



Secondary

Geography 1

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

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

Each year comprises of Student's Book and teacher's Guide.

The Teacher's Guide provide:

- Full coverage of the national secondary school syllabus.
- A strong grounding in the basics of how to teach Geography as a subject, inclusive of helpful detailed notes.
- Clear presentation and explanation of Geographical concepts, theories and ideas
- Answers to variety of case studies, progress checks, comprehensive activities and exercises, often showing how Geography can be applied to tackle real-life situations.
- It provides opportunities for collaboration through group work activities.
- Clear, detailed and stimulating illustrations.



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



Secondary Geography 1

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Geography 1

Teacher's Guide



Teacher's Guide

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South Sudan

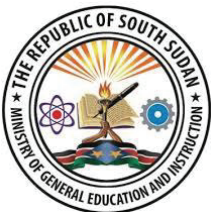
SECONDARY

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GEOGRAPHY

Teacher's Guide

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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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Guidance on teaching Secondary School Learners

Learning for secondary school learners is basically acquired through listening , reading, writing, creative and imaginative activities. It is through these activities that learners enhance various aspects of development which include: physical, cognitive , language, social, moral, spiritual, emotional, cultural and aesthetic.

It is imperative for teachers to realize that individual differences should be put into consideration when organizing activities for secondary school learners. This is in relation to their abilities, capabilities and potentialities.

This guide book provides hints for the teacher in relation to the activities learners can perform in order to cover specific content. Teachers are advised not to consider the hints suggested being exhaustive. They are instead expected to be creative and come up with more activities which can make learning more interesting for the learners.

It is important for teachers to note that the activities suggested for a specific content area varies in the level of complexity as we move from one level to another. The aspect is meant to cater for the development age levels of learners in terms of their abilities and capabilities.

Reasons behind Teaching Geography in Schools

Geography in secondary schools is important for learners to acquire knowledge about the distribution of world's physical features and their impacts to human activities.

Geography appreciates the diversity in nature and tries to grant learners with knowledge on how physical features are formed. Similarly they also learn how human activities contribute to change in climate and issues like environmental degradation among others.

As a career subject, geography has vast areas of specialization in the job industry giving the student a wide array of choices for his/her future aspirations. Examples of careers that learners may benefit from geography include aviation, meteorology, survey, tour guide among others.

Geography is an interesting subject to teach and teachers should ensure that the lessons are adventurous, lively and interactive by encouraging participation of the learners in the classroom.

UNIT 1: LANDFORMS IN AFRICA

CONTENT MAP

Knowledge and understanding	<ul style="list-style-type: none"> - Understand the plate tectonic theory . - Identify and describe the physical features of Africa and South Sudan . - Understand how physical processes have influenced their landscapes - Understand how underlying geology affects physical processes
Skills	<ul style="list-style-type: none"> - Evaluate the evidence for theories - Interpret maps to recognize physical features - Interpret local landscapes on the basis of their understanding of the processes
Attitudes	<ul style="list-style-type: none"> - Be thorough in their approach to evaluating evidence.
Competencies	<ul style="list-style-type: none"> - Critical thinking through the evaluation of evidence. - Communication in making presentations . - Co-operation in working in groups.
Key inquiry questions	<ol style="list-style-type: none"> 1. How were the lands (continents) formed? 2. What do you understand by plate tectonic and sea-floor spread theory? 3. Has the landscape that we see always looked the same? 4. How were mountains formed? 5. What subsequent forces have acted on the land? 6. Why doesn't the land surface look the same?

UNIT 1: LANDFORMS IN AFRICA

Introduction

The present day forms of land surface (landform) are a result of different earth surface processes that operated over long geological times.

Landforms are usually the first and easiest thing we observe when we study global change, the impact of human activities on our environment.

These may contain important clues to past processes related to global change and the human impact.

We need to improve and maintain the sustainability of our environment, as well as predict and reduce the negative impact of contemporary earth surface processes that lead to natural hazards (such as landslides).

In order for these to succeed we are required to have a basic understanding of the general configuration of landforms and of the surface processes, as well as environmental factors involved in their formation and evolution.

Landform evolution is an important aspect of earth sciences and involves complicated interaction among different physical processes and environmental factors.

These include underlying rock structures, tectonics, rock types, climate and climatic changes, and human activities, all occurring over a wide range of spatial and temporal scales.

However, because of the degree of complexity in spatial and temporal scales, long-term landform evolution cannot be observed directly. Further, the interacting processes involved are hard to infer from the limited temporal observations of present day forms.

Understanding landforms in Africa

Types of Earth Movements

The Structure of the Earth

An understanding of the layered nature of the earth is central to understanding plate tectonics and earth science. Geological processes include the movement of the continents, mountain formation, the worldwide distribution of earthquakes and volcanoes, aspects of evolution (*including the production of South Sudan's unique flora and fauna and the distribution of fossils*). All these depend on an understanding of plate tectonics, which is the very slow movement of solid continental plates across a plastic lower layer.

This unit also allows learners to explore how scientists construct understandings and explanations of things that they cannot directly observe. 'How can they know?' can be an important theme for study with this context.

Because learners usually observe only small changes in the earth's surface, the viewing of videos and animated websites showing dramatic land transformations alone are unlikely to change the learner's existing views. Learners should be introduced to, and practice using the idea, those small geological changes over a human timescale will result in very dramatic changes over geological time scales.

Learners' prior views should be identified and then their understanding should be guided and developed through discussion and hands-on activities. Opportunities to make models draw diagrams and to manipulate the models, to help learners explain their ideas, should be provided.

The construction of diagrams and models also assists learners to consider the unseen interior of the earth as part of the whole earth system. This will be more useful as opposed to their usual perspective, as an observer located on a very small region of the earth's surface.

After a preliminary discussion of the size of the earth and what could be inside, ask learners in small groups to draw on large sheets of paper a circle to represent a cross-section through the earth. Ask them to **imagine a tunnel** passing through the centre of the earth from under their feet and have them describe all the things they would encounter on the way to the centre. The questions below should be discussed but not answered prior to having the learners complete their posters showing the objects they think they would encounter.

Questions posed could include:

1. *How deep is the soil?*
2. *Where are the first rocks encountered?*
3. *Where would you find lava?*
4. *Where does lava come from?*
5. *What is it like in the centre of the earth?*

Learners can then show their posters to the class and discuss the common aspects. It is possible that some learners will have previously heard of terms such as the crust, mantle and the core. The posters can be kept for later reflection on how the learners' ideas may change after investigating this unit.

Earth Movements

- Learners explore the massive movements that are constantly shaping the earth-volcanoes erupting, trenches forming, continental plates colliding and sending mountain ranges.
- Learners learn how rocks provide clues to earth's history, structure, and geological activity. They build earth cross-sections to compare ocean and continental crusts. Learners investigate earth processes that support the continental drift and plate tectonics theories.

Crustal Earth Movements

This is displacement of the Earth's crustal rocks. They are brought about by tectonic forces e.g. tensional forces.

- Tensional forces operate along horizontal plane moving away from each other
- Compressional forces operate along horizontal plane moving towards each other.
- Shear forces which move past each other with unequal strength.
- Gravitational forces attracts things to the Earths Centre.

Types of Earth movements

Explain to the learners the main types of Earth movements

Horizontal & Vertical Earth movements

Practical Activity

Practical activity page 3

- Provide the learners with the requirements.(rubber band, a piece of mattress)
- Guide the learners through the procedure for the practical as indicated in their textbooks.

Causes of Earth Movements

Define different causes of earth movements to the learners.

- Movement of magma within the Earth's crust- *movement of magma with force pushing of crustal rocks occurs horizontally or vertically. When magma moves from its reservoir it results into either sudden or slow Earth movements where the crust of the Earth has shifted.*
- Gravitational force- *gravitational force of the Earth pulls crustal rocks into the empty spaces left after magma escapes from the reservoir, Earth movements will take place.*
- Convectional Currents within Mantle - *When convectional currents in the magma found within the mantle drag crustal rocks by friction.*

Horizontal currents cause horizontal movements while vertical currents cause vertical movements.

- (d) *Isostatic adjustment - the rising of continental plates to upset the state of balance between SIAL (continental crust made up of silica and aluminium) and SIMA (oceanic crust made up of Silica and magnesium) layers. The state of balance between the layers of SIAL and SIMA can be disturbed by the melting of continental sheets and the erosion on continents, thus the reduced weight on land causes continental mass rise, while oceanic masses sink.*

Activity 1.1

- Ensure the learners give the correct answers to the questions.

Expected Answers

1. Identify the main types of Earth movements.
 - a. *Horizontal Earth movements.*
 - b. *Vertical Earth movements.*
2. Discuss vertical Earth movements and the resulting effects.
Supervise the learners during discussion and ensure they give the correct answers to the question.
3. Design a poster to illustrate the different earth movements.
Guide the learners in designing the poster that illustrates different Earth movements from the knowledge they have attained.
4. Learners to discuss and support answers they provide with evidences per the earth movement they choose to be strongest

Theories explaining the formation of continents

The teacher can ask the learners whether they know what a theory is or even whether they have ever heard about any theory. Before introducing the theories to them.

Introduce the continental drift theory and plate tectonic theory and the evidences that support the theories to the learners.

Continental drift Theory

Continental drift is a theory that explained how continents shift position on Earth's surface. Presented in 1912 by Alfred Wegener, a geophysicist and meteorologist, continental drift also explains why animal and plant fossils look alike, and similar rock formations, are found on different continents.

The theory states that:

- The Earth was a single GIGANTIC land mass called **Pangaea**. It was surrounded by a huge ocean called Panthalassa whose floor was a mass of SIMA.
- Pangaea broke into two parts called Laurasia (Northern Hemisphere) which lay above the equator and Gondwanaland (Southern Hemisphere) which lay around south pole. These two were separated by a narrow ocean called **Tethys** (the present Mediterranean Sea).
- Laurasia broke into the Laurentian Shield and Fennoscandia (Europe, Asia and North America) and moved northwards to their present positions.
- Gondwanaland broke into Africa, Australia, South America, Antarctica, and the Indian subcontinent.
- Africa and the Indian subcontinent thereafter drifted northwards.

Evidence Supporting the Continental Drift Theory

1. The Western coast of Africa and the Eastern Coast of South America fits into a jigsaw.

2. Considerable displacement of rocks along some faults e.g. along the Great Glen Fault of Scotland.
3. The Cape fold belt and Buenos Aires folds resemble one another having East West trend.
4. Red Sea shores show evidence of having undergone lateral displacement, an indication that it was formed by movement of the Earth's crust.
5. There is evidence of ancient glaciation to the south of Equator in Africa, in Madagascar and in India. There are ancient glacial deposits found here suggesting these areas were once around the South Pole.
6. There is also evidence of sea floor spreading where the age of rocks in the middle of the ocean differs to those closer to the coast. For example, some of the younger rocks have been found in the center of oceanic plates and were still being found in areas such as Iceland and the oldest rocks were those nearest to the USA and Caribbean coast.

