



# Primary Science

# 1

Primary Science has been written and developed by Ministry of General Education and Instruction, Government of South Sudan in conjunction with Subjects experts. This course book provides a fun and practical approach to the subject of Science, and at the same time imparting life long skills to the pupils.

The book comprehensively covers the Primary 1 syllabus as developed by **Ministry of General Education and Instruction.**

Each year comprises of a Pupil's Book and teacher's Guide.

The Teacher's Guides provide:

- Full coverage of the national syllabus.
- A strong grounding in the basics of Science.
- Clear presentation and explanation of learning points.
- A wide variety of practice exercises, often showing how Science can be applied to real-life situations.
- It provides opportunities for collaboration through group work activities.
- Stimulating illustrations.



All the courses in this primary series were developed by the Ministry of General Education and Instruction, Republic of South Sudan. The books have been designed to meet the primary school syllabus, and at the same time equipping the pupils with skills to fit in the modern day global society.

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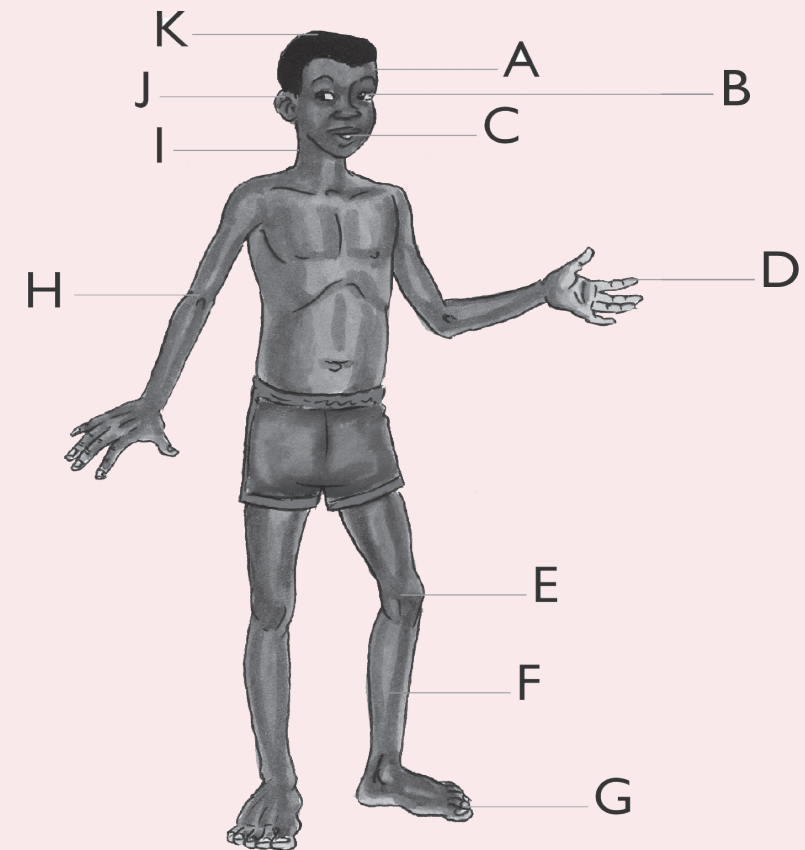
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# Primary Science

# 1

Teacher's Guide



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South Sudan

PRIMARY  
1

# Science

## Teacher's Guide 1

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## FOREWORD

I am delighted to present to you this Teacher's Guide, which is developed by the Ministry of General Education and Instruction based on the new South Sudan National Curriculum. The National Curriculum is a learner-centered curriculum that aims to meet the needs and aspirations of the new nation. In particular, it aims to develop (a) Good citizens; (b) successful lifelong learners; (c) creative, active and productive individuals; and (d) Environmentally responsible members of our society. This textbook, like many others, has been designed to contribute to achievement of these noble aims. It has been revised thoroughly by our Subject Panels, is deemed to be fit for the purpose and has been recommended to me for approval. Therefore, I hereby grant my approval. This Teacher's Guide shall be used to facilitate learning for learners in all schools of the Republic of South Sudan, except international schools, with effect from 4th February, 2019.

I am deeply grateful to the staff of the Ministry of General Education and Instruction, especially Mr Michael Lopuke Lotyam Longolio, the Undersecretary of the Ministry, the staff of the Curriculum Development Centre, under the supervision of Mr Omot Okony Olok, the Director General for Quality Assurance and Standards, the Subject Panelists, the Curriculum Foundation (UK), under the able leadership of Dr Brian Male, for providing professional guidance throughout the process of the development of National Curriculum, school textbooks and Teachers' Guides for the Republic of South Sudan since 2013. I wish to thank UNICEF South Sudan for managing the project funded by the Global Partnership in Education so well and funding the development of the National Curriculum, the new textbooks and Teachers' Guides. I am equally grateful for the support provided by Mr Tony Calderbank, the former Country Director of the British Council, South Sudan; Sir Richard Arden, Senior Education Advisor of DfID, South Sudan. I thank Longhorn and Mountain Top publishers in Kenya for working closely with the Ministry, the Subject Panels, UNICEF and the Curriculum Foundation UK to write the new textbooks. Finally, I thank the former Ministers of Education, Hon. Joseph Ukel Abango and Hon. Dr John Gai Nyuot Yoh, for supporting me, in my role as the Undersecretary, to lead the Technical Committee to develop and complete the consultations on the new National Curriculum Framework by 29 November 2013.

The Ministry of General Education and Instruction, Republic of South Sudan, is most grateful to all these key stakeholders for their overwhelming support to the design and development of this historic South Sudan National Curriculum. This historic reform in South Sudan's education system is intended to benefit the people of South Sudan, especially the children and youth and the future generations. It shall enhance the quality of education in the country to promote peace, justice, liberty and prosperity for all. I urge all Teachers to put this textbook to good use.

May God bless South Sudan. May He help our Teachers to inspire, educate and transform the lives of all the children and youth of South Sudan.



Deng Deng Hoc Yai, (Hon.)

**Minister of General Education and Instruction, Republic of South Sudan**

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## Book organisation

This teacher's guide is organised into two main sections.

Part 1 is the general introduction section detailing information on competence-based curriculum and pedagogical issues.

The main elements of Part are:

- **Background information** to the new curriculum - It gives a brief overview of the general requirements of the new South Sudan competence-based curriculum including the guiding principles, the competences the learners are expected to acquire and cross cutting issues to be addressed during learning.
- **Basic requirements for an effective Science lesson** - It highlights the teacher's and learner's roles for effective teaching and learning of Science, teaching and learning resources and grouping learners for learning and teaching methods.

Part 2 provides a unit -to - unit guide to the teacher on how to facilitate learners to acquire the knowledge, skills and attitudes envisaged in each unit. This part is therefore structured into units.

The main elements of each unit guide are:

- **Unit heading**
- **Unit outcome**
- **Contribution to learner's competencies:** The section explains how the unit will facilitate the learner to acquire the specified competencies.
- **Cross cutting issues to be addressed:** The section outlines the specific cross cutting issues that will be addresses through infusion as the learners do activities and interact with concepts planned for the unit This is meant to make you conscious and be on the lookout for suitable opportunities throughout the teaching and learning process in the entire unit to address the cited cross cutting issues. Note that a unit may not necessarily address all the cross cutting issues outlined in the curriculum.

- **Teaching methodologies**

The section lists down the main teaching and learning methods that the teacher can employ in the unit.

- **Background information**

This section outlines key knowledge, skills, attitudes and values that learners need to have acquired earlier that will facilitate easier acquisition of the new knowledge, skills, attitudes and values envisaged in the unit. It also guides the teacher on how to find out that the learners possess them before they start learning the concepts in the unit, and how to help learners in case they do not possess them.

- **Suggested teaching and learning activities**

This section provides you with guidance on how to facilitate learners to learn by doing the activities outlined in the learner's book. It also guides you on how to assess the process of learning.

## **Background information on the new curriculum**

The aim of the South Sudan Competence-based Curriculum is to develop in the learners competencies that will enable them interact with the environment in more practical ways.

It clearly defines the knowledge, skills and attitudes that the learner should acquire by doing the specified learning activities.

## **Learning competences to be attained**

Competencies are statements of characteristics that learners should demonstrate, which indicate they have the ability to do something to the required level of performance.

The following are the four competencies envisaged in this curriculum:

### **1. Critical and creative thinking**

Science lessons and activities facilitate learners to acquire these competencies by giving them opportunities to:

- Plan and carry out investigations, using a range of sources to find information.
- Sort and analyse information and come to conclusions.



- Suggest and develop solutions to problems, using their imaginations to create new approaches.
- Evaluate different suggested solutions.

## **2. Communication**

Science lessons and activities facilitate learners to acquire these competencies by giving them opportunities to:

- Read and comprehend critically a variety of types and forms of texts during research activities.
- Write reports on scientific investigations and activities.
- Speak clearly and communicate ideas and Science related information coherently.
- Listen and comprehend scientific facts presented by fellow classmates, group members, teachers and resources persons.
- Use a range of media, technologies and languages to communicate messages, ideas and opinions.

## **3. Cooperation**

Science lessons and activities facilitate learners to acquire these competencies by giving them opportunities to:

- Work collaboratively towards common objectives when doing activities.
- Be tolerant of others and respectful of differing views, when working together in groups.
- Adapt behaviour to suit different situations.
- Negotiate, respect others' rights and responsibilities and use strategies to resolve disputes and conflicts.
- Contribute to environmental sustainability.

## **4. Culture and identity**

Science lessons and activities facilitate learners to acquire these competencies by allowing them to:

- Take pride in identifying the diverse nature of the South Sudan society.
- Build understanding of the South Sudan heritage in relation to the rest of the world.
- Appreciate and contribute to the development of the South Sudan culture

- Value diversity and respect people of different races, religion, communities, cultures and those with disabilities.

## **Cross-cutting issues to be addressed during learning**

These are issues that are of high national priority and hence have been incorporated in the learning process. The three cross-cutting issues should be addressed through the teaching and learning process are:

### **1. Environment and sustainability**

A well-conserved environment is obviously key to our health and survival. It is therefore important for you to make use of the opportunities that arise in the process of teaching and learning Science through activities to sensitise learners on the importance of conserving the environment. One way is by ensuring that the learners always dispose off the waste materials at the end of an activity in ways that do not pollute the environment.

### **2. Peace education**

Peace is critical for a society to flourish and for every individual to focus on personal and national development.

You need to be in the fore front in educating your learners on the need for peace, for example by encouraging group work in the learners activities and showing them ways of solving interpersonal problems peacefully that occasionally arise during interactions and discussions.

