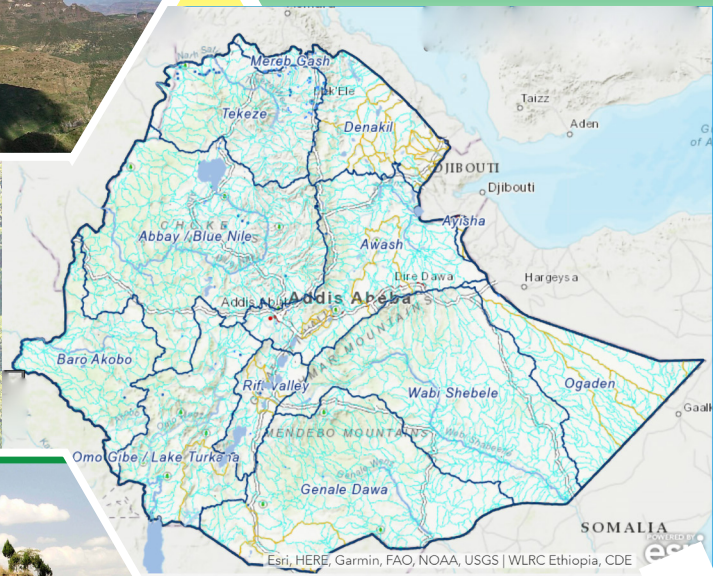
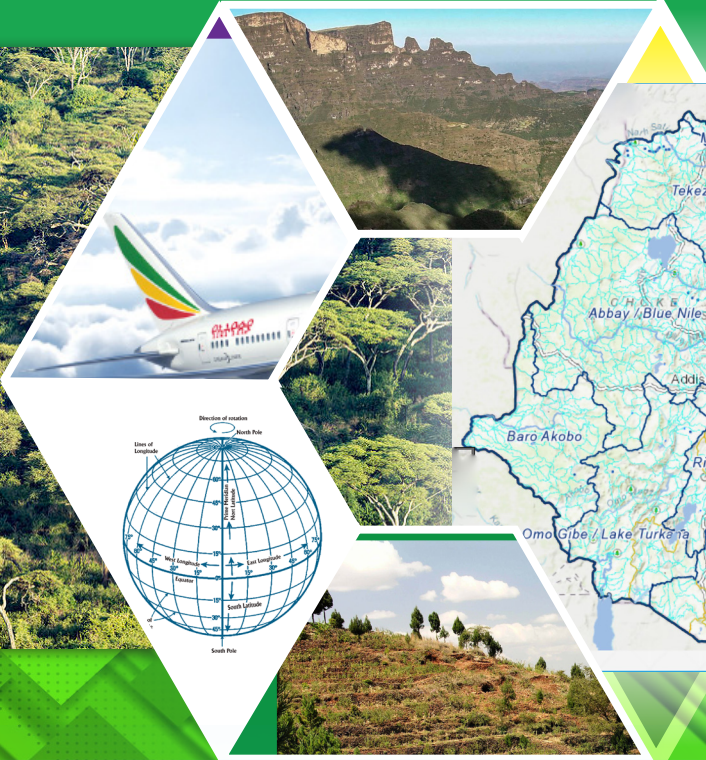




GEOGRAPHY

TEACHER GUIDE

GRADE 9



Legend

- Surface water**
 - Surface water
 - Lake
 - Occasional lake
- Dams**
 - Dam
 - dam
- Basins**
 - Main basin
 - Sub basin
- Watersheds**
- Contributors**

Map powered by Esri, HERE, Garmin, FAO, NOAA, USGS | WLRRC Ethiopia, CDE



GEOGRAPHY

Teacher Guide

Grade 9

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FDRE, MINISTRY OF EDUCATION



HAWASSA UNIVERSITY

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FOREWORD

Education and development are closely related endeavors. This is the main reason why it is said that education is the key instrument in Ethiopia's development and social transformation. The fast and globalized world we now live in requires new knowledge, skill and attitude on the part of each individual. It is with this objective in view that the curriculum, which is not only the Blueprint but also a reflection of a country's education system, must be responsive to changing conditions.

It has been almost three decades since Ethiopia launched and implemented new Education and Training Policy. Since the 1994 *Education and Training Policy* our country has recorded remarkable progress in terms of access, equity and relevance. Vigorous efforts also have been made, and continue to be made, to improve the quality of education.

To continue this progress, the Ministry of Education has developed a new General Education Curriculum Framework in 2021. The Framework covers all pre-primary, primary, Middle level and secondary level grades and subjects. It aims to reinforce the basic tenets and principles outlined in the *Education and Training Policy*, and provides guidance on the preparation of all subsequent curriculum materials – including this Teacher Guide and the Student Textbook that come with it – to be based on active-learning methods and a competency-based approach.

In the development of this new curriculum, recommendations of the education Road Map studies conducted in 2018 are used as milestones. The new curriculum materials balance the content with students' age, incorporate indigenous knowledge where necessary, use technology for learning and teaching, integrate vocational contents, incorporate the moral education as a subject and incorporate career and technical education as a subject in order to accommodate the diverse needs of learners.

Publication of a new framework, textbooks and teacher guides are by no means the sole solution to improving the quality of education in any country. Continued improvement calls for the efforts of all stakeholders. The teacher's role must become more flexible ranging from lecturer to motivator, guider and facilitator. To assist this, teachers have been given, and will continue to receive, training on the strategies suggested in the Framework and in this teacher guide.

Teachers are urged to read this Guide carefully and to support their students by putting into action the strategies and activities suggested in it.

For systemic reform and continuous improvement in the quality of curriculum materials, the Ministry of Education welcomes comments and suggestions which will enable us to undertake further review and refinement.

ADDIS ABABA, ETHIOPIA
2022

FDRE
MINISTRY OF EDUCATION

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INTRODUCTION

nature, Geography seems to be a dynamic, fast growing and a multidisciplinary area of study. Its depth and approach vary from middle to secondary levels. In grades 7 and 8, the basic concept of Geography has been introduced as a social studies subject combined with history. The Grade 9 geography textbook has been designed to provide textual material covering the whole of Ethiopian geography in a manner particularly suited to classroom discussion for beginning courses in secondary school geography.

Nevertheless, the role of the teacher in delivering the lessons should be the most vital of all things. The teacher has to use the participatory approach so that the deliveries of lessons are attractive and more practical. The class activities and assignments set after every lesson are very much helpful for this purpose. A teacher, who could not have access to modern technologies and teaching aids, can create his materials using locally available resources. Hence, if you implement the teaching learning process as to the guidelines designed, adding on your creativity, then you will successfully achieve the objectives stated for this grade level and your students develop interest in the subject.

I. General Information for the Teacher

The students' textbook and this teacher's guide are based on student-centered learning methods and an active teaching-learning methodology. This approach is widely known to:

- *increase and enhance students' academic achievements;*
- *develop students' critical thinking skills;*
- *promote co-operation among learners;*
- *improve students' communication skills;*
- *develop student confidence; and*
- *foster positive attitudes toward the subject matter.*

The active-learning method has advantages both for the teacher and the students. It emancipates the students from the teacher's authoritarian approach and gives

opportunities to involve, practice, and develop their skills, etc. For the teacher, she/he will have opportunities to evaluate, follow up, realize their weaknesses, and look for solutions.

Besides, the students share the load and the teacher obtains time to make critical assessments. There are different techniques and strategies to practice the participatory or active learning method suggested by teachers and educators. We hope that you will study them well and broaden your understanding by reading more books and by discussing with your colleagues what each of them mean and how they could be presented in the classroom. The following instructions will help you and give you general guidelines on how to get ready before and during the entire teaching-learning process.

1. Organizing Groups

You can organize your students into groups based on the nature of the topic at hand and the type of group task to be performed. It may range from pair work to a whole class discussion. When you organize groups:

- A. You need to have a list of all the students in the class.*
- B. Decide how many groups are needed to be formed.*
- C. Then put your students into the required number (not be more than six) of groups. To do so, you can follow the following techniques:*
 - *Seat grouping: Students sitting on a bench, in the same row, etc.*
 - *Ability grouping: Grouping students according to their abilities*
 - a) Similar ability grouping: Slow learner with a slow learner, a medium learner with the medium learner, and a fast learner with fast learner.*
 - b) Mixed ability grouping: In this type of grouping the students of all ability types: slow, medium and fast learners can be in one group; it is you, who decide which method of grouping fits the task to be performed.*
 - *Lottery method grouping: This is a method of grouping students randomly by pulling them out of their seats or by randomly numbering them.*

2. Discussion

This can be done in pairs, groups, or the whole class as a group. Discussion eases much of your burden, especially for classes with a large number of students.

In all units, sections and sub-topics, there are activities suggested for the students to do in groups. Whenever you let your students discuss a certain aspect of a topic:

- ➔ *Follow up whether every student is participating in the discussion or not and how well she/he is participating,*
- ➔ *Be part of the discussion in some of the groups for a while and see if the group discussion is held in the way intended; give assistance and guidance whenever it is needed,*
- ➔ *Give some hints when you think they will get stuck in some points or when you see them facing difficulties, and*
- ➔ *In some occasions ask questions related to the topic to facilitate the group interaction in the manner or direction required.*
- ➔ *Observe each student see how he or she participates in the discussion. Encourage inactive students to participate. Employ various techniques to encourage them, using your own approaches and talents.*

3. Presentation

In a geography class presentation can be considered as a vital learning process because the students can be doing a lot of things and activities. For example, they can present:

- *the most important ideas and concepts they gained in the group discussion;*
- *the information they gained from a field trip;*
- *data they gathered or interpreted; and*
- *maps, diagrams, models, charts, samples, etc.*

Be sure:

- *Each member of the group presents its opinions*
- *There is a fair distribution of topics. It would be better if students present topics of their choice.*
- *The first priority should be given to female students*

4. Demonstration

In this technique, you show the students how something is done or why something is true. For example, you can

- *Demonstrate and compare the advantages and disadvantages between a globe and a map.*
- *Show the size and shape of Ethiopia.*
- *Demonstrate how to determine Ethiopia's absolute and relative locations.*

In doing so, the teacher is required to perform the following tasks:

- a. *guide students while they do their demonstrations;*
- b. *give brief explanations after and before the demonstrations;*
- c. *provide materials from the pedagogical center;*
- d. *assist the students whenever they need your help; and*
- e. *follow up to see whether each member of the group is carrying out his task or not.*

5. Field work

Field work through observations and interview: Field observation enables students to associate what they have learned theoretically in the class with the actual physical features in the field. The field observation should be pre-planned and purposeful. Students should be oriented on how to collect, organize, analyze and interpret data. Each group is expected to present its findings to the class.

