the sun. This causes the seasons. After the dry season comes the wet season. This is repeated year after year. This is a cyclic movement.

Key Words: Cyclic, merry-go-round, analogue clock, circular cards, season.

Additional Information:

We have observed the following activities during our lives. Day and night, wet and dry seasons, merry-go-round and analogue clocks. All the events occur in cyclic manner. Cyclic events are those that repeat themselves after a certain period of time. For example, when we sleep during

the night we are sure that day will break. As we work during the day we know that the night will come eventually. Farmers know that a time will come when the ground will become soft enough to plant their crops and a time will come when the sun will shine and the weather will be warm for them to harvest their crops. All these are cyclic events.

Materials / Resources (Low or no cost)

i. analogue clock, with the second hand.
ii. circular cards
iii. merry-go-round

Procedure:

Start lesson by asking simple questions such as

i. When did the learners sleep yester night?
ii. When did they wake up in the morning?
iii. Does this always happen?
iv. What event takes place after the day and night?
v. Do these activities keep on repeating themselves every day and night?

Explain to them that such events which keep on repeating themselves are known as cyclic events.

Events such as the rotation of the earth on its axis and the revolution of the earth round the sun are all cyclic as they keep on repeating themselves after certain periods of time.
The analogue clock, the merry-go-round and circular cards all move in a cyclic manner.

Activity 2.1.1.1 (a) To show circular movements using the second hand of an analogue clock

Show the learners an analogue clock. Show them the second hand of the clock.

Ask them the following questions.

- Where is the second hand in diagram (a), (b) and (c)?
- Generally, how does the second hand of the analogue clock move?

Activity 2.1.1.1 (b) To make circular cards

Refers to the diagram of a circular card from page 51 of learners book and directs learners to make their own circular cards.

- Draw a line from one edge of the circular card made out of card boards to the opposite side.

- Draw a second line as shown in diagram (3) through the centre of the circular card. These two lines are called diameters.
- Where the two lines meet is the centre of the card.
- Make a hole at the centre of the card.

Activity 2.1.1.1 (c) Use of circular cards

- One of the group members should put the tip of his or her pencil through the hole and spin it.
- Other members of the group observe how the lines turn on the card.
- Ask them whether it shows a cyclic movement. Let learners use a merry-go-round if you have one at hand.

Summary

- The sun does not move but the earth moves round the Sun in a cyclic manner
- In nature, there are many examples of cyclic movements.
- The earth turns round on its axis. This movement on the axis is called rotation.
- The movement of the earth and other planets round the sun is in a cyclic manner.

Diagnostic assessment

1. How does the second hand of an analogue clock move?
2. Does this movement repeat itself?

Answers to Diagnostic assessment

1. It moves in a cyclic manner or round on the face of the clock.
2. Yes, it repeats itself after every 60 seconds.

Progressive Assessment

1. How do the lines on a circular card appear when it is spinned round?
2. Do they repeat this movement?
3. How does a merry-go-round move when one sits on it?

Answers to Progressive assessment

1. They move in a cyclic manner.
2. Yes, they repeat it in every cycle.
3. It moves in a cyclic manner.

Appearance of sun, moon and stars in cyclic patterns.

Materials needed/Advance preparation (No materials will be needed)

The learners will have to observe the sky at night. They should observe whilst the moon is up and another time without the moon.

Procedure: Since the facilitator does not live with the learners at home, this topic can be taught by the facilitator giving the learners an assignment by asking them to watch the sky at night. Question the learners the following day during class hours. Questions such as the following can be asked.

- Name the objects seen in the night sky the previous night.
- Which is brighter: the moon or the stars?
- Is the moon brighter than the sun?
- Why do we not see the stars in the day sky?
- Where is the sun during the day?

Answers.

- Moon and stars
- stars
- No the sun is brighter
- Because the sun is bright so the stars cannot be seen since they are very far away.
- It is in the sky.

Diagnostic Assessment

1. Ask the learners whether they sought help from their brothers, sisters or parents.
2. Ask them whether they saw the moon the previous night or not?

Answers to diagnostic assessment

1. The parents, brothers and sisters
2. Yes, the moon was shining but it was only half moon.

Progressive Assessment

Guide learners to answer the following questions.

1. Name two occurrences that are cyclic in nature.
2. Name two artificial cyclic movements.
3. Do the seasons repeat themselves?

Answers to progressive assessment

1. Appearance of the sun and moon.
2. Motion of the second hand of a clock and Merry-go-round
3. Yes every year there is a wet and dry season.

Answers to Study Questions (Refer to LB page 57)

1. (i) cyclical
2. (i) star, sun and moon
   (ii) in the sky
   (iii) the moon
3. Accept any correct sketch of an event that takes place during the day.

Diagnostic assessment for facilitator

1. How did you start the lesson?
2. Did you vary your methodology in the course of the lesson?
3. Were the exemplars used relevant to the lesson?
4. What did you do to create the atmosphere for creativity and critical thinking in the course of the lesson?
5. Were learners able to do the assessment task for their workbooks or learner's book?

STRAND 2: CYCLES
SUB-STRAND 1: EARTH SCIENCE

LESSON 10: THE SUN IS THE MAIN SOURCE OF LIGHT TO THE EARTH

Reference: Learner's Book 1 pages 58 - 64.

Content Standard: B1.2.1.2.1 Know that the sun is the main source of light to the Earth

Indicator: B1. 2.1.2.1: Recognise the relationship between the earth and the sun.

Expectations: At the end of this lesson learners will be able to:
- mention sources of light in their environment.
- mention the main source of light by considering the biggest source of light which makes them see clearly in the day time.
- use paper to design the sun as a source of light to the earth.

Core Competencies: Critical Thinking and Innovation, Personal development and Leadership.

Subject Specific Practices: Manipulating, Generalising, Observing, Analysing, Evaluating.

Resources: Flashlight, lantern, electric bulb, candle, pictures of moon, stars and sun.

Introduction
There are different forms of energy. These include heat and light energies. Heat and light energies are very important for life on earth. Without them there will be no living things. These two types of energy are produced by the sun and other bodies. However, the sun is the main source of these energies.

Key words: sun, sky, torch, matchstick, lantern, moon, stars.

Additional Information
There are many objects that produce energy. They are called sources of energy. They can be natural and artificial. Energy exists in different forms. These include chemical, electrical, magnetic, heat, light, sound and mechanical. Heat and light energies are very important to living things. These are produced by the sun, a torchlight, the stars, fire flies, lanterns and electric bulbs among others.

The main source of light and heat however is the sun. It is this heat energy that all living things benefit from which makes them live.

In this lesson we will show that the main source of light on earth is the sun.

Materials/Resources (Low or no cost): Flashlight, lantern, electric bulb, candle


Procedure: Show learners some sources of light physically or in diagrams. Show them a flashlight, a lantern, an electric bulb and a candle and diagrams of the sun, moon and the firefly.

Light them up for them to see that they produce light.

Let them appreciate that although all other sources produce light, the main source of light is the sun.

Activity B1.2.1.2.1 (a) The sun as the main source of light.

- Let the learners go to the headteacher's office or any other area where all windows can be closed.
- Ask them to open and read their science books.
- Ask them whether they can see clearly to read.

Guide them to know that it is the sun that enables them to see and read during the day and without the sun's light they cannot see clearly. The main source of light on earth is the sun.

Summary

- The sun is the main source of light to the earth.
- The other sources of light are very small and cover a very small part of a place at a time.
- The stars produce their own light but are too far away from the Earth such that their light is not sufficient to make us see clearly, as the sun does.
- Other sources of light include flashlights, lanterns, electric bulbs, fire flies and candles.
- Plants use sunlight as a source of energy to produce their food. Animals including human beings get their energy when they feed on plants.

Diagnostic Assessment

1. Name two sources of light.
2. What is the main source of light on earth?
3. Why can't we see in a dark room?

Answers to dianostic assessment

1. Sun, moon, stars, candle, flashlight, etc.
2. The sun
1. Because there is not enough sunlight in the room.

Progressive Assessment

Guide learners to answer the following questions.

1. Name three sources of energy.
2. Name two sources of light in the environment which are natural.
3. Does the moon produce its own light?
4. The moon and the stars; which is farther away from the earth?

Answers to progressive assessment

1. Sun, moon, candle, flashlight, electric bulb
2. Sun, stars
3. No, it reflects the sun's light.
4. The stars

Answers to Study Questions (Refer to LB page 64)

1. i) sun
   ii) see
   iii) Food
2. candle, sun, light bulb and flashlight
3. i) sun
   ii) stars
   iii) bulb
   iv) candle

Diagnostic assessment for facilitator

1. How did you introduce the lesson to learners?
2. What did you do to kindle learners' interest in the lesson?
3. How did you make sure every learner demonstrate creativity during the lesson?
4. Were the learners yearning for the lesson to continue even though you have ended it?
5. How did you conclude the lesson?

STRAND 2: CYCLES
SUB-STRAND 1: EARTH SCIENCE

LESSON 11: DISAPPEARANCE OF MIST AND POOLS OF WATER AFTER RAINS.

Reference: Learner's Book 1 pages 65 - 68

Content Standard: Observe the disappearance of mist and pools of water after rains.

Indicator: B1. 2.1.3.1 Show understanding of the roles of condensation, evaporation, transpiration and precipitation in the hydrological cycle.

Expectations: At the end of this lesson learners will be able to:

- observe the disappearance of mist and run-off water after rains.
- predict where mist and run-off water go after rains.
- state that mist evaporates but run-off water either flows into surface water bodies or collects as stagnant pools of water.
- state that run-off water takes a longer time to evaporate.

Core Competencies: Critical thinking and problem solving, creativity and Innovation, Personal development and leadership.

Subject Specific Practices: Manipulating, Generalising, Observing, Analysing, Evaluating.

Resources: Pictures of mist, pools of water, rain, run-off water and stagnant pools of water.

Introduction

When the rain falls, we observe pools of water around us. Mist is formed when water vapour condenses around the earth in fact close to the surface of the earth. After sometime the pools of water and the mist disappear. Where do they go? We observe that they take a longer time to disappear in cold weather than in warm weather. In this lesson we will learn about the disappearance of pools of water and mist after a rain.

Key Words: Mist, pools of water, rain, run-off water, stagnant pools of water.

Additional Information:

When liquids become warm, they change into vapour. Some of the vapour molecules obtain energy from the rest of the liquid and move out. This is known as evaporation. Evaporation thus occurs when temperatures rise. When the wind blows over the surface it carries away the evaporated molecules and more are encouraged to move out again. When the rain falls and pools of water settle on the ground, an increase in temperature will result in the disappearance of the water. If there is wind, it will also cause the pool to disappear faster.

Materials/Resources (Low or no cost):No materials required in these activities.

Procedure

Begin the lesson by asking learners to answer the questions on page 67 of learners textbook 1.

1. Do you live in an area where it rains very often?
   Ans. There may be varied answers with some learners answering yes and others answering no.
2. What happens immediately after the rainfall?
   Ans. There is a collection of water on the ground.
3. What is mist?
   Ans. Mist is condensed water vapour close to the surface of the earth.
4. Does mist remain all the time?
   Ans. No, it soon disappears when the atmosphere becomes a little warm.

Activity 2.1.3.1 Observing the disappearance of mist and run-off water after a rain fall.

Wait and perform this activity after a rainfall.
Lead the learners to go out the classroom after a rainfall.
Ask the learners to observe any pool of water around the compound.
Let them draw a circle round the pool of water as a mark to know the part covered by the water.
Ask them to go back to the classroom.

Ask the learners to return to the pool of water the next day in the afternoon.
Ask them to observe the pool of water and make comments on it. Did the pool of water decrease or increase?
Lead the learners to discuss what happened to the pool of water.
Let them understand that apart from evaporation, the pool of water can also decrease in volume if it sinks into the ground especially if it is sandy. It will also sink faster if there is no water already in the soil. It can also run-off especially on a sloppy area. The water also evaporates faster if there is no water vapour in the atmosphere.

Explain what mist is. It is condensed water droplets very close to the earth surface. This happens when the weather becomes very cold and cannot hold water in the form of vapour. Mist will evaporate if the atmosphere becomes a little warm.

Explain to learners that whilst mist evaporates when the weather warms up, run-off water may flow into lakes, rivers and even the sea in coastal areas. In short, run-off water runs into existing water bodies or collects as stagnant water and evaporates gradually.

Summary

- A mist is condensed water droplets.
- A mist forms very close to the earth's surface.
- A mist is the result of the water vapour in the air being cooled to form the droplets. This happens when the air can no longer hold all the water vapour it contains.
- When rain cools and moistens the air near the surface of the earth a mist can form.

Diagnostic assessment

1. Learners in Basic one class visited a pool of water around the compound and drew a circle round it as a mark to know the part covered by the water. They returned to the classroom and went back to the pool of water the next day.Guess what will happen to the water by the next day.
2. State two factors that will quicken the decrease in volume of the water.
3. Name the methods by which mist and pools of water disappear after a rain.

Answers to Diagnostic assessment

1. It will decrease in volume.
2. High temperature and wind.
3. Mist evaporates when the weather becomes warm. Pools of water may remain stagnant on the ground, evaporate gradually or flow into existing water bodies.

Progressive Assessment

Guide learners to answer the following questions

1. What is mist?
2. What produces pools of water that we see on the ground?
3. What happens to mist produced as the weather becomes hot?
4. State two ways by which pools of water disappear after a rain.

Answers to Progressive assessment

1. Condensed water vapour close to the earth's surface.
2. Rain
3. It evaporates
4. Evaporate or run-off into water bodies.

Answers to Study Questions (Refer to LB page 68)

1. (a) water (b) mist (c) rain
2. (i) (a) mist
   (b) pool
   (ii) Into the clouds
   (iii) mist
3. (a) mist (b) cloud

Diagnostic assessment for facilitator

1. Did you draw the attention of learners to a previous knowledge?
2. Did you disclose learning expectations with learners?
3. Did your pedagogy enable you to deliver the lesson successfully?
4. Did I present the lesson in order
5. Did you refer learners to exercises in the workbook and the learners book? er's book?

STRAND 2: CYCLES
SUB-STRAND 1: EARTH SCIENCE

LESSON 12: SOURCES AND USES OF WATER IN THE HOME AND AT SCHOOL

Reference: Learner's Book 1 pages 69 - 74.

Content Standards: 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.

Expectations: At the end of this lesson learners will be able to:

- state where they get water (sources of water) at the home, community and school.
- mention sources of water in the home and at school.
- discuss the various uses of water at their homes, school and community.
- demonstrate several uses of water, e.g. washing of face and hands, drinking and preparing beverages, rinsing of utensils, watering of flowers.
- use local materials to create different sources of water in an outdoor activity.

Core Competencies: Critical Thinking and problem solving, Creativity & Innovation, Personal development and Leadership.

Subject Specific Practices: Generalising, Observing, Analysing, Evaluating.

Resources: Charts of water from many sources; rain, pond, river, stream, pond.

Introduction

Learners have experienced rainfall in their daily lives and have also seen a pool of water after the rainfall. At this point the question of where they get water to use at school and at home becomes relevant in this lesson.

Key words: rain, well, pond, river, sea, lake, pipe borne, bore hole.

Additional Information

Water is one of the important needs of living things. All living things need water. The body of all living things contain water. The blood of human beings and other animals contain water. Plants also contain water. For example, coconut and water melon contain a lot of water. We get water from different sources.

Importance of water to living things

Water is important to living things because, it has many uses. Plants use water to make their food in the process known as photosynthesis.

All animals also drink water. Water in animals helps in several processes in the body. Humans also drink water and it helps in digestion and cooling down the body. Human body is about 90% water.

Apart from drinking, humans also use water for

- putting off fire
- cooking food
- watering plants
- washing clothes
- cooling car engines and for transportation.
- washing face and hands.
- drinking.
- preparing beverages.
- rinsing utensils.
- watering flowers.

Starting the lesson

Start this lesson by asking learners whether they have

- Had their bath that morning
- Drank water that morning
- Ate food that morning

Follow the above questions with another question about where the learners got the water for those activities from.

Class Activity 2.1.4.1(a): Name sources of water at home and at school.

Ask learners to mention other sources from which water can be obtained apart from those they mentioned earlier.

Compare the sources learners mention with the following checklist:

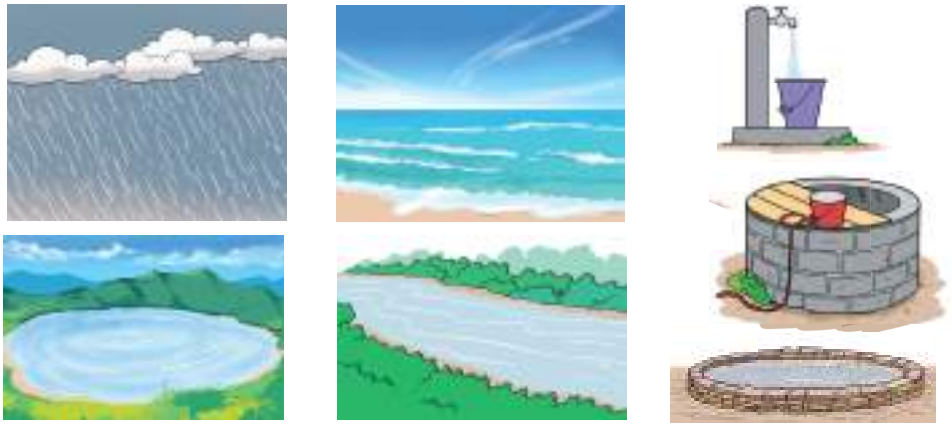
- rain
- well
- pond
- river
- sea
- lake
- pipe borne
- bore hole

Class activity 2.1.4.1(b): Classify them into those that can be found in the home and those that can be found in the school environment.

Ask learners to classify the sources of water that can be found in the home and at school. Compare the response of the learners with the following list:

School	Home
• rain	• rain
• well	• pond
• pipe borne	• lake

Teacher shows to learners pictures of sources of water from page 74 of learners textbook 1.



Ask learners, in their groups of four or five, to identify the sources of water at home and at school from the pictures. Make sure each person in a group participates in this activity.

Tell learners to use local materials to create different sources of water in an outdoor activity, for example artificial wells, rivers and tap.

Show to learners pictures about uses of water at home, at school and in the community from page 75 of learners textbook 1

Tell learners to identify the uses and write them down in their exercise books.

Use the following list to guide the responses of learners: drinking, cooking, cooling, transpiration, watering plants, putting off fire.

Tell learners to demonstrate uses of water such as drinking, cooking, cooling, transpiration, watering plants and putting off fire, washing clothes and in photosynthesis in green plants to prepare food.

Summary

- we use water for drinking, putting off fire, cooking food, watering plants, washing clothes, cooling car engines and for transportation, washing of face and hands, preparing beverages, rinsing utensils and watering flowers.
- sources of water in the home and school include: rain, lake, pipe borne, well, river, pond, sea and borehole.