### **3. Life skills**

Learners need to progressively acquire some skills, abilities and behaviors that will help them to effectively deal with the events and challenges of everyday life. Such skills include First Aid, communication skills, conflict resolution, basic ICT skills among others. You should as much as possible facilitate the learners to acquire these skills whenever an opportunity arises in the lesson execution.

## **Basic requirements for an effective Science lesson**

### **1. Teacher's role and basic skills for effective Science lesson**

The teacher is the most important resource for an effective Science lesson.

#### **(a) Some key roles of a Science teacher.**

- Organising the classroom to create a suitable learning environment.
- Preparing appropriate materials for learning activities.

- Engaging learners in a variety of learning activities.
- Encouraging and accepting learners' autonomy and initiative.
- Allowing learners' responses to drive lessons and shift instructional strategies.
- Familiarising themselves with learners' understanding of concepts before sharing their own understanding of those concepts.
- Encouraging learners to engage in dialogue, both with you and one another.
- Engaging learners in experiences that pose contradictions to their initial hypotheses and then encouraging discussions.
- Providing time for learners to construct relationships and create metaphors.
- Using a variety of teaching and assessment methods.
- Adjusting instructions to the level of the learners.
- Nurturing learners' natural curiosity.
- Motivating learners to make them ready for learning.
- Coordinate learners' activities so that the desired outcomes can be achieved.
- Assessing learners' activities and suggest solutions to their problems.
- Assist learners to consolidate their activities by summarising the key points learnt.

**(b) Key skills of a Science teacher:**

- Creativity and innovation.
- Makes connections or relations with other subjects.
- A high level of knowledge of the content.
- Effective disciplining skills to adequately manage the classroom.
- Good communicator.
- Guidance and counselling.

**Learners' role in learning Science**

Learning takes place only when the learner acquires the intended knowledge, skills and attitudes. As such, learning is a highly personal and individual process. Thus, a learner must be actively engaged in the learning exercise.

For active participation in learning, the learner should:

- Raise questions about what is observed.

- Suggest solutions to the problems observed.
- Take part in planning investigations with appropriate controls to answer specific questions.
- Carry out investigations to search for answers with the help of materials in search of patterns and relationships while looking for solutions to problems.
- Working collaboratively with others, communicating their own ideas and considering others' ideas.
- Expressing themselves using appropriate Science terms and representations in writing and talk.
- Engaging in lively public discussions in defense of their work and explanations.
- Applying their learning in real-life contexts.
- Reflecting critically about the processes and outcomes of their inquiries.

### **Teaching and learning resources**

These refer to things that the teacher requires during the teaching process. They include:

- The classroom
- Textbooks
- Wall charts and wall maps
- Materials and apparatus

### **Various tools and equipment**

- Science models
- Resource persons
- Firms such as hydroelectric power stations, engineering firms among others

### **(a) Classroom as a learning environment**

A classroom generally refers to the place where learning takes place. Learners learn from everything that happens around them, such as the things that they hear, see, touch, taste, smell and manipulate.

### **Classroom organization**

It is important you make the classroom an attractive and stimulating environment. This can be done by:

- Carefully arranging the furniture in the classroom in an organised way to allow free movement of learners and you.
- Putting up learning and teaching aids on the walls. Examples are wall charts, pictures and photographs.
- Displaying teaching models.
- Providing objects of examination for example cover slides.
- Having a display corner in the classroom where learners display their work.
- Setting a corner for storing materials so as not to obstruct learners or distract them.
- Spreading out the learners evenly so that they do not interfere with one another's activities.
- Setting up the materials or experiments for the series of lessons or activities going on for a number of days or weeks in a location where they do not interfere with other daily activities.
- Organising the sitting arrangement such that learners face the lighted areas of the room.
- Choosing the most appropriate location for you and the chalkboard such that they are visible to all learners and that you have a good view of all learners in the class.

## **b) Apparatus and materials**

For learners to study Science through the activity method, a number of materials and apparatus are required. The important role played by materials in learning has been felt for centuries. This is noted for instance in the old Chinese proverb that says:

When I hear, I forget,

When I see, I remember.

When I do I understand.

Since Science is a highly practical subject, materials help you to convey your points, information or develop skills simply and clearly and to achieve desired results much faster.

Some of the materials that you require for activities and investigations can be collected from the local environment.

Many others can be improvised while some have to be purchased. Whether collected, improvised or purchased, there are certain materials that are valuable to have around almost all the time.

These include:

### **i) Sciencekit**

A Sciencekit is a special box containing materials, apparatus and equipment necessary to conduct an array of experiments. The content of the kit depends on the curriculum requirements per level. Most Sciencekits are commercially available and target particular levels of learners. However, you are encouraged to come up with a kit based on the syllabus requirements.

### **ii) Models**

A model refers to a three-dimensional representation of an object and is usually much smaller than the object. Several models are available commercially in shops. Examples of Science models include models of body parts, animals among others. These models can be purchased by schools for use during Science activities.

### **iii) Resource persons**

A resource person refers to anybody with better knowledge on a given field. Examples include health practitioners such as doctors, nurses and laboratory technologists, agricultural extension officers, environmental specialists among others. Depending on the topic under discussion organise to invite a resource person in that area to talk to learners about the topic. The learners should be encouraged to ask as many questions as possible to help clarify areas where they have problems on.

### **iv) Improvisation**

If each learner is to have a chance of experimenting, cheap resources must be made available. Complicated apparatus may not always be available in most schools. Such sophisticated equipment made by commercial manufacturers are usually expensive and majority of schools cannot afford them. You are therefore advised to improvise using locally available materials as much as possible.

### **vi) Scheduling learning activities and venues**

Some of the activities suggested in the learner's book need good planning and scheduling in order to get accurate results. The teacher should therefore think ahead while making the scheme of work so that the prevailing weather pattern and the most appropriate timing are considered.

### **Grouping learners for learning activities**

Most of the Science activities suggested in the Learner's book are carried out in groups and therefore the teacher should place 2 or 3 desks against each other and then have a group of learners sitting around those desks.

In certain activities, the teacher may wish to carry out a demonstration. In this case, the learners should be sitting or standing in a semicircle, or arranged around an empty shape of letter “U” such that each learner can see what you are doing clearly and without obstruction or pushing. If the learners are involved in individual work, each learner can work on the floor or on the desk or a portion of the desk if they are sharing. In this case, they need not face each other.

Grouping learners for learning has increasingly become popular in recent years. In fact, the shift from knowledge-based to competence curriculum will make grouping the norm in the teaching process.

Learning grouping can be formed based one or a number of the following considerations:

- Similar ability grouping.
- Mixed ability grouping.
- Similar interests grouping.
- Common needs grouping.
- Friendship grouping.
- Sex-based grouping.

Grouping learners in a Science class has several advantages. They include:

- The individual learner’s progress and needs can easily be observed.
- The teacher-learner relationship is enhanced.
- A teacher can easily attend to the needs and problems of a small group.

Materials that were inadequate for individual work can now be easily shared.

- Learners can learn from one another.
- Cooperation among learners can easily be developed.
- Many learners accept correction from the teacher more readily and without feeling humiliated when they are in a small group rather than the whole class.
- Learners’ creativity, responsibility and leadership skills can easily be developed.
- Learners can work at their own pace.

The type of “grouping” that a teacher may choose may be dictated by:

- The topic or task to be tackled.
- The materials available.
- Ability of learners in the class (fast, average, slow).

## **Class size**

There is no method or approach to teaching that is appropriate to all lessons. A teacher should, therefore, choose wisely the method to use or a combination of methods depending on the nature of the topic or subtopic at hand.

## **Teaching methods**

There are a variety of possible methods in which a teacher can help the learners to learn. These include:

- a) Direct exposition
- b) Discovery or practical activity
- c) Group, class or pair discussion
- d) Project method
- e) Educational visit or field trips
- f) Teacher demonstration
- g) Experimentation or research

The particular technique that you may choose to use is influenced by several factors such as the:

- Particular group of learners in the class.
- Skills, attitudes and knowledge to be learned.
- Learning and teaching aids available.
- Local environment.
- Teacher's personal preference
- Prevailing weather condition.
- Requirements of Science syllabus

### **(a) Direct exposition**

This is the traditional way of teaching whereby the teacher explains something while the learners listen. After the teacher has finished, the learners may ask questions. However, in a competence-based curriculum, this technique should be used very minimally.

### **(b) Guided Discovery**

In this technique, encourage learners to find out answers to problems by themselves. You do this by:



- Giving learners specific tasks to do. Giving learners materials to work with.
- Asking structured or guided questions that lead learners to the desired outcome. Sometimes learners are given a problem to solve and then left to work in an open-ended manner until they find out for themselves.

This is the most preferred method of teaching in the implementation of Competency- Based curriculum.

### **(c) Group or class discussion or pair work**

In this technique, you and learners interact through question and answer sessions most of the time. Carefully select your questions so that learners are prompted to think and express their ideas freely, but along a desired line of thought. The method leads learners from the known to unknown in a logical sequence; and works well with small groups. The method boosts confidence in learners and improves interpersonal and communication skills.

The main disadvantage of this method is that some learners may be shy or afraid to air their opinions freely in front of you or their peers. It may give them more confident learners a chance to dominate over others.

### **(d) Project method**

In this approach, you organize and guide a group of learners or the whole class to undertake a comprehensive study of something in real life over a period of time such as a week or several weeks.

Learners using the project method of studying encounter real life problems, which cannot be realistically brought into a normal classroom situation. A project captures learners' enthusiasm, stimulates their initiative and encourages independent enquiry. If you are using the project method, ensure that the learners understand the problem to be solved and then provide them with the necessary materials and guidance to enable them carry out the study.

The main disadvantage of this method is that if a project is not closely supervised, learners easily get distracted and therefore lose track of the main objective of their study. Studying by the project method does not work well with learners who have little or no initiative.

### **(e) Educational visits and trips/nature walks**

This is a lesson conducted outside the school compound during which you and the learners visit a place relevant to their unit of study. An educational visit/ or nature walk enables learners to view their surroundings with a broader outlook that cannot be acquired in a classroom setting. It also allows them to learn practically through first- hand experience. In all “educational visit or nature walk lessons”, learners are likely to be highly motivated and you should exploit this in ensuring

effective learning. However, educational visits are time consuming and require a lot of prior preparation for them to succeed. They can also be expensive to undertake especially when learners have to travel far from the school.

### **(f) Demonstration lessons**

In a demonstration, you or a laboratory technician show the learners an experiment, an activity or a procedure to be followed when investigating or explaining a particular problem. The learners gather around you where each learner can observe what you are doing. It is necessary to involve the learners in a demonstration, for example by:

- Asking a few learners to assist you in setting up the activity.
- Requesting them to make observations.
- Asking them questions as you progress with the demonstration.