Plate Tectonic Theory

Plate tectonic theory is an improvement of the Continental Drift Theory. This theory suggests that the Earth crust/lithosphere (SIAL and SIMA) is a series of semi-rigid blocks called tectonic plates. These plates are separated from one another by distinct boundaries.

The theory states that:

The Earth's outer layer is fragmented into plates that are in constant motion. The movement's rate has been determined to be approximately 10-5 cm per year (2-6 inches per year), depending on location of the plates.

Progress check pg. 8

From the knowledge the learners have acquired in the evidences supporting the two theories. Have the learners prepare a summary that proves one evidence is much stronger than the other.

Plate Tectonics

The term plate tectonics refers to how the earth's surface is made up of plates. In geology, a plate is a large slab of rock, while tectonics is a word with Greek origin meaning 'to build'. According to this theory, the earth's crust is made up of plates on which the continents and oceans rest.

These plates are continually shifting because the surface beneath them – the hot, soft mantle – is moving slowly like a conveyor belt, driven by heat and other forces at work in the earth's core. The plates are moving approximately 1 centimeter (0.5 inches) to 15 centimeters (6 inches) per year in different directions.

Distribution

The Earth's crust is broken up into pieces called plates. Heat rising and falling inside the mantle creates convection currents generated by radioactive decay in the core.

The convection currents move the plates. Where convection currents diverge near the Earth's crust, plates move apart. Where convection currents converge, plates move towards each other.

The movement of the plates, and the activity inside the Earth, is called plate tectonics.

Plate tectonics cause **Earthquakes** and **volcanoes**.

The point where two plates meet is called a plate boundary. Earthquakes and volcanoes are most likely to occur either on or near plate boundaries.

Plate Boundaries

There are three types of plate boundaries namely;

- a. **Divergent boundaries**
 - New crust is generated as plates pull away from each other.

- Sites of pulling away; spreading sites. Example, Mid-Atlantic Ridge, at this boundary the American Plate is /are separated from the Eurasian and African Plates.

b. **Convergent Boundaries**

- Where the crust is destroyed as one plate slips under another.
- The location where sinking of the plate occurs in the Subduction zone.
- Three ways of convergence are: a) between oceanic and continental plate; b) between two oceanic plates; c) between two continental plates.

c. **Transform Boundaries**

- No crust is formed nor destroyed as the plates slide horizontally past each other.
- Transform faults are the planes of separation. They are generally perpendicular to mid-oceanic ridges.
- Since eruption is irregular, there is differential movement of a portion of the plate away from the axis of earth.
- Also, rotation of earth has its effect on the separated blocks of plate portions.

Rates of plate movements determined by the strips of normal and reverse magnetic field that parallels the mid-oceanic ridges.

Heat within earth comes from two sources;

2. Radioactive decay.
3. Residual heat.

The slow movement of the hot, softened mantle that lies below the rigid plates is the driving force behind the plate movement.

Significance of Plate Movements

Progress check on page 13

The learners should identify the advantages and disadvantages the plate movements.

Expected answers

Advantages

- Plate movements lead to the formation of landforms such as fold mountains which beautify the land as well as ocean trenches
- Eruption of magma can result in the formation of valuable minerals.
- Plate movements lead to formation of spectacular landscape features that are tourist attraction.

Disadvantages

- Volcanoes that erupt mostly along convergent boundaries end up destroying property and displacing many people.
- Earthquakes that occur mainly along the transfer boundary leads to destruction of property and death of people and animals.

Activity 1.2

- 1 Describe what you believe to be the most significance causes of Earth movements.

The learners should be able to describe Movement of magma within the Earth's crust, gravitational force, and convectional currents within mantle and Isotactic adjustment.

- 2 Describe the origin of the continents according to the theory continental drift.

Ensure the learners are able to describe the origin of continents according to continental drift theory.

- 3 What do you understand by the term plate tectonics?

The Earth's crust is made up of tectonic plates, which are in constant motion. Earthquakes and volcanoes are most likely to occur at plate boundaries.

Practical activity to explain the Sea-floor Spreading page 14

Practical Activity

Requirements

Provide the learners with the requirements which include: 2 sheets of 8.5" x 11" paper (cardboard may be substituted for 1 of the sheets), Ruler, Colored pencils or crayons, Scissors/razor blade, Transparent tape & Masking tape.

Procedure

1. Place one sheet of binder paper so that the long side is towards you as shown below.

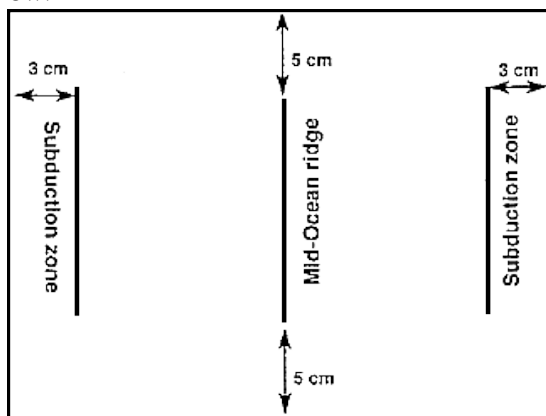


Figure 1. Cut along the heavy lines.

2. Draw a vertical line in the middle of the paper with a height of 11.5 cm leaving 5 cm on either side of the line. This line represents a mid-ocean spreading center (See Figure 1).
3. Draw a second vertical line to the right of the center line so that it lies 3 cm from the right edge of the paper. This line represents a subduction zone.
4. Draw a third vertical line to the left of the center line so that it lies 3 cm from the left edge of the paper. This line represents another subduction zone. When you are finished, your piece of paper should look like the diagram in Figure 1.
5. With a pair of scissors/razor blade, cut the vertical lines so there will be three slits on the paper all the same height and parallel to each other. To reinforce the slits you have made, place masking tape over each one and re-cut the slit through the tape.

6. On the second sheet of paper draw 11 bands each 2.54 cm (1 "wide) perpendicular to the long edge of the paper.
7. Choose one color to represent normal polarity and a second to represent reversed polarity. Color alternate bands to represent periods of normal and reversed polarity. Color the band on the far left as reversed polarity.
8. Cut the paper in half parallel to the long edge to get two strips of paper as shown in Figure 2. Mark the bands on each strip with arrows to indicate alternating periods of normal (up arrow) and reversed (down arrow) polarity.

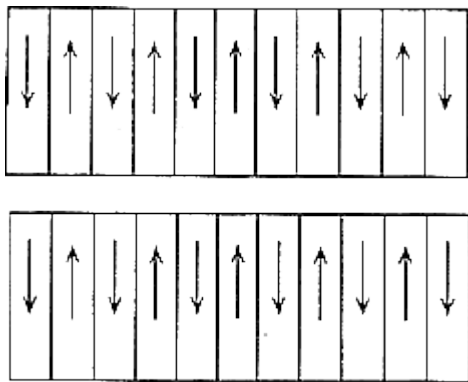


Figure 2.

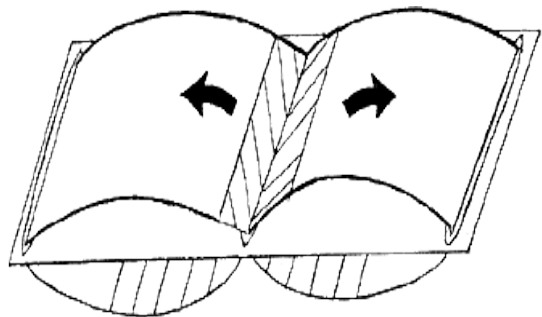


Figure 3.

9. Insert one end of each strip of paper through the spreading center line on your first piece of paper (see Figure 3).
10. Pull each strip of paper towards the slits nearest the margins of the paper (the subduction zones). Tape each strip to make a loop as shown in Figure 3.
11. Circulate the ribbons of paper (which represent oceanic crust) to simulate the movement of ocean floor from the mid-ocean spreading center to the subduction zone. Start the movement of the ribbons with bands representing normal polarity.

Folding

Practical activity to define folding

Practical Activity

Provide the learners with the requirement and group arrange them in groups to carry out the experiment and observe the answers they provide before defining what folding is.

Guide the learners in defining folding

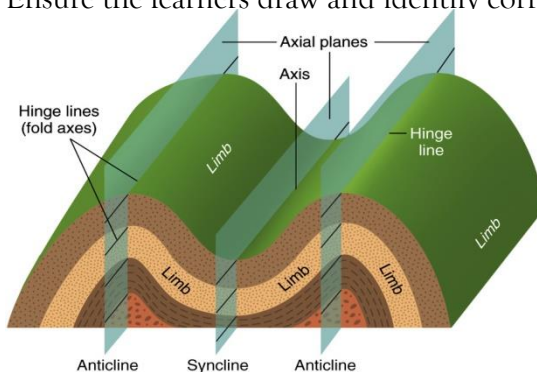
Folding refers the process through which crystal rocks are distorted by being forced to bend upwards and downwards through compressional forces.

- It occurs when the earth's crust is pushed up from its sides.
- It occurs at a very slow rate.
- Fold mountains occur where the crust is pushed up as plates collide, which causes the crust to rise up in folds.
-

Examples of fold mountains include; Andes, Himalayas, Juras in Switzerland, Appalachians.

Activity 1.3

1. Ensure the learners draw and identify correctly the parts of a fold.



Parts of a Fold

- a) Anticlines (up folds) - these are parts of the Earth's surface which bend upwards when folding occurs.
- b) Synclines (down folds) - these are parts of the Earth's surface which bend downwards when folding occurs.
- c) Crest-this is the upper most part of Anticline.
- d) Trough-lowest part of a syncline.
- e) Limb-these are the rock layers sloping on both sides of a fold
- f) Axis- this is the imaginary line drawn vertically through the Centre of the anticline.

Practical Activity

Using the same piece of paper used on the previous experiment on folding:

- 1 Apply equal forces on both sides of the paper.
Qa write down your observation.
- 2 Apply force on only one side of the paper.
Qb writes down your observation.

Guide the learners in the practical experiment and observe the learners present the results.

Types of Folds

1. Simple symmetrical fold - compressional forces with equal strength push from opposite sides leading to folding of rocks.
2. A syncline - Compressional forces of unequal strength push from opposite sides leading to the fold having one limb that is steeper than the other.
3. Tight fold - a sharp-peaked anticline fold.
4. Over fold - bending or warping of folding rock layers over other limbs; it is almost horizontal.
5. Recumbent fold - a fold that is bent so much that it is no longer vertical.
6. Nappe - a fold that has overturned so much the rock layers have fractured.