Diagnostic assessment

1. Where do plants get their water from?
2. Where do animals in the bush get their water from?

Answers to diagnostic assessment

1. From the soil.
2. From lakes, streams, rivers and ponds.

Progressive assessment

Guide learners to answer the following questions.

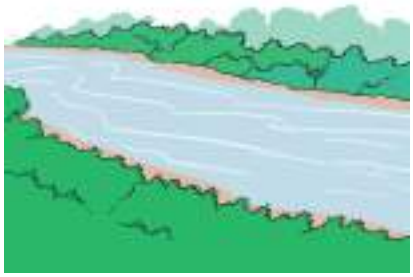
1. Why do we put water in the water tank of a car every morning?
2. Why do we water our vegetable crops during the dry season?

Answers to progressive assessment

1. To cool the engine of the car
2. Plants grow well when they absorb water from the soil to make their food.

Answers to Study Questions (Refer to LB page 74)

1. tap and rain water
2. for cooking, washing and bathing
3. i) To make their own food
   ii) For digestion of food and cooling down the body
   iii) water
4.

 *Rain*	 *pond*
 *River*	 *pipe borne water*

Diagnostic assessment for facilitator

1. Did every learner show interest in the lesson?
2. Did the learners ask you questions about the lesson?
3. What pedagogy did you use to deliver your lesson ?
4. Were the learners able to identify sources of water correctly?
5. Did you discuss home learning assignment with the learners?

STRAND 2: CYCLES
SUB-STRAND 1: EARTH SCIENCE

LESSON 13: THE EXISTENCE OF AIR IN THE ENVIRONMENT

Reference: Learner's Book 1 pages 75 - 79

Content Standards: 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.

Expectations: At the end of this lesson learners will be able to:
- carry out activities or play games that demonstrate the existence of air.
- explain what causes the leaves of a tree and hoisted flag to move.
- outline uses of air in your life.

Core Competencies: Critical Thinking and problem solving, Creativity & Innovation, Personal development and Leadership

Subject Specific Practices:Generalising, Observing, Analysing, Evaluating

Resources: charts of parachuting, flying kites, inflated balloons, a man pumping tyres, woman fanning coal pots, a boy whistling, blowing trumpet and people sailing in canoes and boat.

Introduction
It is not only water we use at school and at home. The learners should also appreciate the fact that there is another very important material in the environment which is needed in daily lives. This important material is air. The absence of air for a few minutes leaves all living things dead.

Additional Information
Air is a mixture of gases. Air is around us but we cannot see it. We can feel its presence through its effects on things. Air is very important. No living thing can live without air. Apart from all living things which need air for breathing, birds and insects use it to fly and human beings also use air for other things which include parachuting, flying kites, blowing balloons, pumping tyres, fanning coal pots, whistling, blowing trumpet and sailing of canoes and boat.

Key words: natural resource, parachuting, flying kites, blowing balloons, pumping tyres, fanning coal pots, whistling, blowing trumpet and sailing of canoes and boat

Starting the lesson
Start the lesson by fanning yourself and draw learners attention to it.
Continue this activity and engage learners in games which involves the use of air such as:
- waving a piece of paper across the face,

- leaving inflated balloons in an open space,
- watching a hoisted flag,
- observing the leaves of a plant in the school,
- closing their mouths and then taking a deep breath,
- asking learners to fan themselves or sit in front of a working fan.

Show to learners the diagrams on page 76 of learner's book 1 which shows the presence of air.

Ask learners what the behaviour, of the bird, plant, boat and hoisted flag in the diagrams is.

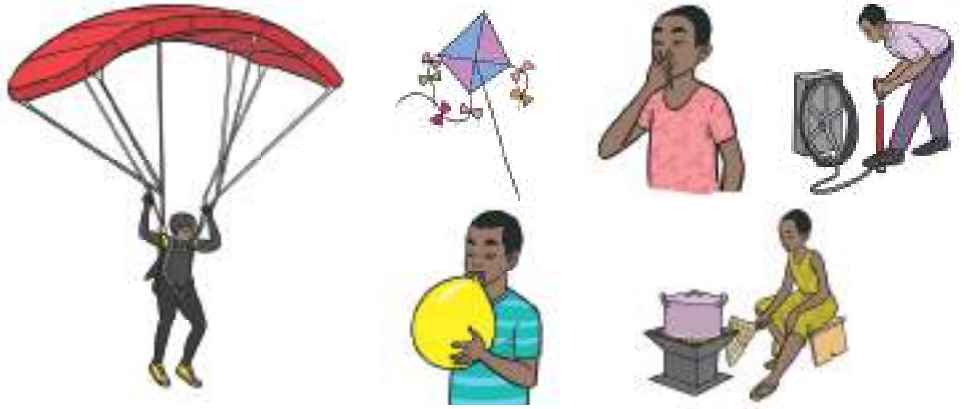
Tell learners to discuss the behaviour of these things with their classmates.

Activity 2.1.4.2 To demonstrate the existence of air in the environment
Materials/Resources (Low or no cost): Balloon
Procedure

- Tell learners the previous day to bring balloons to class.
- Tell learners to fill the balloon by blowing air into it.
- Ask learners why the balloon becomes bigger.
- Tell learners to take a piece of paper and wave it across their face.
- Ask learners what they feel when they waved the paper across their face.
- Tell learners to watch a hoisted flag.
- Ask learners the cause of the movement of the hoisted flag.
- Guide learners to conclude that though we cannot see air, we feel its presence.

Guide learners to arrive at the explaination that

- For example, air has made the balloon bigger and lighter.
- The balloon will move up a little when left after inflating it.
- when we wave a piece of paper across our faces we feel the presence of air.
- the air blows the hoisted flag about.
- the leaves of a plant are also blown by the air about.



Tell learners to outline uses of air in their lives, for example, whistling, blowing of trumpets, flying kites, sailing of boats.

Summarise the lesson by explaining to learners that air is everywhere.

Summary

- Air is everywhere.
- We feel the presence of air but we cannot see it.
- We use air to do many things.

Diagnostic Assessment

When the weather is warm and you switch on the fan, what does it provide?

Progressive Assessment

Guide learners to answer the following question.

1. One use of air for the survival of human being is?

Answers to Diagnostic Assessment

Air

Answers to Progressive Assessment

Breathing

Answers to Study Questions (Refer to LB page 79)

1. a) Air b) big
2. He is showing that air exist
3. a) True [√]
   b) False [√]
   c) True [√]
4. Air
5. Air

Diagnostic assessment for facilitator

1. Did every learner participate in the activity to demonstrate the existence of air in the environment
2. What core competences can you identify being developed in the learners
3. Were there more hands-on to make use of resources

STRAND 2: CYCLES

SUB-STRAND 2: LIFE CYCLES OF ORGANISMS

LESSON 14: THE STRUCTURE OF PLANTS

Reference: Learner's Book 1 pages 80 - 83

Content Standards: B1.2.2.1 Demonstrate understanding of the life cycle of plants.

Indicators: B1.2.2.1.1 Examine the structure of plants.

Expectations: At the end of this lesson learners will be able to:

- uproot young plants from the school environment and bring them to class with the help of your facilitator.
- examine the external parts of plants (using hand lens if available).
- draw the external parts of a plant.
- create weed albums using leaves of different plants.

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

Subject Specific Practices: Observation, Recording.

Resources: A young plant uprooted or picture of the structure of a plant.

Introduction

Water and air are important resources that both plants and animals need. The plants that the learners see, both the young and the old plants, on their way to school each day, have a certain appearance. The learners need to know the structure of the plants that they always see. They always see the leaves, the branches, the flowers, the fruits and the seeds but they have not examine it critically before. They do not know the relationship between the tree, the fruits and the seed which becomes the tree.

Key words: structure, stem, root, leaf, flower, fruit.

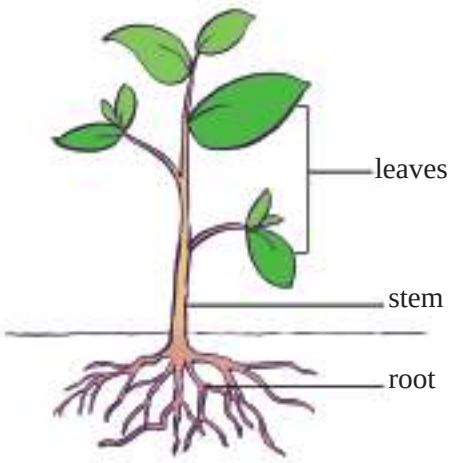
Additional Information

A living thing capable of separate existence is called an organism. All organisms are made up of cells - that is the basic unit of life. When events repeat themselves from time to time they form a cycle. When farmers sow their seeds, the seeds germinate into seedlings. The seedlings grow to become a mature plant. The mature plant bear fruits. The farmer harvests the fruits of the seeds sown. The seeds in the fruits are collected and sown again for the fruits to be harvested at

another time. This forms a cycle. In the life cycle of every plant the seed, the seedlings and the mature plant have their own unique structures. There are many cycles in life. The development of plants such as okro, maize, mango, beans, orange and shea nut also follow cycles. In this lesson you will learn the structure of plants.

Starting the lesson

Start this lesson by drawing learners' attention to a tree on the school campus and ask them how it looks like.



Activity 2.2.1.1: Collecting plants and examining parts of plants
Materials/Resources (Low or no cost): Pictures of a plant
Procedure

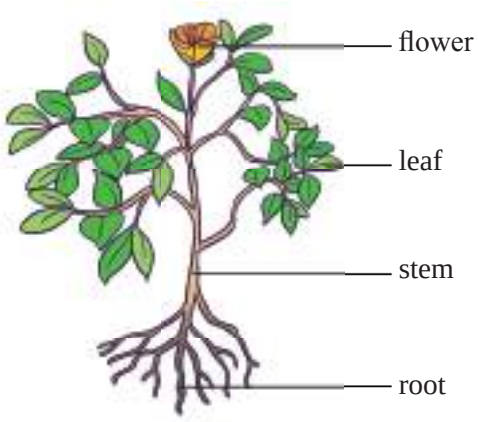
- Lead learners to go round the school compound.
- Help learners to uproot a young plant and bring it to the classroom.
- Tell learners to examine all the parts of the young plant that they can see well.

Ask learners what they have seen.

- Give hand lens to learners to examine all the parts of the young plant well.

Ask learners what they have seen. Ask learners whether thay can draw what they have seen and finally instruct them to draw it in their exercise book.

- Tell learners to show the diagram to their classmates and talk about it.
- Ask leaners what their classmates say about their diagram.
- Go round to make comments about the diagrams of learners.
- Tell learners to tell their classmates the comments that you (teacher) passed about the drawing.
- Finally ask learners whether their drawing looks like the plant they uprooted.



Tell learners to create weed albums using leaves of different plants.

Summary

- Plants have leaves, flowers, stem and root.
- The root is in the soil and cannot be seen.

Diagnostic assessment

Name three parts of a plant .

Progressive assessment

Guide learners to answer the following questions.

1. Name three parts of a mango tree during a mango season.
2. Which part of the cassava plant is used to pound fufu?

Answers to Diagnostic assessment

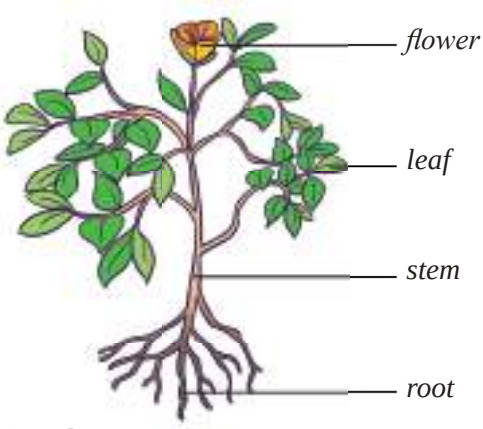
Root, stem, leaves.

Answers to Progressive assessment

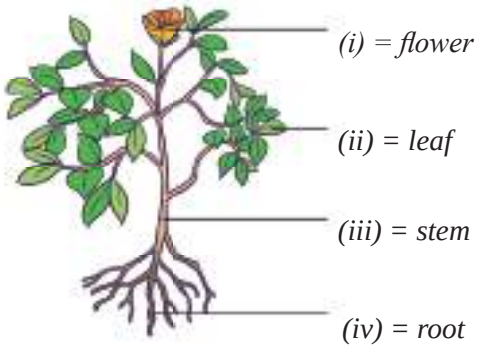
1. Stem, leaves, mango fruit.
2. Root.

Answers to Study Questions (Refer to LB page 83)

1. a. root, stem, leaves

2. 

(i) a plant

(ii) 

3. roots
4. leaves.

Diagnostic assessment for facilitator

1. Did you use actual plant or a picture to deliver this lesson?
2. Were the learners able to draw the plant well?
3. What did you do to make the learners appreciate the relevance of studying this topic
4. Did you use assessment for learning strategies well during the lesson?

STRAND 2: CYCLES
SUB-STRAND 2: LIFE CYCLES OF ORGANISMS

LESSON 15: DIFFERENT KINDS OF SEEDS

Reference: Learner's Book 1 pages 84 - 88

Content Standards: B1.2.2.1 Demonstrate understanding of the life cycle of plants

Indicators: B1.2. 2.1.2 Observe different kinds of seeds.

Expectations: At the end of this lesson learners will be able to:
- examine the external parts of different seeds.
- draw the external parts of different seeds.
- identify different fruits and their seeds.
- Play matching game to identify different fruits and their seeds.

Core Competencies: Critical Thinking and Problem Solving, Personal Development and Leadership, Communication and Collaboration, Creativity and Innovation

Subject Specific Practices: Observation, Recording.

Resources: Seeds such as orange, maize grains, beans, groundnut, tomato, pawpaw

Introduction
The learners have seen some seeds before. No one has drawn their attention to examine its external features before. They have also not compared the different kinds of seeds before. This lesson will enable them pay close attention to any seed they see and observe it critically.

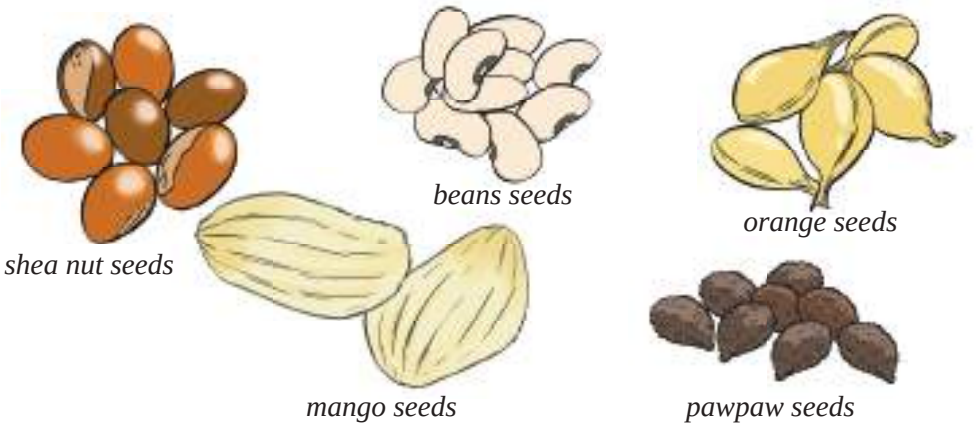
Key words: seeds, fruits, grain, germinate, seedling.

Additional information
Plants go through life cycle like other living things. Seeds are planted in a good soil. The seeds germinate into seedlings when conditions are favourable for them. The seedlings develop into the adult plant. The adult plant produces flowers. The flowers develop to form fruits which contain seeds. Seeds are found in the fruit. Orange seed is found in orange fruit. Mango seed is found in mango fruit. Bean seed is found in bean fruit. Shea seed is found in shea nut fruit. Okro seed is found in okro fruit. Maize grain (seed) is found in maize fruit.

The fruits are produced by the plant. There are three things which which are seen clearly here namely the plant, the fruit and the seed. A seed germinates and grow into a plant. The plant produces fruit which contain seeds.

Starting the lesson

Start this lesson by intentionally eating orange and draw the attention of learners to it, especially the seeds.



Activity 2.2.1.2: Observing different kinds of seeds

Materials/Resources (Low or no cost): orange, pawpaw, mango, bean seeds, shea nut.

Procedure

- Show diagram of seeds to learners and tell them to look at them(seeds) well.
- Also provide learners with different kinds of seeds (e.g. orange, pawpaw, mango, bean seeds, shea nut).
- Tell learners to look at all the parts of the seeds well. Teacher then asks learners to state what they have seen
- Tell learners to draw the different seeds that they have seen in their exercise book.
- Tell learners to
  (i)show their drawing to their classmates.
  (ii) say what their classmates say about their drawing.
  (iii)say something about how they see the drawing of their classmates
- Tell learners to show their drawing to you.

Take learners through a matching game, to identify different fruits and their seeds.

Summary

- Seeds are found in fruits.
- The plants produce the fruits.
- The plant produces fruit, which contain seeds.

Diagnostic assessment

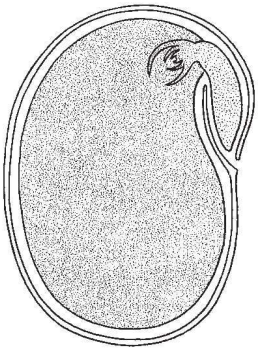
1. Write down three examples of seeds.
2. Draw and colour bean seed.

Progressive assessment

Guide learners to answer the following questions.

1. Does doughnut contain seeds? Why?
2. Does yam contain seeds? Why?

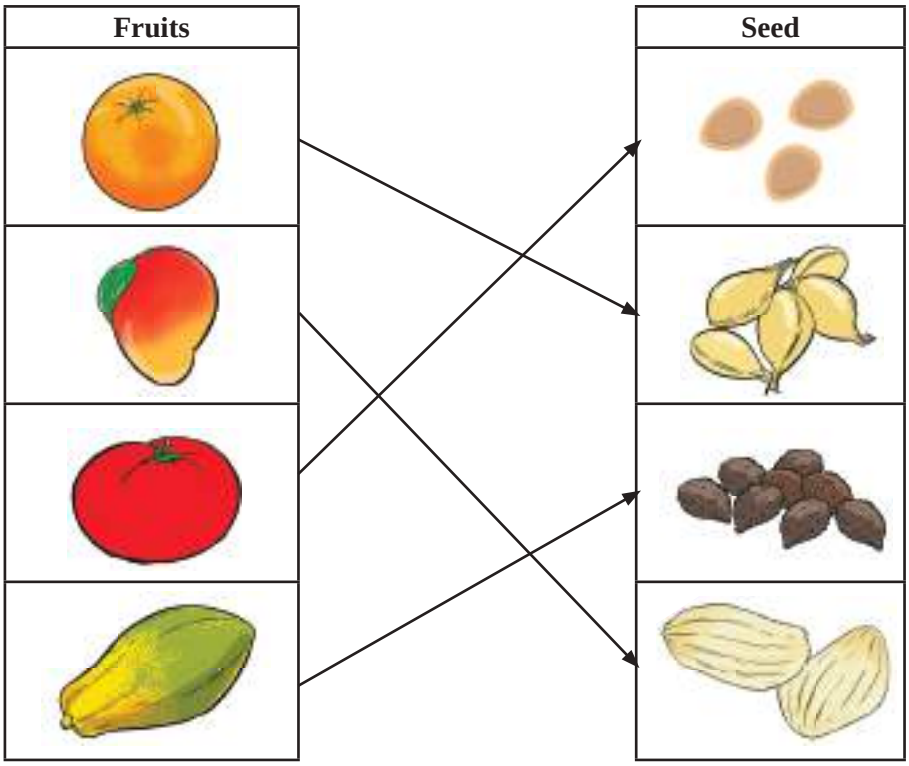
Answers to Diagnostic assessment

1. Mango seed, pawpaw seed, orange seed.
2. 

Answers to Progressive assessment

1. No. It is not a fruit
2. No. It is not a fruit

Answers to Study Questions (Refer to LB pages 87 - 88)

1. fruit
2. orange, pawpaw and banana
3. (i) seed
   (ii) It will germinate
4. 