This will help to prevent the demonstration from becoming too teacher-centred.

When is a demonstration necessary?

You may have to use a demonstration, for example when:

- The experiment or procedure is too advanced for learners to perform.
- The experiment or procedure is dangerous.
- The apparatus and materials involved are delicate for learners to handle.

Refer to learner's book page 1 to 21

Learn about	Key inquiry questions
<p>Learners should investigate their bodies to identify they have different parts, each has a name and they are connected. They should learn about this by talking, examining, and investigating joints and muscles on their own bodies.</p> <p>They should learn how they can move and explore this by making models and charts to show how the bones and joints work. They should learn how to record through measuring the length of arms and legs and draw round their longest finger when it is straight and bent to identify the bones and muscles. They should learn that we have similarities but each person is slightly different by comparing their own with other children.</p> <p>They should learn that there are parts of the body inside that we cannot easily see, and these work by muscles moving. They should talk about what is meant by 'exercise' and that use of muscles and bones makes them stronger.</p> <p>They should learn how to keep their bodies healthy through washing which removes dirt where germs live. They should learn how to clean their body, and experiment with soap and water to demonstrate basic hygienic practices including the use of the latrines and toilets.</p>	<ul style="list-style-type: none"> <li>• What are the main parts of the body?</li> <li>• How are bones, joints and muscles used for movement?</li> <li>• How do you keep your body clean?</li> <li>• How do you use the latrine and keep it clean?</li> <li>• Why do we wash our hands after using the latrine?</li> </ul>

Learning outcomes		
Knowledge and understanding	Skills	Attitudes
<ul style="list-style-type: none"> <li>Identify different parts of the body.</li> <li>Understand the role of bones, joints and muscles in movement and the importance of healthy exercise.</li> <li>Understand how to keep the body clean.</li> <li>Understand proper use of the toilet and latrine.</li> </ul>	<ul style="list-style-type: none"> <li>Practice basic hygiene.</li> <li>Practice measuring and comparing body parts.</li> </ul>	<ul style="list-style-type: none"> <li>Appreciate the importance of body parts and appearance.</li> <li>Value the importance of keeping the body clean.</li> <li>Appreciate differences in body parts.</li> </ul>
<p><b>Contribution to competencies:</b></p> <p>Critical thinking: keeping the body clean and in understanding differences among humans.</p> <p>Co-operation: working in groups.</p>		
<p><b>Links to other subjects:</b></p> <p>Physical Education.</p> <p>Life Skills: Basic hygiene practice.</p>		

## Introduction to the unit

This unit is about parts of the body and hygiene. It addresses different parts of the body and how they are cleaned using different materials. It also addresses how bones joint and muscle coordinate to bring about movement. It tries to emphasize the importance of exercise to learners. Learners should also be in a position to differentiate the three types of toilets, their uses and some of the good habits that needs to be practiced when using a toilet.

Hygiene is more than just being clean and is defined as the many practices that can help people stay healthy. Through practising good personal hygiene, one can prevent him or herself from diseases. Good personal hygiene also helps people feel good about themselves and their bodies. Cleanliness is an important issue and poor hygiene is seen as unacceptable and unhealthy within the society.

Good hygiene includes washing our body especially hands, hair, brushing and flossing teeth, washing legs, cutting fingernails, proper use of toilets and regular exercises. These practices reduce threat of bacteria that constantly reside on the body. While a certain amount of bacteria are harmless, and even beneficial, to the body, a build-up of bacteria can harm a person's health and result to high cost of treating the illness.

Learners should also be in a position to differentiate the three types of toilets, their uses and some of the good habits that need to be practised when using a toilet.

### **1. Co-operation**

Encourage learners to work as a team through group discussions. Allow learners to freely interact with one another. Let them associate with one's culture and abilities through resource sharing and exchange of ideas. The principle of co-operation should be listening to understand but not listening to respond. All learners should be given equal opportunities.

### **2. Communication**

During group discussion, encourage learners to share their opinions, suggestions and ideas freely. This way they will build on their language command as well as ability to participate in discussions. Ask them questions and give them a chance to attempt answering in the simplest way possible. This way, they will build on their confidence and soon develop the love and passion for the subject. Allow some room for learners to make mistakes and then correct them in nice way lest they will feel demoralized.

### **3. Critical and creative thinking**

Use probing questions during the lessons to elicit critical thinking in learners. Help them develop a thinking culture as they try to relate the unit with the questions given to them. These questions should however trigger the idea of what they should expect from the unit. Use videos, pictures and photographs to make learners discuss the activities therein. Ask learners to come up with diagrams that illustrate learning aspects which encourages creativity.

#### 4. Culture and identity

Make learners to research on ways in which they can use the knowledge acquired from the unit in improving the living conditions of their communities. The greatness of a nation lays in the ability of its people to integrate skills and knowledge with national development and growth. Learners should know that knowledge and culture are mutually inclusive.

#### Cross cutting issues

##### 1. Environmental awareness and sustainability

Learners should endeavor to keep and maintain a clean environment. By doing this they not only prevent diseases but the environment for sustainability purposes.

##### 2. Peace education

Throughout the unit, learners are actively involved in discussing issues as a group. Learners should be made aware of the need to accommodate everyone's ideas and opinions. Through discussions they will at times agree or disagree on issues at hand. They should be made to embrace the views of others and treat them as a learning process. Any form of intolerance should be highly condemned.

##### 3. Life skills

The knowledge of hygiene and diseases is important in life. Learners should be sensitized on the need to maintain personal hygiene to prevent diseases. They should actively participate in communal activities such as: anti-jiggers campaigns or cleaning exercises. Involve learners in activities that foster coherence, respect, gender inclusivity and patriotism.

#### Meaning of new words

- **Joints**- any part of the body where two bones join or meet.
- **Muscles**- a tissue in the body that tightens or relaxes to bring about movement.
- **Hygiene**-the state of keeping ourselves or our surrounding clean to prevent diseases.
- **Cleanliness**- a state of being clean.
- **Diseases**- an illness that occurs to people as a result of an infection.

- **Habit-** something that you often do regularly
- **Toileting-** a place where we go to relieve ourselves. It mostly has water to flush the waste.
- **Latrine-** A simple toilet with a hole in the ground.
- **Urinal-** a place where men and boys go to urinate.

## 1.1 Parts of the body and hygiene

### Activity 1.1: Parts of the body

Refer to Learner's Book pages 1-6

#### As a class

1. Take all the learners to the playground or school compound.
2. Draw a single line and let all learners line up.
3. Ask for four volunteers ( Two boys and two girls).
4. Let them sing while touching their body parts i.e.  
 Head, legs and toes x2  
 Shoulders, knees and feet x2  
 Eyes, nose and mouth x2
5. Ask learners to create their own version of the song and sing while touching the parts mentioned to a friend.

#### In pairs

Let the learners play a game of naming parts of the body. Let one learner point at her/his part of the body as the partner names the parts pointed. Allow the learners to change roles and repeat the activity.

#### Individually

1. Let learners join the dots of the diagram on the Learner's Book.
2. Give learners a chance to ask questions related to the parts of the body.

## Lesson assessment

- **Observation**

Listen to the learners as they name the parts as their partners touch them.

- **Conversation**

Talk to pairs to check if their partners named the parts of the body correctly.

- **Product**

Check if they can identify the different parts of the body correctly.

## Answers to check your progress 1 a

Refer to learner's book page 6

1. a. 2 , b. 2 , c. 10, d. 2, e. 10
2. Neck, hands, legs
3. Joints

## 1.2 Uses of bones, joints and muscles

### Activity 1.2

Refer to Learner's Book pages 7-10

#### Class activity

1. Invite two learners to walk from one corner to the door of the class as others observe them.
2. Let them repeat the activity.
3. Ask the learners what they have observed.

#### In groups

1. Let the learners measure the length of the arms and legs of their partners when stretched and bent.

Draw the following table on the board and ask learners to record measurements in the board.



Parts of the body		Length ( Size of string)
Arm	Stretched	
	Bent	
Leg	Stretched	
	Bent	

2. Ask the following questions;
  - a) What makes your arm and legs to stretch?
  - b) How are you able to run, jump, skip or walk?
3. Ask learners to trace their longest finger when stretched and when bent on a drawing paper.
4. Allow them to compare their diagrams with other class members.
5. Help learners understand why the lengths differ when stretched and bent.

### **As a class**

1. Invite a puppeteer to class. Let the learners observe the movements of the puppet.
2. Ask them to compare the movable parts of the puppet and their body parts. Ask them these questions:
  - a) Do they move the same?
  - b) What makes the parts move?
3. Give the learners a doll and let them observe it. Ask them to move its arms and legs.
4. Ask them these questions:
  - a) What makes the parts move?
  - b) How are the arms and legs attached to the main body?
5. Give learners a chance to ask questions related to bones, joints and muscles.
6. Get a box. Ask learners cut out parts of the human body from the carton box using the scissors and make holes at different points as shown learner's book
7. Let them join the body parts using pieces of strings. Ask them if the body parts are movable.
8. Ask them: How do we use bones, joints and muscles for movement?

## Assessment opportunities

- **Observation**

Listen to the conversations to see that they have understood why the parts of the puppet are movable.

- **Conversation**

Ask them why body parts they made are movable.

- **Product**

Check if the learners can explain the fact that bones, joints and muscles help in movement.

### Activity 1.3: Importance of healthy exercises

Refer to Learner's Book pages 10-12

#### In groups

1. Let the learners look at the pictures and tell each other what they can see. Take some time to discuss the photos.
2. In groups ask the pupils to identify the health exercises shown in the pictures. Help them understand the importance of healthy exercises.
3. What can they see from the pictures? (Critical thinking)
4. Encourage learners to compose questions to the people in the photographs that would enable them to answer some ideas they are not certain about. For example:
  - a) What activities are the children doing in the pictures?
  - b) Why are the activities important?
  - c) Why should you do the activities everyday?
  - d) Name the activities you should do everyday to be healthy.
5. Give learners a chance to ask questions related to importance of healthy exercises.

## Assessment opportunities

- **Observation**

Listen to the conversations to see that they have understood that exercises are important

- **Conversation**

Talk to pairs and groups to check if they understand the importance of healthy exercises.

- **Product**

Look at the model they have made. Check the answer they have given when asked if the arms and legs of the man they have modelled can move.

Check the answers given by the learners on the check your progress.

### Answers to check your progress 1b

Refer to learner's book page 12

1. Joints and muscles.
2. Arms and legs, neck.
3. Joints and muscles.

### Activity 1.4: How to keep the body clean

Refer to Learner's Book page 13

#### In pairs

Ask the learners to look at the pictures shown and tell each other what they can see.