Fold Mountains and Distribution

Guide the learners in understanding the distribution of Fold Mountains.

Fold Mountains form the world's highest and most impressive mountains and the most conspicuous feature of folding and examples include:

- Imatong mountains in South Sudan
- Rocky mountains in the western part of North America
- Everest mountains at the border of Nepal and Tibet
- Atlas mountains in North West Africa.
- Appalachian Mountains in Eastern part of North America.
- Andes Peru in South. America.
- Alps South in Central Europe.

Theories of the Origin of Fold Mountains

Guide the learners in stating the theories of the origin of Fold mountains.

a. Contraction Theory

During the Earth's formation, surface rocks cooled faster and wrinkled to form Fold Mountains.

b. Convictional Currents Theory

Horizontal convectional currents in the mantle exerted frictional pull on crustal rocks. Continental crusts were pulled towards each other. Sediments between them were squeezed into folds.

c. Continental Drift Theory

During the breaking of Gondwanaland, India drifted northwards and collided with Eurasia. Sediments between these two were squeezed to form fold mountains like the Himalayas and Mount Everest.

d. Plate Tectonics Theory

When an oceanic plate meets another or it meets a continental plate, the sediments under the sea are compressed to form fold mountains.

When two continental plates meet, the SIAL layer is compressed to form fold mountains. The Alps for example were formed when the Africa plate pushed against the rigid European plate.

Progress check

Observe the learners draw a creative diagram illustrate these theories.

Guide the learners stating other features formed from folding.

1. Escarpment
2. Depressions
3. Ridges and Valleys
4. Rolling Plains
5. Intermontane Plateaus
6. Intermontane Basins

Impacts of Folding to Human Activities

Activity 1.4

1. In groups discuss the advantages of folding to human activities.
2. Share the answers you have discussed among the other groups.

NOTE the teacher should request the learners to close their books

Activity 1.5

Complete these sentences about the disadvantages of fold mountains:

1. Fold Mountains cause the leeward slopes to receive less rainfall because of the path of rain.
2. Fold Mountains discourage settlement due to cold temperatures and rugged terrain.
3. Folding can lead to burying of Minerals deeper into the Earth's surface.
4. Fold Mountains are a barrier to the construction of road and railway because there is no passage.
5. Frequent fog can hinder a Pilots visibility.

Activity 1.6 a

Expected answers

- Depressions formed by folding turn into wet land important for water purification.
- Folding leads to faulting and magma may escape through faults leading to Volcanicity and Earthquakes.
- It can lead to metamorphism of rocks, changing their original state and making them more resistant to erosion.
- Folding can result in submerged coastal zones which are used as harbours.

Activity 1.6 b

Observe the learners draw and mark anticline syncline and a limb on a simple fold.

Faulting

Faulting refers to the breaking or fracturing of crustal rocks due to tectonic forces.

- It occurs when tension and compression associated with plate movement is so great that blocks of rock fracture or break apart.
- This process can occur very rapidly.
- This rapid movement causes the ground to shake and vibrate, resulting in earthquakes.

Parts of a Fault

- a) Uplifted- this is part of the land that is displaced upwards.
- b) Down thrown- part of the land displaced downwards.
- c) Throw- this is the vertical displacement.
- d) Heave- this is the horizontal displacement .
- e) Hade- this is the inclination of fault to vertical plane.
- f) Fault line- this is the path of the fault.
- g) Fault plane- this is the separation of land created by the fault.

Types of Faults

1. Normal fault - rocks move away from each other due to land moving apart through tensional forces.
2. Reverse fault - rocks are compressed such that one plate moves up while the other descends below it.
3. Anticlinal fault - these are formed when anticlines comes under great compressional forces leading to further faults forming on the crest.
4. Thrust fault - strong compressional forces cause faults that are almost horizontal to develop as one block of land gets pushed over another block of land.
5. Tear fault/strike-slip - two plates slide laterally past each other.

Features Resulting From Faulting

Guide the learners in describing features formed from faulting giving examples and their distribution.

- Fault scarp/Escarpment
- Fault blocks/Horst Mountains
- Block Mountains

Theories of Formation

Tensional Theory

Practical Activity on Tensional theory

Practical Activity

Provide the learners with requirements and guide the learners in the procedure.

Guide the learners in the steps that explain the tensional theory.

Compressional Theory

Guide the learners in the steps that explain the compressional theory.

Anticlinal Theory

Upward forces from within the Earth pushed sedimentary rock strata upwards. Suggests the rift valley was formed by Anticlinal arching.

Activity 1.7

In groups

1. Discuss, and list, what you think the positive and negative significances of faulting are, on human activities.
2. Share your answers with other group members. (Note Books Closed)

Progress check

From the given statements the learners should read and group the statements into positive and negative impacts of faulting on human activities.

Activity 1.8

Expected answers

Faulting is the cracking/fracturing of the brittle crustal rocks due to tectonic forces.

- Escarpment
- Block mountains

Volcanicity

Guide the learners in defining volcanicity.

Volcanicity is a process through which solid, liquid or gaseous materials are forced out of the interior of the Earth into the Earth's crust surface.

Causes of Volcanicity

Describe to the learners causes of volcanicity.

1. Magma under high temperature and pressure moving through lines of weakness or faults to the Earth's surface.
2. When tectonic plates move away from each other and the resulting boundaries give way to magma.
3. Underground water coming into contact with hot materials hence changing into gaseous form.

Types of Volcanicity

- a. **Intrusive Volcanicity (plutonic):** in which the molten materials intrude the crustal rocks but don't reach the Earth's surface. **Magma** is the molten material while it's underground.
- b. **Extrusive Volcanicity (volcanic):** in which materials reach the Earth's surface.

There are two types of lava and magma, acidic and basic.

Volcanoes

A volcano is a cone shaped hill formed when volcanic materials flow out and accumulate around a vent. Volcanoes are classified into three main groups:

1. **Active volcano-** These are known to have erupted in recent times e.g. , Jebel Marra in Sudan, OL donyo Lengai in Tanzania and Mt. Cameroon, and Mauna Loa in Hawaii,
2. **Dormant volcano-** These are not known to have erupted in the recent past but show signs of volcanic activity such as presence of hot springs, geysers and fumaroles for example. Mt Rejaf in South Sudan, Mt. Kilimanjaro, Longonot and Menengai in Kenya.
3. **Extinct volcanoes-**These have not shown signs of possible future eruptions e.g. ,Okire Mountain in Magwias Mount Kenya and Elgon in Kenya.

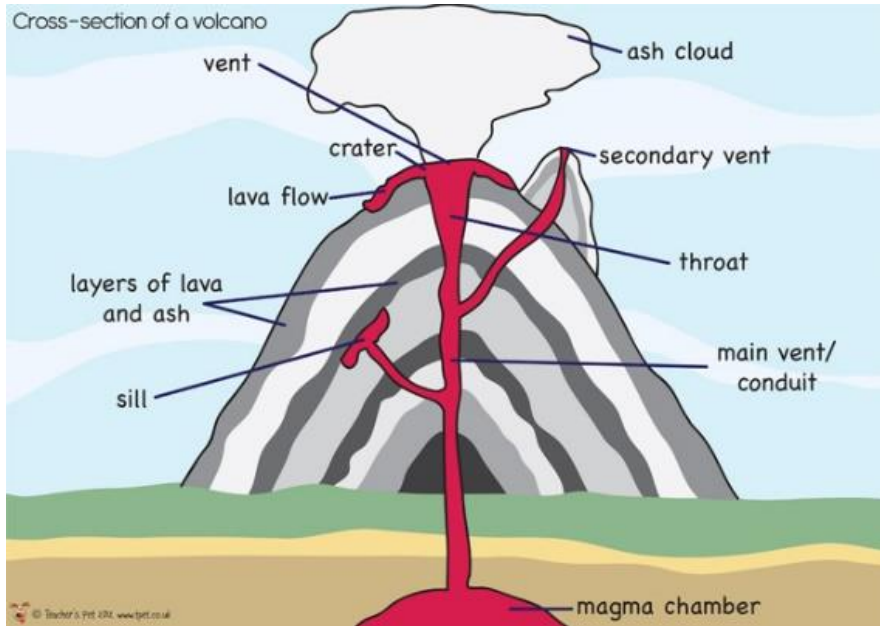
Types of Volcanoes

Guide the learners in stating different types of Volcanoes and their characteristics as stated in the student's book.

- (a) Acidic Lava Domes
- (b) Basic Lava Domes
- (c) Ash cinder cones
- (d) Composite Volcanoes

Activity 1.9

Expected answers



Progress check page 37

The learners should be able to describe characteristics of Ash and Cinder cones referring to fig 1.29 on the student's book.

Expected answers

- It is made of pyroclasts.
- It is symmetrical about the axis.
- It is cone shaped.
- It has smooth slopes.
- It has steep windward slope and gentle leeward slope.

Activity 2.0

Expected answers

- The first eruption throws out the pyroclasts.
- Then viscous lava flows out and solidifies on them.
- Further eruption occurs later blowing the rocks sealing the vent.
- The pieces of rock settle on earlier solidified lava.
- Another mass of lava flows out and spreads over pyroclasts and solidifies.
- This process is repeated causing the volcano to build upwards.
- The conelets are formed when magma is unable to overcome the plug and finds its way through weak lines at the sides of the volcano pyroclasts and lava accumulate around the side vent examples include. Mountains Kenya, Longonot, Elgon and Kilimanjaro.

World Distribution of Volcanoes

Volcanoes are found in the following parts of the world.

1. Regions of faulting e.g. the Great Rift Valley of E. Africa.
2. The mid-Atlantic ocean ridge.
3. The western coast of America.
4. Zones of recent mountain building such as the Fold Mountains of South East Asia.

Impacts of Volcanicity

Progress check

The learner should be able to read and group the given statements into positive and negative impacts of volcanicity on human activities.

Positive

- a) Volcanic rocks like basalt weather to form fertile agriculturally productive soils.
- b) Geysers are sources of geothermal electricity.
- c) Hot springs water is pumped into houses for heating during winter.
- d) Volcanic features are a tourist attraction for example hot springs, geysers and snowcapped Mt. Kenya.
- e) Igneous rocks like phonolites are crushed to make ballast for building, roads, bridges, etc.
- f) Crater lakes are a source of fish, minerals and water for domestic use.
- g) Volcanic mountains are catchment areas, sources of rivers and habitats for wildlife.
- h) Pumice, a volcanic rock, is used as a scrubbing stone.
- i) Volcanicity is useful for production of gases e.g. carbon dioxide used in soft drinks manufacture.