Diagnostic assessment for facilitator

1. Did you use actual seeds or a picture to deliver this lesson?
2. Were the learners able to identify the parts of the different seeds correctly?
3. Did the learners appreciate the relevance of studying this topic ?
4. What could you have done better for a better delivery of the content of this lesson?

STRAND 3: SYSTEMS

SUB-STRAND 1: THE HUMAN BODY SYSTEMS

LESSON 16: EXTERNAL HUMAN BODY PARTS AND THEIR APPROPRIATE NAMES

Reference: Learner's Book 1 pages 90 - 95

Content Standards: B1.3.1.1 Recognise that different parts of the human body work interdependently to perform a specific function.

Indicators:B1. 3.1.1.1 Identify the external human body parts and their appropriate names (e.g eyes, ears, mouth, nose, legs, hands, shoulders, knees, fingers, toes and chest)

Expectations: At the end of this lesson learners will be able to:

- name the parts of their body
- sing song about parts of their body
- identify the external parts of the human body.
- draw a human body and use a colour of their choice to colour the drawing.
- trace an outline of the human body on a cardboard or paper.

Core Competencies

- Personal Development and Leadership.
- Digital Literacy.
- Critical Thinking and Problem Solving.
- Creativity and Innovation.

Subject Specific Practices: Recording, Generating.

Resources: A chart of the human body with parts labelled

Introduction

It is not only the trees we see around that have external parts. The human body also has external parts. The learners should be made to appreciate the parts of their body and know that they act together to make them do the things they do.

Key words: Identify, external, eyes, ears, mouth, nose, legs, hands, shoulders, knees, fingers, toes and chest.

Additional information

The human body has parts we can see and parts we cannot see. The parts we cannot see are internal parts. The parts we can see are external parts. Even what we use to see parts of the body forms the external part. The parts of the body act together to make us do things we do. All the parts which work together form a system. The system has different parts that carry out different functions. The external parts that we see include:

- head
- ears
- neck
- mouth
- hands
- eyes
- chest
- nose
- abdomen
- legs

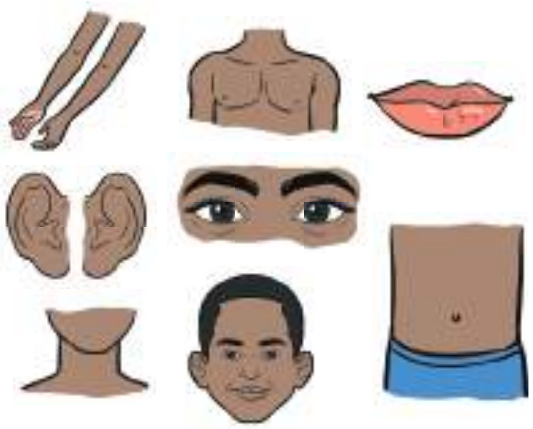
When any part of the system is lost, it affects the whole system and the system does not work well again. The internal part of the system is not seen but it works with the external parts for the whole system to function well.

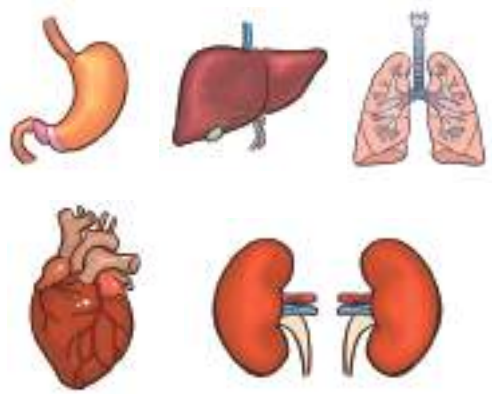
Starting the lesson

Start this lesson by asking learners if they know a song that talks about parts of the human body. If learners do not know any such song, sing one of such songs which goes like this:

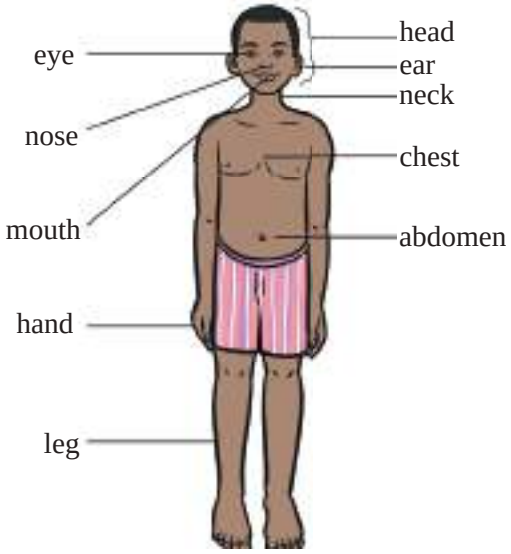
This is my head, this is my mouth,
these are my ears and these are my eyes
Show me your head, show me your mouth,
show me your ears and show me your eyes

Tell learners that some parts of the human system are external and we see them. Other parts are internal and we cannot see them.





When a part of the human body is not working well, it affects the whole system. When parts of the human body are lost the whole system is affected.



Activity 3.1.1.1.1a: Singing a rhyme

Sing the rhyme below and point to the parts as you mention them.

I am a human being.
I have a head, neck and two hands.
I am a human being.
I have a chest, abdomen and two ears.
I am a human being.
I have a mouth, a nose, two eyes and two legs.
These are the parts of my body.
My abdomen contains my stomach.
I cannot see it.

Activity3.1.1.1.1b: Drawing parts of the body

- Draw yourself in your drawing book and show the parts you mentioned above.
- Do you have a doll? Bring it to school and use it to show the parts you have mentioned.
- Ask your teacher to show you a model of the human body for you to see the parts you have mentioned.

Summary

- The human body consists of so many parts that work together to perform a function.
- Parts of the body include the head, neck, ear, chest, abdomen, leg, hand, mouth, nose and eye.
- When a part of the human body is not working well, it affects the whole system.

Diagnostic assessment

1. Name two parts of your body that can be found in the upper part of your body.

Progressive assessment

Guide learners to answer the following questions.

1. Name the parts of your body that help you to go to school every day
2. Which part of your body makes you smell food?
3. Which part of your body can be lifted above your head?
4. Which part of your body can help you play ampe?

Answers to Diagnostic assessment

1. Eyes, nose, mouth, ear

Answers to Progressive assessment

1. Legs, eyes
2. Nose
3. Arm
4. Hands, legs and eyes

Answers to Study Questions (Refer to LB page 94 -95)

1. hands, legs, eyes, and ears
2. i. supports the head
   ii. for thinking and learning
3. because it is inside the body
4. i. leg = you cannot walk
   ii. hand = you cannot write
   iii. eye = you cannot see things

Diagnostic assessment for facilitator

1. Did you share learning expectations with learners?
2. Did you vary your pedagogy in the course of the lesson ?
3. Did you use assessment for learning strategies well during the lesson?
4. How did you manage class control for effective delivery of the lesson?

STRAND 3: SYSTEMS

SUB-STRAND 2: ECOSYSTEM

LESSON 17: THE PLACES WHERE LIVING THINGS LIVE

Reference: Learner's Book 1 pages 96 - 100.

Content Standards: B1.3.2.1 Show understanding and appreciation of the interactions and interdependencies of organisms in an ecosystem.

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

Expectations: At the end of this lesson learners will be able to:

- observe different habitats around the school.
- observe videos or pictures of places where living things live.
- name living things found in some habitats in a video, pictures or through the nature walk.
- draw organisms in their natural homes.

Core Competencies

- Digital Literacy.
- Critical Thinking and Problem Solving.
- Communication and Collaboration.
- Creativity and Innovation.

Subject Specific Practices

- Observation.
- Analysing.
- Predicting.
- Evaluating.
- Recording.

Resources:A chart of different habitats.

Introduction

It is not only the plant and the human being whose body parts learners studied that exist. There are other living things in the environment. These living things live at certain places which we need to know.

Key words: home, habitat, community, ecosystem, land, air and water, interact, food chain.

Additional Information

Human beings live in homes. Rats live in holes. The hole is their home. All living things live in a home where they live their lives sucessfully. The natural home of a group of living things or a single living thing is called a habitat. There are different habitats. The habitats can either be land, water or air. The group of plants and animals found in one habitat is called community. When the plants and animals are living together in the same habitat, they interact with each other and their environment.

The community of plants and animals in a given habitat, together with the non-living parts of the environment for example, air or water is called ecosystem. An ecosystem is a self-contained unit, that is the plants and animals interact to produce all the materials they need. Living things living in their habitats do not live in isolation. They interact with each other, with other living things and with the physical environment in which they live. For example animals interact with other animals. They also interact with trees.

A mouse interacts with grass by eating the grass to get energy. A cat also interacts with a mouse by eating it to get energy. This means that energy flows from the grass to the mouse and from the mouse to the cat. Some people eat cat, so energy from the cat will go to them. All this results in what is called food chain. A food chain is a linked series of living things, each of which is the food for the next in line. Plants make their food from non-living matter by a process called photosynthesis and are always the first members of a chain. Animals cannot make their own food; they rely on the food-making activities of plants. An ecosystem has a lot of food chains which form a network.

Starting the lesson

Start this lesson by asking learners where they are staying. Tell learners where they are staying is their home. Proceed to tell learners to identify the homes of other living things. Tell learners the home of other living things is called habitat.

Activity 3.2.1.1: Watching how living things interact with each other in their habitat
Lead learners to observe different habitats around the school, for example, a tree which houses some birds and insects, a bush or a pond.

Bring learners back to their classroom to shows videos or pictures of places where living things live and tell them to observe them well, for example, a marshy area, forest, a pond and others.

Display pictures of air, water and land habitats with different organisms for learners to observe.

Guide learners to come out with the names of the living things found in the three habitats (living places) in the video, pictures or through the nature walk.

Ask learners after going round the campus and watching videos and pictures the following questions:

- what do you see around?
- have you seen animals?
- have you seen a group of particular trees?
- What does the group of a particular kind of trees forms?

Also ask learners whether

- the animals they see are feeding on the plants.
- some animals they see feed on other animals.
- they see non-living things too in the habitats.
- the living things need the non-living things.

Go on and ask learners the following questions:

- What role do trees play in the environment?
- What role do insects play in the environment?
- What role does water play in the environment?
- What role does sunlight play in the environment?

Engage learners to draw organisms in their natural homes, for example a school garden or a pond or a forest and show living and non-living things.

Ask learners what is formed when an animal feeds on a plant and another animal feeds on that animal. Guide the response of the learners to give “food chain” as an answer to the question.

Summary

- The natural home of a group of living things or a single living thing is called a habitat.
- The habitats can be either land, water or air. The group of plants and animals found in one habitat is called community.

Diagnostic assessment

1. Which of the following living things live in water?: monkey, tilapia, goat, cat, dog, lizard, housefly, fowl, shark

Progressive assessment

Guide learners to answer the following questions.

1. Where do the following living things live?
   (i) horse……..(land, river, in the air, sea)
   (ii) fish……
   (iii)bird……

Answers to Diagnostic assessment

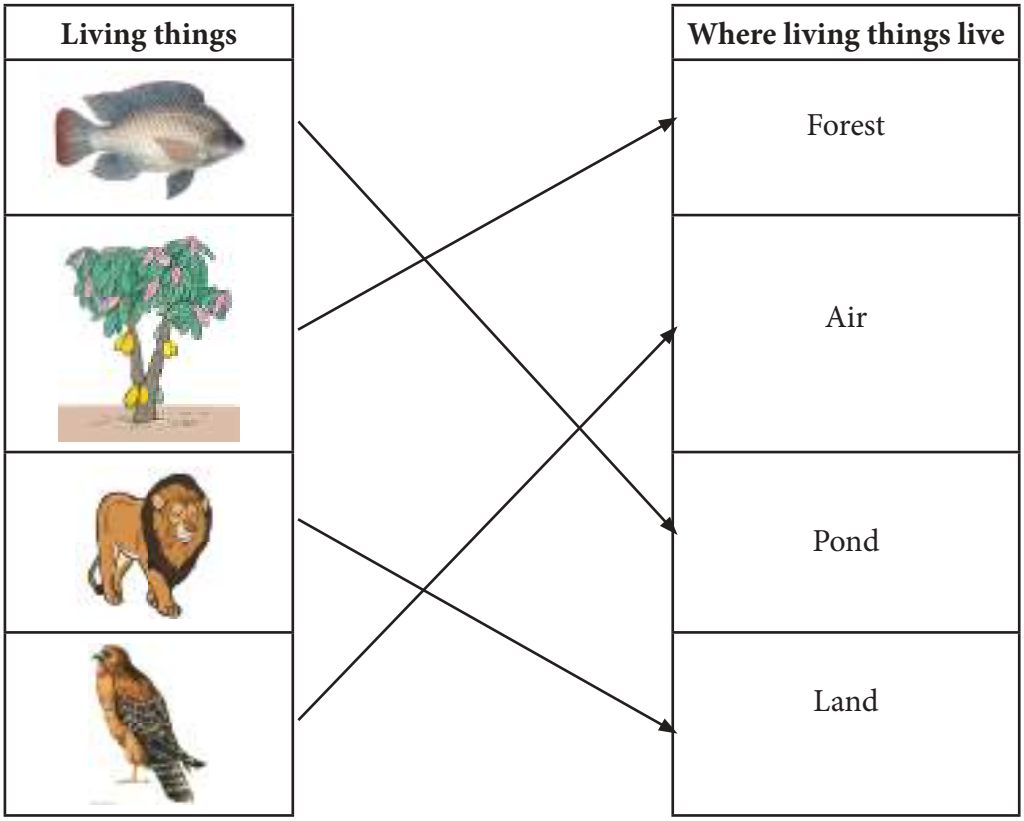
1. Tilapia, shark

Answers to Progressive assessment

(i) horse= land……..(land, river, in the air, sea)
(ii) fish= river, sea
(iii)bird= in the air

Answers to Study Questions (Refer to LB page 99 - 100)

1. (i) air (ii) land (iii) water
2. (i) Habitat (ii) community (iii) Frog
3. Look at the living things in the picture. Match each living thing with where it lives
4.



Diagnostic assessment for facilitator

1. Did you make sure that all the learners concentrate on the observation of the different habitats?
2. Were the learners able to observe the interaction of different living things?
3. What observable subject specific practice did you inculcate in the learners during this lesson?

STRAND 4: FORCES AND ENERGY

SUB-STRAND 1: SOURCES AND FORMS OF ENERGY

LESSON 18: ENERGY AND EXAMPLES OF ITS USES.

Reference: Learner's Book 1 pages 102 - 105.

Content Standard: B1.4.1.1.1 Demonstrate understanding of the concept of energy, its various forms and sources and the way in which it can be transformed and conserved.

Indicator: B1. 4.1.1.1 Understanding energy and give examples of its uses.

Expectations: At the end of this lesson learners will be able to:

- state why you eat food every day
- do activities that involve the use of energy.
- come-out with the meaning of energy.
- state what happens when a car runs short of fuel.

Core Competencies: Personal development and Leadership, Critical thinking and Problem Solving, Communication and Collaboration.

Subject Specific Practices: Observing, Predicting, Analysing, Evaluating. Generalising, Communicating.

Resources: Charts on uses of energy.

Introduction

Energy is the ability to do work. It is the driving force of all motion. It has a source and can be changed from one form to another but cannot be created nor destroyed.

The ultimate source of energy on Earth is the sun; without which there would be no form of energy on Earth and for that matter no life. The sun's energy is transformed into many devices and materials developed by humans.

Key words: Potential energy, kinetic energy, heat energy, electrical energy, sources of energy.

Additional Information

There are different forms of energy. Where energy is produced from is known as its source. The ultimate source of energy is however the sun. In the sun nuclear reactions take place to produce energy. This energy is transferred everywhere by a process known as radiation. It is this energy that maintains all natural cycles including the water cycle in which rain falls. Without rainfall there will be no food on earth and hence there will be no life.

Procedure:
Begin lesson by asking learners to clap their hands. Explain that clapping entails the use of energy. This energy is obtained from food eaten by them.

Name other sources of energy which include: chemical energy from fuels, potential energy of bodies above reference points, kinetic energy of moving bodies, sound energy by vibrating bodies, heat energy from burning fires and other hot objects.

Explain that light in the classroom is produced when electric energy is converted into light energy.

Lead learners to understand the importance of energy in fuels for example in a vehicle. Without petrol or diesel, the vehicle cannot move. Similarly, without chemical energy from food we eat, work cannot be done because there will be no energy. It is important that we eat breakfast if we have to work efficiently.
Explain the different types of energy to learners.

Summary
- Energy enables us to do work.
- Energy can be changed from one form to another.
- Food has energy.
- A car moves because it has energy from fuel.
- Without energy we cannot live.

Diagnostic assessment
1. Why do we eat our breakfast?
2. What does food eaten do to us?
3. Name the ultimate source of energy on earth.

Answers to Diagnostic assessment question
1. To enable us have enough energy to sustain us throughout the day.
2. Food gives us energy.
3. The sun.

Progressive Assessment
Guide learners to answer all the following questions.
1. Name different sources of energy.
   Ans. Solar, electrical, chemical, wind, coal, charcoal.
2. Explain the form in which the energies in (1) are produced.
   Ans. 1. Solar from nuclear reactions in the sun.
   2. Electrical – moving charges.
   3. Chemical – between molecules of chemical compounds.
   4. Wind – moving air masses.