#### In groups

1. Let learners talk about:
  - a) How they keep their body clean.
  - b) What will happen if they don't clean their body.

- c) What will happen if they don't use soap to clean their bodies.
2. Choose one member of each group to do a class presentation of their findings.

## **Assessment opportunities**

- **Observation**

Listen to the conversations to see that learners can explain how they can use soap and water to keep their body clean.

- **Conversation**

Talk to pairs and groups to check if they understand the importance of keeping their body clean.

- **Product**

Look at the presentation they make to check if they know how to use soap and water to make their body clean.

## **1.3 Using toilets and latrines**

### **Activities 1.5, 1.6, 1.7 and 1.8**

Refer to Learner's Book pages 14-19

#### **In pairs**

1. Ask the learners to look at the picture on the Learner's Book.
2. Let them talk about what they can see in the picture.
3. Take sometime to discuss the photos. Ask the pupils about the people in the photos. What might they be saying? What can they say about what the toilets in their school?
4. Ask the learners the following questions.
  - a) Where do you go when you are pressed?
  - b) What do you think can happen if we do not use toilets?

## Tour of the school to explore toilets

1. Arrange learners in groups of not more than 4. Consider which group may need extra supervision according to their learning behavior needs. Accompany them to the latrines and the urinals at school.
2. Ask them the following questions:
  - a) Where are the toilets or latrines located?
  - b) Are they near classrooms or far from the classroom and offices?
  - c) Why is it so?
3. Give learners a chance to ask questions related to use of toilets and latrines.

### In groups

Ask the learners to look at the pictures in activity of toilets shown on learners book and identify the type of toilet found in their home and at school.

### In pairs

Ask the learners to look at the pictures on the Learner's Book page 16. Ask them to talk about who used the toilet properly and how they use latrines at home and at school.

### In groups

Ask the learners to look at the pictures in activity 1.8 on good habits when using toilets and urinals. Ask them to talk about the pictures. Read for the learners the words in the picture on reasons for washing hands after using the toilet.

<b>Good habits</b>	<b>Bad habits</b>
Knocking the door of a toilet or latrine before entering.	Relieving ourselves outside the toilet or latrine.
Using the toilet or latrine hole properly.	Not using the toilet or latrine hole properly.
Cleaning the toilets and latrines daily.	Disposing tissue papers on the floor of the toilet or latrine.
Washing hands after visiting the toilets or latrines.	Leaving the toilets and latrines dirty or not flushing toilets after use.

## Assessment opportunities

- **Observation**

Listen to the conversations to see that they can explain how to use a toilet and good habits when using the toilets.

- **Conversation**

Talk to pairs and groups to check if they understand the importance of keeping the toilet clean and ask them why its important to wash hands after visiting the toilet.

### Answers to check your progress 1c

Refer to learner's book page 19

1. (a) Good habit (b) Bad habit
2. Clean and spray them.
3. Water, soap, detergents etc.

## 1.4 Washing hands

### Activity 1.9

Refer to learner's book page 20

1. Organize learners into groups.
2. Give each group a picture charts showing how to clean hands.
3. Let them study the pictures and say how to clean hands.
4. Demonstrate to learners how to properly clean their hands using soap and water.
5. Let learners role play how to wash their hands.

### Answers to check your progress 1d

Refer to learner's book page 21

1. They become dirty.
2. In the nails.
3. Soil, dirty water etc.

Refer to learner's book page 22 to 42

Learn about	Key inquiry questions
<p>Learners should group plants and animals by their observable characteristics to develop an early understanding of how some animals and humans depend on plants for food.</p> <p>They should learn how to examine local plant leaves and compare them for similarities and differences through discussion with each other and adults, including parents. They should learn how to observe and name local animals, including birds and wild animals, and the names of common plants. They should learn how to observe and talk about the differences in size and shape.</p> <p>Learners should observe the plants that they eat, where they grow, and talk about how some animals only eat plants, or some parts of them. They should learn about how food provided by plants (fruit and vegetables) is essential to keep humans and some animals alive. They should learn about where different plants grow well and where animals make homes in plants and have colours that provide protection against other animals.</p>	<ul style="list-style-type: none"> <li>• Why do some plants grow in one place and not in another?</li> <li>• How are the plants and animals around the school different from or similar to plants and animals in other parts of the World such as where it is very cold or in the desert?</li> <li>• Why do animals eat some plants and not others?</li> <li>• How could we find out which plants a goat likes best?</li> <li>• How could we find out which plant or parts of a plant the children in the class like/dislike?</li> </ul>

<b>Learning outcomes</b>		
<b>Knowledge and understanding</b>	<b>Skills</b>	<b>Attitudes</b>
<ul style="list-style-type: none"> <li>Identify plants and animals in their locality and their importance.</li> </ul>	<ul style="list-style-type: none"> <li>Closely observe and identify different animals and plants.</li> <li>Group plants and animals according to their observable characteristics.</li> </ul>	<ul style="list-style-type: none"> <li>Appreciate the relationship between plants and animals.</li> </ul>
<p><b>Contribution to competencies:</b></p> <p>Critical and creative thinking: understanding how animals depend on plants to keep them alive.</p> <p>Co-operation and communication: grouping of plants and animals.</p> <p>Communication: in discussions.</p>		
<p><b>Links to other subjects:</b></p> <p>Social studies: Environment.</p> <p>TVET: Food and nutrition.</p> <p>Environment and sustainability: Identification of plants and animals.</p>		

## **Introduction to the unit**

This unit is about plants and animals. It addresses different types of plants, parts of plants liked and those disliked by children. The unit also relates similarities and differences observed in plants found in local areas and those plants found in other parts of the world. By studying this unit the learner will gain knowledge on different types of plants and how they are of great importance to our lives. The unit also outlines various types of animals within our surroundings and how they compare with those of other parts of the world. Learners will gain knowledge on how to differentiate animals from local areas and those from other parts of the world and how they are of importance to both human beings and other animals lives.

Plants and animals are both living things. As living things, they both breathe, take in nutrients and grow. However, there are many differences observed between plants and animals. This unit will enable learners to apply their knowledge on plants and



animals they have come across or interacted with both at home and at school. They will investigate different types and parts of plants, how plants within their surrounding compare to those in other parts of the world and the parts of plants they like and dislike. The unit also creates awareness of the importance of science knowledge in improving learners' knowledge on plants and animals. At the end of this unit, learners will have acquired skills in differentiating animals within their surrounding both in naming and categorising them as either domestic or wild animals and where they are mostly found.

## **Competency to be developed**

### **1. Co-operation**

Encourage learners to work as a team through group discussions. Allow learners to freely interact with one another. Let them associate with one's culture and abilities through resources sharing and exchange of ideas. The principle of co-operation should be listening to understand but not listening to respond. All learners should be given equal opportunities irrespective of their abilities. Ensure every learner enjoys the learning experience.

### **2. Communication**

During group discussion, encourage learners to discuss in English. This will help learners build on the command for the language as well as ability to participate in other discussions. Ask them questions and give them a chance to attempt answering in the simplest way possible. This will help learners build on their confidence and soon develop the love and passion for the subject. Allow some room for learners to make mistakes and correct them in a nice way lest they will feel demoralized..

### **3. Critical and creative thinking**

Introduce the unit by posing general questions to the learners. Let learners try to look for the answers to these questions posed. This will make them develop a thinking culture as they try to relate the unit with the questions given to them. These questions should however trigger the idea of what they should expect from the unit. Present pictures, charts and photographs and make learners discuss the activities in those presented teaching aids as they give out their findings. This will build their creativity in thinking.

#### 4. Culture and identity

Make learners to research on ways in which they can use the knowledge acquired from the unit in improving the living conditions of their communities. The greatness of a nation lies in the ability of its people to integrate skills and knowledge with national development and growth. Learners should know that knowledge and culture are mutually inclusive.

#### Cross cutting issues

##### 1. Environmental awareness and sustainability

Make learners understand that plants and animals form the largest part of our environment. Let them know destruction of plants leads to destruction on our environment. Discourage learners from cutting plants and killing animals. Encourage learners to always plant trees at home and water them for good growth. Learners should also be encouraged to take care of their animals at home and protect them from causing harm to peoples crops.

##### 2. Peace education

Throughout the unit, learners are actively involved in discussing issues as a group. Learners should be made aware of the need to accommodate everyone's ideas and opinions. Through discussions they will at times agree or disagree on issues at hand. They should be made to embrace the views of others and treat them as a learning process. Any form of intolerance should be highly condemned.

##### 3. Life skills

Learners should be sensitized on the need to conserve our environment. They should actively participate in activities such as: National tree planting day. Learners should be made to understand the need to embrace one another regardless of their cultural background or nationality. Involve them in activities that foster coherence, respect, gender inclusivity and patriotism.

#### Meaning of new words

- **Wild-** animals or plants that that live or grow independently of people in natural conditions.
- **Similarities** - looking or being almost, but not exactly.
- **Differences-** the way things are not the same.
- **Poisonous-** very harmful and can cause illness or death.

## 2.1 Plants

### Activity 2.1

Refer to Learner's Book pages 22-24

#### In groups

Ask the learners to look at the photos shown on the learner's book. From the pictures, ask the learners to name the plants and identify those that are found near their home and those near their school.

#### Nature walk

1. Arrange the learners in groups. Walk with them in the school compound. Let them observe the plants in the school compound and name them.
2. Ask them the plants they know of.
3. Give learners a chance to ask questions related to plants.

#### Assessment opportunities

- **Observation**

Listen to the conversations to see that they can identify the plants shown in the pictures.

- **Conversation**

Talk to pairs and groups to check if they understand the features of plants and if they can name plants found in the school compound.

### Activity 2.2: Parts of a plant

Refer to Learner's Book pages 25-26

#### In pairs

Ask the learners to look at the picture. Let them identify the parts of a plant shown in the picture.

A-Flower, B-fruit, C-leaf, D-branch and E-roots

## **Nature walk**

1. Walk around the school compound with the learners. Let them look at the plants around. Name the parts of a plant.
2. Give learners a chance to ask questions related to parts of a plant.

## **Assessment opportunities**

- **Observation**

Listen to the conversations to see that they can name the parts of the plants they saw.

- **Conversation**

Talk to pairs and groups to check if they understand the parts a plant.

## **Answers to check your progress 2a**

Refer to Learner's Book page 26

1. (a) Acacia  
(b) Cactus  
(c) Water lily  
(d) Water hyacinth

## **Activity 2.3: Plants that we eat**

Refer to Learner's Book page 27-30

### **In pairs**

1. Let learners look at the pictures. Let them name the parts as the plant and identify which parts of a plant they are from.
2. Let them play a game of naming plants.
3. Let their friend point at a picture as the other one names it.