Negative

- a) Volcanic eruptions cause loss of life and destruction of property e.g. Sulphur dioxide, ash, cinder and lava may bury houses and farm land.
- b) Volcanic mountains are barrier to transport and communication.
- c) Volcanic mountains on the path of rain winds cause leeward slopes to receive little rainfall.
- d) Volcanic eruptions cause environmental pollution from dust, ash and Sulphur dioxide.

Guide the learners in the discussion and help them present their findings.

Activity 2.2

Expected answers

Observe the answers given the by the learners

Teaching/learning Activities

1. Guide the learners in drawing diagrams of different features such as volcanic mountains and fold mountains.
2. Conduct a field study around your school and assist the learners to identify the effects of processes on the landscape.

UNIT 2: NATURAL AND MAN - MADE HAZARDS

CONTENT MAP

Knowledge and understanding	<ul style="list-style-type: none"> - Understand the causes and effect of natural disasters. - Understand that disasters are also man-made. - Recognise that there is evidence for climate change and this is related to frequency of hazards of occurring.
Skills	<ul style="list-style-type: none"> - Explore information about hazards from a range of sources. - Review the evidence for climate change. - Suggest ways of managing hazards and climate change.
Attitudes	<ul style="list-style-type: none"> - Learners should respect and care for the environment.
Competencies	<ul style="list-style-type: none"> - Critical thinking about disaster management. - Communication in presenting to the class. - Co-operation and teamwork to review evidence and agree suggestions.
Key inquiry questions	<ol style="list-style-type: none"> 1. What do we understand by natural and man-made hazards? 2. What are the causes and the effects of these hazards? 3. What are the main causes of frequent occurrence of natural hazards? 4. What evidence do we have for these? 5. How can climate change be managed?

UNIT 2: NATURAL AND MAN-MADE HAZARDS

Understanding Natural and Man-made hazards

Notes for the Teacher

- a) In this unit, the learners will be introduced to new terminologies; the teacher should define the terms and explain them as they appear. Natural hazards are classified into two categories;
- ❖ Natural hazards

These are caused by natural processes that are beyond human control like floods and cyclones.

 - ❖ Man-made disasters:
- b) When the disasters occur due to human carelessness or mishandling of dangerous equipment's, they are called man-made disasters. Common examples of these disasters are train accidents, airplane crashes, collapse of buildings, bridges, mines and tunnels.
- c) When discussing the mitigation of the hazards, it should be noted that each hazard has its unique method of mitigation depending on the causes. Some hazards like floods, despite the negative impact that they may have on humans and the physical environment, may have some positive effects. This should not be overlooked but rather emphasized.
- d) When discussing the causes of earthquakes, clay models made in school by the teacher and/or the learners could be useful as a tool for learning about the interior of the earth. A boiled egg cut into two would expose its interior, and this can be compared to the earth's interior.

Teaching/ learning resources

- a) The Learners' Book Unit 2
- b) Other relevant reference books
- c) Videos
- d) The internet

Specific Objectives

By the end of the unit the learner should be able to;

- a. Define natural and man-made hazards.
- b. Outline the causes and the effects of these hazards.
- c. Describe the main causes of frequent occurrence of natural hazards.
- d. Outline the evidence for these hazards.
- e. Explain how natural hazards can be managed.
- f. Define climate change and how it can be managed.

Detailed Content

- Define the term hazard. Give general examples of hazards. See the learners' book page 42.
- Describe the two categories of hazards and analyse the causes of these two categories of hazards.
Types of hazards; Natural and man-made hazards.
- Describe the different natural hazards, that is, earthquakes, floods, landslides, cyclones and drought. Give a detailed description of the causes of each hazard.
- Describe the man-made hazards i.e. local and industrial. Describe the disasters under each category. Explain the causes of these disasters. Clearly cite relevant examples.
- Discuss the effects of each hazard citing relevant examples.

- Describe the impact these natural and man-made hazards have on the physical environment.
- Explain the different ways to control/ mitigate these hazards.

Teaching/ Learning Activities

- At the beginning of the unit, the teacher should introduce the unit and explain the difference between natural and man-made, disasters as explained in the Learners' Book.
- Ask the learners to attempt to give the meaning of hazards.
- You should then clearly define the term and give different versions.
- Describe the two categories of hazards, this is, natural and man-made hazards. Allow the learners give examples of each category.
- Discuss the causes of each disaster, the learners should be given a chance to attempt to define the new terminologies such as cyclones and environment.
- Explain the measures that can be taken in controlling or mitigation measures. Start by defining mitigation.
- Describe the relationship between these hazards and climate change.

Natural Hazards

Guide the learners in defining what natural hazards are;

Natural hazards are naturally occurring physical phenomena caused either by rapid or slow onset events. The events be geophysical (Earthquakes, landslides, tsunamis and volcanic activity), hydrological (avalanches and floods), climatological (extreme temperatures, drought and wildfires), meteorological (cyclones and storms/wave surges) or biological (disease epidemics and insect/animal plagues).

Man-Made Disasters

- Pose the question of what man-made disasters are to the learners before introducing what they are.

- Guide the learner in stating what man-made disasters are and give an example.

Man-made disasters are caused by human activities which bring about destruction and loss of life at local to global scales.

Examples of disasters due to human error are terrain accidents, aeroplane crashes, and collapse of buildings, bridges, mines and tunnels.

Progress check

Give examples of natural hazards and man-made disasters in South Sudan.

Expected answers

- Drought
- Earthquakes
- Floods

Natural Disasters

Some of the common natural disasters, their impact on the environment, and their prevention, control and mitigation are discussed below:

Earthquakes

- Before introducing Earthquakes, pose the question to provoke the learners to say what an earthquake is.
- Have them share whether they have ever experienced an earthquake, and if yes, let them say how strong the earthquake was.

Activity 2.0

Expected answers

An Earthquake is the shaking of the Earth's surface caused by rapid movement of the Earth's crust or outer layer.

Causes of Earthquakes

Some of the important causes of the Earthquake include:

Natural Causes of Earthquake

- i. **Tectonic Movement:** tectonic movements take place when the continental plate collides against the oceanic plate. The oceanic plate is overridden by the continental plate leading to occurrence of an Earthquake.
- ii. **Volcanic Activity:** Earthquakes may also be caused by the movement of lava beneath the surface of the Earth during volcanic activity.
- iii. **Dislocation of the Earth's crust:** Earthquakes may be caused by the dislocation of the crust beneath the surface of the Earth.
- iv. **Landslides and avalanches.**
- v. Faulting and folding in the rock beds are responsible for causing minor Earthquakes.

Natural causes

- Guide the learners in stating the important causes of earthquakes. Which are:
 - ✓ Natural causes which include Tectonic movement, volcanic activity, dislocation of the earth's crust, landslides and avalanches.
 - ✓ Man-made causes.

Man-Made Earthquakes

Effects of Earthquakes

- Guide the learners in stating that earthquakes have effects.
- Guide the learners in stating the Destructive and Constructive effects of earthquakes.

Impact of Earthquake on the Environment

Practical Activity to show impact of Earthquake on the environment

Practical Activity

Provide the learner with the requirements and guide them in carrying out the experiment.

Observe and listen to their conclusion and results.

Guide the learners to suggest and reflect on, key factors that influence the amount of destruction caused by an Earthquake. E.g. factors such as Earthquake location, duration, magnitude and intensity of shaking. Consider nearness to areas of human activity and settlement.

Major effects of Earthquakes

Guide the learners to suggest, discuss and reflect on, the key factors that influence the amount of destruction caused by an earthquake. E.g. factors such as Earthquake location, duration, magnitude and intensity of shaking. Consider nearness to areas of human activities and settlement.

Earthquakes are caused when tension is released from the earth's crust, most often at tectonic plate's boundaries where movement along fault lines occurs.

Earthquakes are often associated with volcanic activities and sometimes human activities, such as mining and related explosions

Major causes of Earthquakes

Earthquakes can be destructive in several ways. Enquire and research with the learners what some of the major effects of earthquakes are and discuss, relating this to South Sudan where appropriate.

Liquefaction

A conditions most often caused by earthquakes, when strong shaking causes water saturated or loose soil to behave like liquid.

Landslides

Essentially caused by gravity acting on a steep slope, these are common and widespread and occur for a variety of reasons such as rock fall and slope failure. Landslides are frequently a secondary earthquake hazard. Earthquakes creates stresses that makes slopes fail and have been known to trigger landslides.

Fires

Maybe caused by the power of earthquakes rapturing power lines or gas lines.

Tsunamis

Large Ocean waves capable of travelling at speed and caused by sudden motion on the ocean flow. These sudden motion could be an earthquake, a powerful volcanic eruption or an underwater landslide. Most Tsunamis are caused by earthquakes generated in a subduction zone.

A subduction zone is an area where an oceanic plate is being forced down into the mantle by plate tectonic forces. (You could set up a model to help using a clear plastic tank with water, sand and earth.)

Prevention and Mitigation

Tsunamis cannot be prevented. However there are ways in which damage from a tsunami can be mitigated. (Encourage a discussion with learners as to how this might be done. Mitigation strategies include early warning systems, good communication and preparedness to evacuate.)

Floods

A flood is the overflow of water over large parts of land that is often dry but sometimes wet. Flooding occurs when a river's discharge exceeds its channel's

volume causing the river to overflow onto the area surrounding the channel known as the floodplain.

Impact on the Environment

Progress check

The learners should discuss and share the impacts of floods in South Sudan

Guide the learners in stating the effects of floods causes on the environment. For example;

- i. Floods cause the spread of many epidemic diseases.
- ii. Rapid runoff causes soil erosion.
- iii. Wildlife habitat and forests are often destroyed.
- iv. Man-made structures like buildings, bridges, roads, sewer lines and power lines are damaged.

Prevention and mitigation

Guide the learners in understanding ways in which floods can be prevented and controlled.

Activity 2.1

Guide the learners in group and observe the answers they provide.

Drought

The teacher should introduce the learners by asking them what a drought is. Ask the learners if they know of any area that is affected by drought.

Guide the learner in stating and explaining what a drought is.

Progress check

The learners should differentiate between drought and dry climate

Impact on the Environment

Guide the learners in stating the effects of drought to the environment as in their text books.

Prevention and Mitigation

Guide the learner in stating ways in which drought can be prevented/controlled.

1. Conservation of water through rainwater harvesting, building check dams, bunds, etc.
2. Construction of reservoirs to hold emergency water supplies.
3. Proper agricultural techniques:
4. Avoid overcropping and overgrazing.
5. Plant drought resistance crops.

Activity 2.2

Guide the learners in groups and observe them present their answers.

Cyclones

Cyclones cannot be prevented in the short term, although over the longer term there is an association with intensity and number of cyclones and increased human emission of greenhouse gases.