5. Coal – chemical energy of particles making it up.

Answers to Study Questions (Refer to LB pages 104 - 105)

1. (a) clap (b) light (c) fuel (d) torch
2. Energy
3. (a) energy
   (b) food
4. Energy, energy, fuel
5. (i) food
   (ii) energy

Diagnostic assessment for facilitator

1. Did you discuss diagnostic and progressive assessment meant for learners
2. Did you provide opportunity for each learners to carry out more hands-on to make use of resources
3. Were the learners curious to learn more about uses of energy?
4. Did you use assessment for learning strategies well during the lesson?

STRAND 4: FORCES AND ENERGY
SUB-STRAND 1: SOURCES AND FORMS OF ENERGY

LESSON 19: HOT AND COLD

Reference: Learner's Book 1 pages 106 - 109.

Content Standard: B1.4.1.2. Show 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.

Expectations: At the end of this lesson learners will be able to:

- Say what types of things that are usually hot or cold.
- sort items into hot and cold in groups.
- say the difference between hot item and cold items.
- compare the samples in terms of warmth (by touching/feeling the provided samples).
- talk about how you keep hot things hot and cold things cold for a long time.
- say what will happen if an object is placed in the sun.
- tell how substances placed in a fridge feel when touched.
- find out other ways of making things warm.

Core Competencies: Creativity and Innovation, Personal development and Leadership.

Subject Specific Practices: Manipulating, Predicting, Analysing, Generalising, Communicating.

Resources: Charts of hot water, iced cubes, refrigerator.

Introduction

We feel cold after a rainfall. When the sun shines, it comes with light and heat. When one cooks, one uses a stove which converts chemical or electrical energy into heat energy.
When we place things in the refrigerator or deep freezer its temperature reduces and it feels cold when touched. In this lesson we will learn about hot and cold substances.

Key Words: Hot, Cold, Refrigerator, weather.

Additional Information

When heat is added to materials they become hot. When heat is taken out of the material it becomes cold. We eat hot food, drink hot tea or milo, but drink cold water and cold fanta. The fire makes things hot but the refrigerator makes things cold.

Procedure

Diagnostic assessment

Begin lesson with these questions. They are diagnotic assessment questions.

1. What did you eat this morning before coming to school? Was it hot or cold?
2. How did your body feel the last time you visited the hospital? Hot or cold?

Answers: There would be varied answers.

2. Draw the attention of learners to the illustrations on page 111 of learner's book.
(i.e.) (a) cup of milo or tea (hot)
(b) ice cream
(c) ice block

Explain that the milo or tea is hot because the water used to make it was first heated. The ice cream and block were cold because the water or cream was placed in the refrigerator to make them cold.

To make things hot, you have to heat them using a source of heat. To make things cold they must be placed in a refrigerator or a deep freezer.

The refrigerator or deep freezer removes heat from the material and makes it cold.

Activity 4.1.2.1 (a) Using flashcards

Prepare flashcards using cardboard. Cut cardboards to about 10cm by 5cm and write hot or cold on them. Use red coloured card for hot and white card for cold.
Prepare hot milo by boiling water and adding a little milo to it and pour it in a cup.
The second cup contains ice blocks.
Ask learners to place the appropriate flash cards by the cup of milo and the cup of ice block. Go round and observe how the learners go about the activity.

Activity 4.1.2.1 (b) To differentiate between hot and warm water.

Boil water in an enamel container using any heat source. Divide the boiled water into two cups. Add cold water to one of the cups to make the water warm. Label the two cups as hot and warm. Ask the learners to touch the warm water but not the hot water. They should explain why it is warm and not hot.
Lead the explanation. The warm water became warm because some cold water was added to it.

Summary

- Sometimes the weather becomes extremely hot and we hide under shades of trees and in rooms.
- Food, water, the human body and the weather can be hot or cold.

Progressive assessment

Guide learners to answer the following questions.

1. What makes water hot?
   Ans. Heat makes water hot.
2. What makes water cold?
   Ans. When heat is removed from water it becomes cold.

Answers to Study Questions (Refer to LB page 109)

1. hot, cold
2. (a) cold
   (b) hot
   (c) cold
   (d) hot
3. hot, cold
4. (a) hot (b) cold (c) fire (d) cold

Diagnostic assessment for facilitator

1. Did you give learners precaution about how to handle hot things
2. Were the learners able to predict objects that are cold or hot
3. Did you engage the learners in any activity to make them acquire manipulative skills
4. Did every learner benefit from the lesson

STRAND 4: FORCES AND ENERGY

SUB-STRAND 2: ELECTRICITY AND ELECTRONICS

LESSON 20: IMPORTANCE OF ELECTRICITY AND IDENTIFY COMMON HOUSEHOLD APPLIANCES THAT REQUIRE ELECTRICITY TO WORK.

Reference: Learner's Book 1 pages 110 - 118.

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

Indicator: B1. 4.2.1.1 Demonstrate knowledge of generation of electricity, its transmission and transformation into other forms of energy.

Expectations: At the end of this lesson learners will be able to:

- mention items in their homes that use electricity.
- sort the items into two groups i.e, 'use electricity' and 'does not use electricity'.
- match items with their functions.
- say why all appliances are connected to a source of electricity.
- say how daily living without electricity will affect your home, school and industries.
- explain that electricity is a form of energy.
- talk about the importance of electricity in the home.

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, Generalising.

Resources: Charts of electrical appliances used at home.

Introduction

Electric energy is one of the different forms of energy. It is an important form of energy because it is very important for modern living. Most of the devices we use today depend on electrical energy. The most important aspect of electrical energy is that it can be produced at a source and transported by electric cables far away from where it is produced.

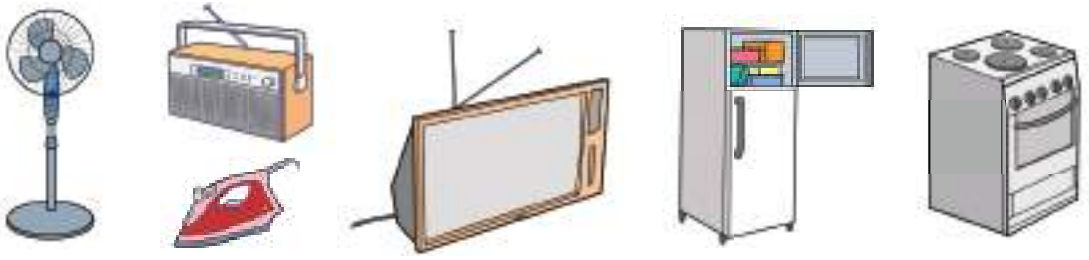
This makes it a convenient form of energy. It is used in the home to iron our uniforms and clothes. It is used to cook, charge our mobile phones, to work our refrigerators, deep freezers and air conditioners among several other uses. It however can be very dangerous if not used properly.

Key Words: Electricity, washing machine, television, radio, refrigerator.

Additional Information

Without energy many appliances cannot work. Many appliances in the home use electric energy as a source of energy. The electric energy is stored in batteries to be used continuously in some appliances and others convert the electric energy into other forms of energy immediately such as heat or light.

Materials/Resources (Low or no cost)



- Flashcards of items that use electricity.
- Flashcards of items that do not use electricity.

The cards are prepared by the facilitator. Cut cardboard of length 20cm by 10cm.

Write names of items that use electricity on about five and names of items that do not use electricity on another five.

Procedure

Begin lesson by asking learners to mention appliances in the home that use electricity. E.g. pressing iron, mobile phone, electric bulb, refrigerator.

Ask learners to state their observations when the electricity in the house goes off. This will lead learners to understand the importance of electricity in the home.

Summary

- Electrical energy is a form of energy, which can be produced at a point and transported to many places by electric wires.
- Electrical energy is important in the home, at school and in industry.
- Many appliances, that are used in the home, at school and in industry, need electricity to work.
- Without electrical energy, life will be miserable since there are many things we cannot do.

Diagnostic assessment

1. Name three appliances in the home that use electricity.
2. State the effect of a power cut on the appliances.

Progressive Assessment

Guide learners to answer the following questions.

1. Is electricity important for appliances in the house?
2. Do you watch television when lights go off?

Diagnostic

1. Name three appliances in the home that use electricity.
   Ans. Blender, electric pressing iron, refrigerator, electric stove, etc.
2. State the effect of power cuts on appliances.
   Ans. When lights go off, none of the appliances work again and humans go through stress.

Progressive assessment

Guide learners to answer the following questions.

1. Is electricity important for appliances at home?
   Ans. Yes it is very important because without it they will not work at all.
2. Do you watch television when lights go off?
   Ans. No, the television uses electricity and will go off when lights go off.

Activity 4.2.1.1 (a) Video show from internet

Look for an appropriate site to show learners items or appliances that use electricity.

Activity 4.2.1.1 (b) To show items that use electricity and those that do not use electricity using flash cards.

Distribute the flash cards to learners.

Move among them and observe how they use them; placing them on items that use electricity and those that do not use electricity. Help them sort the items into the two groups.

Functions of items which use electricity.

Lead learners to discuss the functions of items that use electricity as shown on pages 116 - 119 of learners book.

Ask learners questions to lead them to find out how their daily lives will look like without electricity in their homes, schools and in industry.

Ask learners questions so that they can come out to say the importance of electricity in the home.

Summarise lesson by discussing the importance of electric energy in the home, school and industry.

Answers to Study Questions (Refer to LB pages 117 - 118)

1. i) cold
   ii) hot
   iii) cold
   iv) cold
   v) hot
2.

Items	use electricity	Do not use electricity
	√	X
	X	√
	√	X

3. Watching tv, seeing.
4.

Appliance/Item	**Use of item/Appliance**
Washing machine	Washing
Radio	Listening to news and music
Refrigerator	Keeping things cold
Electric bulb	Providing light

Diagnostic assessment for facilitator

1. Are you sure that you have presented the lesson in the right order?
2. Apart from charts of electrical appliance did you make effort to secure some electrical appliance for the learners to see and handle?
3. Could you say that you managed the time well?
4. Were the learners able to distinguish between appliances that use electricity from those that do not use it?
5. What aspect of your lesson engaged the learners in critical thinking?

STRAND 4: FORCES AND ENERGY
SUB-STRAND 2: ELECTRICITY AND ELECTRONICS

LESSON 21: COMMON ELECTRONIC DEVICES AND THEIR USES

Reference: Learner's Book 1 pages 119 - 124

Content Standard: 4.2.2.1: Know the functions and assemblage of basic electronic components.

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

Expectations: At the end of this lesson learners will be able to:
- identify some electronic devices displayed by you.
- do an activity to match electronic devices with their uses.
- make any one electronic device of their choice using appropriate materials such as clay or blu tack or cardboard with your help.

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

Subject Specific Practices: Analysing, Predicting, Generalising

Resources: Electronic devices such as mobile phone, laptop, camera and charts of those that are not readily available.

Introduction
In the world today we use many electronic devices. Most parents and older children use mobile phones. We watch television at home and in the school. The teacher uses video shows to teach the learners. At the hospital and other places of work electronic equipment such as computers, video cameras, electronic balances and other equipment are used. In this lesson we are going to learn about electronic devices and their uses.

Key Words: Electronics, mobile phones, cameras, torchlights, clay, blu tack, cardboard.

Additional Information:
Electronic devices use p-type and n-type semi-conductors in most of their components. Silicon, a semi-conductor is used to make chips and microchips. Such chips are used in most electronic devices such as mobile phones, ATM cards, card for prepaid electric meters and a lot of other modern day equipment. All these need electricity to be able to power them for the machines they are applied in to read them. In this lesson we will learn about electronic components and their uses.

Materials/Resources (Low or no cost)
Mobile phones, wrist watch, cameras, torchlight, electricity card. (The teacher can use his or borrow to show learners)

Procedure:
Begin lesson by asking learners to look at the electronic devices on page 122 of their book. Ask them to identify the devices. They are (a) mobile phone (b) digital wrist watch (c) electronic camera (d) torch light or flashlight with light emitting diodes.

Activity B1.4.2.2.1 (a) Use of electronic devices
Lead the discussion on the uses of items.
A mobile phone is used for communication.
A digital wrist watch is used to tell the time.
An electronic camera is used to take still or moving pictures for videos.
A torch or flashlight is used in the dark or hidden places where there is no light.

Diagnostic assessment
1. Name any other electronic device apart from the one in the illustration.
2. Have you used a mobile phone before?

Progressive assessment
Guide learners to answer the following questions.
1. What is the source of energy for electronic devices?
2. Where do the sources named in (1) above obtain their energy from?

Answers to assessment questions.

Summary
- We use many electronic devices in this modern world.
- They make life interesting and enjoyable. Without them, our lives will be dull without fun.
- We are able to talk to friends and family members who are many kilometres away from us using mobile phones.
- We tell the time accurately using digital watches.
- We take moving pictures as well as stationary ones, using electronic flashlights in the dark to see our way clearly.

Diagnostic assessment
1. Name any other electronic device apart from the one in the illustration.
   Ans. Electronic balance, video players, computers, etc.
2. Have you used a mobile phone before?
   Ans. Yes or no depending on the learners.

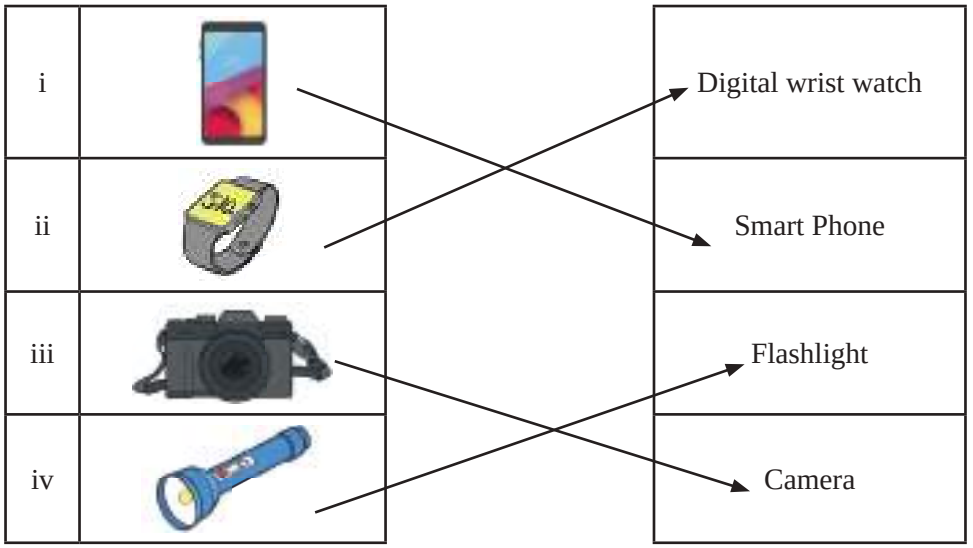
Progressive assessment

Guide learners to answer the following questions.

1. What is the source of energy for electronic devices?
   Ans. They normally use batteries since they can be carried easily.
2. Where do the sources named in (1) above obtain their energy from?
   Ans. Some are electric sources and others from solar energy.

Answers to Study Questions (Refer to LB pages 123 - 124)

1.



2. Indicate the use of each of the electronic devices shown below.

i	torchlight 	As a source of light
ii	Mobile phone 	For communication
iii	Camera 	To take pictures
iv	Electronic wrist watch 	To tell time

Diagnostic assessment for facilitator

1. Did you share learning expectations with learners?
2. What did you do to make sure that the learners display creative skills?
3. Did you create the atmosphere for the learners to discuss among themselves?
4. Did you emphasise to learners precautions to be taken when using electrical appliances?

SUB-STRAND 3: FORCES AND MOVEMENT

LESSON 22: FORCE AS A PULL OR PUSH ON AN OBJECT.

Reference: Learner's Book 1 pages 125 - 131.

Content Standard: B1.4.3.1.1 Explain force as a pull or push on an object.

Indicator: B1. 4.3.1.1 Know that movement is caused by applied forces due to the release of stored energy.

Expectations: At the end of this lesson learners will be able to:

- mention activities in the home and the community that involve a push or a pull.
- play games or do activities involving pull or a push force.
- observe the movement of things under the influence of the wind.
- discuss with your friends other actions that will cause objects to move.
- say why when you push objects they move.
- explain that a push or a pull causes objects to move.
- drawing activities involving pushing and pulling

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

Subject Specific Practices: Observing, Analysing, Predicting, Generalising.

Resources: Charts on movement caused by a force.

Introduction

Air in motion is known as wind. Humans walk along. Movement is possible because bodies have energy. Energy is stored in the wind because of the heating of parts of the earth differently. When humans eat their food they store energy which is used in movement. It is this stored energy that we use to pull objects towards us and push objects away from us.

Key Words: push, pull, force, movement, energy.

Additional Information

Objects move when pulled or pushed. Pulling makes objects move towards the person pulling. Pushing makes the body move away from the one pushing. Push or pull are forces. For a body to be able to push or pull requires energy. This energy is energy stored in the body applying the force of push or pull. All forms of energy can cause a push or pull of a body. The stored energy

in the wind causes leaves to move to and fro. A rolling stone hits another stone and causes it to move. The rolling stone has energy stored in it.

In this lesson we are going to learn about the effect of forces on a body.

Materials/Resources (Low or no cost)
Two learners (girl and boy), football, box, chair, long thick rope, learner's textbook.

Procedure:
Refer learners to the diagrams on page 129 of learners book 1. The girl pushes the boy away whereas the boy pulls the girl towards himself.

Explain that pulling and pushing cause movement. It is as a result of the stored energy that one is able to exert the forces of pushing and pulling.

Activity 4.3.1.1 (a)
Show the learners a picture of the following activities.



Prior to the lesson, look for the pictures or download them from the internet.

Ask the learners to identify the pictures in which pulling and pushing take place.
In (a) the donkey is pulling.
(b) the woman is pulling.
(c) people are pushing.

Lead learners outside the classroom and ask learners to look around and identify where leaves and whole plants are moving.

Give the learners a balloon and ask one of them to inflate it and tie the mouth with a long rope. He or she should just leave it but hold the rope. They should state the effect of the wind on the balloon and plants and their leaves.

Ask them to take note of other materials around them which are moving.

Explain to them that movement is caused by a force; forces are a result of stored energy.

Activity 4.3.1.1. (c)

- Obtain a football, a box, a chair.
- In their groups give them one of the above materials each and tell them what to do.
- Push a box, pull a chair, throw the football up, kick the football and move round performing the activities. Let them explain the effect of the activities they perform on the materials.
- Put the learners into two groups of ten in a group.

One group should hold one end of a long thick rope about ten metres long, and another the other end. Explain that this is called a tug-of-war. They should pull the ropes at the ends to see who will win by pulling the other group towards themselves.

Summary

- Forces cause movement.
- When a force is applied on a body, it makes the body change its position.
- When the body moves towards the one exerting the force, he or she is said to be pulling.
- When the body moves away from the person exerting the force, he or she is said to be pushing.
- A force causing a body to move is either a push or a pull.

Diagnostic assessment

1. Complete the following statements
   (a) Pulling moves a body ……
   (b) The energy of a man pushing a cart is …….
2. Pull or push are referred to as …….