## In groups

1. Ask the learners to look at the pictures shown in the learner's book.
2. Let them talk about the parts of plants that they eat raw and those cooked at home and school.
3. Ask them to make a list of plants cooked before eating and those eaten raw.

<b>Plants eaten when raw</b>	<b>Plants eaten when cooked</b>
Mango	Kales
Orange	Spinach
Watermelon	Beans
Banana	Pumpkin
Apple	Maize
Avocado	Potatoes
Pawpaw	Peas

4. Give learners a chance to ask questions related to plants that we eat.

## Assessment opportunities

- **Observation**

Listen to the conversations to see that they can name the plants eaten while raw and those eaten while cooked.

- **Conversation**

Talk to pairs and groups to check if they understand why some plants are eaten raw and others are eaten while cooked.

## Answers to check your progress 2b

Refer to Learner's Book page 32

<b>Plants that we eat</b>	<b>Plants we do not eat</b>
a. Peas	a. Papyrus reeds
b. Bananas	b. Cactus
c. Maize	c. Napier grass
d. Beans	d. Hibiscus

e. Kales	e. Acacia
f. Arrow roots	f. Flower
g. Carrots	g. Sisal

## 2.2 Differences and similarities in plants from local and other parts of the world

Refer to Learner's Book page 33

### Activity 2.5:

Refer to Learner's Book page 33-34

#### In groups

1. Let the learners look at the pictures on the learner's book.
2. Ask them to talk about the pictures and identify the similarities and differences of local plants and those of other parts of the world.
3. Ask them these questions:
  - a) Do their leaves have the same shape?
  - b) Do their leaves have the same size?
  - c) Are the plants the same?
  - d) Why are they different?

#### Assessment opportunities

- **Observation**

Listen to the conversations to see that they can identify the differences and similarities in plants from local and other parts of the world.

- **Conversation**

Talk to pairs and groups to check if they understand why plants vary in different habitats.

## Answers to check your progress 2c

Refer to Learner's Book page 34

1. Acacia
2. Cool places

## 2.3 Reasons why animals feed on some plants and not others

### Activity 2.6

Refer to Learner's Book page 35-36

#### In groups

1. Let the learners talk about the pictures on the learner's book.
2. Ask them these questions:

- a) Why do animals feed on some plants and not others?

**Answer:** Some plants are poisonous, others have thorns and others have a bad smell.

- b) Which plants do animals feed on and which ones do they avoid?

**Answer:** Grass, plants leaves and shrubs. Animals with thorns

#### Field visit

Organise a visit to a nearby farm. Let learners observe what cows, goats and sheep feed on. Ask them questions such as:

- a) What do cows feed on?
- b) What do goats feed on?
- c) What do sheep feed on?
- d) Which plants do goats feed on and cows do not feed on?

## Assessment opportunities

- **Observation**

Listen to the conversations to see that they can identify plants that animals feed on and those that they avoid and explain why.

- **Conversation**

Talk to pairs and groups to check if they understand why animals eat some plants and not others.

## **2.4 Plants or parts of plants children like and dislike**

Refer to Learner's Book page 37

### **Activity 2.7**

1. Show learners pictures of different plants and their parts.
2. Let learners say if they like them or not.
3. Ask learners why they like or dislike some plants and their parts.
4. Guide learners in filling a table like the one in the learner's book.
5. Assist learners in singing the song suggested in the learners book as a fun corner.

## **2.5 Animals**

Refer to Learner's Book page 39-40

### **Activities 2.8 and 2.9**

#### **In pairs**

1. Ask the learners to name the animals shown in the pictures.
2. Ask them these questions:
  - a) Which animals are found at home?
  - b) Which animals are not found at home?
  - c) Where do animals not found at home live?
  - d) What is the other name of animals found at home?
  - e) What is the other name of animals found in the jungle?

#### **In groups**

1. Organise learners in groups and show them pictures of animals talking shelter under plants and let them discuss these questions:



- a) How are plants important to animals? (Food and shelter)
  - b) How are animals important to us? (Food, transport, workforce, sports, skin, companionship and security)
2. Give learners a chance to ask questions related to animals and plants.

### **Assessment opportunities**

- **Observation**

Listen to the conversations to see that they can identify animals found at home and those not found at home.

- **Conversation**

Talk to pairs and groups to check if they understand domestic and wild animals and their importance.

### **Answers to check your progress 2d**

Refer to Learner's Book page 42

1. Check learners' answers on the importance of animals to human beings.
2. A dog
3. Check learners' answers on animals that give us food eg hen, cows, goats, sheep
4. Domestic

Refer to learner's book page 43 to 63

Learn about	Key inquiry questions
<p>Learners should investigate the sources of light and sound. They can do this by talking about the common sources of light such as sun, moon, lamp, candles, electric bulbs etc. and sources of sound e.g. beating of a drum, ringing of bell, calling out others etc. They may also perform simple activities on common sources of light and sound.</p> <p>They should learn that they have five senses and which organs allow us to see, hear, smell, taste and feel.</p> <p>Children should investigate individually and in small groups how light, sound, smell, taste and touch influence how good their senses are, and what happens when they are deprived of a sense. For example, blindfolding and wearing gloves will effect sight and touch. They should learn about how light and sound travel to the eyes and ears and that we use a combination of senses to understand the world around us. Some animals rely on one sense more than others and they should learn by observation and talk about how dogs use their sense of smell, horses their ears, hawks their eyes.</p>	<ul style="list-style-type: none"> <li>• How do we know where sound comes from?</li> <li>• How do we know where light comes from?</li> <li>• How many different sounds can we hear around the school?</li> <li>• How are sounds different in different places?</li> <li>• What happens to the light if eyes are closed?</li> <li>• How will you know if there is sugar in your tea?</li> <li>• What happens if your ears are closed?</li> </ul>

Learning outcomes		
Knowledge and understanding	Skills	Attitudes
<ul style="list-style-type: none"> <li>• Understand the role of the senses in daily life.</li> <li>• Understand sources of light &amp; sound in the environment.</li> </ul>	<ul style="list-style-type: none"> <li>• Use sense organs to closely observe the environment.</li> <li>• Develop different ways of recording what they find.</li> </ul>	<ul style="list-style-type: none"> <li>• Appreciate the importance of the five senses?</li> </ul>
<p><b>Contribution to competencies:</b> Critical thinking: understanding of roles of sense organs in their lives.</p>		
<p><b>Links to other subjects:</b> ICT: Images and graphics and use radios TV and mobile phones. Environment and Sustainability: Observing things around them.</p>		

## Introduction to the unit

This unit is about our senses. It addresses the five types of senses. By studying this unit the learner will gain knowledge on different types of senses and how they are important to our lives. Learners will gain knowledge on how to differentiate items in the environment using the senses.

Human beings have five basic senses: touch, sight, hearing, smell and taste. The sensing organs associated with each sense send information to the brain to help us understand and perceive the world around us. People also have other senses in addition to the basic five.

- Touch is thought to be the first sense that humans develop. Touch consists of several distinct sensations communicated to the brain through specialized neurons in the skin. Pressure, temperature, light touch, vibration, pain and other sensations are all part of the touch sense and are all attributed to different receptors in the skin.
- Sight, or perceiving things through the eyes, is a complex process.
- Hearing sense works via the complex labyrinth that is the human ear. Sound is funneled through the external ear and piped into the external auditory canal.

- Humans may be able to smell. They do this with the olfactory cleft, which is found on the roof of the nasal cavity, next to the “smelling” part of the brain, the olfactory bulb and fossa.
- The gustatory sense is usually broken down into the perception of four different tastes: salty, sweet, sour and bitter.

## **Competencies to be developed**

### **1. Co-operation**

Encourage learners to work as a team through group discussions. Allow learners to freely interact with one another. Let them associate with one’s culture and abilities through resources sharing and exchange of ideas. The principle of co-operation should be listening to understand but not listening to respond. All learners should be given equal opportunities irrespective of their abilities. Ensure every learner enjoys the learning experience.

### **2. Communication**

During group discussions, encourage learners to discuss in English. This way will build on the command for the language as well as ability to participate in other discussions. Ask them questions and give them a chance to attempt answering in the simplest way possible. This will help learners build on their confidence and soon develop the love and passion for the subject. Allow some room for learners to make mistakes and correct them in nice way lest they will feel demoralized.

### **3. Critical and creative thinking**

Introduce the unit by posing general questions to the learners. Let learners try to look for the answers to these questions posed. This will make them develop a thinking culture as they try to relate the unit with the questions given to them. These questions should however trigger the idea of what they should expect from the unit. Present pictures, charts and photographs and make learners discuss the activities in those presented teaching aids as they give out their findings. This will build their creativity in thinking.

### **4. Culture and identity**

Make learners research on different ways in which they can use the knowledge acquired from the unit in improving the living conditions of their communities. The greatness of a nation lies in the ability of its people to integrate skills and knowledge

with national development and growth. Learners should know that knowledge and culture are mutually inclusive.

## **Cross cutting issues**

### **1. Environmental awareness and sustainability**

Make learners understand that we use our sense to be aware of our environment. We should use our senses well to protect and conserve the environment.

### **2. Peace and values of education**

Throughout the unit, learners are actively involved in discussing issues as a group. Learners should be made aware of the need to accommodate everyone's ideas and opinions.

### **3. Life skills**

The senses we have, enables us to interact with others in every aspect of life.

## **Meaning of new words**

- **Nasal**- the nose.
- **Taste** - the sensation of flavour perceived in the mouth and throat on contact with a substance.

## **3.1 Sources of light**

Refer to Learner's Book page 43 - 44

### **Activity 3.1**

#### **In groups**

1. Let the learners look at the pictures shown on the learner's book and name the sources of light.
2. Ask them these questions:
  - a) What do the pictures have in common? (They are all sources of light)
  - b) Where do you think the light comes from? (the moon, Candle, Lamp, Sun, torch, bulb and fire).
  - c) What happens where there is no light? (we cannot see).

d) Which source of light do you use at home?(fire,lamp,bulb,candle,torch)

e) Which source of light gives us light during the day?

3. Give learners a chance to ask questions related to sources of light.

### **Nature walk**

Take the learners outside.

Let them identify the source of light used during the day. Ask them these questions:

a) What gives us light during the day?

b) What gives us light at night?

### **Assessment opportunities**

- **Observation**

Listen to the conversations to see that they can identify the sources of light.

- **Conversation**

Talk to pairs and groups to check if they understand the sources of light and the importance of light.

## **3.2 Sense of seeing**

Refer to Learner's Book page 45

### **Activity 3.2**

#### **In pairs**

1. Organise learners to work in pairs.

2. Let one partner close their eyes.

3. Let them change roles.

4. Let them ask their partners these questions:

- Are you able to see anything?

- What did you find out?