6. Brainstorming

Use this method at the moment of introducing the topic of the lesson. Have the classroom of students' -state, out loud, all possible ideas about the lesson subject. To get them started, use general questions. For example, at the start of Unit 1, you might ask "What is geography?" and "Why is studying geography important?" As the students brainstorm, encourage them to give their opinions freely, using their ideas, existing knowledge, intuition and imagination.

7. Questioning

Use this method frequently, particularly during explanations. Also, during discussions, pose questions periodically or intermittently. Give all of your

students opportunities to answer questions. Considering and answering questions helps students develop their analytic and communication skills. This technique also helps you to assess student participation and achievements.

A good approach for this technique is to ask the question and then pause to cast your eyes around the class, and then ask an individual to answer. Be sure to praise correct answers and also the act of participation. If the students find your question difficult, write it on the board.

To achieve those goals during the process of questioning, use these approaches and follow these procedures:

- *Keep the questions short and simple.*
- *Pause for longer than you think is necessary.*
- *Whenever possible, use questions that all levels of students (slow, normal, and fast learners) can engage with. When a single question cannot achieve this goal, use multiple questions.*
- *Reward participation as well as correct answers with praise, bonus marks or other types of rewards.*

8. Organizing Concepts

In a participatory class there might be different ideas and concepts that may come up out of the class interaction. Sometimes students may be confused when such new ideas sprang. This is because most students often think that there should be a single route to pass through and their coming to class is to identify that route. Therefore, whenever different ideas are raised with regard to a given topic they may fear that they have lost or couldn't find that single route. Such views might be reflected particularly in discussions and presentations. Thus, the teacher's major role is to harmonize concepts forwarded by the students during, after presentations and discussions or during other class activities. On such occasions you are expected to make a mini-lecture. In the lecture you should:

- *explain only points which you think are unclear to the students;*
- *give short answers to their questions;*
- *correct wrong conclusions or deductions;*
- *add some ideas or uncover concepts; and*
- *explain untouched parts of the topic.*

9. Continuous assessment

Continuous assessment is the process of collecting, interpreting and analyzing information to aid in decision making. Continuous assessment does not mean testing. Rather, it means communicating with the students to find out whether they are truly learning or not.

Most of the time different students in the class come from different economic, social and cultural backgrounds. Such conditions have a great impact on the teaching-learning process. In this regard the teacher must be in a position to stimulate and encourage the students' interests in accordance with their interests, beliefs and values. Therefore, the teacher should follow each student's day-to-day activities and identify those students that have problems in their academic performance. After having investigated such a student's problems, the teacher has to use varieties of techniques to make decisions about:

- *How to teach*
- *What to teach*
- *How well students have learned*

A teacher should follow the following steps to apply continuous assessment:

Before instruction: Gather information about what the students already know-for example, about the scope of geography and identify what misconceptions they may have. Use this information to help plan the instruction and teaching activities for the unit. After that, use the information to consider changes that should be made in the learning plans.

During instruction: gather information about how well the students are learning. Use this information to decide which students are performing well and which ones are not doing well. Use the information to consider what changes should be made in the lesson plans.

After instruction: Collect information about how well each student has learned the lesson that was taught. Use the information to record grades or re-teach students who are lagging.

In the past, it was a traditional to evaluate the students' performance by recording their grades on quizzes, tests, and mid and final examination results. Even though these evaluation methods are useful to assess the students' achievements, they

may not give us clear pictures of each student's academic performance. Therefore students' academic performance should also be evaluated by their day-to-day activities throughout the topics they are taught. Hence, you need to have a record of every student's work and activity. You can manage a record of each student's achievement based on the following points:

- *Participation in group and individual discussions,*
- *Participation in presentations after discussion,*
- *Participation in answering and explaining questions,*
- *Ability in suggesting new ideas,*
- *Role in presenting and organizing activities,*
- *Accuracy and consistency in doing class works, home works, quizzes, tests and exams,*
- *Consistency in attending classes,*
- *Punctuality,*
- *Classroom conduct,*
- *Reporting field observations,*
- *Other miscellaneous assessment techniques are:*
 - *Class work* - *Quizzes*
 - *Homework* - *Tests*
 - *Group work* - *Mid-semester and semester exams*

10. Supplementary Activities

Only the activities given in the students' textbook may not be adequate to obtain the expected affirmative outcome. Even worse, some of the activities and tasks that are given in the textbook may not fit to the needs and requirements of some of your students in the class. Hence, you should have always contingency plans and ready-made materials to use whenever necessary. Therefore:

- a) *Always have questions that are marked asterisk (*) for fast learner students.*
- b) *Prepare some more questions that can be given in the classroom.*
- c) *Give some home-take tasks to whom you think are slow during the classroom interaction.*
- d) *Find some puzzles related to your subject which can motivate students.*

11. Giving Notes

Teachers are not expected to give notes on the blackboard. However, the teacher may give summary notes, which give general views about the topic that has been taught at the end of each unit or sub-unit. Otherwise, the teacher is not obliged to write every detail that is depicted in the textbook. The teacher should teach the students to how to take notes from their textbook and other reference materials.

12. Answers for review questions

Answers to review questions are given at the end of the teacher's guide.

13. Suggested teaching methodologies

Since geography is a dynamic subject, the teaching-learning activity demands the implementation of the active and student-centered teaching methodology. In the active learning methodology, more time is devoted to student discussions (either in groups or individually) on ideas, issues and contents of the topic treated. In this teaching methodology, the role of the teacher is just to guide students on how to handle issues in the course of discussion. Therefore, the teacher is there to act as a facilitator instead of dominating the class by talking the whole period without giving the students chances to talk.

Active learning enables students to:

- *Develop their critical thinking skills*
- *Develop a positive attitude towards others.*
- *Develop self-confidence that they can solve any problem by themselves.*
- *Develop responsibility.*
- *Bring behavioral change and continuous progress in their academic achievements.*

Active learning can be implemented by employing the following techniques:

- a. **Entertaining brainstorming questions:** *enable the teacher to assess students' abilities and their prior knowledge about the topic that is treated in the class. It also helps the teacher how to approach and present the unit to the students.*
- b. **Group discussion:** *This is the most important teaching methodology*

- for the teacher to use to apply active learning. Group discussion can be conducted by dividing the class into several groups of about 4 to 6 students in which they are to work together throughout the year. Group discussion helps teachers to assess the students' thinking power and the knowledge they acquired from their previous classes.*
- c. **Cooperative or Collaborative Learning:** *This method can be implemented in fostering group works, projects, and assignments. It helps the students to cooperate in doing some activities and sharing their experiences.*
 - d. **Brief explanation:** *give brief explanations of the lesson topic after students have finished their presentations. Give class work as per your timetable or else give them assignments to be done at home. Do not forget to give a summary at the end of each period.*
 - e. **Demonstration:** *It is a method by which the students are presented with something visual that represents how something is structured, what it is made from, how it functions, etc. For example, to show types of soils and their textures or how temperature is measured, and so on.*
 - f. **Drawing Pictures, Maps, Graphs, etc.:** *As most of the topics of Geography are location- oriented, this method can be used more frequently in a geography class. They enable the learner to visualize and conceptualize knowledge, concepts and information. This method is mainly applicable for topics, such as fold mountains distributions, vegetation distributions, earthquake and volcanoes distributions, population density, weather conditions, etc.*
 - g. **Inquiry method:** *The teacher asks questions during lectures just to keep students alert and attentive.*
 - h. **Visual based active learning:** *the teacher should bring real objects, models, pictures, maps, graphs, charts, films, videos, photos, etc. to class. For example, you can use a globe when you teach the rotation and revolution of the earth.*
 - i. **Grouped Lectures:** *It is not wise to make a long and continuous lecture for it may bore the students. Instead it is advisable if the total lecture is divided into small sections. Hence, follow the following approaches so that your lecture could become effective and attractive:*

- *Divide your lecture into small sections of about 15 minutes,*
- *Give your students a short and quick activity of about 5 to 10 minutes, and*
- *Continue to lecture for another 15 minutes that can be followed by another activity (if necessary) as to the length of the allotted period. It would be advisable if the activities are those which consolidate the concept of the proceeding lecture and give some clues to the forth-coming ones.*

1. **Field-visit reporting:** *You can make your students write reports based on visits they made recently. The main importance of field visits is to enable the students to compare and contrast what they have learned in the class with facts they encounter in the real world. The reports they write based on such incidents help them to be keen observers and good interviewers.*

Only identifying and implementing the best teaching methodologies to your topic cannot still be an end unless before entering into the class you accomplish one significant task – preparing a lesson plan.

A good lesson plan contains four major parts:

- i. **Introduction**
 - ii. **Presentation**
 - iii. **Consolidation/stabilization**
 - iv. **Evaluation**
- i. **Introduction:** *This is the part of the lesson in which the teacher:*
 - a) *Introduces a new topic,*
 - b) *Relates the present topic to the past.*
 - ii. **Presentation:** *This is the stage where the teacher presents and explains the topic to the students. It is at this stage that all the activities discussed earlier be implemented.*
 - iii. **Consolidation:** *At this stage, the teacher strengthens the topic learned in the presentation part by explaining the main points or by letting the students perform some tasks that consolidate the main lesson.*
 - iv. **Evaluation:** *This is the stage where the teacher checks whether the students have understood the topic to the level and amount required. This can be*

done by asking some questions or by making them do some tasks just after the lesson. These are the didactic elements of the teaching-learning process taking place in the classroom. These activities should be set and stated clearly and vividly in a manner that shows the logical interaction with one another and in accordance with the instructional elements given in the body of the lesson. The instructional elements of the body of the lesson include, the instructional activities taking place in the given period, teaching materials and teaching aids, units and sub-units, etc. The format of the lesson may be left to you or a concerned body may provide you with it. However, what you need to take care of is being sequential, orderly and logical so that your lesson is comprehensive and the teaching-learning process in the classroom is interactive. A good lesson plan would enable the teacher to present the lesson in the given time order and manner. Therefore, topics to be taught, methods to be employed, the teaching materials to be used, and the procedures to be followed should be stated clearly.

It is assumed that the additional activities are common to all students regardless of their differences in attitude, knowledge, and skill.

Therefore, the teacher is required to organize the class based on the efficiency of students. The questions should be addressed in terms of the aggregate ability of the students in the group formed for fast, average and slow learners.

You can also refer to the assessment at the end of each unit in the syllabus and needs to stress on it while you are dealing with any activities.