Ask the learners to discuss how damage from cyclones might be mitigated and who or what is at risk. For example, mitigation strategies might include effective weather forecasting, communication and strategies for coping with severe cyclones effects.

Discuss who might be at most risk, for example those in areas where there is an increased risk of landslides or flooding and those whose livelihood maybe affected such as farmers.

Impact on the Environment

Guide the learners in stating the effects that cyclones have on the environment.

Prevention and Mitigation

Guide the learner in stating ways in which cyclones can be prevented/controlled.

Landslides

Guide the learner in stating and explaining what a landslide is.

Landslides refer to a rapid down-slope movement of rocks or soil mass under the force of gravity.

Landslides may be referred to as mudflow where there is down-slope movement of soil and debris flow, which is the down-slope movement of coarse material and rocks

The important factors responsible for landslide occurrence

Guide the learner in stating factors responsible for landslides.

- i. Stability of slopes.
- ii. The type of earth and rock material on the slope.
- iii. The type of vegetation growing on the slope.
- iv. The role of ground water conditions and precipitation.
- v. Presence of streams on the slope.

Impact on the Environment.

Guide the learners in stating the impacts of landslides on the environment.

- i. Uprooted trees and degraded soil.
- ii. Buried building and settlements.

- iii. Damage to crops and plantation.
- iv. Frequent roadblocks in the hilly areas.
- v. Injuries and death to humans and animals.

Prevention and Mitigation

Guide the learner in stating ways in which landslides can be prevented/controlled.

Activity 2.3

Expected answers

1. A cyclone is an area of low atmospheric pressure surrounded by a wind system blowing in anti-clockwise direction, formed in the northern hemisphere.
2. Assess the answers provided.
3. Use of Advanced Technology, Hazard reduction initiatives, Relief measures
4. Landslides refer to a rapid down-slope movement of rocks or soil mass under the force of gravity.
5. Stability of slopes
The type of earth and rock material on the slopes.
The type of vegetation growing on the slopes.
The role of ground water conditions and precipitation
Presence of streams, etc.
6. Conservation of water through rainwater harvesting, building check dams, bunds, etc. Construction of reservoirs to hold emergency water supplies.
Proper agricultural techniques:
Avoid over-cropping and overgrazing.
Plant drought resistance crops

Man-made disasters

Guide the learners in stating the two types of man-made disasters.

Man-made disasters are the result of carelessness or human errors during technological and industrial activities. The disasters are in the form of accidents, which occur suddenly and take a huge toll on life and property. Such disasters cause injuries, diseases and casualties where they occur.

- i. Local disasters.
- ii. Industrial and technological disasters.

Impacts of Man-made Disaster

Guide the learners in outlining and understanding the impacts of man-made disasters.

Natural Hazards and Climate Management

Guide the learners in understanding how man-made disasters can be minimized to a large extent by adopting the following measures:

- i) Proper training of personnel working in the hazardous industries.
- ii) Proper maintenance and care of safety equipment.
- iii) Making the people aware about the first-aid methods in case of accidents.
- iv) Remaining indoors in case of radioactive accidents.

Activity 2.4

Expected answers

Natural hazards are naturally occurring physical phenomena caused either by rapid or slow onset events while Man-made disasters are caused by human activities which bring about destruction and loss of life at local to global scales.

Activity 2.5

Observe the answers provided by the learners.

Assessment of Skills, Abilities and Attitudes

- You should give oral questions, tests and questions to test the acquisition of knowledge. Assessment of positive attitudes can be done through discussions and contributions during the lesson.
- You can test for acquisition of knowledge by setting questions based on the unit objectives, (a), (b), and (d). Comprehension can be tested by basing questions on objectives (c) and (e).

Guidelines to Exercise

1. This exercise is about things the learner should do.
2. The exercise is about the meaning of floods, the learner should be able to research and come up with different versions of the definition. Similarities and differences arising from the definitions should be noted.
3. The information in this exercise is available from the sub unit. Types of natural hazards, on page of the Student's Book.

UNIT 3: PHYSICAL FEATURES OF SOUTH SUDAN

CONTENT MAP

Knowledge and understanding	<ul style="list-style-type: none">- Understand and identify the main physical features of South Sudan.- Describe their formation.- Explain the relationship of these features to other parts of South Sudan.- Explain how the physical features influence settlement and economic activities.
Skills	<ul style="list-style-type: none">- Evaluate the evidence for theories.- Interpret local landscapes on basis of their understanding of the processes.
Attitudes	<ul style="list-style-type: none">- Be thorough in their approach to evaluating evidence.
Competencies	<ul style="list-style-type: none">- Critical thinking through the evaluation of evidence.- Communication in making presentations.- Co-operation in working in groups.
Key inquiry questions	<ol style="list-style-type: none">1. What do we understand by the term physical features?2. What are these main features?3. How were these physical features formed?4. How are the physical features of South Sudan similar to those in other parts of Africa?5. How are the physical features related to settlement?

UNIT 3: PHYSICAL FEATURES OF SOUTH SUDAN

Understanding Physical Features of South Sudan

Notes for the Teacher

- a) This topic is similar in approach to unit one both deal with landforms and the resultant features.
Unit one deals with the general landforms of the world while this unit is more specific to South Sudan.
- b) The teacher should start by stating the different physical features allowing the students to mention these features then sum up all the given examples as physical features then give the definition.
- c) Give a detailed description of these physical features and outline their mode of formation and their location on the map of South Sudan.
- d) The learners should be encouraged to observe the different features in the field, record the characteristics of the features and identify their influence on the environment and settlement.

Teaching/ Learning resources

- a) The students book, Unit 3
- b) Other relevant resource books
- c) Maps/Atlases
- d) Videos
- e) Photographs and slides
- f) The internet.

Specific Objectives

By the end of the topic, the learner should be able to;

- a) Define a physical feature.
- b) State the different features found on the earth's surface.
- c) Outline the main features found in South Sudan.
- d) Describe how they were formed.
- e) Describe how the physical features of South Sudan are similar to those in other parts of Africa.
- f) Explain how the physical features are related to settlement.

Detailed Content

- Definition of a physical feature: Guide the learner in defining what a physical feature is.
- State the main physical features on the earth's surface.
- Pose a question to the learners before listing the physical features on earth it could be: *"Do you know any physical feature?"*
- Describe each physical feature and their mode of formation. Guide the learner in Describing different physical features and their Formation.

Physical features

A physical feature is a natural landform occurring on the surface of the Earth, physical features include bodies of water and landforms, for example, oceans, mountains, lakes, rivers, plateaus, plains, streams, hills, bays, gulfs, volcanoes, canyons, valleys and peninsulas are all various physical features

There are four major procedures of describing physical features. They include:

- Describing their formation.
- Classification of the physical features.
- Types of the physical features.
- Locating the various physical features in maps and atlases.

The teacher should guide the students in describing the various physical features using the steps above.

- i. Identify where the main physical features are found on an atlas map.
- ii. State the main features found in South Sudan
- iii. Identify their location on the map of South Sudan
- iv. Explain the relation between the physical features and settlement.
- v. Conduct a field study and observe the different physical features.
- vi. Explain the significance of these physical features.

Plains and plateaus

Plains

- Before the lesson, “provoke the learners” thinking by asking them what a plain is.
- Listen as the learners give their suggestions.
- Guide the learners in defining what plains are and give examples.
Plains are large and continuous stretches of comparatively flat land, not rising much above the sea level

Plateaus

- “Provoke the learners” thinking by asking them what a plateau is.
- Listen as the learners give their suggestions.
- Guide the learners in defining what plateaus are and give examples.
- Guide the learners in stating the main plateaus in South Sudan such as the Boma plateau, Lomareng plateau and Ironstone Plateau

Activity 2.5

Expected answers

A physical feature is a natural landform occurring on the surface of the Earth
River, plateaus, lakes and hills.

Mountains

- Guide the learners in defining what a mountain is.

A mountain is a large and elevated part of the Earth's surface rising to greater height of 1000-2500m (3300-8200 ft) above sea level than ordinary hills.

- Guide the learners in stating the three major types of mountains that is:
 - ❖ Fold mountains
 - ❖ Block mountains
 - ❖ Volcanic mountains

Fold Mountains

- Before introducing the topic ask the learners what fold mountain are. This will provoke the learners to think. Listen as they give out their ideas.
- Help the learners define how fold mountains are formed through the explanation on page 4
- Listen as the learners explain their results.
- Guide the learners in defining Fold Mountains.

Block Mountains

- Before introducing what fold mountains are, ask the learners What a Block Mountain is. This will provoke the learners to think. Listen as they give out their ideas.
- Help the learners define how block Mountains are formed.
- Guide the learners in stating examples of Block Mountains.

Volcanic Mountains

- Before introducing what Volcanic mountains ask the learners what a volcanic mountain is.
You may also ask them to name one volcanic mountain they know. This will provoke the learner to think. Listen as they give out their ideas.

- Help the learners define how Volcanic Mountains are formed.

Types of Volcanic Mountains

- ❖ Active volcanic mountain.
- ❖ Dormant volcanic mountain.
- ❖ Extinct (dead) volcanic mountain

Residual Mountains

- Before introducing this sub-unit ask the learners what a residual mountain is. You may also ask them to name one residual mountain they know. This will provoke the learners to think. Listen as they give out their ideas.
- Guide the learner in explaining the formation of residual mountains.
- Give examples such as The Imatong Mountains in South Sudan.

Progress check

The learners should be able to differentiate between Volcanic, Residual Mountains and Block Mountains

Basins

- Guide the learners in defining what a basin is.
- Guide the learners in explaining how the basins are formed and outline examples of basins.
 - ❖ Muglad Basin.
 - ❖ Melut Basin.

Water bodies

Rivers

- Guide the learners in stating what a river is.
- Guide the learners in explaining the formation of rivers.
- Name rivers in South Sudan.
 - ❖ The Nile River.

- ❖ Aswa River
- ❖ River Kinyeti
- ❖ Atebi River
- ❖ Yei River

Lakes

- Guide the learners in defining what a lake is.
- Guide the learners in explaining the formation of lakes.
- Guide the learners in stating the lakes in South Sudan.
 - ❖ Lake No
 - ❖ Lake Ambadi

Assessment of Skills, Abilities and Attitudes

Written questions, tests, and quizzes should be set to test knowledge, comprehension, application and evaluation. This can be done by setting questions using the specific objectives.

- ❖ Knowledge- (a), (b), (c)
- ❖ Comprehension- (d)
- ❖ Application- (e)
- ❖ Evaluation - (e)

Guidelines to Exercise

The answers to the questions are to be found in the Student's Book. However the learners should research on different definitions of the physical features.