Progressive assessment

Guide learners to answer the following questions.

1. What makes a kicked football move away from you?
2. When one draws water from a well the one will be ……..

Answers to assessment questions

a. Diagnostic.

1. Complete the following statements;
   (a) Pulling moves a body towards oneself.
   (b) The energy of a man pushing a cart is stored in him.
2. Pull or push are referred to as force.

b. Progressive

1. What makes a kicked football move away from you?
   The force applied to the football pushes it away.
2. When one draws water from a well the one will be pulling.

Answers to Study Questions (Refer to LB pages 130 - 131)

1. i) A
   ii) D
   iii) E
   iv) F
   v) Pull
2. pull, push
3. (a) pull
   (b) push
   (c) force
   (d) move
4. (i) moves away
   (ii) moves towards him or her

Diagnostic assessment for facilitator

1. Did you observe how the learners communicate and collaborate among themselves when they were in groups?
2. Did you observe any of the learners showing some outstanding leadership skills?
3. Did you notice any special skills shown by the learners which can be improved upon?
4. How did you conclude the lesson?

STRAND 4: FORCES AND ENRGY
SUB-STRAND 3: FORCES AND MOVEMENT

LESSON 23: SIMPLE MACHINES AND COMMON EXAMPLES.

Reference: Learner's Book 1 pages 132 - 137.

Content Standard: B1.4.3.2.1: Understand what simple machines are and cite common examples.

Indicator: B1. 4.3.2.1 Recognise some simple machines used for making work easier and their advantages and know their uses. E.g. levers, inclined planes and pulleys.

Expectations: At the end of this lesson learners will be able to:

- do an activity to identify common machines in your home and school.
- explore the use of some simple machines in your home shown to you by your teacher.
- show how to use some simple machines.
- say the importance of some machines on daily living.
- explain that machines enable work to be done easier and faster.
- draw any device of your choice.

Core Competencies: Communication and collaboration, Personal Development and Leadership, Critical Thinking and Problem Solving, Creativity and Innovation.

Subject Specific Practices: Manipulating, Classifying and Analysing.

Resources: Bottle opener, forceps, pair of scissors, screw driver, hammer or a chart on simple machines which are not readily available.

Introduction

The human hand is the instrument used in the manipulation of devices. It is the hand that is used to do all work concerned with humans. However, the extent to which the hand can be used is limited. It cannot for example be used to remove a tight bolt or to open a tightly closed bottle. For these reasons humans have made tools that they can use to make work easier and faster; than using the hands. These are called simple machines. In this lesson, we will learn about simple machines and how they help humans to do their work.

Key Words: Simple machines, bare hands, broom, bottle top opener, forceps.

Additional Information

In the home and school, we use several simple machines. Since our hands cannot perform all activities easily and fast we need to use tools that enable us to work very fast. Common simple machines used at home are the staircase to move up a building, knife to cut our bread or peel

yam for cooking. We have used simple machines over the years so much that we don't even know they are machines but think they are a matter of convenience. They make our work easy and fast.

Materials/Resources (Low or no cost)
Bottle opener, forceps, pair of scissors, screw driver, hammer.

Procedure:
Begin lesson by asking learners to name the devices used at home for the following activities.

- sweeping
- opening a bottle of fanta
- cutting bread
- cutting a piece of cloth for sewing
- removing a screw

The learners name the devices used for the activities.

Ask why they use them and not their bare hands.
They are used because they will work faster and make the work easier.

Come out that such devices are called simple machines because they make work easier and faster.

Ask learners to look at the diagram of some simple machines illustrated on page 139 of their books.

Activity 4.3.2.1 (a) Obtain the following simple machines prior to the lesson and brings them to the classroom.

Display the following simple machines and ask learners to name the work they are used to do.

- Broom.
- Bottle top opener.
- Screw driver.
- Hammer.
- Pair of scissors.
- Knife.
- Forceps.

The learners mention the type of work the machines do.

Activity 4.3.2.1 (b) and (c) To demonstrate the use of some simple machines (bottle top opener and forceps)

Obtain the two simple machines for the use of learners. Also obtain bottles of fanta drinks and small pieces (granules) of any metal.

Demonstrate the use of the simple machines. Bottle top opener to open the bottle of fanta and the forceps to pick small granules of the metal. Ask learners in the groups to practice using these simple machines.

Move among the groups to observe how they perform the activities.

Explain that they are called simple machines because our bare hands cannot perform the duties they perform easily and fast.

Give other examples of simple machines such as a screw driver, a pair of scissors and a broom and ask learners to state what they are used for.

Activity 4.3.2.1 (d) Drawing simple machines.
Display the following simple machines on a table; bottle top opener

- forceps
- broom
- sugar tongs

Also ask learners to draw a machine of his or her choice.
Moves among them to observe how they do it.

Summary

- Machines are devices that make our work easier and faster. Using our hands make our work more difficult.
- Some machines have engines but others do not have. Those without engines are called simple machines.
- We use simple machines in the home, school and other work places.
- The broom and bottle opener are examples of simple machines.

Diagnostic assessment

1. Name two simple machines not listed above that are used in the home.
2. The shears used to trim flowers is a simple machine. True or False.
3. Name the simple machine used to cut grass at home.

Progressive assessment
Guide learners to answer the following questions.

1. Why do we use simple machines?
2. Do the bare hands perform duties faster than simple machines?

Diagnostic

1. Learners will name any simple machine they know which is not listed.
2. True. The shears is a simple machine.
3. Cutlass

Progressive assessment

1. They make our work easier and faster.
2. No, bare hands cannot perform work faster and easier than simple machines.

Answers to Study Questions (Refer to LB page 137)

1. B, C and D
2. (a) bottle top opener
   (b) forceps
   (c) pair of scissors
   (d) cutlass
3. (a) 
   (b) 
   (c) 
4. (i) to do work faster.
   (ii) broom

Diagnostic assessment for facilitator

1. Which relevant previous knowledge helped you to present this lesson?
2. Were the learners able to explore the use of some simple machines available in your school?
3. Was the interest of learners in the lesson sustained during the lesson?
4. Was there a better way you could have presented the lesson?
5. Did you vary your pedagogy in the course of the lesson?

STRAND 5: HUMANS AND ENVIRONMENT

SUB-STRAND 1 : PERSONAL HYGIENE AND SANITATION

LESSON 24: THE NEED FOR BATHING AND HOW IT IS DONE

Reference: Learner's Book 1 pages 139 - 144.

Content Standards: B1.5.1.1 Recognise the importance of personal hygiene

Indicators: B1. 5.1.1.1 Explain the need for bathing and know how it is done.

Expectations: At the end of this lesson learners will be able to:

- Mention some routine activities they engage in before coming to school.
- discuss the reasons for undertaking those activities (such as bathing)
- mention items used in bathing.
- talk about what will happen if you do not take their bath regularly.
- draw some items used for bathing and display them for discussion.

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.

Resources: Doll, soap, sponge, water and towel.

Introduction

We take good care of the machines we use to make our work easy. We wash and clean some of them. We also need to wash our selves by bathing. We should make sure we do it well.

Key words: bathing, soap, sponge, water, clean, sanitation, sick, armpit, body, dirt, odour.

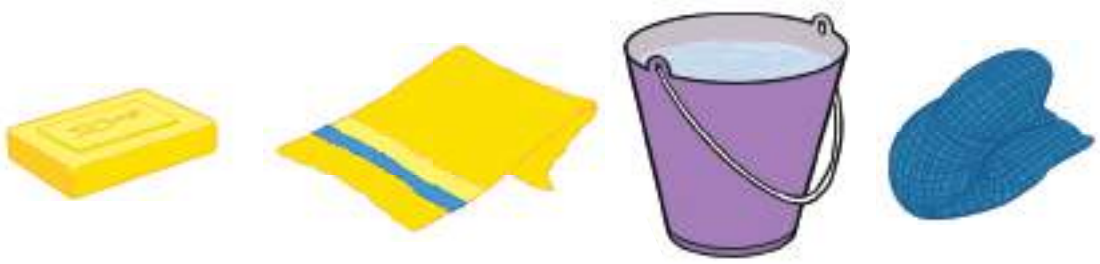
Additional Information

What do you do in the morning before coming to school? Do you sweep? Do you bath? Do you brush your teeth? Do you wash your face?

It is important to keep your body clean. If you keep your body clean, it is called personal hygiene. How do you keep your body clean? You can keep your body clean by bathing. Do you know how to bath? It is also important to keep your surrounding clean. This is called sanitation. You will become sick if you do not do these things. There are certain parts of the body which you must clean well when you are bathing. Your ampit, between your toes and legs are examples of such parts of the body.

Procedure

Begin this lesson by referring learners to page 144 of learner's book 1. Then, ask the following questions:



What is the learner in the picture above doing?

Why should he or she bath? What will happen to you if you do not bath regularly? Do you bath in the morning before coming to school? Do you bath in the evening before going to bed?

We bath because there is the need to wash away the dirt which sticks to our bodies. We bath to remove odour from our bodies. We use water, soap and sponge to help remove dirt from our bodies.

Activity: 5.1.1.1: To demonstrate the proper way of bathing it.

Materials/Resources (Low or no cost): A doll, soap, running water, neat towel

Procedure

You need to bring a doll to school to do this activity.

- Organise learners into groups of four or five.
- Give soap, sponge, water, and towel to each group.
- Let one member of each group use the items collected to show how to bath a doll they have brought to school.
- Tell other group members to look on as one person shows the proper way to bath the doll.
- Tell learners to sing a song they know about bathing as they bath the doll.
- Tell each group to discuss among their members if the person has shown the proper way to bath the doll.
- Go round to inspect each group to make sure they have done it correctly.
- Tell learners to draw the items they have used for bathing the doll in their exercise book.
- Tell learners to show what they have drawn to the members of their group for discussion.
- Tell learners to find out what their group members say about their individual drawings, whether they are good or not.

Summary

- We bath because there is the need to wash away the dirt, which sticks to our bodies.
- We bath to remove odour from our bodies.
- We use water, soap and sponge to help remove dirt from our bodies.

Diagnostic assessment

Write down one activity that shows the following:

i. Personal hygiene.
ii. Sanitation.

Progressive assessment

Guide learners to answer the following questions.
Your mother is sick and cannot help you to bath to go to school.

1. What will you use to bath yourself?
2. Which parts of your body do you have to clean well?

Answers to Diagnostic assessment

Write down one activity each that shows the following:

i. Cleaning your teeth.
ii. Cleaning gutters.

Answers to Progressive assessment

i. water, soap, sponge, towel.
ii. armpit, between your legs, between the toes, your private parts.

Answers to Study Questions (Refer to LB page 144)

1. If you keep your body clean, it is called personal hygiene. You can keep your body clean by bathing. If you keep your surrounding clean, it is called sanitation
2. towel, sponge, soap
3. Draw one item you use in your home to bath and colour it



4. armpit, between toes, between legs.
5. he/she will smell bad.

Diagnostic assessment for facilitator

1. Did every learner show keen interest in the lesson?
2. Did the learners realise the need for bathing?
3. As you inspected each group to demonstrate how to bath a doll were the learners able to do it well?
4. Did you observe any good communication and collaboration among each group members during the activity carried out?
5. What pedagogy did you use during this lesson?

STRAND 5: HUMANS AND ENVIRONMENT
SUB-STRAND 1 : PERSONAL HYGIENE AND SANITATION

LESSON 25: THE NEED FOR AND HOW TO CLEAN THE TEETH

Reference: Learner's Book 1 pages 145 - 149.

Content Standard: B1.5.1.1 Recognise the importance of personal hygiene.

Indicators: B1. 5.1.1.2 Know the need for and how to clean the teeth.

Expectations: At the end of this lesson learners will be able to:
- mention the items used in cleaning the teeth, e.g. toothbrush and toothpaste, chewing stick etc.
- demonstrate the right method of brushing the teeth (moving the toothbrush in an upward and downward motion) in front of the class and ask learners to do same.
- draw and colour some items used in brushing their teeth.
- talk about what will happen if you do not brush your teeth regularly.

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.

Resources: Fluoride tooth paste, tooth brush, chewing stick, sponge, cup of clean water.

Introduction
The learners need to know that after bathing to make their body neat, they do not have to forget to clean their teeth. It is is also equally important.

Key words: Teeth, clean, decay, smell, brush.

Additional Information

You use your teeth to eat different types of food. The food particles stick to your teeth and can remain there for a long time. These particles can decay in your mouth and begin to smell badly. Germs which cause diseases can also hide in those food particles. If you clean the teeth they can be removed. You must therefore clean the teeth always. You can use tooth brush or chewing stick or sponge to clean your teeth. When you are using any of these things, you have to move it up and down and sideways. When you move it up and down all the food particles on the teeth or between the teeth are removed. It is not only your teeth you need to clean. Food particles stick to the tongue also. You must therefore brush your tongue.

Procedure

Begin the lesson by asking learners if they know a familiar song on cleaning the teeth.

Tell learners to sing the song or teach them a song to sing if they do not know any already.

Show to learners the picture from page 148 of learner's textbook 1.

Give a name to the boy with dirty teeth in the picture as Kofi Kankpe. Tell learners to look at Kofi Kankpe who never likes to clean his teeth. Ask learners what they think could happen to him.

Proceed to tell learners to put the palm of their hand in front of them and blow air from their mouth into it and smell the air as they do when they wake up from bed in the morning. Ask learners how they think the air would smell? Ask learners whether the air would smell good or bad?

Ask learners why they brush their teeth. Use the following checklist as learners respond to his or her questions

- To remove food particles which stick to the teeth when you eat.
- To remove bad smell from the mouth.
- To avoid food decay.
- To make the teeth clean and strong.

How to clean your teeth

Show learners an audio visual or pictures about the right way to clean the teeth. Show learners pictures on page 150 of learners textbook 1.

Tell learners to draw and colour some items used in brushing the teeth. Tell learners to show their drawing to their classmates for discussion.

Ask learners to discuss with their friends what will happen to them if they do not brush their teeth regularly? Use the following checklist to check the responses that learners give during their discussion:

If you do not brush your teeth regularly

- food particles will stick to your teeth.
- food particles that stick to your teeth will decay and make your mouth smell bad.
- your teeth will be dirty and weak
- your teeth will decay .

Activity 5.1.1.2: Cleaning the teeth

- Give to learners in groups of four or five chewing stick or tooth brush with tooth paste.
- Ask learners to clean their teeth using the chewing stick or toothbrush with the tooth paste .
- Go round to inspect to see if learners are cleaning their teeth well.
- Ask learners the importance of the activity they have done.

Summary

- You can use toothbrush or chewing stick or sponge to clean your teeth.
- When you are using any of these things, you have to move it up and down and sideways.
- When you move it up and down, all the food particles on the teeth or between the teeth are removed.

Diagnostic assessment

1. What will food particles do to your teeth if you do not clean your teeth?
2. Which of these things can you use to clean your teeth?:shoe brush, tooth brush, ceiling brush, broomstick.

Progressive assessment

Guide the learners to answer the following questions.

1. How often do you have to clean your teeth?
2. What will happen if you use only water and your finger to wash your mouth every day?

Answers to Diagnostic assessment

1. They will stick to your teeth.
2. Tooth brush.

Answers to Progressive assessment

1. When you wake up in the morning, after eating and when you are going to sleep.
2. Food particles will stick between your teeth. Germs will be in your mouth.

Answers to Study Questions (Refer to LB pages 148 - 149)

1. It will decay .
2. To remove food particles between the teeth
3. brush, tooth paste, sponge, chewing stick (any 2).
4.

BOX A	**BOX B**
	
Bad, unclean, dirty, unhygienic, unhealthy	good, clean, hygienic, healthy

5. (i) toothbrush
   (ii) brushing his teeth
   (iii) brushing her teeth with a chewing stick
6. Tooth paste.

Diagnostic assessment for facilitator

1. Were the learners realise what will happen to their teeth if they do not clean them?
2. Did all the learners participate in the activity to clean their teeth with a brush or chewing stick?
3. Did you examine the teeth of all the learners?
4. Did you observe any good communication and collaboration among each group members during the activity carried out?
5. What home learning activity did you give to the learners ?

STRAND 5: HUMANS AND ENVIRONMENT
SUB-STRAND 1 : PERSONAL HYGIENE AND SANITATION

LESSON 26: THE NEED FOR AND HOW TO WASH THE HANDS

Reference: Learner's Book 1 pages 150 - 154

Content Standards: B1.5.1.1 Recognise the importance of personal hygiene

Indicators: B1. 5.1.1.3 Demonstrate understanding of the need for and how to wash the hands

Expectations: At the end of this lesson learners will be able to:
- state the importance of washing the hands.
- say when to wash their hands.
- name items used in hand-washing, (soap and clean running water)
- demonstrate washing of hands in groups.
- state possible health effects associated with failure to wash the hands properly.

Core Competencies
- Critical Thinking and Problem Solving
- Collaboration and communication
- Personal Development and Leadership
- Digital Literacy

Subject Specific Practices
- Analysing
- Predicting
- Evaluating

Resources: Soap, running water, clean dry towel

Introduction
The learners need to understand that they can bath well to make their bodies clean and brush their teeth to make it clean but there is another practice they have to pay attention to. This has to do with how to wash their hands.

Key words: wash, running water, soap, rinse, towel, palm, fingers

Additional Information

There are germs in our environment. Your hand always makes contact with things in the environment. There are germs on the surfaces of the things you touch with your hands. If you do not wash your hands with soap and clean running water before eating, germs that cause diseases will enter your body and make you fall sick.

Procedure

Start this lesson by asking learners whether their hands are always clean or dirty.

Proceed to ask learners:

- what they have to do when their hands are dirty.
- why they must wash their hands with soap and water after school.
- why they must rinse their hands in clean water after washing with soap.
- whether they have to wash their hands before eating.

Emphasise the following points to learners: Always wash your hands with water and soap. After washing your hands with soap, rinse the soap away from your hands with clean water. When you wash your hands, do it very well.

When you come to school, you play with your hands and nails. You also shake hands with people. You must wash your hands after visiting the toilet. You must wash your hands before eating and after eating. You must wash your hands after any practical activity. You must wash your hands after returning home from school or the playground. You must therefore wash your hands with soap and rinse them with clean running water to remove the soap.

Activity 5.1.1.3: How to wash your hands well

Materials/Resources (Low or no cost): Soap, running water, clean towel

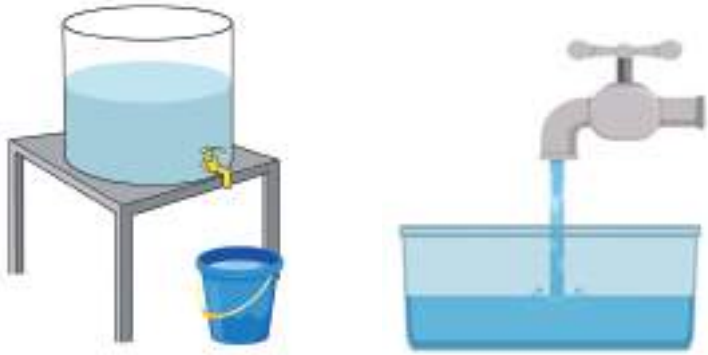
Procedure

Tell learners to:

- bring soap and water to the classroom and demonstrate how to wash their hands.
- wet their hands with running water.
- apply soap to their palm
- rub their palm against each other vigorously for about 30 seconds.
- wash between their fingers.