By the end of the grade 9 geography education students should exhibit the following profile:

- *Describe their natural and social surroundings/environment.*
- *Articulate the link between poverty and environmental degradation.*
- *Participate in activities related to socio-cultural development as well as environmental protection.*
- *Contribute to activities that enhance a healthy interaction between human and natural environments.*
- *Live together with people of diverse backgrounds thereby appreciating*

multiculturalism and valuing the diversity of livelihoods and lifestyles.

- *Figure out the interconnection between the social and natural phenomenon by using their geographic knowledge and skills.*
- *Communicate facts, concepts, ideas, etc. using maps.*
- *Pursue a technical training path of their choice or prepare for further academic engagements using their geographical knowledge and skills as a base.*
- *Contribute to efforts aimed at bringing about sustainable development in Ethiopia and the world at large.*

II. Grade level learning outcomes for Grade 9 Geography

After completing grade nine geography lessons, the students will be able:

1. To develop understanding and acquire knowledge of:

- ➔ *concept, scope and branches of geography;*
- ➔ *basic features of the physical environment;*
- ➔ *the concept of a map and its basic components;*
- ➔ *geological processes and landform of Ethiopia;*
- ➔ *concepts of weather and climate;*
- ➔ *elements and controls of climate, and climatic regions;*
- ➔ *drainage pattern and water resources of Ethiopia;*
- ➔ *factors responsible for the distribution of the major water resources in Ethiopia;*
- ➔ *factors responsible for the difference in types of natural vegetation in Ethiopia;*
- ➔ *the types of wildlife in Ethiopia and factors that affect their distribution;*
- ➔ *the types of soils in Ethiopia and factors that affect their distribution;*
- ➔ *spatiotemporal distribution of minerals in Ethiopia;*
- ➔ *theories, growth, characteristics, structure and distribution, population and settlement patterns in Ethiopia;*
- ➔ *impacts of rapid population growth on the natural environment, socio - economic development and urbanization in Ethiopia;*

- ➔ *spatial distribution of health and diseases in the highlands and lowlands of Ethiopia;*
- ➔ *the importance of the major economic activities of Ethiopia;*
- ➔ *trade and transport systems of Ethiopia;*
- ➔ *the diversity of language and religion in Ethiopia;*
- ➔ *socio-economic development;*
- ➔ *relationship between human activities and the environment by giving examples from their local environment;*
- ➔ *how protecting the environment is in the interest of humans and other living beings;*
- ➔ *dynamic flows, interactions and exchanges within an integrated human-environment system at different spatial and temporal scales in the highlands and lowlands of Ethiopia;*
- ➔ *the implications of trend in population growth on sustainable use of natural resources;*
- ➔ *the advantages and disadvantages of underpopulation for environmental and socioeconomic development;*
- ➔ *the impact of rapid population on environmental and socioeconomic development;*
- ➔ *the cause and effects of natural resource degradation; and*
- ➔ *Ethiopia's vision to achieve development without undermining the potential of the natural environment.*

2. To develop skills and abilities of:

- ➔ *construct the absolute and relative location of Ethiopia;*
- ➔ *compute the size and shape of Ethiopia;*
- ➔ *constructing statistical diagrams to represent data on distribution maps;*
- ➔ *make a conversion of map scale;*
- ➔ *measure area and distances using maps;*
- ➔ *demonstrate position on maps and make sketch maps;*
- ➔ *undertake investigate, gather geographic information and analyze the data using appropriate techniques;*
- ➔ *illustrate the distribution of soils types, major water resources, natural*

vegetation and wild life in Ethiopia;

- ➔ *demonstrate the spatiotemporal variation minerals in Ethiopia;*
- ➔ *demonstrate the population distribution and settlement patterns of Ethiopia;*
- ➔ *demonstrate spatial distribution of health and diseases in the highlands and lowlands of Ethiopia; and*
- ➔ *sort out some of the ways in which humans use natural resources and give examples that illustrate over-exploitation.*

3. To develop the habits and attitudes of:

- ➔ *adhere to the realization of the Ethiopian population policy;*
- ➔ *value the importance of the major economic activities of Ethiopia;*
- ➔ *value the importance of cultural landscapes and heritages of Ethiopia;*
- ➔ *appreciate the diversity of language and religion in Ethiopia;*
- ➔ *showing interest for the realization of plan for accelerated sustained development to end poverty;*
- ➔ *adhere the implication of optimum population for sustainable use of local natural resources;*
- ➔ *aspire natural resource management in Ethiopia;*
- ➔ *showing interest for the implementation of Ethiopia's vision to achieve development without undermining the potential of the natural environment;*
- ➔ *adhere natural resource conservation and management policy of Ethiopia;*
- ➔ *conforming to participate in conservation programs; and*
- ➔ *generalizing the present features of Ethiopian socio-economic development.*

UNIT ONE

1. GEOLOGICAL HISTORY AND TOPOGRAPHY OF ETHIOPIA

Total periods allotted: 11

1. Unit Introduction

In this unit, students will learn the geological history and topography of Ethiopia. More specifically, the unit treats such topics as the location, size and shape of Ethiopia and the geological processes, and landforms of Ethiopia. The unit is also intended to get the students familiar with the meaning, scope and branches of geography.

2. Unit Outcomes

At the end of this unit, the students will be able to:

- ➔ *recognize the concept, scope and branches of geography;*
- ➔ *express the basic land features of the physical environment;*
- ➔ *describe the absolute and relative location of Ethiopia;*
- ➔ *compute the size and shape of Ethiopia;*
- ➔ *explain geologic processes that shaped the land surface of Ethiopia; and*
- ➔ *describe different landforms in Ethiopia.*

3. Main Contents

- 1.1. Geography: Meaning, Scope and branches
- 1.2. Location, Size, and Shape of Ethiopia

1.3. Geological History of Ethiopia

1.3.1. Geological Processes

1.3.2. Landforms

1.1. Geography: Meaning, Scope and Branches

1.1.1. Meaning of Geography

Period allotted: 2

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *define geography as a subject.*

2. Contents

- ☛ Meaning of Geography

3. Overview

In this lesson, students are going to learn about the meaning of geography. First they will learn the general definition of geography. Then there will be a discussion session about the term geography and how it was coined by the famous Greek philosopher known as Eratosthenes. During that time, geography was defined as the field of study which deals with “the description of the earth”. But today the scope of geography is beyond this definition. Different scholars have tried to define geography differently at different times.

This variation might be attributed to:

- ☞ The wider nature of the scope of geography
- ☞ The dynamic nature of much of its content

Although geography has been defined in different ways by different scholars, geographers have adopted one single definition.

Geography is the study of the spatial variation of phenomena on the earth's surface, on the one hand, and the two-way relationship existing between humankind and the environment, on the other hand.

4. Teaching-Learning Process

4.1. Suggested Teaching Aids

- ↪ Pictures that show ancient world maps
- ↪ Ancient maps to show the location of Greece
- ↪ Pictures of Eratosthenes
- ↪ Diagrams

4.2. Suggested Teaching Methods

- ↪ Brainstorming
- ↪ Group discussion
- ↪ Questioning
- ↪ Lecture with a demonstration
- ↪ Explanation
- ↪ Jigsaw group project

Note: The selected teaching methods that are included in the lesson are prescribed in the general information for the teacher given on the first page of this guide.

4.3. Pre-Lesson Preparation

Before you begin teaching the lesson:

- ↪ get the suggested teaching aids and teaching materials ready;
- ↪ refer to relevant materials on the definitions and meanings of geography; and
- ↪ find ancient and modern maps of the world, photographs, diagrams, and other teaching materials via electronic source or the school pedagogical center.

4.4. Presentation of the Lesson

a) Introduction to the lesson

You might use your own method of presenting the lesson in a way you see fit for that particular topic. However, the simplest way of introducing a topic is by raising relevant questions. Questions by themselves are motivating factors that make students curious and draw their attention to the lesson. Therefore, you may begin the lesson by asking questions such as:

1. What is geography?
2. Who defined the term geography for the first time in history?
3. Why did different scholars define geography in different ways?
4. What reasons do you suggest for the fact that geography has different definitions?

Introduce also the lesson by giving the ancient and modern definitions of geography. Be sure the students understand the objectives of the lesson.

b) Body of the lesson

- ↳ Listen to the students' responses to the above questions and try to identify where your students need of your instruction. Then, make your presentation to the class, based on the students' responses to the above questions.
- ↳ Give a general definition of geography.
- ↳ You may divide students into small groups, provide them with different definitions of geography and have them discuss both ancient and modern definitions and develop their own.
- ↳ Explain why it is difficult to have a single and simple definition of geography.

c) Stabilization

Ask students to identify the key point of the lesson and then stabilize your lesson presentation by reviewing all essential points, including those not mentioned by the students. You may mention the following.

- ↪ A number of geography definitions have been given by different scholars of the nineteenth and twentieth centuries.
- ↪ Geography is a branch of science that studies the spatial variation of phenomena on the earth's surface and the interaction of natural and human features and their causes and effects.
- ↪ Geography being a science the main tools uses to gather and analyze information is observation, systematic description, systematic recording and mapping.

4.5. Evaluation and Follow-Up

a) Evaluation

At the end of the lesson, make sure that your students have understood the essential concepts of the lesson by asking them questions like the following.

- ↪ Who introduced the term geography first in history?
- ↪ What is geography?
- ↪ Write the modern and ancient definitions of geography.
- ↪ What do we mean by spatial variation of phenomena?
- ↪ Do you think that geography has a single universally accepted definition? Why?

b) Follow up

- ↪ You should record and rate (assign scores) for the responses the students make.
- ↪ Watch carefully the slow learners and fast becomes. Design a supporting means to slow learners.
- ↪ Facilitate classroom discussion.

c) Additional Question

- ↪ What does GEO + GRAPHY literally mean?

Answer Key for Additional Question

- “To write about the Earth.”

1.1.2. The Scope of Geography

The period allotted: 1

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *determine the scope of geography.*

2. Contents

- ☛ The Scope of Geography

3. Overview

Geography is a discipline that has a wide scope. It generally places special emphasis on the following four major issues: location, spatial relationships, regional characteristics and the forces that change the earth. Hence, the scope of geography emerges from these broader themes.

The geographer’s major interest is to explain the spatial variation and distribution of different phenomena over space.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

To make your lesson lively and appropriate, use the following teaching aids:

- ☞ Physical map of the world
- ☞ Thematic map of the world
- ☞ Pictures/photographs that show relationships between man and nature – e.g., different economic activities, settlements, etc.