UNIT 4: POPULATION AND SETTLEMENT

CONTENT MAP

Knowledge and understanding	<ul style="list-style-type: none"> - Understand and identify the main physical features of South Sudan - Describe their formation. - Explain the relationship of these features to other parts of South Sudan - Explain how are the physical features influence settlement and economic activities.
Skills	<ul style="list-style-type: none"> - Evaluate the evidence for theories - Interpret local landscapes on basis of their understanding of the processes.
Attitudes	<ul style="list-style-type: none"> - Be thorough in their approach to evaluating evidence.
Competencies	<ul style="list-style-type: none"> - Critical thinking through the evaluation of evidence. - Communication in making presentations - Co-operation in working in groups
Key inquiry questions	<ol style="list-style-type: none"> a) What do we understand by the term physical features? b) What are these main features? c) How were these physical features formed? d) How are the physical features of South Sudan similar to those in other parts of Africa? e) How are the physical features related to settlement?

UNIT 4: POPULATION AND SETTLEMENT

Understanding Population and Settlement

Notes for the Teacher

- a. When introducing the topic, a clear distinction between the two terms, population and settlement should be outlined.
- b. This topic is related to topic three in that there is a relationship between settlement and the physical features. The teacher should therefore articulate this relationship. Show how the settlement patterns are influenced by physical features.

Teaching/ learning resources

- a) The Student's Book, unit 4.
- b) Other relevant reference books
- c) Population maps.
- d) Publications with population reports.
- e) Photographs.
- f) Videos.

Specific Objectives

By the end of the topic, the learner should be able to;

- a) Define population, population distribution and settlement.
- b) Describe how population is distributed in South Sudan.
- c) State factors have influenced the distribution of population in South Sudan.
- d) Describe factors have affected the settlement patterns.
- e) Define migration.

- f) Outline the reasons for migration.

Detailed Content

- i. Definition of population, population distribution and settlement
- ii. Give a detailed account of the population distribution of South Sudan
- iii. Define settlement
- iv. Describe different settlement patterns and explain the reasons behind such settlement patterns
- v. Define migration
- vi. Explain the different types of migration citing relevant examples in South Sudan
- vii. Discuss the various causes of migration with reference to South Sudan.
- viii. Define migration
- ix. Describe the different types of migration
- x. Explain the causes of migration.

Population

*Population is the total number of people living in an area at a particular period of time.
Population can be classified according sex and age.*

- The teacher should guide the learners in defining population.
- The teacher can pose a question before defining population, such as “What is population?” this will engage the learners into thinking and coming up with different ideas on their take on what population is.

Population is the total number of people living in an area at a particular period of time.

- Guide the learners in defining the two terms in population.
Geographical area-this refers to the location where a particular pattern of population (settlement) is found.

Settlement pattern-this refers to the distribution of population in an area.

Activity 4.0

- Organize the learners in groups.
- Observe and listen to the learners as they explain their results.

Human Population

Guide the learner in defining human population.

Human population is the group of people occupying a certain geographical unit.

Demography is the scientific study of human population.

Activity 4.1

- Group the learners in pairs.
- Guide the learners in observing the map.
- Observe and listen to the learners as they explain their results.
- Check the conclusion the learners provide.
- Observe the answers the learners have given on the questions.

Settlement

A Settlement is a permanent or temporary community in which people live, without being specific as to size, population or importance.

Settlement is a place where people live and interact through activities such as agriculture, trading and entertainment.

Types of Settlement

- 1 Urban settlement
- 2 Rural settlement

- Guide the learners in outlining the types of settlement. You can ask them whether they live in a town or a village.
- Listen to the learners as they give answers on where they live before introducing the topic to them on the types of settlement.
- Guide the learners in stating that some people live in towns while others live in villages. State examples of villages in South Sudan.
- Guide the learners to know that some people settle in the mountains while others settle at the river banks, and others still live in the forests.

Settlement Patterns

A settlement pattern refers to the way that buildings and houses are distributed in a rural settlement, which include the following:

Nucleated- In a nucleated settlement pattern, the buildings are grouped around a central core.

Dispersed- In a dispersed settlement pattern, the buildings are scattered over a wide area. Dispersed settlement patterns are often associated with agricultural activity and are frequently surrounded by farmland.

Linear- In a linear settlement pattern, the buildings are arranged in lines. These lines often follow the route of a road or body of water.

Activity 4.2

- Group the learners in pairs.
- Guide the learners in observing the map.
- Observe and listen to the learners as they explain their results.
- Check the conclusion the learners provide.
- Observe the answers the learners have given on the questions.

Population distribution

Guide the learners in defining population distribution.

Population distribution is the way in which people are spread out across the surface of the Earth.

Give an example of population distribution in South Sudan.

Population Density

Population density is the number of people per unit area.

This describes the concentration of people in a specific area.

Activity 4.3

- The learners should be able to state areas in South Sudan with the most dense and sparse population.
- Observe the learners and see the answers they give to the questions.

Factors Influencing Population Distribution and Density

- Engage the learners in asking what factors have influenced distribution of population in their home area.
- Guide the learners in stating the factors which includes: climate, relief, edaphic factors, and biotic factors.

Activity 4.4

- Observe the learners and see the answers they give to the questions.

Underlying Factors

The factors mentioned, that is relief, climate and access to water, are all evident factors because they are easily seen. There are other factors that are not easy to spot that is they are less evident

Edaphic factors/ Soil types

Edaphic factors are abiotic aspects relating to the physical or chemical composition of the soil found in a particular area.

For example, very alkaline soil may be an edaphic factor limiting the variety of plants growing in a region

Activity 4.5

- Observe the learners and see the answers they give to the questions.

Migration

- Guide the learners in defining what migration is.

Migration is the movement of people from one place or region to another which results in change of residence this change may be temporary or permanent. Immigration is the movement of people into a particular region.

- For better understanding, you can ask the learners whether they have ever migrated, and the reason that made them migrate.

Types of Migration

Guide the learner in stating the types of migration and defining them.

Internal Migration

This is the movement of People within a country. It can be permanent, temporary, voluntary or forced.

External Migration

This is also called international, interstate or inters regional migration. It is the movement of people from their own countries to other countries.

Activity 4.6

- Observe the learners and see the answers they give to the questions.
- Then introduce the reasons for migration.

People migrate for the following reasons:

- i. **Pressure on land**, People move to areas with available land for cultivation, settlement etc.
- ii. **Availability of employment opportunities**. Move to areas where employment is possible e.g rural to rural, to work in plantations and mines.
- iii. **Religious conflicts**, may result to chaos in a country thus trigger migration.

- iv. Political instability. These civil wars cause people to migrate for example, as experienced in Rwanda, South Sudan and Burundi has resulted to influx of refugees in East African countries.
- v. Natural disasters like epidemic diseases, floods, earthquakes and drought. These may cause people to migrate to other areas where it is safer.

Teaching /Learning Activities

- i. At the beginning of this unit, the teacher should introduce the topic by asking the students leading questions. Ask the learners to attempt to give the meaning of population.
- ii. You should then clearly define the term. Other terms will emerge such as settlement and population. Define them too
- iii. Explain the relationship between settlement and physical features.
- iv. Discuss the factors that influence population distribution
 - v. Answering questions from the learner/ teacher.
 - vi. Researching in the various reference materials.

Assessment of Skills, Abilities and Attitudes

Written questions, tests, and quizzes should be set to test knowledge, comprehension, application and evaluation. This can be done by setting questions using the specific objectives.

- a) Knowledge (a), (b), (c)
- b) Comprehension (d)
- c) Application (e)
- d) Evaluation (e),(f)

Acquisition of skills and development of a positive attitude can be assessed through participation in group discussions.

Activity 4.7

- Observe the learners and see the answers they give to the questions.

Guidelines for Exercises

1. The teacher and the students to come up with the answers of the questions because the answers may vary depending on the area the students and their teacher live.
2. The next exercise involves an activity that the learners should do, study the map and come up with the answers of the questions asked. The learners to describe the population patterns on the map
3. The teacher to assist the learners should describe the densely and sparsely populated areas in South Sudan.
4. The answers to these questions are contained in the text.

UNIT 5: SOUTH SUDAN RESOURCES

CONTENT MAP

Knowledge and understanding	<ul style="list-style-type: none">- State the types of natural resources in South Sudan.- Identify the types of energy natural resource in South Sudan.- Explain the nature and distribution of natural resources.- Understand the need for sustainable development
Skills	<ul style="list-style-type: none">- Recognise the potential of natural resource development- Analyse resource use in different countries.- Explain natural resource utilisation in South Sudan, taking some examples from other African countries in the context of sustainability.
Attitudes	<ul style="list-style-type: none">- Be thorough in their approach to evaluating evidence.- Appreciate the need for sustainability in development.
Competencies	<ul style="list-style-type: none">- Critical thinking through the evaluation of evidence.- Communication in making presentations.- Co-operation in working in groups.
Key inquiry questions	<ol style="list-style-type: none">a. What do we understand by natural resources?b. What types of resources are there in South Sudan and neighbouring countries?c. How do resources promote development?d. How are resources classified?e. How can we manage the resources sustainably?

UNIT 5: SOUTH SUDAN RESOURCES

Understanding South Sudan Resources

Notes for the Teacher

- a) Natural resources are things that the learners may be familiar with as they are available within the environment around them. The teacher should therefore assist the learners to identify them and classify them into the two categories.
- b) Clearly articulate the difference between the two types of natural resources.
- c) The teacher should ensure that all resources that have been discovered in South Sudan. Even those that have not yet been exploited are mentioned. This will help the learners to understand the potential of South Sudan.
- d) Outline the management strategies of South Sudan to avoid exhaustion or depletion of the available resources.
- e) Explain the meaning of sustainable management of natural resources.
- f) Articulate the efforts made by South Sudan to sustainably manage the available resources.

Teaching/ learning resources

- a) The Student's Book, Unit 5
- b) Maps
- c) Photographs
- d) Videos
- e) Internet

Specific Objectives

By the end of the topic, the learner should be able to;

- a) Define natural resources.
- b) State the types of natural resources.
- c) Mention the types of resources in South Sudan.

- d) Describe how resources contribute to development
- e) Define resource management
- f) Describe how resources can be managed sustainably

Detailed Content

1. Define natural resources. See the Student's Book pg. 85
2. The types of natural resources.
 - a) Renewable resources- Renewable resources can be replenished naturally. Some of these resources, like sunlight, air, wind, water, etc., are continuously available and their quantity is not noticeably affected by human consumption.
 - b) Non-renewable resources- Non-renewable resources either form slowly or do not naturally form in the environment. Minerals are the most common resource included in this category.
3. Describe the resources of South Sudan and where they are found.
4. Explain the economic importance of these natural resources

Natural resources

Natural resources are materials or substances occurring in nature which can be exploited for economic gain.