- wash the back of their hands.
- wash the base of their thumbs.
- wash the back of their fingers.
- wash their finger nails too very well.
- wash their wrists.
- rinse the soap away with clean running water.
- dry their hands with clean dry towel, tissue paper or handkerchief.

If the school does not have tap water, makes running water like the one in the diagram below.



Tell learners to discuss the possible health effects associated with failure to wash the hands properly with their classmates.

Tell learners to draw diagrams of themselves washing their hands with soap and water.

Summary

- If you do not wash your hands with soap and clean running water before eating, germs that cause diseases will enter your body and make you fall sick.

Diagnostic assessment

Why do you have to wash your hands with soap under running water after visiting the toilet?

Progressive assessment

Guide the learners to answer the following questions.

Anita washes her hands with soap under running water before eating but does not use soap to wash her hands after eating. Albert washes his hands without soap before eating but does so after eating.

1. Which one do most Ghanaians do?
2. Which one is better and why?

Answers to Diagnostic assessment

To remove germs that cause diseases from the hand.

Answers to Progressive assessment

i. Washing the hands without soap with water before eating but uses soap with water to wash hands after eating.
ii. Washing the hands with soap under running water before eating and after eating is better.

Reason: It removes germs that cause diseases from the hand. After eating when you wash your hands with soap and water it removes food particle and the smell of the food from your hands.

Answers to Study Questions (Refer to LB page 154)

1. wash, hands, home, wash, soap, running, remove.
2. soap, water , napkin
3. (i) Soap (ii) sick (iii) well (iv) running
4. To remove germs from your hand.

Diagnostic assessment for facilitator

1. Did every learner participate in the washing of hands during the lesson?
2. Did you make the learners appreciate the need for washing their hands with clean water and soap?
3. Does your school have running water for regular washing of hands?

STRAND 5: HUMANS AND ENVIRONMENT
SUB-STRAND 1 : PERSONAL HYGIENE AND SANITATION

LESSON 27: CLEAN AIR AND WATER ARE ESSENTIAL TO HUMAN HEALTH

Reference: Learner's Book 1 pages 155 - 159.

Content Standards: 1.5.1.2 Appreciate the natural and human features of the local environment and the need for keeping the environment clean.

Indicators: B1.5.1.2.1 Know that clean air and water are essential to human health.

Expectations: At the end of this lesson, learners will be able to:
- observe things in the environment during nature walk.
- discuss what will happen to you if the environment is very dusty and unclean.
- State what will happen if you do not weed or keep your school, home and community clean.
- present ideas after group discussion by explaining further why it is important to keep the environment clean.
- compose songs on how to keep the environment clean.
- draw pictures to depict clean environments.

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.

Resources: A chart on clean environment and a dirty environment.

Introduction
The learners should know that it is not enough to bath well, brush their teeth well, wash their hands well but live in an environment that is not neat. The air around them and the water they use should also be kept clean.

Key words: air, water, clean, health, essential, environment, germs, unclean, sick.

Additional Information

We are living things. We live in an environment with other living things. All living things interact with one another. That is, they help each other for survival. Germs are also living things. But they like to live in dirty and unclean places. These dirty places include water and air. Some germs live in water and some live in air. If water and air are clean you cannot find germs in them. Germs cause many diseases which make us sick. To prevent us from getting sick, we must practice good sanitation. This means we must keep our body and surroundings clean so that germs cannot live and make us sick.

Procedure

Start this lesson by leading the learners to go on a nature walk to observe the things in the school environment.

Ask learners the things they saw. Asks learners whether they saw human beings. Ask learners whether they saw things to show that human beings were also living there. Tell learners that they might not have seen human beings but some signs to show that human beings were living there.

Tell learners to talk about what they have observed during the nature walk with their classmates.

Show to learners pictures of the natural and human features of the environment.

Ask learners whether they saw both natural and human features in the picture.

Lead a discussion with learners on why they should keep their compound clean. Write the response from learners on the board using the following points as a checklist:

We keep our compound clean to:

- Prevent the breeding of mosquitoes which carry germs that cause malaria fever.
- Prevent bad smell from rotten materials.
- Prevent the breeding of houseflies which carry germs.
- Make the compound beautiful and attractive.
- Prevent the growth of weeds so that snakes and insects cannot hide in them to hurt us.
- Prevent slipping and falling down when water pours on the floor.
- Prevent diseases like cholera.

Again lead learners in a discussion of ways to keep their compound clean. Write the response of learners on the board using the following questions to guide them:

Ways of keeping the compound clean

- Do you sweep your house and school every morning?
- Do you clean dirty gutters around your house and school regularly?
- Do you clean your wash room regularly?

Tell learners if their answer to these questions are yes then they are practicing good sanitation.

Show learners pictures of the different ways of keeping their environment clean on pages 160 -161 of learner's textbook 1. Then ask learners questions about ways to keep the environment clean based on what they saw in the picture.

Activity 5.1.2.1: Ways of keeping our environment clean.
Materials/Resources (Low or no cost):
Procedure

- Tell learners to organise themselves into groups of four or five.
- Tell learners in each group to appoint one person as a leader.
- Tell the leader in each group to lead the group to talk about different ways of keeping the environment clean as shown in the diagrams on pages 160 - 161 of learners textbook 1.
- Tell learners to explain the importance of keeping the environment clean.

Ask learners:

- Why they should clean their gutters.
- Why they should sweep their compound.
- Why they should clean their toilet facilities.

Assist learners to compose songs on how to keep the environment clean.

Tell learners to draw pictures to show clean environments.

Summary

- Germs are living things.
- They like to live in dirty and unclean places.
- If water and air are clean, you cannot find germs in them.
- Germs cause many diseases, which make us sick.
- To prevent us from getting sick, we must practise good sanitation.
- There are different ways of keeping our environment clean.

Diagnostic assessment
Select three ways of keeping your school compound clean from the following list: sweeping, swimming, throwing rubbish into the gutter, packing chairs in the classroom, clearing the bush in the surroundings, mopping the floor.

Progressive assessment
Guide learners to answer the following question.

1. If you visited another school what are the things you expect to see to show that it is neat?

Answers to Diagnostic assessment
sweeping, clearing the bush in the surroundings, mopping the floor.

Answers to Progressive assessment

Neat gutters, no rubbish around, neat classrooms, bushes weeded.

Answers to Study Questions (Refer to LB page 159)

1. (i) it will look dirty.
   (ii) Clean the place.
2. to prevent disease.
3. by sweeping every morning.
4. to clean a wet floor.
5. germs.

Diagnostic assessment for facilitator

1. Before you started this lesson how did you assess your school environment with respect to cleanliness?
2. After the nature's walk how did you assess your school environment with respect to cleanliness?
3. What was the impression of the learners after the nature's walk with respect to cleanliness?

STRAND 5: HUMANS AND ENVIRONMENT

SUB-STRAND 2: DISEASES

LESSON 28: SOME COMMON DISEASES THAT AFFECT THE SKIN AND THEIR CAUSES.

Reference: Learner's Book 1 pages 160 - 164

Content Standards: B1.5.2.1 Know common diseases of humans, causes, symptoms, effects and prevention.

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

Expectations: At the end of this lesson learners will be able to:

- tell a story on common skin diseases.
- name some common skin diseases that affect people in their communities, e.g. heat rashes, measles, eczema, ringworm, chicken pox etc.
- share their ideas about common skin diseases with the whole class.
- write down all common skin diseases.
- state the causes of common skin diseases.
- talk about the ways you can prevent skin diseases.
- role play some of the prevention scenarios of skin diseases.

Core Competencies

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

Subject Specific Practices

- Observing.
- Generalising.

Resources: A chart on skin diseases.

Introduction

You can keep your environment clean. It is very good to do it so that you can live a healthy life at all times. People can live in a clean environment but still get some diseases if they do not keep their body clean. Some diseases can affect the skin if it is not kept clean.

Key words: disease, skin, ring worm, eczema, chickenpox, rashes, measles.

Additional Information

Diseases can affect any part of the human body. Though the skin is a protective organ of the human body, it can be attacked by certain diseases. Diseases such as ringworm, eczema, chicken pox, measles and skin rashes can attack the skin if it is not properly washed. These diseases are referred to as skin diseases.

Procedure

Begin this lesson by telling learners to examine their skin and asking them whether:

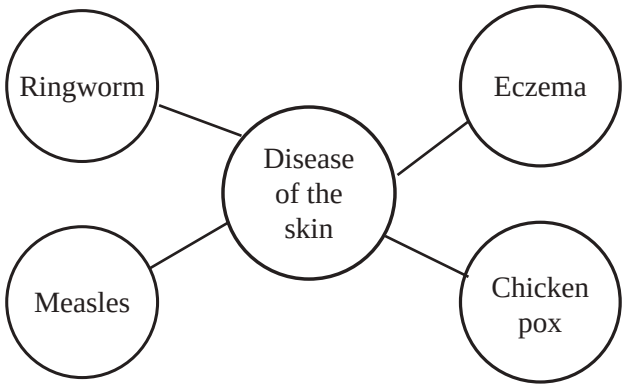
- diseases which can affect the skin.
- they know some common skin diseases.
- they have been affected by common skin diseases before.

Activity: 5.2.1.1(a) Identify some common diseases that affect the skin

Materials/Resources (Low or no cost): picture on page 166 of learner's textbook

Procedure

- Organise learners into groups of four or five and make them appoint a leader for each group.
- Tell learners to name some common skin diseases that affect people in their communities
- Tell each group leader to write the disease's down.
- Show pictures on pages 165 -166 of Learner's book to learners and tell them to identify the type of skin disease they see persons in the picture have.
- Ask learners what makes them able to identify the disease.
- Tell learners to discuss the diseases they have identified with their group members.
- Ask learners what they think may be the cause of these skin diseases.



Diseases such as ringworm, eczema, chicken pox, measles and skin rashes can attack the skin if not properly washed.

Ringworm

Ringworm is caused by a fungus. It makes ring patches on the head of and body of the person affected by the disease. It comes as a result of improper cleaning of the body (lack of personal hygiene). It causes itching and pain of the body.

Eczema

Eczema is also caused by a fungus. The fungus produces some tiny things called spores. The spores of fungus are always in the air. When they fall on the skin which is not clean, they start growing and spreading. Eczema causes colouring of the skin and leave spots on the skin.

Chicken pox

Chicken pox is caused by a virus. These viruses are in the air. When they fall on the skins of humans, they cause some spots to form on the skin which looks as if that part of the skin is burnt with fire. They are described as blister-like spots. Chicken pox can be transferred from one person to another person through contact. It is therefore described as an infectious disease.

Measles

Look at the skin of the child in the picture on the right. How does the skin look like? The child is suffering from a disease called measles. Measles is caused by a virus. As was stated earlier, viruses are always in the air. When they fall on humans with weak immune systems, they begin to grow. Rashes appear on the neck and behind the ears and later spread all over the body. These rashes are itchy and as they burst because of scratching, the spread to other parts of the body. If not detected early and treated measles can be fatal.

Heat rashes

Heat rashes is a disease which is mostly common in babies. It is caused by heat. When the weather is hot and wet and babies sweat, the sweat pore is blocked and the sweat is trapped under the skin of the baby. The rashes appear on the skin like blisters or red lumps.

Prevention of skin Diseases

Skin diseases can be prevented. There are ways to do this. What do you think are some of the ways?

Activity 5.2.1.1(b): Ways of preventing skin diseases
Materials/Resources (Low or no cost): chart of skin diseases.
Procedure

- Organise learners into groups and appoint a leader for each group.
- Let the leader in the group lead to discuss different ways of preventing skin diseases.
- Tell learners to record what they discuss in their book.
- Inspect what learners write in their books.

We can prevent skin diseases in many ways. Some of these ways include:

- Keep your body clean by removing germs.
- Wash hands with soap and water before eating and after visiting the toilet.
- Keep finger nails short and clean.
- Wash(bath at least two times a day) to remove bacteria, fungus and viruses which may grow on the sweat secretions on the skin.
- Clothing should be clean and changed frequently.

These are what are involved in personal hygiene.

Note: Invite a health worker to give a talk on the occurrence and prevention of skin diseases.

Summary

- The skin is a protective organ of the human body and needs to be kept clean.
- Diseases such as ringworm, eczema, chicken pox, measles and skin rashes can attack the skin if it is not properly washed.
- We can prevent skin diseases in many ways.

Diagnostic assessment

Write down (i)three examples of skin diseases.
(ii) three ways of preventing skin diseases.

Progressive assessment

Guide learners to answer the following question.

1. How will you know that a particular person has a particular type of skin disease?

Answers to Diagnostic assessment

i. three examples of skin diseases: ringworm, eczema, chicken pox, measles
ii. three ways of preventing skin diseases:
    - Keep your body clean by removing germs.
    - Keep finger nails short and clean.
    - Wash(bath at least two times a day) to remove bacteria, fungus and viruses which may grow on the sweat secretions on the skin.

Answers to Progressive assessment

- By looking at the signs on the skin. Every skin disease shows a particular sign.

Answers to Study Questions (Refer to LB page 164)

1. skin, fungus, fungus, virus
2.
   i. Fungus.
   ii. Keep yourself clean.
3. chickenpox.
4. Chicken pox.
5. To prevent skin disease I need to bath well, using soap, sponge and water.

Diagnostic assessment for facilitator

1. Was every group of learners able to appoint leaders?
2. Did each leader appointed demonstrate good leadership skill during the activity?
3. How did you assess the communication and collaboration among the learners during their discussion?

STRAND 5: HUMANS AND ENVIRONMENT

SUB-STRAND 3: SCIENCE AND INDUSTRY

LESSON 29: TECHNOLOGIES IN THE IMMEDIATE ENVIRONMENT AND THE IMPACT OF THE TECHNOLOGY ON SOCIETY.

Reference: Learner's Book 1 pages 165 - 169.

Content Standards: B1.5.3.1 Recognise the impact of science and technology on society.

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

Expectations: At the end of this lesson learners will be able to:

- mention technological equipment they see in their immediate environment and their uses.
- talk about what will happen if such technologies were absent in the society.
- say your ideas about key concepts on common technologies in the environment.
- mention some technological devices and how these have impacted their lives.
- design and make simple technological devices of their choice using materials such as blu tack, clay, cardboard and paper.

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.

Resources: Blu tack, clay, cardboard and paper, toys, radio, laptop, smart phone, watches, DVD player and charts on technological devices.

Introduction

It is not only the things that cause diseases, especially skin diseases that we can identify in our environment which have impact on our lives. We can also identify and describe the impact of technology in our immediate environment. All this happens as a result of our knowledge in science and the way we apply it.

Key words: technology, environment, society, impact.

Additional Information

Technology has become a popular word among educated people, not only in Ghana but in the whole world. We cannot talk about technology without talking about scientific knowledge.

People use scientific knowledge to make things which makes life easy for us. This is what is called technology. Society is benefiting from technology in many ways. Society will therefore be affected in the following ways if some equipment were not available. For example,

- Information and data cannot be processed and stored if computers were not available.
- People cannot make calls if smart phones were not available.
- People cannot watch world cup and other things happening far away if television sets were not available.
- Ghanains cannot travel by air to far places like America at a short time if aeroplanes were not available.

Procedure

Start the lesson by asking learners the following questions:

- If you do not have crayon, pencil or pen, what will you use to write?
- If you do not have exercise books what are you going to write in?

Guide learners to realise that their great ancestors used charcoal to write on walls. Instead of charcoal they are now using crayon, pencil and pen. Instead of writing on walls, they are now writing in exercise books. Furthermore, they can now write using laptops instead of using pen and paper. People now use knowledge to make these things to make life easy for us. We call this technology. Society is benefiting from technology.

Then ask learners if they are also benefiting from technology.

Shows video of technologies to learners and the impact that they have on society.

Show to learners toys, radio, laptop, smart phone, watches and DVD player.

Tell learners to form groups of four or five in each group. Tell learners to think about other equipment they have seen apart from those in the video and in the pictures. Tell learners to write them down in their exercise book and talk about them.

Ask learners

- how those equipment help society.
- what will happen to society if those equipment were not there.

Show to learners pictures on page 166 of learner's book.

In groups of four or five with one leader, tell learners to discuss what the following equipment are used for:laptop, jockey stick, radio, television set, smart phone, electronic watch, drone, calculator, camera, thermometer, car, water filter and aeroplanes.

Tell learners to write in their exercise books what the equipment they have seen is used for.

Tell learners to:

- draw any one of the equipment in their exercise books and colour it.
- write the name of the equipment they have drawn under the drawing.
- write what the equipment is used for under what they have drawn.
- compare what they have drawn with those of their friends.

Continue to ask learners what they think will happen if the technology to make these things were not available, for example how life in society will be if the following were not available: computers, smart phones, watches, music players, cars, radios, television sets, microphones and aeroplanes. Write the response of learners on the board and finally shape the learners' ideas such as:

- We cannot store and process information if computers were not available.
- We cannot make calls if smart phones were not available.
- We cannot do things on time if watches were not available.
- We cannot play music if music players were not available.
- We cannot watch things happening away if television sets were not available.
- We cannot travel fly to far places like America at a short time if aeroplanes were not available.

Activity 5.3.1.1: Making a simple technological device
Materials/Resources(low or no cost): blu tack, clay, cardboard and paper.
Procedure
Organise learners in groups of four or five
Give to the learners the following items: blu tack, clay, cardboard and paper. For example, you can make a toy car.
Tell learners to use the materials they have been given to make a technological device of their choice.
Supervise the activity and guide them appropriately.

[Thinking time: Can I also build an aeroplane one day?]

Summary

- People now use knowledge to make things, which makes life easy for us. We call this technology.
- Society is benefiting from technology.

Diagnostic assessment

1. Write down four items in your home which results from technology.
2. State what will happen if there were no cars.

Progressive assessment
Guide learners to answer the following question.

1. John and Janet were travelling to their village with their father in his car. A very big tree fell to cross the road. Their daddy had a cutlass in the car but the tree was too big for a cutlass to cut. What technological device do you think will make cutting the tree easier?

Answers to Diagnostic assessment

1. Television set, radio, laptop, blender (many more)
2. People cannot travel and carry goods in short time to far places.

Answers to Progressive assessment

Chain saw.