4.2. Suggested Teaching Methods

- ↪ Brainstorming
- ↪ Demonstration
- ↪ Questioning
- ↪ Explanation
- ↪ Pair/group discussion
- ↪ Jigsaw group project

4.3. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials.
- ↪ Design the most appropriate teaching method for the context.
- ↪ Prepare notes, activities and exercises.

4.4. Presentation of the Lesson

a) Introduction to the lesson

Introduce the lesson by asking questions like:

- ↪ What do we mean by scope?
- ↪ Explain the scope of Geography
- ↪ How wide is the scope of geography?
- ↪ What makes geography a broad discipline than any other subject?

b) Body of the lesson

- ↪ Define what scope means.
- ↪ Explain the scope of geography, including its areas of interest.
- ↪ Explain the major issues that geography deals with.
- ↪ Describe how the scope of geography emerged.
- ↪ Define four spheres of physical geography

c) Stabilization

Complete your lesson presentation with a review of key ideas and concepts such as:

- ↳ Scope refers to the content (how broad or narrow) of the field of study of a given discipline, in this case, geography.
- ↳ Geography's scope is very wide. As the scope is dynamic, it changes often as new discoveries and ideas enter the field.
- ↳ The subjects that geography examines include features in the hydrosphere, atmosphere, lithosphere and biosphere.

4.5. Evaluation and Follow up

a) Evaluation

To know the level of understanding of the students and whether the expected competencies are achieved, ask the students questions about the topic you taught like the following:

- ↳ What is scope?
- ↳ What is the scope of geography?
- ↳ Explain how the scope of geography emerged.

b) Follow up

To help your students get more knowledge on the topic, you can have them work on topics that are directly related to your lesson. For example, you can give them assignments on the following topics.

- ↳ The major issues that geography focuses on.
- ↳ The ancient and modern scope of geography

c) Additional Question

- ↳ Mention the major issues that encompass the scope of geography.
- ↳

Answer Key for Additional Question

↪ Hydrosphere, biosphere, atmosphere, and lithosphere.

1.1.3. Branches of Geography

1. Competencies

At the end of this lesson, students will be able to:

➔ *identify the branches of Geography.*

2. Contents

☞ Branches of Geography

3. Overview

The scope of geography is very wide; this is so because it deals with physical, social, and economic aspects of the world. Geography may be divided into two fundamental branches: Physical and Human Geography.

Physical geography studies the distribution of the natural features of the world, such as climate, landforms, soil, vegetation, surface drainage systems, water resources and animals. This branch of geography also considers the causes, effects and interactions of these features.

Human geography studies the distribution and influence of human aspects of our world, including cultures, population settlement, economic activities and political systems. This branch of geography is sub-divided into the following specialized fields of study.

4. Teaching-Learning Process

4.1. Suggested Teaching Aids

↪ Charts that show the branches of geography.

4.2. Suggested Teaching Methods

- ↪ Brainstorming
- ↪ Lecture with a demonstration
- ↪ Questioning
- ↪ Jigsaw group project
- ↪ Group discussion
- ↪ Presentation

4.3. Pre-lesson Preparation

- ↪ Make charts of branches of geography and pictures ready.
- ↪ Refer to relevant materials on the branches of geography.
- ↪ Prepare yourself especially on areas, which you think might be confusing or challenging to the students

4.4. Presentation of the Lesson

a) Introduction of the lesson

- ↪ Introduce students to what they are going to learn (Branches of geography).
- ↪ Make the objectives of the lesson clear to students.
- ↪ Conduct a brainstorming session to find out the students' background understanding of branches of geography. You may ask questions such as: What are the two branches of geography? Can you list some of the fields of geography that fall into each of the two branches?

b) Body of the lesson

- ↪ By using a chart, identify the major branches of Geography
- ↪ Explain the sub-branches of physical and human geography
- ↪ Help your students to present real-life examples from the surroundings about physical and human features'.

c) Stabilization

Summarize the following points

- ↪ The two branches of geography.
- ↪ The meaning of physical and human geography.
- ↪ Fields of geography that fall into physical geography.
- ↪ Fields of geography that fall into Human geography.

4.5. Evaluation and Follow up

a) Evaluation

Check whether or not the students have understood the lesson by giving them quizzes. Encourage them to answer the following questions in their groups or independently.

- ↪ What are the two major branches of Geography?
- ↪ What does human geography study?
- ↪ What's meant by physical geography? Give examples.

b) Follow up

- ↪ Encourage students to list and discuss in groups, the major elements and events available in their surroundings and categorize these elements under physical and human geography.
- ↪ Help them to present their group findings to the class.

c) Additional Activity

- ↪ What is the major concern of applied geography?

Answer Key for Additional Question

- ↪ Applied geography is concerned with the application of geographical knowledge and skills to the resolution of real-world social, economic and environmental problems

4.6. Answer for Activities in the Textbook

Activity 1.1

1. I agree; because the core issues in geography are the relationship between human beings and nature and there is also two-way relationship between humans and nature.
2. I disagree. Please, teachers, give students the freedom to assess and discuss the issue from their perspective.
3. I do not agree, because the scope of geography is very wide; it deals with physical, social, and economic aspects of the world.
4. Geography has common areas of study with a number of other fields of study. Generally, geography is classified into two broad categories: physical and human. The physical parts of geography are related to the natural sciences and the human aspects are strongly associated with the social sciences.

1.2. Location, Size and Shape of Ethiopia

1.2.1. Location of Ethiopia

Period allotted: 1

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *describe the absolute and relative location of Ethiopia; and*
- ➔ *recognize the geopolitical implication of the location of Ethiopia.*

2. Contents

- 👉 Location of Ethiopia

3. Overview

In this lesson, students will learn particularly the location of Ethiopia. The location of Ethiopia can be expressed absolutely (using latitudes and longitudes)

and relatively (with reference to the neighboring countries and the major bodies of water and landmasses).

The absolute location of Ethiopia is between 30N to 150N latitudes and 330E to 480E longitudes. Thus, from the country's absolute location, we can understand that:

- ↪ Ethiopia is located within the tropics.
- ↪ Ethiopia is a country found in the northern and eastern hemispheres.
- ↪ Ethiopia is located in the GMT+3 time zone.
- ↪ The latitudinal (north-south) distance of Ethiopia is slightly longer than its longitudinal (east-west) distance.

The relative location of Ethiopia can be expressed with reference to its neighbors (vicinal location) and with reference to the major bodies of water and landmasses (geological location). Ethiopia is a landlocked country, surrounded by five neighboring countries, Kenya, Somalia, Djibouti, Eritrea, and Sudan. The vicinal location of Ethiopia is: South of Eritrea; West of Djibouti; North of Kenya; Northwest of Somalia and East of Sudan

Its geological location can be expressed in the following ways. Ethiopia is found: Southwest of Asia;

South of Europe; Northwest of the Indian Ocean; West of the Gulf of Aden; Southwest of the Red Sea and in the Horn of Africa.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Political map of Ethiopia and Africa
- ↪ Globe
- ↪ Google earth satellite map of Ethiopia
- ↪ GPS (Geographical Positioning System)

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Pair/group discussion
- ↪ Questioning
- ↪ Demonstration
- ↪ Jigsaw group project

4.3. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials.
- ↪ Design the most appropriate teaching method for the lesson.
- ↪ Prepare notes, activities and exercises.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce the students to what they are going to learn (Location of Ethiopia).
- ↪ Make the objectives of the lesson clear to your students.
- ↪ Remind the students about the differences between absolute and relative location.
- ↪ Conduct a brainstorming session to find out the students' background knowledge of the location of Ethiopia. You may ask questions such as: How do you express the location of Ethiopia? Can you identify the relative location of your school or residence? Which neighboring country is located south of Ethiopia?

b) Main Body of the Lesson

- ↪ Using the political maps and globe that you have prepared, have your students describe the position of Ethiopia with reference to the neighboring countries, major bodies of water and landmasses, latitudes and longitudes.

- ↪ Based on the students' background knowledge, explain more about the absolute and relative location of Ethiopia. When you explain the vicinal location of Ethiopia, be sure that the students are aware of the types of international boundaries and the stages of the formation of international boundaries. Support your presentation with the map that shows the boundaries shared between Ethiopia and its neighbors. You may ask students questions such as: Which country shares the longest boundary with Ethiopia? Which country shares the smallest boundary with Ethiopia? As compared with its neighbors, what is the rank of Ethiopia in terms of boundary length?
- ↪ Give them time to ask questions and organize their notes.

c) Stabilization

Stabilize your lesson presentation with a review of key ideas and concepts of such as:

- ↪ Ethiopia is located between 3°N-15°N and 33°E-48°E.
- ↪ Ethiopia is a landlocked country surrounded by five neighboring countries.

4.5. Evaluation and Follow Up

a) Evaluation

Check your students' understanding of the lesson by giving them an exercise to be done independently. The exercise may contain questions such as:

- ↪ What is location? How is it described?
- ↪ Where is Ethiopia located astronomically?
- ↪ What is the absolute location of Ethiopia?
- ↪ What are the advantages and limitations of Ethiopia's location?

b) Follow up

- ↪ Rate and grade the various activities performed by the students to get indirect feedback on whether the lesson is well-understood or not and

to identify those students who may need additional assistance.

c) Additional Activity

- Describe the absolute and relative location of Ethiopia.

4.6. Answer Key for Additional Question

- Absolute Location:** Ethiopia is found between 3°N — 15°N and 33°E — 48°E .
- Relative Location:** Ethiopia is found to the South of Eritrea, North of Kenya, East of Djibouti, Northwest of Somalia, Northwest of the Indian Ocean, Southeast of the Red Sea, etc.

1.2.2. Size of Ethiopia

1. Competencies

At the end of this lesson, students will be able to:

- describe the size of Ethiopia; and
- compare the size of Ethiopia with that of other countries of Africa.

2. Contents

- Size of Ethiopia

3. Overview

With a total area of 1,106,000 km², Ethiopia is one of the ten largest countries in Africa. When we compare its area with that of its neighbors, Ethiopia stands second, next to Sudan, and it is almost five times bigger than Djibouti. The large geographical area of Ethiopia has both positive and negative impacts on the socio-economic, political, and natural conditions of the country.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ political map of Africa;
- ↪ political map of Ethiopia;
- ↪ sketch maps that show regular and irregular shaped areas; and
- ↪ charts that show the sizes of Ethiopia and its neighboring countries.