- Ask learners to come up with other games that touch on the sense of seeing.

## **In groups**

1. Ask all the learners to identify the organ they use in seeing and what helps them to see. Use these questions:
  - a) Which body organ helps us to see?
  - b) Can you see without light?
  - c) What is the importance of the sense of seeing?
  - d) How do you use your eyes everyday?
2. Give learners a chance to ask questions related to sense of seeing.

## **Game**

1. Organise learners in groups of five and let them play the blindfolding game.
2. Let each group select one member and blind fold him/her.
3. Ask the blindfolded learner to try looking for her group members.
4. Let the four members call the name of the one blindfolded learner as they move around him or her as he or she tries to catch them.
5. Let them change roles.

## **Assessment opportunities**

- **Observation**

Listen to the conversations to see that they can identify the organ used to see and differentiate different things such as colour, shape and size.

- **Conversation**

Talk to pairs and groups to check if they understand the sense of seeing and the role of light in seeing.

## **Answers to Check your progress 3a**

Refer to Learner's Book page 47

1. Sun, candle, fire, lamp.
2. Eyes.

3. a. Yellow b. Green c. Red

### **3.3 Sources of sound**

Refer to Learner's Book page 48

#### **Activities 3.3 and 3.4**

##### **In groups**

1. Take the learners outside.
  - Ask them to sing.
  - Ring a bell.
2. Ask the learners to name the sources of sound around the school and at home.

##### **In pairs**

1. Let them try making different sounds produced by different sources of sound and let their partner identify the sound.
2. Give learners a chance to ask questions related to the sources of sound.

#### **Assessment opportunities**

- **Observation**

Listen to the conversations to see that they can identify the sources of sound.

- **Conversation**

Talk to pairs and groups to check if they understand the sources of sound and the significance of each sound.

#### **Answers to check your progress 3b**

Refer to Learner's Book page 52

1. a. barking, b. meow, c. crowing, d. ringing, e. plucking, f. Chirping



### 3.4 Sense of hearing

Refer to Learner's Book page 53

#### Activity 3.5

##### In pairs

1. Let learners play a game of hearing in pairs.

##### Instructions:

1. Let your friend make different sounds as you listen.
2. Tell your friend the type of sound made.
3. Point to the direction where the sound is coming from.
4. Change roles and repeat the activity.

##### As a class

1. Let learners predict the kind of sound the following materials will make then drop the materials and listen to the sound it produces.
  - Spoon
  - Coin
  - Rubber
  - Book
  - Ruler
  - Stone
2. Blindfold the learners and drop each object and ask them to name the object that has been dropped.

##### Group work

1. Ask all the learners to identify the organ they use in hearing and the importance of the sense of hearing. Use these questions:
  - a) Which body organ helps us to hear?
  - b) What will happen if your ears are closed?
  - c) What is the importance of the sense hearing?

- d) How do you use your ears daily?
2. Give learners a chance to ask questions related to the sense of hearing.

### **Assessment opportunities**

- **Observation**

Listen to the conversations to see that they can identify the organ used in hearing and differentiate sounds produced by different things.

- **Conversation**

Talk to pairs and groups to check if they understand the sense of hearing and the organ used in hearing.

### **3.5 Sense of taste**

Refer to Learner's Book page 55

#### **Activity 3.6**

##### **In groups**

1. Let learners play a game of tasting things.
2. Put the following in a box:
  - Sugar
  - Salt
  - Passion fruit
  - Banana
  - Orange
  - Lemon
  - Sugarcane

##### **Instructions**

- a) Blindfold one member of each group and let him or her pick an item from a box and taste.

- b) Tell your group members what you have tasted and how it tastes.
  - c) Change roles until everyone has tasted an item from the box.
3. Ask them the following questions:
    - Which organ is used for tasting?
  4. Copy the table below on the board and allow one representative from each group to fill it.

Sweet things	Salty things	Bitter things	Sour things

### Individually

1. Let the learners taste the things shown on the Learners Book and draw a line to match the picture to the correct part of the circle.
2. Give learners a chance to ask questions related to the sense of taste.

### Assessment opportunities

- **Observation**

Listen to the conversations to see that they can identify different tastes.

- **Conversation**

Talk to pairs and groups to check if they understand the sense of taste and the organ used in tasting.

### 3.7 Sense of smell

Refer to Learner's Book page 60

#### Activity 3.8

##### In pairs

1. Organise learners to play a game of smelling. Provide the following things:
  - Mango
  - Paraffin
  - Soap
  - Stone
  - Chalk
  - Bean leaf or leaves with different smells
  - Flowers with different smells
  - Banana

##### Game rules

- a) Play a game of feeling things.
  - b) Let your friend blindfold you.
  - c) Smell whatever is brought to you one by one and say how it smells.
2. Identify what you have smelt.
  3. Ask these questions?
    - a) How does it smell?
    - c) Is it sweet?
    - d) Is it bad?
    - e) Does it have a smell?

##### As a class

1. Ask the learners to cover their noses and ask them to smell a rose or any flower.
2. Let the learners smell the same rose without covering their nose.

3. Ask them these questions:
  - a) Did you feel the smell when you covered your nose?
  - b) Did you feel the smell when you stopped covering your nose?
  - c) What brought about the difference?
  - d) Which organ do you use for smelling?
  - e) What is the importance of smelling?
  - f) What happens when you can't smell?
4. Give learners a chance to ask questions related to the sense of smell.

### **Assessment opportunities**

- **Conversation**

Talk to pairs and groups to check if they understand the sense of smelling and the organ used in smelling e.g. What should we do when smell something bad?

### **Answers to check your progress 3d**

Refer to Learner's Book page 62

1. Tasting, sight, hearing, smelling

### **3.6 Sense of touch**

**Refer to Learner's Book page 58**

#### **Activity 3.7**

##### **In groups**

1. Let learners play a game of feeling the following things:

Sand	Powder
Bean leaf	Sugar
Baking flour	Salt
Cold water	Warm water
Paper	Chalk powder
Stone	Duster

## **Game rules**

- a) Play a game of feeling things.
  - b) Let your friend blindfold you.
  - c) Touch and feel whatever is brought to you one by one and say how it feels.
2. Identify what you have touched.
  3. Ask these questions?
    - a) Is it cold?
    - b) Is it warm?
    - c) Is it rough?
    - d) Is it smooth?
    - e) Is it hard?
    - f) Is it soft?

## **As a class**

1. Give learners gloves and ask them to touch a leaf.
2. Let the learners touch the same leaf with a bare hand.
3. Ask them these questions:
  - a) How did you feel when you touched the leaves with gloves?
  - b) How did you feel when you touched the leaf without gloves?
  - c) What brought about the difference?
  - d) Which organ do you use for touching?
  - e) What is the importance of the sense of touch?
  - f) What happens when you can't feel things?
4. Give learners a chance to ask questions related to the sense of touch.

## **Assessment opportunities**

- **Observation**

Listen to the conversations to see that they can identify the things they have touched.

- **Conversation**

Talk to pairs and groups to check if they understand the sense of touching and the organ used in touching.

### **Answers to Check your progress 3 c**

Refer to Learner's Book page 59

1. a. Sweet b. Sour c. Sweet d. Salty
2. a. Rough, b. soft, c. rough

Refer to learner's book page 64 to 74

Learn about	Key inquiry questions
<p>Learners should investigate different weather conditions by observing and recording the effects of weather changes on human activities. They should learn about how the weather involves the sun, heat, rain and wind, and that it is not the same every day, keep a class weather log and devise ways in which they can measure the weather such as a rain gauge, measuring cloud cover using a mirror, wind speed, and the brightness of the sun, at different times during the day and over a period of more than a week.</p> <p>They should learn how to represent changes in the weather and how different aspects of the weather react together by using a camera or drawings. They should learn that the wind makes things move and create air currents by blowing or fanning and discuss how air is there but we cannot see it. They should learn how to capture air in a balloon and what the air is doing to the balloon.</p> <p>Learners should start to consider that some things we cannot see but we can feel and hear, and that air pressure creates wind.</p> <p>As a result they should be able to describe what happens when weather changes and understand how changes in weather affect human activities.</p>	<ul style="list-style-type: none"> <li>• How does the weather change each day?</li> <li>• How would you know whether there will be rain?</li> <li>• How do you feel under different weather conditions?</li> <li>• How do we know that there is air around us?</li> <li>• Why do things move around us?</li> </ul>



Learning outcomes		
Knowledge and understanding	Skills	Attitudes
<ul style="list-style-type: none"> <li>• Know basic weather conditions.</li> <li>• Appreciate the presence of air and its movement in air currents / wind.</li> </ul>	<ul style="list-style-type: none"> <li>• Observe changes in weather.</li> <li>• Measure and record changes in weather.</li> <li>• Protect themselves against extreme weather conditions.</li> </ul>	<ul style="list-style-type: none"> <li>• Appreciate the importance of changes in weather.</li> <li>• Appreciate the presence of air and its movement in air currents / wind.</li> </ul>
<p><b>Contribution to competencies:</b>            Critical thinking: recording changes in weather.            Co-operation and communication: carrying out investigations.</p>		
<p><b>Links to other subjects:</b>            Social Studies: Climate.            Environment and Sustainability: Observing things around them.</p>		

## Introduction to the unit

This unit is about weather. It addresses different types of weather experienced in a certain area. It will enable learner to know basic weather conditions.

Weather is the day-to-day state of the atmosphere, and its short-term variation in minutes to weeks. People generally think of weather as the combination of temperature, humidity, precipitation, clouds, visibility, and wind.

Weather forecasters try to answer questions like: What will the temperature be tomorrow? Will it rain? How much rain will we have? Will there be thunderstorms? Today, most weather forecasts are based on models, which incorporate observations of air pressure, temperature, humidity and winds to produce the best estimate of current and future conditions in the atmosphere.

## **Competency to be developed**

### **1. Co-operation**

Encourage learners to work as a team through group discussions. Allow learners to freely interact with one another. Let them associate with one's culture and abilities through resources sharing and exchange of ideas. The principle of co-operation should be listening to understand but not listening to respond. All learners should be given equal opportunities irrespective of their abilities. Ensure every learner enjoys the learning experience.

### **2. Communication**

During group discussions, encourage learners to discuss in English. This way will build on the command for the language as well as ability to participate in other discussions. Ask them questions and give them a chance to attempt answering in the simplest way possible. This will help learners build on their confidence and soon develop the love and passion for the subject. Allow some room for learners to make mistakes and correct them in nice way lest they will feel demoralized.

### **3. Critical and creative thinking**

Introduce the unit by posing general questions to the learners. Let learners try to look for the answers to these questions posed. This will make them develop a thinking culture as they try to relate the unit with the questions given to them. These questions should however trigger the idea of what they should expect from the unit. Present pictures, charts and photographs and make learners discuss the activities in those presented teaching aids as they give out their findings. This will build their creativity in thinking.