Answers to Study Questions (Refer to LB page 168 -169)

1. Technology
2. Calculator
3.

 *camera*	 *aeroplance*	 *laptop*
 *smart phone*	 *Thermometer*	

4. Mobile phone.
5. Television set.

Diagnostic assessment for facilitator

1. Did every learner show keen interest in the lesson?
2. As you inspected each group to assess their manipulative skills in making the technological device, did you discover some potential in them?
3. Did you observe any good communication and collaboration among each group members during the activity carried out?
4. What pedagogy did you use during this lesson?

STRAND 5: HUMANS AND ENVIRONMENT
SUB-STRAND 3: SCIENCE AND INDUSTRY

LESSON 30: FOODS THAT CAN BE PROCESSED AND PRESERVED AT HOME

Reference: Learner's Book 1 pages 170 - 178.

Content Standards: B1.5.3.2 Exhibit knowledge of food processing and preservation.

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

Expectations: At the end of this lesson learners will be able to:
- mention foods they ate in the morning and what was used to prepare the food.
- name vegetables, fruits and other types of food that can be preserved at home.
- talk about how food is prepared in their home.
- tell how their parents preserve food at home.

Core Competencies
- Critical Thinking and Problem Solving.
- Collaboration and Communication.
- Personal Development and Leadership.
- Cultural Identity and Global Citizenship.

Subject Specific Practices
- Classifying,
- Generalising.

Resources: As many of the following food items that are available in the community: Yam, cassava, cocoyam, fish (Tilapia, salmon, herrings), meat (beef, poultry, bush meat (grass cutter, antelope, rat), maize, rice, fish, ginger, garlic, onions, vegetables(okro, pepper, cabbage, carrot), fruits(oranges, mangoes, pineapple).

Introduction
People now use knowledge to make things which makes life easy for us. This is called technology as we saw in the previous lesson. In the same way, technology is used to make sure that the food we eat do not spoil within a short time. For example food items are put in refregerators so that they do not spoil.

Key words: preservation, spoilage, processed, drying, canning, smoking, gradual, evaporation, roasting, baking, refrigeration.

Additional Information

You eat food every day. Every food you eat is processed before eating. The food you eat can spoil if kept for a longer period. This can be prevented in the home.There are many food items in our homes. Food items generally contain certain amount of water in their raw states.

Organisms which cause food spoilage like to live in water medium. As they live in the water in the food, their life activities cause damage to the food and the food spoils. It is therefore necessary to find ways to process and preserve these food items so that they can last for a longer period. In food processing, as much water as possible is removed from the food item through drying or smoking or by other means.

Farmers can produce large quantities of food at certain seasons when conditions are favourable. People are able to eat as much as they can but they are not able to eat all. This is because it is too much. To avoid the food being wasted and thrown away the rest has to be preserved.
The processing and preservation of the food items aims at ensuring that the organisms that cause them to spoil are prevented from getting into contact with them (the food items). When food is processed very well, it can stay for long periods of time without spoiling. Different methods are used to prevent food from spoiling. These different methods are referred to as food preservation.

Food items in a community can be processed and preserved in the following ways:

1. Drying: maize, rice, millet, sorghum, fish(kobi), meat(guinea fowl), ginger, garlic, onion, pepper, okro.
2. Canning: tomato, pepper, fish, meat
3. Smoking: fish, meat(grasscutter, antelope)
4. Gradual evaporation of water: yam, cocoyam
5. Roasting: maize, yam, cocoyam,
6. Baking: bread, beans.
7. Refrigeration: fish, meat, vegetables such as okro, tomato.

Starting the lesson

Start the lesson by asking learners what they ate in the morning and what was used to prepare it. Use the responses learners give to your questions to begin an activity.

ActivityB1. 5.3.2.1: Foods eaten in the morning and items used to prepare them

Materials/Resources (Low or no cost): As many of the following food items that are available in your community: Yam, cassava, cocoyam, fish (Tilapia, salmon, herrings), meat (beef, poultry, bush meat (grass cutter, antelope, rat), maize, rice, fish, ginger, garlic, onions, vegetables(okro, pepper, cabbage, carrot), fruits(oranges, mangoes, pineapple)

Procedure

Ask learners to:

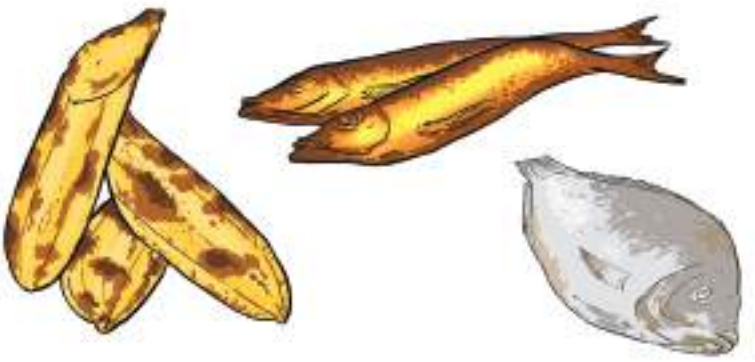
- form groups and appoint a leader for each group.
- let each group have four or five members.

- let their leader in the group lead to let each person mention the food they eat at home.
- let one person in the group act as a secretary to write down the food as it is mentioned.
- let the group leader show what the secretary has written to you to see .

Ask learners after the activity to:

- discuss how the food they mentioned is prepared at home.
- let each person now record what they discussed in their note book.

Show to learners samples of foods that are preserved in the home such as roasted plantain, dried fish(kobi), and smoked fish.



Activity 5.3.2.1: Samples of foods that are processed and preserved.

Materials/Resources (Low or no cost): As many of the following food items that are available in your community:Yam, cassava, cocoyam, fish (Tilapia, salmon, herrings), meat (beef, poultry, bush meat (grass cutter, antelope, rat), maize, rice, fish, ginger, garlic, onions, vegetables(okro, pepper, cabbage, carrot), fruits(oranges, mangoes, pineapple).

Procedure

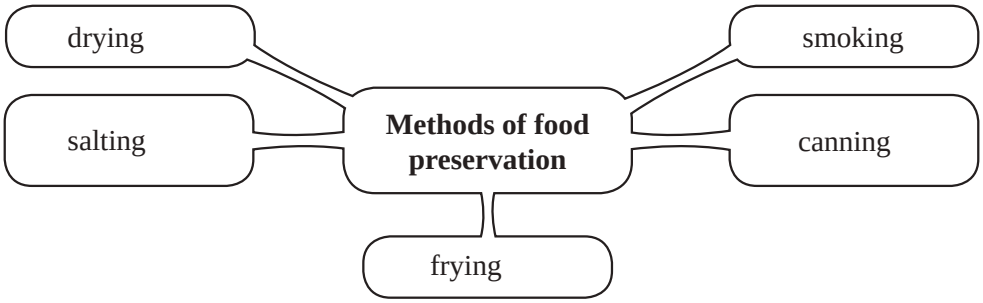
In groups of four or five, ask learners to write the names of different foods that are processed for preservation in their community. Let each group compare the list to the one presented below:

Foods that are processed for preservation in our communities include:

- Yam.
- cassava.
- cocoyam.
- Fish (Tilapia, salmon, herrings).
- meat (beef, poultry, bush meat (grass cutter, antelope, rat).
- maize.
- rice.
- fish.
- ginger.
- garlic.
- onions.
- vegetables(okro, pepper, cabbage, carrot).
- fruits(oranges, mangoes, pineapple).

*[**Thinking time:** What food substances are you able to process and preserve in your home?]*

Methods of Food Preservation



Tell learners to look at the pictures on page 183 of learner's textbook 1 which shows the different methods of food preservation.

*[**Thinking time:** My mother bought fresh fish from the market. She used some to prepare very delicious soup. She left the rest in the kitchen. The next day, it smelt very bad, I don't know why. Can someone explain to me?]*

Summary

- When food is processed very well, it can stay for a long time without spoiling.
- Food preservation is the different methods and ways by which processed food is kept for a long time without spoiling.

Diagnostic assessment

1. Write down two examples of food items in the market near your home.
2. Name two methods of food preservation.

Progressive assessment

Guide learners to answer all the following questions.

1. Name two items that your father bought from the market recently.
2. Write down two food items that your mother has bought before and they got spoilt.
3. Name two of the methods that your mother used recently to preserve food.

Answers to Diagnostic assessment

1. Any two of the following: Yam, cassava, cocoyam, fish (Tilapia, salmon, herrings), meat (beef, poultry, bush meat (grass cutter, antelope, rat), Maize, rice, fish, ginger, garlic, onions, vegetables(okro, pepper, cabbage, carrot), fruits(oranges, mangoes, pineapple)
2. Drying, canning, frying, smoking, gradual evaporation of water, roasting, baking, refrigeration.

Answers to Progressive assessment

1. Any two of the following:Yam, cassava, cocoyam, fish (Tilapia, salmon, herrings), meat (beef, poultry, bush meat (grass cutter, antelope, rat), Maize, rice, fish, ginger, garlic, onions, vegetables(okro, pepper, cabbage, carrot), fruits(oranges, mangoes, pineapple)
2. Any two of the following: Yam, cassava, cocoyam, fish (Tilapia, salmon, herrings), meat (beef, poultry, bush meat (grass cutter, antelope, rat), maize, rice, fish, ginger, garlic, onions, vegetables(okro, pepper, cabbage, carrot), fruits(oranges, mangoes, pineapple)
3. Any two of the following: Drying, canning, frying, smoking, gradual evaporation of water, roasting, baking, refrigeration

Answers to Study Questions (Refer to LB pages 176 - 178)

1. When food is processed very well, it can stay for long periods of time without spoiling. Food preservation is the different methods and ways by which processed food is kept for long periods of time without spoiling
2. plastic

3.

Food item	Name of food item	Method of preservation
	Yam	Drying, Frying, Cooking
	Fish	Drying, frying, smoking
	Plantain	Frying, cooking
	Okro	Drying, cooking
	Garlic	Drying
	Tomato	Canning

4. Preservation
5. Yam
6. Refrigeration
7. Drying

Diagnostic assessment for facilitator

1. Did you observe any good communication and collaboration among each group members during the activity carried out?
2. Did you identify any element of global citizenship and cultural identity exhibited by the learners during their group discussion?
3. Did you discover learners exhibiting problem solving ability during their group discussion?

STRAND 5: HUMANS AND ENVIRONMENT

SUB-STRAND 4: CLIMATE CHANGE

LESSON 31: CONDITIONS OF THE WEATHER.

Reference: Learner's Book 1 pages 179 - 184.

Content Standard: B1.5.4.1.1. Describe the conditions of the weather.

Indicator: B1. 5.4.1.1: Understand that climate change is an important environmental issue facing the world today.

Expectations: At the end of this lesson learners will be able to:

- go out to observe the weather and talk about whether they feel hot or cold.
- talk about other weather conditions, e.g. rainy, windy, sunny and cloudy.
- talk about what they observe during different weather conditions: rainy, windy, sunny and cloudy.
- act a play on the lesson taught.

Core Competencies: Critical Thinking and Problem Solving, Collaboration and Communication, Digital Literacy, Creativity and Innovation.

Subject Specific Practices: Observing, Predicting, Analysing, Evaluating.

Resources:A chart on conditions of the weather.

Introduction

If you have spoken to older people about the conditions of the weather, they will tell you that the weather today is different from what it was a long time ago. Weather is the average atmospheric conditions of a place at any given time. The weather could be sunny, rainy, cloudy, depending on the period of the day. Climate is the average weather conditions of a place over a long period of time. The climate of a place determines the type of vegetation the place has. Most places have seen a change in their climate patterns over the years. This is due to the behaviours of humans over the years. In this lesson, we are going to learn about the weather patterns and how they affect humans.

Key Words: weather, feel hot/cold, rainy, windy, sunny, cloudy.

Additional Information

Every hour of the day has its specific average weather condition. In the morning, it can be sunny or rainy, dry or wet. This weather conditions vary from period to period, day to day, month to

month throughout the year. Each year repeats similar patterns and conditions. In this lesson we will learn about weather conditions, how they vary and change from time to time.

Materials/Resources (Low or no cost): Chart showing atmospheric conditions of sunny, rainy, windy, cloudy or video show of the conditions. Rubbish burning site.

Procedure

Begin lesson by asking learners what the charts stand for.
Learners explain the meaning of the different weather conditions, for example, on a rainy day, it rains and the weather is not clear.

On a cloudy day the atmosphere is covered with clouds and the sun hides behind the clouds making the weather cloudy.
Ask learners what a sunny day, a foggy day and a windy day will look like. Guide learners to respond appropriately. Lead learners to answer the following questions:

- Do you go to school when the rain is falling? If yes, how do you dress?
- What do you do when the wind is blowing strongly?
- How do you protect yourself on a sunny day?

Activity B1.5.4.1 (a) Observation of day's weather condition

Leads learners out of the classroom to observe the weather condition for the day.

Caution: Do not go out when the sun is very hot or when the rain is falling.
Ask the learners to describe the weather for that day. Lead learners to describe the weather conditions for the week.

Activity B1.5.4.1 (b) Video on weather conditions

Show the learners a video of different weather conditions. Ask learners the conditions described by each picture.

Activity B1.5.4.1 (c) Activities performed under different weather conditions.

Show learners a video of activities performed under different weather conditions.
For example, on a sunny day the weather is clear and workers and learners can perform their usual activities.

On a rainy day, many workers cannot go to work. People use raincoats and umbrellas to go about their duties.

On a cloudy day, the weather becomes dull and it appears as if the rain will fall.
Show a video of activities that are done that destroy the land, such as throwing rubber bags about, burning lorry tyres, burning refuse. The video shows the smoke moving up as the materials are burnt. Lead the discussion on how the smoke pollutes the atmosphere.

Explain the poisonous nature of smoke and carbon dioxide which are produced when burning takes place.

Explain why a clean and well preserved environment is better than a dirty, damaged and destroyed environment.

Advice learners to keep their environment clean.
End lesson by teaching learners a song or poem on keeping the environment clean.

Summary
- Weather is the atmospheric conditions of a place at a particular time.
- Weather changes daily.
- Sometimes the weather is hot and other times it is cold.
- On a rainy day learnerss do not go to school.
- Sometimes the weather is foggy or misty.

Diagnostic assessment
i. What do you do on a sunny day?
ii. Describe how the weather is like on a foggy day.

Progressive assessment
Guide learners to answer all the following quetions.
1. Name two devices that learners use to protect themselves on a rainy day.
2. How are clouds formed?

Answers to Diagnostic assessment
i. We seek shelter under trees and in rooms.
ii. The atmosphere looks white and visibility is poor.

Answers to Progressive assessment
i. Rain coat and umbrellas
ii. Water evaporates from water bodies and condenses at higher levels to form clouds.

Answers to Study Questions (Refer to LB page 184)
1. (a) rainy (b) windy (c) sunny (d) cloudy
2. (i) True (ii) False (iii) False
3. (i) Rain coat
   (ii) Windy

Diagnostic assessment for facilitator

1. Did every learner realise the importance of environmental issues facing the world?
2. Did the learners realise they can also contribute positively or negatively to environmental issues?
3. Did the learners show curiosity to know more about issues of the environment when they watched the video or chart about the environment?

APPENDIX

ANSWERS TO WORKBOOK

STRAND 1: DIVERSITY OF MATTER
SUB-STRAND 1: LIVING AND NON-LIVING THINGS

LESSON 1: THINGS AROUND US (Workbook pages 2 - 5)

B1 1.1.1. 1: Observe and describe different kinds of things in the environment

PART A

1. enviroment, plant, animals, stone, football
2. i) (a) L, (b) L, (c) L, (e) L
   ii) (d) NL

PART B

1.

Ball	Cat
• Does not drink water • Does not breathe through the nose • Does not produce babies	• Drink water • Breathe through the nose • Produces babies

LESSON 2: ANIMALS AND PLANTS IN YOUR LOCALITY (Workbook pages 6 -9)

B1.1.1.2.1 Animals and Plants in your locality

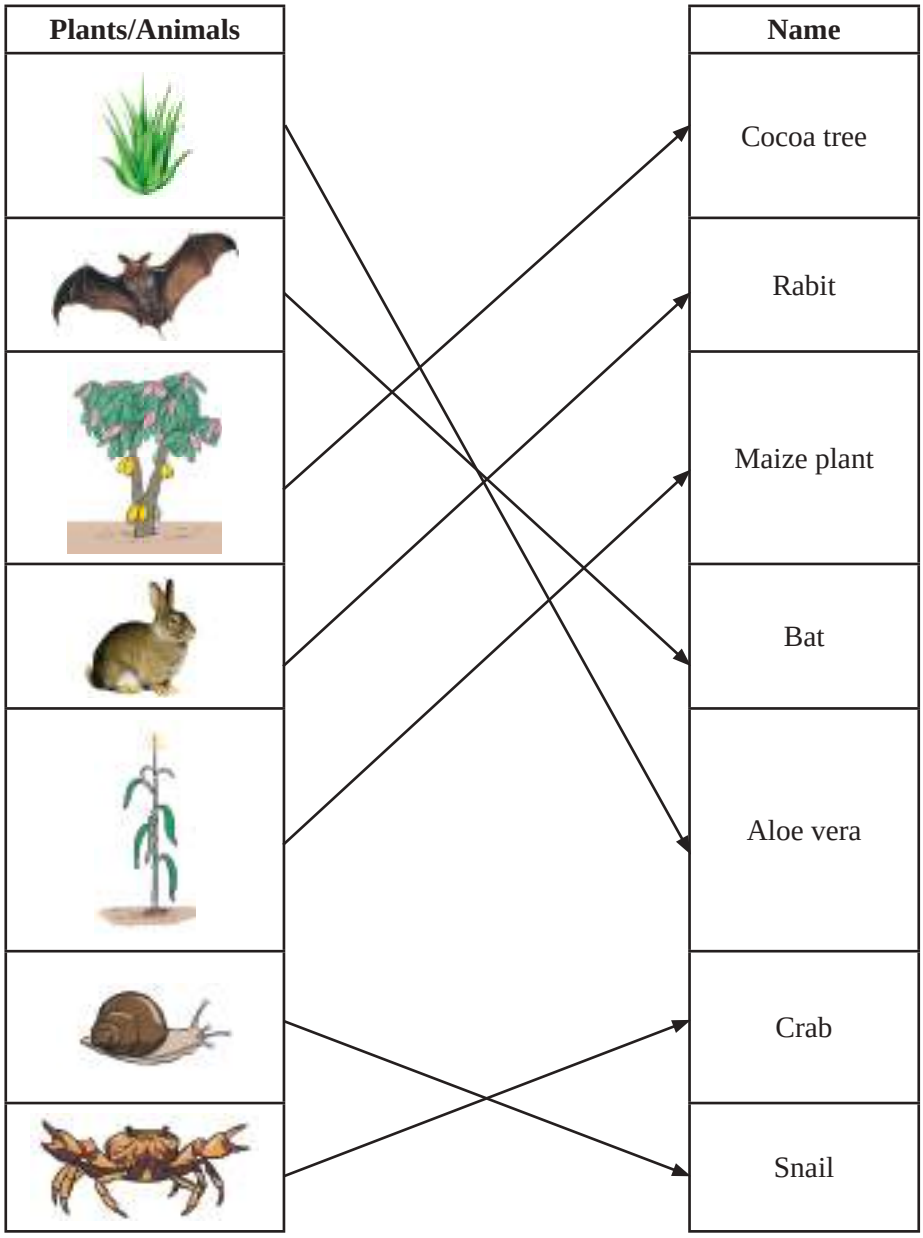
PART A

1. mango tree
   coconut tree
   maize
2. lion, cat, fish

PART B

1. i) Plant (P) ii) animal (A) iii) animal (A)
   iv) Plant (P) v) Plant (P)

2.