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Jigsaw group projects
- ↪ Questioning
- ↪ Explanation
- ↪ Group discussion
- ↪ Demonstration

4.3. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials.
- ↪ Design the most appropriate teaching method for the lesson.
- ↪ Prepare notes, activities and exercises.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce the students to what they are going to learn (i.e., Size of Ethiopia).
- ↪ Make the objectives of the lesson clear to your students.
- ↪ Conduct a brainstorming session to find out the students' background knowledge of the size of Ethiopia. You may ask question such as: Is Ethiopia a large or a small country in comparison with its neighbors? Does size influence the economic strength of a country?

b) Main Body of the Lesson

- ↳ Using the chart and political map of Africa that you have prepared, have the students compare the size of Ethiopia with those of its neighbors. Explain more how large Ethiopia is as compared with other countries of the world. Have the students discuss this question in their groups: What advantages and disadvantages does Ethiopia have because of its big size?
- ↳ Make sure that all students are involved in the group activities and the entire teaching-learning process.
- ↳ Give them time to ask questions and organize their notes.

c) Stabilization

Stabilize your lesson presentation with a review of key ideas and concepts of such as:

- ↳ Ethiopia is a landlocked country surrounded by five neighboring countries.
- ↳ Ethiopia is the tenth biggest country in Africa.
- ↳ Ethiopia's large size has both advantages and disadvantages for the country.

4.5. Evaluation and Follow Up

a) Evaluation

To check the level of understanding of your students of the lesson and be sure that the expected levels of competence are achieved, ask the students some questions from your lesson. Note that your questions should be based on the stated specific objectives of the lesson. You can ask the students questions like the following.

- ↳ How big is Ethiopia areally?
- ↳ What are the merits and demerits of Ethiopia's large size?

b) Follow up

To help your students get more knowledge on the topic, you can have them work on topics that are directly related to your lesson. For example, you can give them assignments on the following topics.

- ↳ Compare and contrast Ethiopia's areal size with its neighboring countries.
- ↳ Compute the size of Ethiopia.

c) Additional Activity

- ↳ Discuss the advantages and disadvantages of large size for a country.

Answer Key for Additional Questions

- Some of the advantages of large size are:
 - High probability of the presence of varieties of natural resources.
 - High probability of having different climates.
 - Large space for population settlement.
- Some of the disadvantages of large size are:
 - High cost of infrastructural development.
 - Difficulty of political administration and unity.
 - High cost of defense to protect every corner of the country.

1.2.3. Shape of Ethiopia

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *describe the shape of Ethiopia; and*
- ➔ *compare the shape of Ethiopia with that of other countries of Africa.*

2. Contents

- ☛ Shape of Ethiopia

3. Overview

Since Ethiopia's north-south and east-west stretches are almost equal, the country has a moderately compact shape. The compact nature of Ethiopia's shape has advantages for the country's socio-economic, political and security-related programs and activities.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Political map of Africa
- ↪ Political map of Ethiopia
- ↪ Sketch maps that show regular and irregular shaped areas.
- ↪ Rulers and pencils

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Jigsaw group projects
- ↪ Questioning
- ↪ Explanation
- ↪ Group discussion
- ↪ Demonstration

4.3. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials.
- ↪ Design the most appropriate teaching method for the lesson.
- ↪ Prepare notes, activities and exercises.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Before you start the lesson motivate the students to enhance their

learning interests and then introduce the students to what they are going to learn (Shape of Ethiopia).

- ↳ Make the objectives of the lesson clear to your students.
- ↳ Conduct a brainstorming session to find out the students' background knowledge of the shape of Ethiopia. You may ask question such as: How do you describe the shape of Ethiopia? What are its advantages and limitations?

b) Main Body of the Lesson

- ↳ Explain to the students the three indices of measuring compactness. Help the students to calculate by themselves the B/C , A/B , and A/A' ratios to determine the shape of Ethiopia. Invite some students to come to the blackboard to show the steps. Explain more about the moderately compact shape of Ethiopia and its advantages. Using the political maps, have your students compare and contrast Ethiopia's shape with those of the other countries that have elongated, perfectly compact, or other shapes.
- ↳ Make sure that all students are involved in the group activities and the entire teaching-learning process.

c) Stabilization

Stabilize your lesson presentation with a review of key ideas and concepts of such as:

- ↳ The shape of Ethiopia is considered to be compact or essentially circular because the extreme north-south and east-west spans of the country cover comparable distances.

4.5. Evaluation and Follow Up

a) Evaluation

To check the level of understanding of your students of the lesson and be sure that the expected levels of competence are achieved, ask the students some questions

from your lesson such as:

- ↪ What are the three theoretical indicators of the compactness of an area?
- ↪ What is the advantage of compact shape?
- ↪ What makes Ethiopia possess a relatively compact shape?

b) Follow up

At the end of the lesson, give different tasks to students that enable them to consolidate and broaden their understanding, share ideas, create awareness and do things. You can also give potential tasks such as:

- ↪ Compute the shape of Ethiopia
- ↪ How the index of compactness is computed.

c) Additional Activity

- ↪ The border line and area ratio of Ethiopia is about 1: 210. What does this ratio imply?

Answer Key for Additional Question

- ↪ It implies that if 1 km borderline is safeguarded by the national army, 210km² of the hinterland will become free from the assault of an enemy.

4.6. Answers for the Activity in the Textbook

Activity 1.2

1. Ethiopia

1.3. Geological History of Ethiopia

The period allotted: 2

1.3.1. The Geological Processes in Ethiopia

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *explain the geological history of Ethiopia.*

2. Contents

- ☛ The Geological Processes in Ethiopia

3. Overview

In this lesson, the students will learn about the geological events that have happened in Ethiopia. The discussion will be based upon the geological timescale of the earth. Geological time scale refers to the classification of the entire geological history of the earth into different time segments. The largest type of time segment in the geological timescale is known as era. In the geological timescale, four eras are chronologically distinguished from the oldest to the recent as Precambrian, Paleozoic, Mesozoic, and Cenozoic. In these four eras, various geological and biological events have happened in Ethiopia and the Horn of Africa. For a detailed study of the events, the eras are further classified into smaller time segments called periods. Each period is classified into smaller time segments called epochs. Therefore, in the geological timescale, the longest time segment is an era while the smallest is an epoch. In this lesson, students will learn in detail about the major geological events in Ethiopia that have happened within the four eras and their respective periods and epochs.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ☛ Geological time table

- ↪ Geological maps of Ethiopia and Africa
- ↪ Physical maps of Ethiopia and Africa
- ↪ A sketch of the Great East African Rift Valley
- ↪ Pictures, diagrams, films, posters, etc. that show the geological processes and their consequences in Ethiopia.

4.2. Suggested Methods of Teaching

Commence your lesson by using the following methods:

- ↪ Brainstorming
- ↪ Demonstration
- ↪ Case study
- ↪ Students' independent work
- ↪ Field visit
- ↪ Group discussion
- ↪ Jigsaw group projects

4.3. Pre-lesson Preparation

- ↪ Get ready for the teaching aids and teaching material. If none are available in your school, try to prepare your charts, maps, pictures and photographs with your students in the pedagogical center.
- ↪ Read related literature in the school's library or elsewhere.
- ↪ Prepare notes, exercises and activities.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce the students to what they are going to learn (The geological processes in Ethiopia).
- ↪ Make the objectives of the lesson clear to your students.
- ↪ Conduct a brainstorming session to find out the students' background knowledge of the concept of geology, the geological history of the earth, geological time scale, and the geological processes and forces.

You may ask students questions such as: What do you know about the geological history of the earth? What do you know about the concept of geology and the geological time scale?

b) Main Body of the Lesson

- ↪ Based on the result of the brainstorming session and students' previous knowledge, explain more about the concept of geology, the meaning of the geological timescale, and the various geological events that have happened in Ethiopia with the four eras. Support your presentation with maps, charts, diagrams, pictures, and tables that show the events and the resulted features.
- ↪ Using the geological map that you have prepared, you may ask students to identify the areas of Ethiopia in which various geological events have occurred. Also, you may ask the students the major geologic events of the Precambrian/Paleozoic/Mesozoic/Cenozoic eras in Ethiopia and how and when was Ethiopian rift valley system formed.
- ↪ By displaying the timeline, the physical maps of Ethiopia and Africa, the sketch and the cross-section, have the students identify the major geological events and the dominant relief features of Ethiopia.
- ↪ Make sure that all students are involved in the group activities and the entire teaching-learning process.

c) Stabilization

Give a summary of the following points.

- ↪ Geologic events that have been working on the surface formation of the country.
- ↪ Major geological events of the Precambrian, Paleozoic, Mesozoic, and Cenozoic eras in Ethiopia and the Horn.
- ↪ A series of volcanic activities that roughened the country's surface

4.5. Evaluation and Follow Up

a) Evaluation

To assess your students and acquire information about the effectiveness of your instruction and the students' level of understanding, you can ask them some questions that are drawn from your lesson. Your questions may include the following.

- ↪ What is a geological time scale?
- ↪ When was the present relief of Ethiopia formed?
- ↪ What were the major geologic events of the Mesozoic era in Ethiopia?
- ↪ Enumerate the major geological events that have happened in Ethiopia and in the Horn during the Cenozoic era?

b) Follow up

Include these activities in your follow-up work: Grade all the activities performed by the students, classify the grades to understand how many of the students have understood the lesson as planned, and how many of them have not.

c) Additional Activity for Fast students

- Define what geological time scale means and discuss its purposes.
- In group organize a field visit to a selected place in your locality and then collect sample rocks. With the help of your teacher examine the texture, composition and color of the sample rocks and then classify them into igneous, metamorphic and sedimentary rocks.

Answer Key for Additional Question

- Geological time scale is the classification of the entire history of the earth into different time segments such as eras, periods and epochs. The purpose of the geological timescale is to make an intensive study of the geological and evolutionary events that happened in the history of the earth since its formation.

4.6. Answers for the Activities in the Textbook

Activity 1.3

1. The major geological events were:
 - ↳ Frequent orogenic movements (mountain building process by volcanic emission),
 - ↳ Intensive volcanic activities,
 - ↳ Denudation during the later periods (reduction or wearing down of the mountains),
 - ↳ Formation of folded mountain ranges in a NNE – SSW direction
2. Adigrat sandstone, Hintalo limestone, and Upper Sandstone
3. **Metamorphic rocks**- Abay Gorge, Assossa, Western and Central Eritrea and many other locations; **Sedimentary rocks**- located in nearly all the south-eastern parts of Ethiopia, as well as in the Somali lowlands and **Quaternary lava deposits**- can be found in the Afar region and Djibouti.

1.3.2. The Major Landforms of Ethiopia

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *describe major landforms of Ethiopia.*

2. Contents

- ☛ The Major Landforms of Ethiopia

3. Overview

In this lesson, the students will learn about the relief of Ethiopia. The landforms of Ethiopia are the results of the geological processes and changes that have happened since the formation of the region. However, the majority of the current landforms of the region are results of the geological events of the tertiary and

quaternary periods of the Cenozoic era. Many of the Ethiopian landforms, for example, are the results of the internal and external forces and processes of this era.