- Guide the learners in defining what natural resources are.
- Pose the question, "what is a natural resource?" this is to provoke the students to think and give their answers on natural resources.

Activity 5.0

Organise the learners in pairs and observe the learners discuss and state different natural resources they have at home

Types of natural resources

- Guide the learners to state the two types of natural resources.

Many natural resources can be categorised as either renewable or non-renewable resources.

Activity 5.1

- Observe the answers given by the learners on the activity.
- And find out the results of the discussion.

Renewable Resources

- Guide the learners in defining renewable resources and giving examples.
- Renewable resources can be replenished naturally. Some of these resources, like sunlight, air, wind and water are continuously available and their quantity is not noticeably affected by human consumption

Non-Renewable Resources

- Guide the learners in defining non-renewable resources and giving examples.
- Non-renewable resources either form slowly or do not naturally form in the environment. Minerals are the most common resource included in this category.
- Resources are non-renewable when their rate of consumption exceeds the natural rate of replenishment/recovery. A good example of these are fossil fuels, they are in this category because their rate of formation is extremely slow (potentially millions of years), meaning they are considered non-renewable.
-

Natural Resources

- Guide the learners in defining what natural resources are and give examples.
 - ❖ Oil
 - ❖ Gold
 - ❖ Copper
 - ❖ Zinc
 - ❖ Aluminium
 - ❖ Manganese

National park

Activity 5.2

Ask the learners whether they have visited any national park in South Sudan.

Listen to the learners as they state the national parks they know

- Guide the learners in stating what a national park is.
- Bandingilo National Park - Nimule National Park
- Boma National Park - Southern National Park
- Observe the answers given by the learners on the activity.

Water

- Guide the learners in giving examples of water sources and the roles they play in the natural resources.

Natural vegetation

- Define natural vegetation and state examples of vegetation in South Sudan.

Montane Forests

These are found on the mountains (Imatong, Dongotona, Greenland Lotii, Didinga and JebelGumbiri) to the southeast in Eastern Equatoria state.

The montane forests of South Sudan are part of the Eastern Afro-montane ecosystem.

Woodland Savannah

Woodland savannah makes up the largest ecological region in South Sudan, it is divided into two regions, namely, the low rainfall woodland savannah, which is mainly found in Upper Nile State and the high rainfall savannah woodlands.

a) The Sudd Wetland

The Sudd wetland, with an estimated area of approximately 57,000 km² represents one of the largest freshwater ecosystems in the world.

The extent of the Sudd wetlands is highly variable; it depends largely on the seasons and years respectively.

In the wet season ,the size of the wetland increases up to 90,000 km² and gradually decreases to about 42,000 km²,depending on high seasonal flood.

Natural Resources and Management Development

Natural resources are important for development because once utilized, they contribute to economic growth of the area. Countries that have utilised their natural resources well have a developed infrastructure and economy.

Activity 5.3

- Observe the answers given by the learners on the activity.
- And find out the results of the discussion.

Teaching/ Learning Activities

1. At the beginning of the topic, the teacher should introduce the topic and explain the meaning of resources.
2. Ask the students to attempt to give examples of natural resources.
3. Describe the natural resources in South Sudan and where the resources are found.
4. Allow the students to identify the location of these resources on a map, their exploitation and economic development.
5. In groups, the students should discuss the natural resources of South Sudan that are similar to those in other neighbouring countries.
6. The learners should make/ take notes as the teacher is explaining the various concepts.

Assessment of Skills, Abilities and Attitudes

- Written questions, tests, and quizzes should be set to test knowledge, comprehension, application and evaluation. This can be done by setting questions using the specific objectives.
 - ❖ Knowledge- (a), (b), (c)
 - ❖ Comprehension- (d)
 - ❖ Application- (e), (f)
- Acquisition of skills and development of a positive attitude can be assessed through participation in group discussions and co-operation during the field study

Activity 5.4

- Observe the learners and see the answers they give to the questions.

Guidelines to Exercise

- a) This exercise involves things that the learners should do. They should get answers to the question asked to the research materials made available to them.

Answers are available in the Student's Book while others should be obtained from the field during a field study.

UNIT 6: RESOURCES UTILISATION

CONTENT MAP

Knowledge and understanding	<ul style="list-style-type: none"> - State the types of natural resources. - Identify the types of energy resource in South Sudan. - Explain the nature and distribution of natural resources. - Understand the need for sustainable development. - Explain different ways of utilisation of natural resources in South Sudan and compare it to other countries.
Skills	<ul style="list-style-type: none"> - Recognize the potential of natural resource development. - Analyse natural resource use in different countries. - Explain natural resource utilisation in South Sudan, taking some examples from other African countries in the context of sustainability. - Be able to compare and contrast natural resource utilisation in different countries.
Attitudes	<ul style="list-style-type: none"> - Be thorough in their approach to evaluating evidence. - Appreciate the need for sustainability in development
Competencies	<ul style="list-style-type: none"> - Critical thinking through the evaluation of evidence. - Communication in making presentations. - Co-operation in working in groups.

Key inquiry questions

- a. What do we understand by the term natural resource utilisation?
- b. In which ways are the natural resources utilised?
- c. What measures can be taken for natural resource sustainability?
- d. How does natural resource utilisation in South Sudan compare to other countries?

UNIT 6: RESOURCE UTILISATION

Understanding Resources Utilisation

Notes for the Teacher

- a) Define resources utilisation. In the process of giving the definition, make reference to the previous Unit 5. Mention the resources available in the country.
- b) Explain the importance of the resources and their utilisation to the economic development of the country. When doing this, the aspect of comparison should come in whereby you can compare the economies of other countries that have the same natural resources as South Sudan.
- c) Give a detailed account of the poor utilisation of some of the available resources.
- d) Prepare for a field study for the students to witness the exploitation of these resources and the impact of the utilisation of the resources on the physical environment.

Teaching/ learning resources

- i. The Student's Book.
- ii. Other relevant reference books.
- iii. Photographs on gold mining, oil exploitation etc.
- iv. Relevant publications on resource utilisation.

Specific Objectives

By the end of the topic, the learner should be able to;

- Define the term natural resource utilisation.
- Explain how natural resources are utilised.
- Outline the measures that can be taken for natural resource sustainability.

- Compare natural resource utilisation in South Sudan to other countries.

Detailed Content

- a) Define natural resource utilisation. Cite examples of the resources that have been used for economic gain.
- b) Explain how natural resources are utilised for instance mining and oil exploitation.
- c) Make a comparison of resource utilisation in South Sudan with her neighbours.
- d) Define sustainable resources management and outline the efforts made by the South Sudan government in the management of her natural resources.

Natural Resources

Introduction

- Guide the learners in introducing natural resources utilisation.
- A resource is defined as anything obtained from the environment to meet human needs.

The resources that are created by nature are called natural resources.

These resources are the gift of nature.

Natural resources include air, water, land, forest, wildlife and mineral.

Types of Natural Resources

- Guide the learners as a reminder of types of natural resources
 - i. Renewable Resources.
 - ii. Non-Renewable resources.

- Pose the question of how do we utilize natural resources this will provoke the learners to think about ways in which they can utilize natural resources.

Activity 6.0

Observe the answers the learners provide the correct answers to the given questions

Types of Resource Energy in South Sudan

- Guide the learners in stating the energy resources.
 - ❖ Petroleum
 - ❖ Large hydro development.
 - ❖ Sun
 - ❖ Wind
 - ❖ Biomass
 - ❖ Geo-thermal

Nature and Distribution of Natural Resources

- Guide the learner in understanding the nature and distribution of natural resources.

Sustainable development

- Pose the question “What is sustainable development?” to the learners and let them share their ideas.
- Guide the learners in stating what sustainable development is.

Natural resource utilisation

Resource utilisation refers to the process of making the most of the resources available to you, in order to achieve the objective that you have.

Ways of Utilising Natural Resources.

Activity 6.1

- Group the learners in pairs to tackle the activity.
- Observe the learners and assess their answers on the questions on how and ways of utilizing natural resources.
- Guide the learners in stating and explaining the ways of utilising natural resources.

Use of alternative sources of power such as solar and wind energy.

These alternative sources of energy are bio friendly, particular because they do not produce greenhouse gases that contribute to global warming.

Practicing of reasonable ways to conserve water in our homes.

This entails simple practices like ensuring that taps are closed when they are not in use.

Reusing some of the water for watering the kitchen gardens in our homes, is also an important practice.

Treatment of industrial wastes and sewage before they are released in the water bodies

Rapid industrialization has resulted to wastes that are harmful to the ecosystem.

The release of these effluents directly into the water bodies has led to massive water pollution to some areas in the world especially, in developing countries.

Therefore, industrial and human waste should be treated to prevent thermal and chemical pollution of water.

Ensure the recycling of wastes.

These wastes include plastics and paper bags that have resulted to tones of garbage. Recycling entails re-manufacturing of already used materials. This reduces the amount of waste available, which in return reduces soil and water pollution.

Translocation of wild animals

The growing population has led to human encroachment on the wildlife habitat. This has resulted to human-animal conflict where the wildlife is killed by humans as a way of protecting themselves from them. Translocation involves moving wild animals to adjacent areas and fencing the area to curb the conflict.

Organise the learners in groups

Measures To Be Taken For Natural Resource Sustainability

- Guide the learners in stating the measures of natural resource sustainability
 - Water supply
 - Adequate energy
 - Air and Climate
 - Land, Forests, and Ecosystems.

Activity 6.1

- Group the learners in pairs to tackle the activity.
- Observe the learners and assess their answers on the question on measures to be taken to sustain natural resources.

Natural Resource Utilisation in South Sudan Compared To Other Countries

- Guide the learners in outlining natural resources utilisation in South Sudan compared to other countries.

Teaching/ Learning Activities

- a) Oral exposition to the new concepts by the teacher.
- b) Explanations and discussions.
- c) Students making/ taking note.
- d) Answering questions from the learners/ teacher.

Assessment of Skills, Abilities and Attitudes

- Oral questions, tests, and quizzes should be set to test knowledge, comprehension, application and evaluation. This can be done by setting questions using the specific objectives.
 - Knowledge- (a), (b), (c)
 - Comprehension- (d)
- Acquisition of skills and development of a positive attitude can be assessed through participation in group discussions and co-operation during the field study.

Guidelines to Exercise

- This exercise involves what the learners should do, they should be given different resources material such as the internet and let them come up with different definitions of the term.