LESSON 3: BASIC NEEDS OF LIVING THINGS (Workbook pages 10 - 13)

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

PART A

1. i) air.
   ii) food
   iii) light
   iv) water
   v) shelter
2. (a) Water, air, and food
   (b) house, shirt, shoe (any 2)

PART B

1. i) shelter
   ii) water
   iii) make food
   iv) food
   v) plants

LESSON 4: DIFFERENCES BETWEEN LIVING AND NON-LIVING THINGS (Workbook pages 14 - 17)

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

PART A

1. non-living, animals, reproduce, food, seeds
2. i) maize, tomato plant ii) Dog, fish iii) Table, mountain

PART B

1. (a) i) X non-living things.
   ii) Y living things
   (b) can breathe
   can feed
   can grow
2. (a) (i) (b) (i) (c) (ii)
   (d) (i) (e) (i)

SUB-STRAND 2: MATERIALS

LESSON 5: VARIETY OF EVERYDAY MATERIALS IN THE IMMEDIATE ENVIRONMENT (Workbook pages 18 - 21)

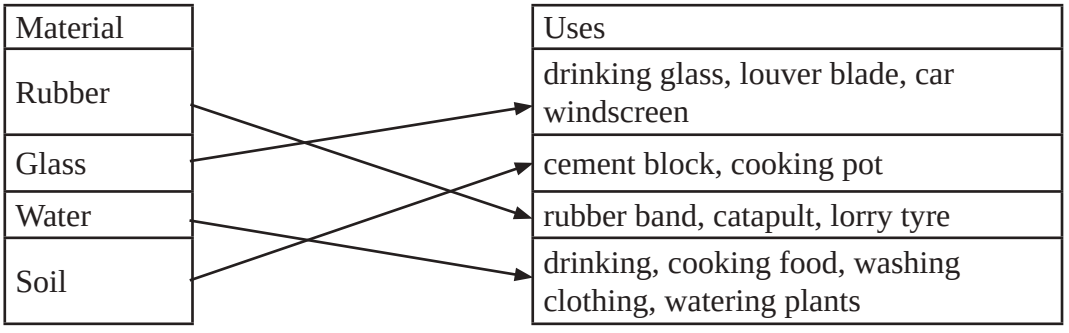
B1.1.2.1.1 Identify and name a variety of everyday materials in their immediate environment

PART A

1. (a) Plastic (b) metal (c) fabric (d) paper
2.
   i. chair (any one and any other correct use)
   ii. buckets (any one and any other correct use)
   iii. books, cement bags, cartons (any one and any other correct use)
   iv. shirts, trousers (any other correct use)
   v. spoons (any other correct use)
3. (a) stone
   sand
   glass
   metal
   wood (any 3 and any other correct material).

PART B

1.



LESSON 6: GROUPING MATERIALS BY THEIR APPEARANCE (Workbook pages 22 - 26)

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

PART A

1. (i) stone .
   (ii) straw
   (iii) wood
2. i) (b) ii) (a) iii) (b) iv) (a) v) (b)

PART B

1. Accept any correct drawing from the learner.
2. A is rough
   B is round
3. (a) heavy (b) smooth (c) green (d) hard (e) heavier

LESSON 7: CLASSIFY MATERIALS AS SOLID, LIQUID OR GAS (Workbook pages 27 - 29)

B1.1.2.2.1: Identifing and classifying materials as solid, liquid or gas.

PART A

1. i) liquid and gas ii) solid iii) gas iv) gas v) solid

PART B

1. i) bread ii) orange juice iii) gas for cooking
2.

Solid	Liquid	Gas
Stone, paper, sand, dried leaf	coke, palm oil, water, milk	Wind, air

LESSON 8: MIXTURE (Workbook pages 30 - 32)

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

PART A

1. Write down two materials that are put together to form the mixture in the table below.

Mixture	Materials
Sea Water	Water and salt
Sugar solution	Water and sugar
Soup	Water, salt, fish, meat and ingredients (any two including water)
Corn dough	Water, cornflour
Muddy water	Water, soil or sand

2. i) sea water ii) concrete iii) sugar solution

PART B

1. i) sugar solution: sugar and water
   ii) mixture of sand and chalk: sand and chalk
   iii) mixture of salt and palm oil: salt and palm oil
   iv) mixture of clay and water: clay and water

STRAND 2: CYCLES
SUB – STRAND 1: EARTH SCIENCE

LESSON 9: SOME NATURAL PHENOMENON, SUCH AS DAY AND NIGHT WHICH OCCUR REPEATEDLY (Workbook pages 34 - 36)

B1: 2.1.1. Explain that some natural phenomena such as day and night occur repeatedly.

PART A

1. a) i) second hand of an analogue clock
   ii) merry – go – round
   iii) circular card
   b) cyclic motion

PART B

1. Accept any correct diagram which could be merry-go-round, muscial chair etc
2. Merry-go-round, musical chair, day and night, Christmas, New year, Easter (any 3)

LESSON 10: THE SUN IS THE MAIN SOURCE OF LIGHT TO THE EARTH (Workbook pages 37 - 39)

B1. 2.1.2.1. Know that the sun is the main source of light on Earth.

PART A

1. i) The sun
   ii) In the sky
   iii) light and heat

PART B

1.

Natural Sources of Light	Artificial Sources of Light
Sun, moonlight, firefly	flashlight, candle, lantern, coal pot fire

2. The **sun** is a natural source of **light** which makes us **see** clearly. It is seen in the **sky** during the **day** The light of the sun helps plants to make their own **food.**

LESSON 11: EVAPORATION OF WATER (Workbook pages 40 - 42)

B1 2.1.3.1. Observing the disappearance of mist and pools of water.

PART A

1. a) i) pool of water
   ii) mist
   b) i) after a rainfall
   ii) when rain cools and moistens the air near the surface of the Earth. OR when the air can no longer hold all the water vapor it contains.

PART B

1. i) It will disappear that is evaporate into the air or sink into the soil.
   ii) it will evaporate into the air.
2. evaporate into the air, flow away into bigger water bodies.
3. run – off – water
4. evaporate
5. True
6. True
7. False
8. False

LESSON 12: SOURCES AND USES OF WATER IN THE HOME AND AT SCHOOL. (Workbook pages 43 - 45)

B1.2.1.5.1 Identify sources and uses of water in the home and at school

PART A

1. (a). River, pond, lake, rain, pipe borne, well .
2. i) drink
   ii) bath
   iii) water flowers

PART B

1. i) Farmer
   ii) Fishermen
   ii) Mason or brick layer
2. i) sea ii) lake, pond, lagoon iii) Rain (Any 1)

LESSON 13: EXISTENCE OF AIR IN THE SURROUNDING (Workbook pages 46 - 49)

B1.2.1.4.2 Demonstrate the existence of air in the environment

PART A

1. (a) i) A is deflated balloon
   B is inflated balloon
   ii) Air
   (b) Air

PART B

1. Experiment to demonstrate the existence of air.
2. i) (a) fan
   (b) flag
   (c) kite
3. (i) X= blowing trumpet
   Y= blowing whistle
   Z= whistling
4. i, ii = accept correct drawing
   iii.When air enters it, it pushes the canoe to move
   iv. Air…

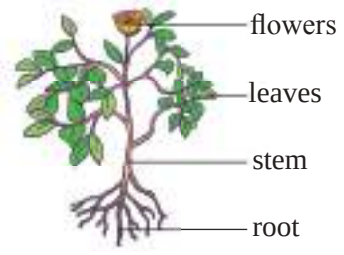
SUB-STRAND 2: LIFE CYCLES OF ORGANISMS

LESSON 14: THE STRUCTURE OF PLANTS (Workbook pages 50 - 51)

B1.2.2.1.1 Examine the structure of plants

PART A

1.
(i)



(ii) A plant

PART B

1. Any correct diagram of a labelled flowering plant.

LESSON 15: DIFFERENT KINDS OF SEEDS (Workbook pages 52 - 54)

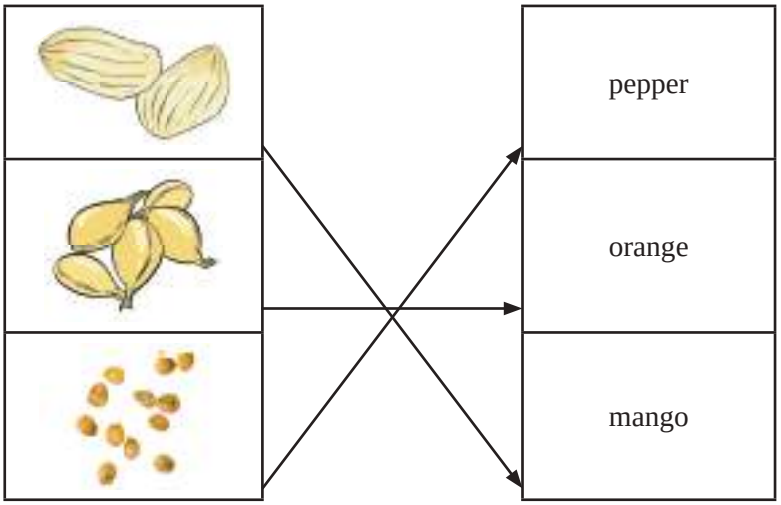
B1.2. 2.1.2 Observe different kinds of seeds

PART A

1. i) plants ii) fruits iii) soil iv) seedlings
2. i) mango ii) orange iii) tomato iv) bean

PART B

1.



2. i) mango, palm fruit, coconut etc (any 2)
   ii) orange, pawpaw, pepper (any 2)

STRAND 3: SYSTEMS
SUB-STRAND 1: THE HUMAN BODY SYSTEMS

LESSON 16: THE EXTERNAL HUMAN BODY PARTS (Workbook pages 56 - 58)

B1. 3.1.1.1.1 Identify the external human body parts and their appropriate names (e.g eyes, ears, mouth, nose, legs, hands, shoulders, knees, fingers, toes and chest)

PART A

1. I = Leg, II = eyes III = Chest IV = hands V = ear

PART B

1. Leg = two
   Neck = one
   Chest = one
   Shoulder = two
   Toe = ten
   Finger = ten
   Eye = two
   Ear = two
   Abdomen = one
2. a. ears
   b. eyes
   c. mouth
   d. nose

SUB-STRAND 3: ECOSYSTEM

LESSON 17: THE PLACES WHERE LIVING THINGS LIVE (Workbook pages 59 - 63)

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

PART A

1. i) air ii) water iii) land iv) water v) wings
2. (a) A=Tilapia
   B= bat
   C = rat
   (b) A lives in water
   B lives in trees

C lives on land.

(c) shark and whale

(d) eagle and hawk

(e) mouse and dog

3. (i) bat (ii) Tilapia (iii) monkey

PART B

1. (a) bird = air (b) monkey = land (c) frog = water, land (d) rat = land (e) fish = water

STRAND 4: FORCES AND ENERGY
SUB STRAND 1: SOURCES AND FORMS OF ENERGY.

LESSON 18: ENERGY AND ITS USES (Workbook pages 65 - 67)

B1. 4.1.1.1. Understand energy and give examples of its use.

PART A

1. i) work ii) get energy iii) the sun iv) a dog v) machines
2. Bath, brush teeth, walk to school (any other three activities).

PART B

1. (a) B and C
   (b) B = mopping the floor
   C = lift the hammer to hit the nail
   (c) A and D

LESSON 19: 'HOT' AND 'COLD' (Workbook pages 68 - 71)

B1 4.1.2.1 Explain the term hot and cold.

PART A

1. i) cold
   ii) hot
   iii) hot
   iv) cold
   v) hot
2. water on fire, soup on fire
3. Iced block, iced cream, frozen meat (any 2)

PART B

1. i) warm, hot ii) in a refrigerator iii) on a burning stove iv) hot v) hot
2. I = Look in the refrigerator
   II = bath with cold water
   III = Put it in an ice chest
   IV = Put it in a vacuum flask

SUB – STRAND 2: ELECTRICITY AND ELECTRONICS

LESSON 20: THE IMPORTANCE OF ELECTRICITY AND ITS USE IN THE HOME (Workbooks pages 72 - 74)

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

PART A

1. charcoal iron, gas stove, lantern.
2. Accept any correct drawing

PART B

1. TV, ceiling fan, light
2. I = requires electricity
   II = requires electricity
   III = does not require electricity
   IV = does not require electricity
   V = does not require electricity
   VI = requires electricity

LESSON 21: COMMON ELECTRONIC DEVICES AND THEIR USES (Workbook pages 75 - 78)

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

PART A

1. a) i) mobile phone
   ii) wrist watch
   iii) torch light
   iv) camera

2.

Uses	Device
For taking pictures	
To give light at night	
For talking to people at different places	
For telling the time of the day	

PART B

1. Accept any correct diagram
2. i) microwave oven
   ii) computer
   iii) Television

LESSON 22: FORCE AS A PULL OR A PUSH ON AN OBJECT (Workbook pages 79 - 81)

B1.4.3.1.1. Explain force as a pull or a push on an object.

PART A

1. i) pull ii) push iii) pull iv) pull
2. i) towards ii) away iii) forces iv) pull v) move

PART B

1. i) open ii) lift iii) drag iv) ride v) kick
2. table, truck, chair (any 3 correct ones)

SUB – STRAND 3: FORCES AND MOVEMENT

LESSON 23: SIMPLE MACHINES (Workbook pages 82 - 85)

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

PART A

1. Knife , broom and bottle top opener or any other simple machine.
2. i) bottle top opener
   ii) broom
   iii) knife
3. Bottle top opener

PART B

1. e, f, g, h
2. Aceept correct drawings

STRAND 5: HUMANS AND ENVIRONMENT
SUB-STRAND 1 : PERSONAL HYGIENE AND SANITATION

LESSON 24: THE NEED FOR BATHING AND KNOW HOW IT IS DONE (Workbook pages 87 - 89)

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

PART A

1. (a) Bathing
   (b) Water, soap, sponge
   (c) Two times
   (d) Smell bad or (b)

PART B

1. Accept any appropriate diagram from learners.

LESSON 25: CLEANING THE TEETH (Workbook pages 90 - 92)

B1. 5.1.1.2 Know the need for and how to clean the teeth

PART A

1. i) twice ii) decay iii) toothpaste
2. i) (b) ii) (a) iii) (b)

PART B

1. Accept any good drawing

LESSON 26: WASHING THE HANDS (Workbook pages 93 - 96)

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

PART A

1.

		
A	B	C

(a) Washing their hands
(b) Water and soap
(c) Running water

PART B

1. i) b, c, d, a ii) a
2. i) soap ii) towel iii) water

LESSON 27: IMPORTANCE OF CLEAN AIR AND WATER (Workbook pages 97 - 99)

B1.5.1.2.1 Know that clean air and water are essential to human health

PART A

1. e, f, g, i

PART B

1. i, iii, v, vi
2. a, d

SUB-STRAND 28: DISEASES

LESSON 28: COMMON SKIN DISEASES (Workbook pages 100 - 102)

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

PART A

1. (a) Measles, chicken pox, eczema, ringworm
   (b) Fungus, virus

PART B

1. Ring worm
2. virus
3. a

SUB-STRAND 3: SCIENCE AND INDUSTRY

LESSON 29: TECHNOLOGIES IN THE IMMEDIATE ENVIRONMENT AND THEIR IMPACT ON SOCIETY (Workbook pages 103 -106)

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

PART A

1. (i) Blender, radio, television set, car, smart phone, refrigerator(any correct devices)
2. i) mobile phone
   ii) aeroplane
   iii) Train
   iv) Television

PART B

3. Accept any good diagram
4. a = camera b = aeroplane c = computer
   d = mobile phone e = thermometer
5. i) radio ii) laptop iii) camera iv) car

LESSON 30: FOODS THAT CAN BE PROCESSED AND PRESERVED AT HOME (Workbook pages 107 -110)

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

PART A

1. Yam, cocoyam, maize, tomato, cassava(any other four common food item)
2. (a) Accept any correct diagram.

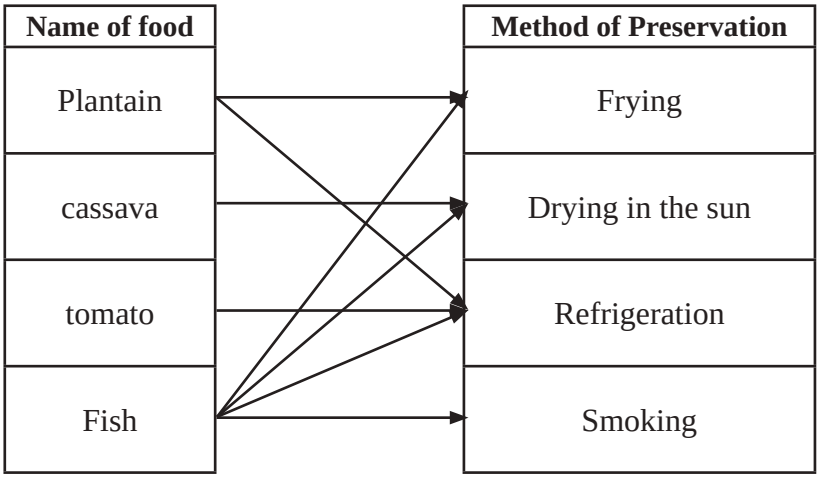
(b) Yam/ Plantain (Accept any correct name since favourite food items will not be the same depending on the learners' locality)

(c) Drying, frying, cooking (Accept any correct method of preparation applicable to the favourite food item the learner draws.

PART B

1. (a) A = Tilapia.
   (b) B= Yam
   (c) Drying and frying (You can also accept smoking), canning.

2.



SUB – STRAND 4 : CLIMATIC CHANGE

LESSON 31: THE CONDITIONS OF THE WEATHER (Workbook pages 111 - 114)

B1 5.4.1.1.1 Describe the conditions of the weather

PART A

1. i) rainy
   ii) windy
   iii) sunny
   iv) cloudy
2. i) rainy day
   ii) windy day
   iii) sunny day
   iv) cloudy

PART B

1. (a) rainy (b) windy (c) cloudy
2. i) play ampe, play football, do merry-go-round etc