### **4. Culture and identity**

Make learners to research on ways in which they can use the knowledge acquired from the unit in improving the living conditions of their communities. The greatness of a nation lies in the ability of its people to integrate skills and knowledge with national development and growth. Learners should know that knowledge and culture are mutually inclusive.

## **Cross cutting issues**

### **1. Environmental awareness and sustainability**

Make learners understand that the weather determines the environmental conditions in an area.

### **2. Peace and values of education**

Learners should understand that through discussions they will at times agree or disagree on issues at hand. They should be made to embrace the views of others and treat them as a learning process. Any form of intolerance should be highly condemned.

### **3. Life skills**

Learners should be sensitised on the need to conserve our environment through learning about weather.

## **4.1 Weather changes**

Refer to Learner's Book page 64

### **Activities 4.1 and 4.2**

#### **In pairs**

1. Let learners talk about what is happening in each picture.
2. Let them identify the weather conditions on the pictures. Discuss the weather conditions. Let the children note the umbrella and dress code during a rainy day.

#### **Nature walk**

3. Take the learners outside the classroom and let them observe weather.
4. Ask them these questions:
  - a) How is the weather today?
  - b) Is it sunny?
  - c) Is it windy?
  - d) Is it rainy?
  - e) Does the weather change?
  - f) How do you feel under different weather conditions?

## As a class

1. Show children pictures of different weather conditions. Let them identify the weather conditions in the pictures. Let the learners open the learner's book and observe the weather symbols. Discuss the weather symbols.
2. Give learners a chance to ask questions related to weather changes.

## Assessment opportunities

- **Observation**

Listen to the conversations to see that they can identify different weather conditions.

- **Conversation**

Talk to pairs and groups to check if they understand and can describe different weather conditions.

## 4.2: Recording of weather changes

Refer to Learner's Book page 66

### Activity 4.3

#### In groups

1. Let learners go out and observe weather on daily basis at school. Ask them to record them in a chart.
2. Copy the table below on the board and fill it for a week as shown below. Allow learners to answer the questions in learner's book page 67.

**Daily weather chart**

<b>Day</b>	<b>Morning</b>	<b>Afternoon</b>
Monday	Sunny	Rainy
Tuesday	Calm	windy
Wednesday	Cloudy	Windy
Thursday	Calm	Rainy
Friday	Sunny	Calm
Saturday	Sunny	Rainy
Sunday	Cloudy	Calm

3. Give learners a chance to ask questions related to recording weather changes.

## 4.3 How to tell weather conditions

Refer to Learner's Book page 68

### Activity 4.4

#### In pairs

1. Show learners picture charts containing different weather conditions.
2. Ask learners to name the weather conditions according to what is happening in the pictures.

#### Assessment opportunities

- **Observation**

Listen to the conversations to see that they can record weather changes.

- **Conversation**

Talk to pairs and groups to check if they understand weather changes and that weather is not the same everyday.

## 4.4: Air around us

Refer to Learner's Book page 69

### Activities 4.5 and 4.6

#### In pairs

1. Let the learners play a game of fanning themselves with books.
2. This will make them feel the air around them.
3. Let them ask each other these questions:
  - a) What did you notice?
  - b) What did you learn from the activity?
  - c) Can you see air?
  - d) How do we know there is air around us?

### **In groups**

1. Ask learners to use papers and sticks to make a fan.
2. Let them use them to fan themselves when it is hot.
3. Give learners balloons and ask them to blow them.
4. Let them compare a blown balloon and an empty balloon.
5. Ask them these questions:
  - a) What is the difference between the two balloons?
  - b) What brings about the differences?
  - c) What is put in the balloon to make them big in size?
  - d) What happens if you prick the balloon?
6. Give learners a chance to ask questions related to air.

### **Assessment opportunities**

- **Observation**

Listen to the conversations to see that they can explain that there is air around us.

- **Conversation**

Talk to pairs and groups to check if they understand that an empty balloon does not have air while an inflated balloon has air.

## **4.5: Effects and uses of moving air**

Refer to Learner's Book page 72

### **Activity 4.7**

#### **In groups**

1. Ask the learners to talk about the pictures shown in the Learner's Book.
2. Ask them these questions:
  - a) What do you think makes things move?
  - b) What is the name of moving air?
3. Ask learners to make propellers and kites and play with them.

4. Ask them these questions:
  - a) What do you think makes kites and propellers move?
  - b) Will they move when there is no wind?
5. Give learners a chance to ask questions related to moving air.

### **Nature walk**

6. Take learners outside the class and let them look at trees and objects like papers and clothes.
7. Let them observe them and say what is happening.

## **4.6 Uses of moving air**

Refer to Learner's Book page 73

### **In groups**

1. Ask the learners to look at the pictures in the Learners Book and talk about them.
2. Ask them to talk about how moving air is used in our daily lives.

### **Assessment opportunities**

- **Observation**

Listen to the conversations to see that they can identify the effects of moving air and explain its importance.

- **Conversation**

Talk to pairs and groups to check if they understand that moving air has effects and that moving air is useful.

### **Answers to check your progress 4a**

Refer to Learner's Book page 74

1. See.
2. Wind.
3. Air.

Refer to learner's book page 75 to 84

Learn about	Key inquiry questions
<p>Learners should know that not all soil is the same.</p> <p>They should feel the texture of the different components of soil, both individually and together and use sieves to develop their ideas that soil is composed of substances of different sizes, some of which can pass through the holes in a sieve.</p> <p>They should start to learn about mixtures and how they can be separated. They should learn through practical investigation that water is added to different combinations of soils (sand, gravel, clay) and how this changes its texture.</p> <p>Learners should have the opportunity to experiment and with different soil combinations when the solid is mixed with water. They should learn through close observation what happens when mud (clay) models dry out and talk about what has happened.</p>	<ul style="list-style-type: none"> <li>• How can we separate different soil particles?</li> <li>• Which particles mix easily with water?</li> <li>• How do you make moulds?</li> </ul>



Learning outcomes		
Knowledge and understanding	Skills	Attitudes
<ul style="list-style-type: none"> <li>Know that soil is made up of organic and inorganic substances.</li> </ul>	<ul style="list-style-type: none"> <li>Perform different activities, sieving, mixing, making moulds and modelling different objects.</li> </ul>	<ul style="list-style-type: none"> <li>Show curiosity as they learn how to mould the objects they make.</li> <li>Appreciate differences in soil particles.</li> </ul>
<p><b>Contribution to competencies:</b></p> <p>Critical thinking: modelling of objects, creativity while modelling. Co-operation and communication: while performing the activities.</p>		
<p><b>Links to other subjects:</b></p> <p>Environment and Sustainability: soil and plants</p>		

## Introduction to the unit

This unit is about introduction to soil. Learners will perform simple activities using soil for example, sieving, moulding and mixing.

Soils are complex mixtures of minerals, water, air, organic matter, and countless organisms that are the decaying remains of once-living things. It forms at the surface of land. Soil is capable of supporting plant life and is vital to life on earth.

Dirt is what gets on our clothes or under our fingernails. It is soil that is out of place in our world – whether tracked inside by shoes or on our clothes. Dirt is also soil that has lost the characteristics that give it the ability to support life.

Soil performs many critical functions in almost any ecosystem.

## Competency to be developed

### 1. Co-operation

Encourage learners to work as a team through group discussions. Allow learners to freely interact with one another. Let them associate with one's culture and abilities through resources sharing and exchange of ideas. The principle of co-operation

should be listening to understand but not listening to respond. All learners should be given equal opportunities irrespective of their abilities. Ensure every learner enjoys the learning experience.

## **2. Communication**

During group discussions, encourage learners to discuss in English. This way will build on the command for the language as well as ability to participate in other discussions. Ask them questions and give them a chance to attempt answering in the simplest way possible. This will help learners build on their confidence and soon develop the love and passion for the subject. Allow some room for learners to make mistakes and correct them in nice way lest they will feel demoralized.

## **3. Critical and creative thinking**

Introduce the unit by posing general questions to the learners. Let learners try to look for the answers to these questions posed. This will make them develop a thinking culture as they try to relate the unit with the questions given to them. These questions should however trigger the idea of what they should expect from the unit. Present pictures, charts and photographs and make learners discuss the activities in those presented teaching aids as they give out their findings. This will build their creativity in thinking.

## **4. Culture and identity**

Help learners research on ways in which they can use the knowledge acquired from the unit in improving the living conditions of their communities. The greatness of a nation lies in the ability of its people to integrate skills and knowledge with national development and growth. Learners should know that knowledge and culture are mutually inclusive.

## **Cross cutting issues**

### **1. Environmental awareness and sustainability**

Help learners to understand that plants and animals need soil in one way or another to survive. They should endeavor to protect and conserve soil.

### **2. Peace and values of education**

Throughout the unit, learners are actively involved in discussing issues as a group. Learners should be made aware of the need to accommodate everyone's ideas and opinions.

### 3. Life skills

Learners should be sensitized on the need to conserve soil.

#### 5.1: Collecting soils from different places

Refer to Learner's Book page 75

#### Activities 5.1, 5.2 and 5.3

1. Take the learners outside the classroom and allows them to work in groups.
2. Let them collect soil from different places such as:
  - Near the road
  - Playing field
  - Near a river
  - In the garden
  - Anthill
3. Let them put the soil on the paper.
4. Using their fingers let them feel each soil.
5. Ask them these questions:
  - a) Do the soil feel the same?
  - b) Do they have the same colour?
  - c) Which soil is rough?
  - d) Which soil is soft?
  - e) What is the colour of the soil? Do they have the same colour?
  - f) Do they have the same size of particles?

#### Playing with soil

1. Take the learners to a place where there is soil and let them draw on soil.
2. They can draw numbers or letters on soil.
3. They can draw shapes on soil or put their hands on the soil and draw the impression they leave on the soil.
4. Give learners a chance to ask questions related to soil.

## Assessment opportunities

- **Observation**

Listen to the conversations to see that they can identify the differences between soils after feeling them and identify the three types of soil.

- **Conversation**

Talk to pairs and groups to check if they can differentiate between the soils.

## Answers to check your progress 5a

Refer to Learner's Book page 79

1. True
2. a. soft, b. rough, c. soft

## 5.2 Mixing soils with water

Refer to Learner's Book page 80

### Activity 5.4

#### In groups

Let the learners carry out the following activity.

#### Materials

- Different soils (clay soil, sandy soil and loam soil)
- Containers
- Water
- Sieve

#### Procedure

1. Put the soil in different containers.
2. Sieve the soil. Which soil was able to pass through?
3. Mix the three types of soil with water.