UNIT 7: MAP READING

CONTENT MAP

Knowledge and understanding	<ul style="list-style-type: none">- Draw and label maps.- Explain the different types of maps.- Describe elements of maps.- Understand map reading principles and methods.- Explain the different ways of drawing maps.- Identify the different ways of land use.
Skills	<ul style="list-style-type: none">- Recognise the potential of natural resource development.- Analyse natural resource use in different countries.- Explain natural resource utilisation in South Sudan, taking some examples from other African countries in the context of sustainability.- Be able to compare and contrast natural resource utilisation in different countries.
Attitudes	<ul style="list-style-type: none">- Be thorough in their approach to evaluating evidence.- Appreciate the need for sustainability in development.
Competencies	<ul style="list-style-type: none">- Critical thinking through the evaluation of evidence.- Communication in making presentations.- Co-operation in working in groups.

Key inquiry questions

- a. What do we understand by the term natural resource utilisation?
- b. In which ways are the natural resources utilised?
- c. What measures can be taken for natural resource sustainability?
- d. How does natural resource utilisation in South Sudan compare to other countries?

UNIT 7: MAP READING

Understanding Map Reading

Notes for the Teacher

1. The geographical concepts in this unit must be defined clearly. The teacher should approach the topic using simple language and relevant examples. This will enable the learners develop interest from the beginning.
2. Expose the learners to topographical maps with different scales
3. A Scale can be defined as the relationship between distance on a map and the actual distance on the ground. What is referred as types of scales are simply different ways of expressing the same relationship. The scale of a map is constant. It does not change but can be expressed in different ways.
4. Map work spreads out into Secondary 2. Application of the information the learner is exposed to in Secondary 1 will come gradually. This explains why some terminologies have been mentioned but not explained for example contours.

Teaching/ Learning activities

- a) Exposing learners to the new terminologies.
- b) Explaining and discussing.
- c) Demonstration.
- d) Learners drawing sketch maps.
- e) Making and taking notes by the learners.

Specific Objectives

By the end of the topic, the learner should be able to;

- a) Define maps.
- b) Identify types of maps and their uses.
- c) Identify the essentials of a good map.

- d) Define scales.
- e) Identify and describes types of scales.
- f) Distinguish the different sizes of scales.

Detailed Content

1. Define maps as described in the Student's Book.
2. Discuss the types of maps and their uses and explain the essentials of a good map.
3. Define the term scale as used on maps.
4. Identify and describe the three types of scale.
5. Demonstrate how to convert one type of scale into another.
6. Discuss the sizes of scales and demonstrate how to differentiate them.

Map Reading

- Pose the question. What is map reading? And listen to the learners as they give their answers.

A map is a scaled representation of the Earth or a part of the Earth on a flat surface. *for example, on a piece of paper, wall, clothes and a piece of wood.*

A map is a representation or a model of reality and as such, along with the it chooses to display, offers a particular way of viewing the world.

Activity 7.0

- Observe the learners give their answers on the activity.

- Guide the learner in defining what map reading is.

Map reading is the process of examining the details on a given topographical map, using conventional symbols and signs. Map interpretation is the process of examining a given topographical for the purpose of identifying the geographical information presented.

Types of Maps

- Guide the learners in stating the types of maps and define all of them.
 - i. Sketch maps.
 - ii. Atlas maps.
 - iii. Topographical maps.

Components of a good map

Activity 7.1

- Organize the learners be in pairs and let them discuss the map and identify different elements of a map.

- Guide the learner in stating the elements of a good map.

A good map contains all the essential elements of maps. These essentials elements are good qualities of maps.

1. Key/legend
2. Title
3. North direction
4. Margin
5. Publisher and date of publication
6. Scale

Types of Scales.

- Guide the learners in stating and understanding different types of scale, as well as how they are expressed.
 - a. Statement scale
 - b. Linear scale
 - c. Ratio scale.

Importance of scale on the map.

1. Scale helps to calculate area of a map.
2. It enable us to calculate the distance on a map.

3. Scale shows the relationship between map distance and the actual ground distance.
4. Scale help us to enlarge and reduce the area on a map or the whole map.
5. Scale can be used to calculate the vertical exaggeration on a Map.
6. Scale is used to calculate the gradient on a map.

Activity 7.1

Ensure the learners have answered the questions correctly.

Teaching/Learning Activities

- a) Exposing learners to the new terminologies.
- b) Explaining and discussing.
- c) Demonstration.
- d) Learners drawing sketch maps.
- e) Making and taking notes by the learners.

Assessment of Skills, Abilities and Attitudes

- a) Oral questions, tests and quizzes should be used to test for knowledge, skills and ability acquisition.
- b) Development of skills can be enhanced by asking the learners to read, interpret measure and convert scales.
- c) Project work like drawing maps can be used to test learners' skills.

Activity 7.2

Expected answers

A map is a scaled representation of the Earth or a part of the Earth on a flat surface for example, on a piece of paper, wall, clothes and a piece of wood.

Map reading is the process of examining the details on a given topographical map using conventional symbols and signs.

- i. Topographical maps*
- ii. Sketch maps*
- iii. Atlas maps*

Topographical maps show selected physical and human features in an area and their positions on the ground for example hills, village, mountains, lakes, ponds and rivers.

Sketch map

- Compass*
- Key*
- Scale*

Ensure the learners give the correct answers for questions 6,7,8 and 9

Guidelines to Exercises

The teacher should provide the learners with topographical maps. The teacher should assist them where they may experience problems in identifying the features given.

The answers to the next exercise to be sourced from the Student's Book.

UNIT 8: RIVER NILE

CONTENT MAP

Knowledge and understanding	<ul style="list-style-type: none">- Name the countries which lie in the Nile Basin.- Determine the source, the length, area and significance of the Nile River to the inhabitants of the Nile Basin.- Understand the Nile Water Agreements of 1929-1959.- Identify the main stakeholders in the management of Nile Waters and possible conflicts that may arise, then suggest possible solutions.
Skills	<ul style="list-style-type: none">- Measure the length of the Nile River from Lake Victoria to the Mediterranean Sea on the map.- Evaluate the contribution of the Nile River to overall development of the Nile Basin countries.- Suggest ways for proper management of the Nile Waters by the countries that lie in its basin.
Attitudes	<ul style="list-style-type: none">- Appreciate the importance of the Nile River to the inhabitants of the Nile Watershed.- Value proper management of the waters of the Nile to the benefit of all countries in its basin.
Competencies	<ul style="list-style-type: none">- Critical thinking through the evaluation of evidence.- Communication in making presentations.- Co-operation in working in groups.

Key inquiry questions

- a. What are the main features of the Nile River?
- b. Why is the Nile River important to the inhabitants of the Nile Basin?
- c. How has the Nile Water Agreement changed over time?
- d. How many countries lie within the Nile Basin?

UNIT 8: THE RIVER NILE

Understanding the River Nile

Notes for the Teacher

1. The geographical concepts in this unit must be defined clearly. The teacher should approach the topic by introducing where the Nile obtained its name from and what the name means
2. Expose the learners to some of the interesting facts about the Nile and provide a variety of photographs for the river.
3. Provide various maps for the learners to trace the course of River Nile on the map of Africa. They should be able to identify from the maps provided, all the countries the Nile passes through.
4. Outline the features of the Nile to the learners and explain the importance of the river. Learners should also have a basic understanding of the details contained in the Nilewater agreement of 1929 and 1959.

Teaching/ Learning activities

- a) Exposing learners to the new terminologies.
- b) Explaining and discussing
- c) Demonstration.
- d) Learners drawing sketch maps.
- e) Making and taking notes by the learners

Specific Objectives

By the end of the topic, the learner should be able to;

- a) Identify features of the River Nile.
- b) Identify importance of the River Nile.
- c) Explain how the Nile water agreement has changed.
- d) Identify countries within the Nile basin.

Detailed Content

1. Name the countries which lie in the Nile Basin.
2. Determine the source, the length, area and significance of the Nile River to the inhabitants of the Nile Basin.
3. Understand the Nile Water Agreements of 1920-1959.
4. Identify the main stakeholders in the management of Nile Waters, and possible conflicts that may arise, then suggest possible solutions.

The River Nile

- Introduce the Nile River to the learners and ask them name the longest river in the world.
The River Nile takes its name from the Greek word 'Nelios', meaning river valley. It is the longest river in the world.

The Source and the Length of the River Nile

- Guide the learners in explaining the source and the length of the River Nile.
The Nile River is the longest river in the world, is approximately 4,258 miles (6,853 kilometers) long.
Nile originates from Lake Victoria in Jinja, Uganda, at the shore of Lake Victoria and flows northwards over Ripon Falls, Owen Falls into Lake Kyoga.

Activity 8.0

- Provide the learners with the requirements for the activity.
- Guide the learners in carrying out the activity on measuring the length of the River Nile on a map.
- Observe the answers the learners have given on the activity.

Countries That Lie In the Nile Basin

- Guide the learners in stating the countries that lie in the Nile basin.
 1. South Sudan
 2. Egypt
 3. Tanzania
 4. Rwanda
 5. Uganda
 6. Burundi
 7. Kenya
 8. Ethiopia
 9. Sudan
 10. Democratic Republic of Congo

The features of the River Nile

- Guide the learners in stating the features of the River Nile, Which are; narrow cliffs, boulders, and wild rapids (cataracts).

Meanders

A meander is one of a series of regular sinuous curves, bends, loops, turns, or windings in the channel of a river, stream, or other watercourse.

Oxbow lakes

An oxbow lake Ushaped lake that forms when a wide meander from the main stem of a river is cut off, creating a free-standing body of water.

Tributaries

A tributary is a stream or river that flows into a larger stream or main stem river or a lake. A tributary does not flow directly into a sea or ocean.

Importance of the River Nile

- Guide the learners in stating the importance of river Nile to South Sudan and the rest of the countries.

Provides fertile soils

Whenever the Nile River floods, it leaves behind nutrients that increase the fertility of the surrounding lands.

Provides water for domestic use

Water from River Nile make lives of many people easy as they can wash, bath and cook with it. There is also a steady supply of food in the regions surrounding the river.

Transportation

Egypt has advanced infrastructures all over the country, but the presence of River Nile for many years has provided relief to those looking for other means of transport

Great attraction for tourism

Tourist from every sphere of life visit to experience the world heritage that the nation provides. Besides the pyramids, many people visit to have river cruises and familiarize with the nation.

Helps generate electricity

Dams have been built across then Nile River which have aided in generation of hydroelectricity which is quite useful for domestic and industrial purposes

Employment

Nile river offers jobs for security officers, tour guides and waiters in the beach resorts along the river.

It has also offered employment to individuals working in construction along the river for example those working on the GERD in Ethiopia.

The Nile water Agreement

- Guide the learner in stating and understanding the Nile water agreement and how it has changed.

Activity 8.0

Observe the answers the learners have given on the activity.

Guidelines to Exercises

The teacher should provide the learners with maps. The teacher should assist them where they may experience problems in identifying the features given.

The answers to the activities to be sourced from the Student's Book.