In Ethiopia there are various types of landforms that can be broadly categorized into three groups as highlands, lowlands, and the rift valley. The highlands of the region include the north and western highlands of Ethiopia and the south and eastern highlands of Ethiopia. On the other hand, the lowlands of the country comprise the western lowlands and southeastern lowlands. The Ethiopian Rift Valley System stretches from the Afar Depression in the north, through the Rift Valley Lakes' region up to Lake Turkena and Chew Bahir.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Physical Maps of Africa and Ethiopia
- ↪ Pictures, diagrams, films, posters, etc. that show the landform features in Ethiopia.
- ↪ A cross-section of Ethiopia's relief
- ↪ Modeling and drawing of fold mountains, rift valleys, block mountains and volcanoes

4.2. Suggested Methods of Teaching

Commence your lesson by using the following methods:

- ↪ Brainstorming
- ↪ Demonstration
- ↪ Case study
- ↪ Jigsaw group projects
- ↪ Students' independent work
- ↪ Pair and group discussion
- ↪ Field visit

4.3. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials.
- ↪ Design the most appropriate teaching method/s for the lesson.
- ↪ Prepare notes, activities and exercises.
- ↪ Prepare yourself especially on areas, which you think might be confusing or challenging to the students.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce students to what they are going to learn (Landforms of Ethiopia)
- ↪ Make the objectives of the lesson clear to the students.
- ↪ Conduct a brainstorming session to find out the students' background knowledge of the concept of the geological history of Ethiopia, and the geological processes and forces. You may ask students questions such as: What do you know about the landforms of Ethiopia? Can you tell some of the landforms that exist in your area? Do you know how the mountains and plateaus of Ethiopia were created? Where do we have the world's largest rift valley?

b) Main Body of the Lesson

- ↪ Based on your students' previous knowledge, explain more about the three broad types of landforms that exist in Ethiopia.
- ↪ Discuss the characteristics of the physiographic regions of Ethiopia in details.
- ↪ With the help of the physical map of Ethiopia, make your students identify the areas of the three major landforms of Ethiopia.
- ↪ Explain more about the sub-divisions of each of the three landform types and their respective locations. At appropriate times during your presentation, have the students do exercise 1.3.2 from their textbook.

- ↳ By using the physical maps of Ethiopia and Africa, the sketch and the cross-section, help the students to identify the locations of high plateaus, low plateaus, fold and volcanic mountains and the Ethiopian rift valley system.

c) Stabilization

Complete your lesson presentation with a review of key ideas and concepts of map such as:

- ↳ The landforms of Ethiopia are the results of the geological events of the Cenozoic era.
- ↳ Highlands, lowlands, and the rift valley are the major landform features in Ethiopia.
- ↳ The three major landforms of the region are further classified into other physiographic regions.

4.5. Evaluation and Follow Up

a) Evaluation

To assess your students and acquire information about the effectiveness of your instruction and the students' level of understanding, you can ask them some questions that are drawn from your lesson. Your questions may include the following.

- ↳ What are the three major landform features of Ethiopia?
- ↳ List three well-known mountains that are situated on the plateau of Tigray.
- ↳ What are subdivisions that exist in the Rift Valley physiographic region of Ethiopia?
- ↳ Enumerate the major highland and lowland physiographic regions of Ethiopia?

b) Follow up

Analyze the evaluation data you have recorded for each individual and then

extrapolate it for the class as a whole to find out whether you have succeeded in passing the lesson's information to your students. Based on your conclusions, provide each student with appropriate activities, as described in the Introduction.

c) Additional Activity

✎ Write the five highest mountain peaks of Ethiopia.

Answer Key for Additional Question

✎ Some of the highest mountain peaks of Ethiopia are Ras Dashen, Guna, Abune Yosef, Tulu Dimtu, Batu, etc

4.6. Answers for the Activities in the Textbook

Activity 1.4

1. This physiographic unit includes all the areas west of the Rift Valley. It is subdivided into four groups of highlands, namely the Plateau of Tigray, the North Central Massifs, the Plateau of Shewa and the Southwestern Highlands
2. Because of the long period of denudation.

Review Exercise Answers for Unit One

Part I

- | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|
| 10. C | 11. C | 12. D | 13. C | 14. A | 15. C | 16. D |
| 17. C | 18. A | | | | | |

Part II

19. During the Triassic period, land subsidence (sinking) began in the southeastern part of Ethiopia and progressed towards the northwestern part of the country.
20. The landforms of Ethiopia are largely the result of the Cenozoic era.
21. The Precambrian era is the oldest and longest geological era.
22. The Paleozoic era is known for the predominance of invertebrates.

Part III

1. Eratosthenes was a famous Greek Philosopher (276-194 B.C), who defined geography as “the field of study, which deals with the description of the earth”.
2. Because geography is a holistic and interdisciplinary field of study contributing to the understanding of the changing spatial structures from the past to the future.
3. Physical and Human Geography
4. The relative location of a place is expressed in relation to the location of other geographic features while the absolute location is expressed as a geographical extent, in terms of latitudes and longitudes.
5. Vicinal location shows the location of a country in relation to its neighbouring countries, while the geologic location describes a country’s location in reference to big landmasses or water bodies.
6. The advantages of compact shape are its implication on the administrative, defense, and economic integration within the country.
7. The major geological events of the Cenozoic Tertiary Period were: Uplifting of the landmass, fracturing and faulting of the landmass, formation of the Great East Africa Rift Valley, Volcanism and flow of the Trappean Lava Series, Formation of the high volcanic mountains and plateaus of Ethiopia, etc.
8. Because the overlying basalt has been eroded.
9. The Cenozoic era

5. Check List

Check the student's performance according to the given competencies referring the questions under the checklist for every unit. Put a tick (√) mark against each task whether they can perform in the competencies of each unit. The students are expected to respond by saying Yes or No. then, you can make your evaluation whether the competencies are met or not.

Can you:

		Yes	No
1	Recognize the concept, scope and branches of geography?		
2	Describe the absolute and relative location of Ethiopia?		
3	Compute the size and shape of Ethiopia?		
4	Explain geologic processes that shaped the land surface of Ethiopia?		
5	Express the basic land features of the physical environment?		
6	Describe different landforms in Ethiopia?		

6. Unit Assessment

Students' performance has to be assessed continuously over the whole unit. The assessment will be made by comparing students' performance with the specified level of competencies. Besides, the teacher has to recognize the level of performance of each student and provide assistance accordingly.

Thus:

A student at a minimum requirement level will be able to define geography; describe the scope and identify the braches of geography; describe the absolute and relative location of Ethiopia; compute the size and shape of Ethiopia; explain geologic processes that shaped the land surface of Ethiopia and describe different landforms in Ethiopia.

In addition, a student working above the minimum requirement level and considered as a higher achiever should be able to:

- evaluate varied definitions of geography;

- discuss the opportunities and the challenges Ethiopia faced due to its location; and
- explain the advantages and disadvantages of Ethiopia's large size; distinguish the geological era which is significant regarding the formation of the various landforms in Ethiopia.

Students working below a minimum requirement level will require extra help if they are to catch up with the rest of the class.

Students reaching the minimum requirement level but achieving a little bit more should be supported so that they attain the higher-achiever competencies. Students who fulfill the higher-achiever competencies also need a special support to continue and achieve more.

UNIT TWO

2. CLIMATE OF ETHIOPIA

Total periods allotted: 10

1. Unit Introduction

In this unit, students will learn about the types and characteristics of the elements of weather and climate, and the major factors responsible for the spatial distribution of these elements of climate in Ethiopia. In order to fully understand the natural resource base of Ethiopia that students will be studying later they must have a clear knowledge of the facts concerning the climates.

2. Unit Outcomes

At the end of this unit, the students will be able to:

- ➔ *recognize the meaning and concepts of weather and climate;*
- ➔ *identify elements of climate;*
- ➔ *distinguish elements of climate from its controls;*
- ➔ *compare and contrast the spatial and temporal variations of climate; and*
- ➔ *identify factors affecting the climate of Ethiopia.*

3. Main Contents

- ☛ Meaning of Weather and Climate
- ☛ Elements of Climate
- ☛ Controls of Climate in Ethiopia
- ☛ Climatic Regions and Seasonal Variations in Ethiopia
- ☛ Measurements of Weather and Climate

2.1. Meaning of weather and climate

The period allotted: 1

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *recognize the meaning and concepts of weather and climate.*

2. Contents

- ☛ Meaning of Weather and Climate

3. Overview

In this lesson, students will learn about the meaning and concepts of weather and climate. People often mistakenly use the terms weather and climate interchangeably as if they were similar. However, though the two terms are interrelated, they have different meanings. Weather refers to the atmospheric conditions of a given place for a short period of time, while climate is the average weather condition of a given place for a relatively long period of time. In other words, the day-by-day variations of atmospheric conditions (temperature, rainfall, cloud cover, humidity, wind, etc.) in a given area constitute the weather, whereas climate is the long-term synthesis of such variations. Therefore, climate can be understood most easily in terms of annual or seasonal averages of temperature, precipitation, humidity, sunshine, cloud cover, etc. In addition, the weather is measured by thermometers, rain gauges, barometers, and other instruments, but the study of climate relies on statistics.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Climatic map of Ethiopia
- ↪ Charts and diagrams that show mean daily temperature and rainfall for a given place
- ↪ Charts and diagrams that show mean annual temperature and rainfall for a given place
- ↪ Photographs, pictures, diagrams and films
- ↪ Pictures and diagrams that show the life of people in different climatic conditions in Ethiopia

4.2. Suggested Methods of Teaching

Commence your lesson by using the following methods:

- ↪ Brainstorming
- ↪ Demonstration
- ↪ Questioning
- ↪ Case study
- ↪ Group discussion
- ↪ Individual/group projects

4.3. Pre-lesson Preparation

- ↪ Obtain all or most of the proposed teaching aids for the lesson, as they are vital to achieving the stated learning objectives
- ↪ If all or some of them are not readily available in the school, please try to prepare your own aids from the materials that you have around. Then plan how to utilize the teaching aids to achieve the expected outcomes.
- ↪ Read related materials to have full information about the lesson topic you teach.

4.4. Lesson Presentation

d) Introduction to the Lesson

Before giving detailed explanations to the students on the lesson, it is better to start the lesson by asking the students some questions about the topic. This would help you identify where your students are with respect to the lesson and its expected outcomes. Questions like the following can help you conduct a brainstorming session with the students.