4. Ask them these questions:
- Which one allows water to pass through easily?
  - Which soil mixes easily with water?
  - How does the three types of soil feel after mixing with water?
  - Which soil sticks together more?

### **Assessment opportunities**

- **Observation**

Listen to the conversations to see that they can identify the differences between soils. Can they tell which soil allows water to pass through quickly?

- **Conversation**

Talk to pairs and groups to check if they can explain why water passes through a certain type of soil easily and not the other.

### **Answers to check your progress 5b**

Refer to Learner's Book page 81

1. Sand
2. Clay
3. Clay

## **5.3 Modelling with soil**

Refer to Learner's Book page 82

### **Activity 5.5**

#### **In pairs**

1. Take the learners outside.
2. Let them collect different types of soil like clay, sand and gravel.
3. In pairs, let learners mix each type of soil with water to make dough (mud).

4. Ask them these questions:
  - a) Does all the soil make dough (mud)? Why?
  - b) From your observation, mention the soil that makes dough (mud) when mixed with water.
5. Give learners a chance to ask questions related to soil.
6. Let them choose the best soil that they can model with and use it to model numbers, letters and the objects shown in learner's book.
7. Ask them to leave the models to dry for three days.

### **Assessment opportunities**

- **Observation**

Listen to the conversations to see that they can identify the soil that makes the best dough that can be used for modelling.

- **Conversation**

Talk to pairs and groups to check if they can explain why they picked clay and not the other soil. Ask them questions such as:

- a) Why did you pick clay and not sand?
- b) Why did you pick clay and not gravel?

- **Product**

Check if they picked clay as the best soil to be used in modelling.

### **Answers to check your progress 5 c**

Refer to Learner's Book page 84

1. Gravel
2. Clay
3. Clay

Refer to learner's book page 85 to 101

Learn about	Key inquiry questions
<p>Learners should investigate the sources of water from rivers, lakes, wells, seas, boreholes, rain and that the evaporation of water results in formation of clouds that bring rain which is the main source of water.</p> <p>They should learn how to measure water, using containers of different sizes e.g. measuring cylinders, cups, bottles of various sizes to develop the idea of conservation of volume.</p> <p>They should learn about floating and sinking objects and collect objects of different sizes, mass and shape and put the objects in water and observe what happens. They should also predict which objects will float and which ones sink to develop early ideas about density.</p> <p>Children should learn about the use of water in turning wheels through investigation by connecting a syringe to a wheel via a tube. Let them put water into the syringe, then exert pressure onto the syringe to release water that turns the wheel to develop the idea of force.</p>	<ul style="list-style-type: none"> <li>• What are the sources of water?</li> <li>• How can we use less water?</li> <li>• What do we use water for?</li> <li>• How do we measure water?</li> <li>• How can we find which objects float and which ones sink in water?</li> <li>• How does water turn a wheel?</li> </ul>

Learning outcomes		
Knowledge and understanding	Skills	Attitudes
<ul style="list-style-type: none"> <li>Identify various sources and uses of water.</li> <li>Understand that some objects float while others sink in water.</li> <li>Understand how water turns water wheels.</li> </ul>	<ul style="list-style-type: none"> <li>Measure water using different containers.</li> <li>Investigate which objects float and which ones sink.</li> <li>Observe objects that float or sink.</li> <li>Perform the activity of using water to turn a wheel.</li> </ul>	<ul style="list-style-type: none"> <li>Appreciate the uses and need to conserve water.</li> <li>Show curiosity in measuring water and identifying sinking and floating objects.</li> </ul>
<p><b>Contribution to competencies:</b> Co-operation and communication: group work while carrying out activities.</p>		
<p><b>Links to other subjects:</b> Mathematics: Measuring. Social Studies: Sources of water. Environment and Sustainability: local water sources.</p>		

## Introduction to the unit

This unit is about water and wheels. Learners should be able to investigate which objects float and sink in water.

Learners have frequent experiences with objects floating and sinking in the bath, in a swimming pool or at the beach. They form understandings from an early age about these ideas and equally importantly the words used to describe them.

Learners tend to pay little attention to why things float or sink and may perform simple tests on objects in a tank of water without any understanding of the forces involved in why they float or sink. These can be quite challenging to identify and understand.

Learners commonly believe that:



- Heavy objects sink and light objects float regardless of their size, shape or the type of material used to make them.
- A true floating object must be wholly above the surface of the liquid.
- All objects that float must contain some trapped air and that is the only reason why they float.
- The amount of liquid in which the object floats matters somehow, i.e. an object will float higher in a larger volume or deeper liquid.

## **Competency to be developed**

### **1. Co-operation**

Encourage learners to work as a team through group discussions. Allow learners to freely interact with one another. Let them associate with one's culture and abilities through resources sharing and exchange of ideas. The principle of co-operation should be listening to understand but not listening to respond. All learners should be given equal opportunities irrespective of their abilities. Ensure every learner enjoys the learning experience.

### **2. Communication**

During group discussions, encourage learners to discuss in English. This way will build on the command for the language as well as ability to participate in other discussions. Ask them questions and give them a chance to attempt answering in the simplest way possible. This will help learners build on their confidence and soon develop the love and passion for the subject. Allow some room for learners to make mistakes and correct them in a nice way lest they will feel demoralized.

### **3. Critical and creative thinking**

Introduce the unit by posing general questions to the learners. Let learners try to look for the answers to these questions posed. This will make them develop a thinking culture as they try to relate the unit with the questions given to them. These questions should however trigger the idea of what they should expect from the unit. Present pictures, charts and photographs and make learners discuss the activities in those presented teaching aids as they give out their findings. This will build their creativity in thinking.

#### **4. Culture and identity**

Make learners to research on ways in which they can use the knowledge acquired from the unit in improving the living conditions of their communities. The greatness of a nation lies in the ability of its people to integrate skills and knowledge with national development and growth. Learners should know that knowledge and culture are mutually inclusive.

### **Cross cutting issues**

#### **1. Environmental awareness and sustainability**

Make learners understand that water is important for life on earth.

#### **2. Peace and values of education**

Learners should be made to embrace the views of others and treat them as a learning process. Any form of intolerance should be highly condemned.

#### **3. Life skills**

Learners should be made to understand the need to protect sources of water to prevent pollution.

### **6.1: Sources of water**

Refer to Learner's Book page 85

#### **Activity 6.1**

##### **In pairs**

1. Let learners look at the pictures shown on the learner's book.
2. Ask them to name the source of water shown and name other sources of water they know of. Ask them these questions:
  - a) Which source of water is found near your home?
  - b) Which source of water is found at school?
  - c) Which sources of water do you know?
3. Let them draw the source of water they use at home.
4. Give learners a chance to ask questions related to water.

## Assessment opportunities

- **Observation**

Listen to their conversations to see that they can identify the sources of water shown in the pictures.

- **Conversation**

Talk to pairs to check if they can explain what a source of water is and identify other sources of water not shown in the pictures.

## Answers to check your progress 6 a

Refer to Learner's Book page 87

1. Rain, well, river.
2. a. borehole b. rain c. river d. lake

## 6.2: Uses of water

Refer to Learner's Book page 88

### Activities 6.2 and 6.3

#### In groups

1. Let learners look at the pictures on the Learners Book and talk about what they can see. Can they identify what is happening in each picture?
2. Ask them the following questions:
  - a) How do you use water at home?
  - b) How do you use water at school?
  - c) How is water used in your community?
  - d) Assist learners to make a water wheel using locally available materials.
3. Let learners use the water wheel and see how it works.

## Assessment opportunities

- **Observation**

Listen to their conversations to see that they can identify the sources of water shown in the pictures.

- **Conversation**

Talk to each pair to check if they can explain what a source of water is and identify other sources of water not shown in the pictures.

## 6.3 Using water well

Refer to Learner's Book page 91

### Activity 6.4

1. Let learners in pairs look at the pictures in the learner's book to identify correct use of water.
2. Let them discuss how they use water at home.
3. Use their discussion to point out correct use of water.

## Answers to check your progress 6b

Refer to Learner's Book page 93

1. Closing taps when not in use.
2. Drinking, watering plants, children swimming, cooking food.

## 6.4 Measuring water

Refer to Learner's Book page 94

### Activity 6.5

#### Group activity

1. Get water, a measuring cylinder, containers of different shapes and sizes, and four containers of the same size and plastic bottles of different sizes.
2. Ask learners to fill all the containers with water.

3. Ask them the following questions:
  - a) Which containers hold more water?
  - b) Which containers hold less water?
4. Ask them to measure the amount of water that fill containers using the measuring cylinder.
5. Ask them these questions:
  - a) Do all the containers hold the same amount of water?
  - b) Which one holds more? Or less?
6. Ask them to fill a big container using small containers.
7. Ask them:
  - How many small containers do you use to fill a big container?
8. Let learners give examples of containers they use to store water at home.

### **Assessment opportunities**

- **Observation**

Listen to the conversations to see if they can tell that small containers hold less water compared to big ones.

- **Conversation**

Talk to each pair to check if they understand that water can be measured.

## **6.5 Floating and sinking**

Refer to Learner's Book page 96

### **Activities 6.6, 6.7 6.8 and 6.9**

#### **Pair work**

1. Ask learners to bring stones, bottle tops, pencil, rubber, ruler, and basin of water, piece of paper, nails, wooden blocks, coins and keys.
2. Ask them to work in pairs for activity 6.6. Let them place a stone gently on the surface of the water in the basin and observe what happens.

3. Ask them to place a piece of paper on the surface of water and observe what happens.
4. Let them place the remaining objects gently on water surface and observe what happens.
5. Ask them to record their observations in a table like this:

<b>Objects which float</b>	<b>Objects which sink</b>
a)	a)
b)	b)
c)	c)
d)	d)
e)	e)
f)	f)
g)	g)

6. For activity 6.8 and 6.9 as learners to work in groups. Let them To find out whether change in size, shape and weight can make an object to float or sink in water. Ask learners to:

To place a small stone on water and observe what happens.

Place a big stone on water and observe what happens.

Place a small and a large piece of big on water and observe what happens.

7. Ask them these questions:

Why did the stone sink and not the paper?

What makes an object to sink or float in water

8. Give learners a chance to ask questions related to floating and sinking of objects in water.

### **Assessment opportunities**

- **Observation**

Listen to the conversations to see if they can identify objects that float and sink in water.

- **Conversation**

Talk to each pair or groups to check if they understand that heavy objects sink in water and light objects float in water.

**Answers to check your progress 6c**

Refer to Learner's Book page 101

<b>Objects which float</b>	<b>Objects which sink</b>
Papers	Stone
Wooden block	Coins
Ruler	Keys