- ↪ What do you know about weather and climate? Do you think they are the same or different?
- ↪ What is the weather like in your locality today?

e) Main Body of the Lesson

- ↪ Based on the results of the brainstorming session and your students' background knowledge of the lesson topics make your presentation to the whole class through the method of your preference.
- ↪ Explain more about the meaning and concepts of weather and climate and the differences between them.
- ↪ Have your students discuss, in groups, the relationships between the weather and climate. Help them to relate their discussion with the practical situations of their local weather and climate.

f) Stabilization

Review the main ideas and concepts of the lesson.

- *Weather refers to the atmospheric condition of a given place for a short period of time.*
- *Climate is the average weather condition of a given place for a relatively longer period of time.*

4.5. Evaluation and Follow Up

a) Evaluation

Before formally concluding your lesson, conduct a brainstorming session with your students to assess the students' level of understanding, to check the effectiveness of the teaching-learning experience, and to see if the expected levels of competence and behavioral changes have been achieved. You can ask them some questions and direct some activities that relate to your lesson, such as the following.

☞ *What do you know about the concepts of weather and climate?*

☞ *Do you see any change in the weather day in and day out?*

b) Follow up

Analyze the evaluation data you have recorded for each individual and then extrapolate it for the class as a whole to find out whether you have succeeded in passing the lesson's information to your students. Based on your conclusions, provide each student with appropriate activities, as described in the Introduction.

c) Additional Activity

☞ Discuss the differences between weather and climate.

Answer Key for Additional Question

☞ Weather refers to the atmospheric conditions of a given place for a short period of time, while climate is the average weather condition of a given place for a relatively long period of time. In other words, the day-by-day variations of atmospheric conditions (temperature, rainfall, cloud cover, humidity, wind, etc.) in a given area constitute the weather, whereas climate is the long-term synthesis of such variations.

4.6. Answer for Activity in the Textbook

Activity 2.1

1. **Definition:** Climate describes the average conditions expected at a specific place at a given time, while weather describes the atmospheric conditions at a specific place at a specific point in time.

- 2. Measure of time:** Weather refers to the atmospheric conditions of a specific place over a short period of time, usually 24 hours. Climate refers to the average atmospheric conditions over relatively long periods of time, usually 30 years.
- 3. Forecast:** Weather forecasts are made by collecting meteorological data, like air temperature, pressure, humidity, solar radiation, wind speeds and direction etc. Climate forecasts are made by aggregates of weather statistics over periods of 30 years

2.2. Elements of Weather and Climate

Periods allotted: 1

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *identify elements of climate.*

2. Contents

- ☛ Elements of Weather and Climate

3. Overview

Several elements make up the weather and climate of a place. The major of these elements are temperature, precipitation, humidity, wind, air pressure, cloud cover and sunshine.

The conditions of these elements of weather and climate significantly vary from place to place and from time to time, even at the same place. For example, in Ethiopia, different places experience different degrees of temperature, amounts of rainfall, etc., even if the season is the same.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Climatic map of Ethiopia
- ↪ Charts and diagrams that show mean daily temperature, rainfall and air pressure for a given place
- ↪ Charts and diagrams that show mean annual temperature and rainfall and air pressure for a given place
- ↪ Photographs, pictures, diagrams and films

4.2. Suggested Methods of Teaching

Commence your lesson by using the following methods:

- ↪ Brainstorming
- ↪ Demonstration
- ↪ Panel discussion
- ↪ Questioning
- ↪ Case study
- ↪ Group discussion
- ↪ Field visit to a nearby meteorological station

4.3. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials.
- ↪ Design the most appropriate teaching method/s for the lesson.
- ↪ Make a breakdown of your daily and weekly lesson plan
- ↪ Prepare notes, activities and exercises.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce students to what they are going to learn (Elements of

weather and climate)

- ↪ Make the objectives of the lesson clear to students.
- ↪ Conduct a brainstorming session to find out the students' background knowledge of weather and climate. You may ask those questions such as: Can you mention some of the elements of weather and climate? What is the significance of knowing the climatic condition of a place? What effect does cloud cover have on temperature during the day? What effect does it have at night?

b) Main Body of the Lesson

- ↪ Based on your student's previous knowledge, explain more about the elements of weather and climate. Have your students discuss, in groups, the differences between elements and controls of climate. Help them to relate their discussion with the practical situations of their local weather and climate.
- ↪ To strengthen your students' understanding, you can invite a guest speaker/resource person who works in a nearby metrological station and/or organize a field trip to a local metrological station.
- ↪ Ask a student to conclude based on the invited guest's talk

c) Stabilization

Review the main ideas and concepts of the lesson.

- ↪ Temperature, precipitation, wind, air pressure, cloud cover, humidity and sunshine are the major elements of weather and climate.

4.5. Evaluation and Follow Up

a) Evaluation

- ↪ Investigate students' participation to allow them to find out the process as they engage in the group/team activities.
- ↪ Review and provide feedback on the performance of each group/team/student at the end of class.

- ↪ Record students' performance and provide detailed feedback at the end of the lesson.

b) Follow up

To further widen the students' understanding of elements of weather and climate, have them work on topics like the following, either individually or in small groups.

- ↪ The constitutes of the climate of a certain place
- ↪ Do you watch the weather broadcast every day? If so, write a report on how a given element has an effect on weather forecast.
- ↪ Compare and contrast elements and controls of weather and climate

c) Additional Activity

- ↪ What is air pressure?

Answer Key for Additional Question

- It is the force exerted on a surface by the air above it as gravity pulls it to Earth.

4.6. Answer for Activity in the Textbook

Activity 2.2

- ↪ The most important elements of climate in Ethiopia are temperature, precipitation, humidity, wind, air pressure and cloud cover.

2.3. Controls of Climate in Ethiopia

Periods allotted: 2

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *identify the major climatic controls of Ethiopia.*

2. Contents

- ☛ Controls of Climate in Ethiopia

3. Overview

Those factors that cause variations in the amount, intensity and areal distribution of the elements of weather and climate are referred to as controls of climate and weather. There are varieties of climates in Ethiopia. The spatial and temporal distribution of the climatic elements in Ethiopia is determined by various physical factors. The most important are: latitude, altitude, mountain barriers, revolution of the earth and the inclination of the earth's axis, distance from the sea, and Ocean current.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ☛ Climatic map of Ethiopia and Africa that shows the pressure belts and pressure cells
- ☛ Physical map of Africa and Ethiopia
- ☛ Globe
- ☛ Charts prepared on the spatial distribution of the elements of climate in Ethiopia
- ☛ Pictures and diagrams that show the life of people in different climatic conditions in Ethiopia

4.2. Suggested Methods of Teaching

Commence your lesson by using the following methods:

- ↪ Brainstorming
- ↪ Demonstration
- ↪ Questioning
- ↪ Case study
- ↪ Group discussion
- ↪ Field visit

4.3. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials.
- ↪ Design the most appropriate teaching method/s for the lesson.
- ↪ Prepare notes, activities and exercises.
- ↪ Refer to relevant materials about the controls of climate in Ethiopia

4.4. Lesson Presentation

a) Introduction to the Lesson

Conduct a brainstorming session to find out the students' background knowledge of the controls of weather and climate. You may ask those questions such as: Do temperature and the amount of rainfall in your area vary from time to time? What do you think are the reasons? Do all places in Ethiopia experience the same temperature and amount of rainfall? What do you think are the reasons? What are the factors that regulate the climatic condition of a place? Which of these factors influence the climate of Ethiopia?

b) Main Body of the Lesson

- ↪ Based on your students' background knowledge of the lesson topic and the results of the brainstorming session, explain more about the controls of climate. Have your students discuss, in groups, the

controls of weather and climate. Help them to relate their discussion with the practical situations of their local climate.

- ↪ Explain more about the major factors that influence the spatial distribution of the elements of climate in Ethiopia. Using the climatic maps and physical maps, help the students to understand the altitudinal differences within the region and their implications on the climate, the regions latitudinal position its impacts on the climate, and so forth.
- ↪ At appropriate moments of your presentation, ask the students to do the activities and exercises found in their textbook. Make sure that all students are involved in the group activities and the entire teaching-learning process. Give them time to ask questions and organize their notes.

c) Stabilization

Review the main ideas and concepts of the lesson.

- ↪ Ethiopia has diverse climatic conditions that result from a number of factors that influence the country's climate
- ↪ Latitude, altitude, distance from the sea, weather systems (wind, air pressure), and mountain barriers are the major factors influencing the elements of climate in Ethiopia

4.5. Evaluation and Follow Up

a) Evaluation

- ↪ Investigate students' participation to allow them to find out the process as they engage in the group/team activities.
- ↪ Review and provide feedback on the performance of each group/team/student at the end of class.
- ↪ Record students' performance and provide detailed feedback at the end of the lesson.

b) Follow up

To further widen the students' understanding of controls of climate in Ethiopia, have them work on topics like the following, either individually or in small groups.

- ↪ The factors that control the climate of Ethiopia
- ↪ The factors influencing rainfall distribution in Ethiopia
- ↪ The global pressure and wind systems

c) Additional Activity

- ↪ Identify the water bodies that have a significant impact on the spatial distribution of the elements of climate in Ethiopia.

Answer Key for Additional Question

- The major water bodies that have an impact on the spatial distribution of the elements of climate in Ethiopia are the Atlantic Ocean, Indian Ocean, Red Sea, and Gulf of Aden.

4.6. Answer for Activities in the Textbook

Activity 2.3

1. Based on their latitudinal location, places in Ethiopia experience different amount of angle of the sun. The latitudinal position of the sun also affects the position of the ITCZ, the low pressure cell that controls the direction of movement of winds in the country. Therefore, latitude effects the spatial distribution of temperature and rainfall in Ethiopia.
2. In Ethiopia, altitude plays a very significant role in modifying temperatures from one place to another. It is known to all that mountains are cooler than plains. For a vertical rise of 167 meters, there is an average decrease of temperature at the rate of 1°C. Thus, temperature decreases with an increase in altitude.
3. Because of their tropical location all places found in Ethiopia experience the overhead sun (90° angle of the sun) twice a year.

2.4. Climatic Regions and Seasonal Variations in Ethiopia

Periods allotted: 3

1. 1. Competencies

At the end of this lesson, students will be able to:

- explain the climatic regions and seasonal variations in Ethiopia; and
- identify agro-climatic zones of Ethiopia.

2. Contents

- ☛ Climatic Regions and Seasonal Variations in Ethiopia

3. Overview

In this lesson, students will learn about why and how temperature distribution in Ethiopia varies from place to place and from time to time. The major factors that result in the spatial and temporal variation of temperature in Ethiopia are altitude and cloud cover.

As altitude increases, we know that the amount of temperature will decrease. This shows that there is an inverse relationship between altitude and temperature. Because of differences in altitude, therefore, different places in Ethiopia experience different amounts of temperature. Temperature over the high altitude areas of the country is lower than that of the low-altitude areas. Among all factors, altitude is the major factor that controls the distribution of temperature in Ethiopia. For example, based on their altitudes, places found in Ethiopia are grouped into five temperature zones (i.e., agro-ecological zones). They are: *Wurch/Kur*, *Dega*, *WoinaDega*, *Kolla*, and *Berha*.

Cloud cover is also another factor influencing the spatial and temporal variation of temperature in Ethiopia. This is because cloud cover affects the amount of solar radiation that reaches the earth's surface. It acts as a barrier that absorbs and reflects back the solar radiation that comes from the sun. For instance, though summer in many parts of the world is a season of high temperature, because of

the high cloud cover during this season, most places in Ethiopia experience low temperature conditions.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Climatic map of Ethiopia
- ↪ Physical map of Ethiopia
- ↪ Statistical data of temperature in different places and times in Ethiopia
- ↪ Charts and diagrams prepared on the spatial and temporal distribution of temperature in Ethiopia
- ↪ Pictures and diagrams that show the life of people in different temperature conditions in Ethiopia

4.2. Suggested Methods of Teaching

Commence your lesson by using the following methods:

- ↪ Brainstorming
- ↪ Demonstration
- ↪ Questioning
- ↪ Case study
- ↪ Group discussion
- ↪ Field visit

4.3. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials such as climatic maps, physical maps, diagrams, pictures, charts, etc.
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.
- ↪ Refer to relevant materials about the climatic regions and seasonal variations in Ethiopia

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce students to what they are going to learn (Climatic regions and seasonal variations in Ethiopia)
- ↪ Make the objectives of the lesson clear to students.
- ↪ Conduct a brainstorming session to find out the students' background knowledge of temporal and spatial distribution of temperature and rainfall in Ethiopia. You may ask those questions such as: Does temperature in your area vary from time to time? What do you think are the reasons? Do all places in Ethiopia experience the same amount of temperature? What do you think are the reasons? How temperature and rainfall are spatially distributed in Ethiopia? Which areas are the hottest? What about the coldest? How many agro-climatic zones are there in Ethiopia? What are the characteristics of the Woina *Dega* agro-climatic zone? What is the altitudinal range of the *Kolla* agro-climatic zone?

b) Main Body of the Lesson

- ↪ Based on the results of the brainstorming session and students' previous knowledge, explain more about the main factors responsible for spatial and temporal variation of temperature in Ethiopia. Have your students discuss, in groups; the relationships that exist between temperature and altitude as well as cloud cover. Help them to relate their discussion with the practical situations of their local environment.
- ↪ Using the climatic maps and physical maps, help the students to understand the altitudinal differences within the country and their implications on the climate, the country latitudinal position its impacts on the climate, and so forth.
- ↪ Explain to them the reasons why temperature distribution in Ethiopia varies from place to place and from time to time. Support your presentation with statistical data of temperature conditions of different places found in Ethiopia. Help the students understand

well how altitude is the major factor of temperature distribution in the country. You may use the five Agro-climatic zones of Ethiopia to help the students to understand the relationship between altitude and temperature. Have the students precisely locate all of the Agro-climatic zones and discuss them. Then have them identify their own Agro-climatic zone and compare it with others that they know.

- ↪ Explain more about the rainfall distribution both in space and time and about five types of rainfall regions identified in Ethiopia.
- ↪ At appropriate moments of your presentation, ask the students to do the activities and exercises found in their textbook. Make sure that all students are involved in the group activities and in the entire teaching-learning process. Give them time to ask questions and organize their notes.
- ↪ To strengthen your students' understanding, you can invite a guest speaker/resource person who works in a nearby metrological station and/or organize a field trip to a local metrological station.
- ↪ Ask a student to conclude based on the invited guest's talk

c) Stabilization

Review the main ideas and concepts of the lesson.

- ↪ The most significant factor of temperature distribution and variation between places in Ethiopia is altitude.
- ↪ Based on the relationship between altitude and temperature, in Ethiopia there are five temperature zones or agro-climatic zones.
- ↪ A season is a period of the year characterized by a particular set of weather conditions resulting from the inclination of the earth's axis and the revolution of the earth around the sun.
- ↪ In Ethiopia, temperatures and rainfall vary from season to season.
- ↪ Based on rainfall distribution, both in space and time, five types of rainfall regions can be identified in Ethiopia.

4.5. Evaluation and Follow Up

a) Evaluation

- Investigate students' participation to allow them to find out the process as they engage in the group/team activities.
- Review and provide feedback on the performance of each group/team/student at the end of class.
- Record students' performance and provide detailed feedback at the end of the lesson.

b) Follow up

At this stage you can:

- Instruct your students to collect information /data on the seasonal distribution of rainfall and temperature of their locality, and then to prepare charts and graphs of various types for presentations in the class.
- Make students show the seasonal distribution of the temperature, rainfall and pressure on the climate map of Ethiopia.
- Facilitate the presentation of the work to the whole class

c) Additional Activity

- What are the two factors that mostly affect the spatial variation of temperature in Ethiopia?

Answer Key for Additional Question

- The two factors that most affect the spatial variation of temperature in Ethiopia are altitude and cloud cover.

4.6. Answer for Activities in the Textbook

Activity 2.4

1. Since it is a local-based activity, the answers are expected to vary from place to place. Therefore, help your students to get information about the altitude of their locality. Then, make them discuss and identify to which temperature (agro-climatic) zone that their locality belongs.
2. Since it is a local-based activity, the answers are expected to vary from place to place. Hence, help your students to discuss and identify the characteristics of the agro-climatic zone that they are living in.
3. Coach your students to write a report on the above two issues that they have discussed.
4. Since it is a local-based activity, the answers are expected to vary from place to place. Thus, instruct and help your students to identify the driest and rainiest seasons of their local area.
5. Since it is a local-based activity, the answers are expected to vary from place to place. So, initiate and help them to relate the rainfall pattern in their local area with the prevailing major wind systems in Ethiopia.
6. Since it is a local-based activity, the answers are expected to vary from place to place. And so, inculcate and help them to identify the factors that are responsible for moist winds to blow towards their local area during the rainiest season of the area.
7. Since it is a local-based activity, the answers are expected to vary from place to place. Therefore, Instruct and help them to identify the hottest and coldest months in their local area.

2.5. Measurements of Weather and Climate

Periods allotted: 3

1. Competencies

At the end of this lesson, students will be able to:

- ➔ identify the common measurements of weather and climate.

2. Contents

- ☛ Measurements of Weather and Climate

3. Overview

The amount of temperature and rainfall, wind direction and speed and the strength of air pressure are known with the help of instruments. These instruments include maximum and minimum thermometer, rain gauge, wind vane and anemometer and simple mercury barometer. In measuring temperature, the scales are used namely Fahrenheit scale and Celsius scale. These scales are interconvertible.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ☛ Pictures and diagrams of meteorological instruments
- ☛ Model meteorological instruments
- ☛ Photographs and films of the meteorological station

4.2. Suggested Methods of Teaching

Commence your lesson by using the following methods:

- ☛ Brainstorming
- ☛ Demonstration
- ☛ Panel discussion
- ☛ Questioning
- ☛ Case study

- ↪ Group discussion
- ↪ Field visit to a nearby meteorological station

4.3. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.
- ↪ Refer to relevant materials about the common measurements of weather and climate
- ↪ Arrange a field visit to a nearby meteorological station if any

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce students to what they are going to learn (Measurements of weather and climate)
- ↪ Make the objectives of the lesson clear to students.
- ↪ Conduct a brainstorming session to find out the students' background knowledge of meteorological instruments used to measure elements of weather and climate. You may ask them questions such as: How do we know exactly how warm or cool the air is? How do we measure and record climate data? Have you ever seen a thermometer, barometer, anemometer, rain gauge or wind vane?

b) Main Body of the Lesson

- ↪ Based on your student's previous knowledge and the results of the brainstorming session, explain more about the measurements of weather and climate. Let your students discuss, in groups; the types of meteorological instruments used to measure the elements of weather and climate.
- ↪ Explain to them the term "measurement" is used to describe the process or result of recording specific values, and may also be

called an “observation” in meteorological contexts. Devices used to objectively indicate meteorological variables such as air temperature and rainfall amounts are called “meteorological instruments”. Thermometer, barometer, anemometer, rain gauge, wind vane are the most commonly used instruments in weather and climate measurements.

- ↪ Demonstrate to the students how temperature, rainfall, wind speeds, wind directions, and air pressure are measured and recorded by thermometers, rain gauge, anemometer, wind vane, and barometer, respectively.
- ↪ At appropriate moments of your presentation, ask the students to do the activities and exercises found in their textbook. Make sure that all students are involved in the group activities and the entire teaching-learning process. Give them time to ask questions and organize their notes.
- ↪ To strengthen your students’ understanding, you can invite a guest speaker/resource person who works in a nearby meteorological station and/or organize a field trip to a local meteorological station.
- ↪ Ask a student to conclude based on the invited guest’s talk

c) Stabilization

Review the main ideas and concepts of the lesson.

- ↪ Temperature is a very important element of climate and weather. The instrument for measuring temperature is the thermometer which is a narrow glass tube filled with mercury or alcohol.
- ↪ Rainfall is measured using a rain gauge.
- ↪ The instrument for measuring pressure is a barometer.
- ↪ Wind speed can be measured using an anemometer, while wind direction is often observed using a wind vane

4.5. Evaluation and Follow Up

a) Evaluation

- ↪ Investigate students' participation to allow them to find out the process as they engage in the group/team activities.
- ↪ Review and provide feedback on the performance of each group/team/student at the end of class.
- ↪ Record students' performance and provide detailed feedback at the end of the lesson.

b) Follow up

- ↪ Rate and grade the various activities performed by the students. Analyze the results to understand whether or not the lesson has been well-understood, and to identify those students who may need extra coaching.
- ↪ Based on these and other evaluations you have performed, assess each student and the class as a whole. Decide whether you have succeeded in guiding them to meet the lesson objectives.

c) Additional Activity

- ↪ How mean annual temperature of a given place is calculated?

Answer Key for Additional Question

- It is calculated by adding the mean monthly temperatures and dividing the sum by 12.

4.6. Answers for the Activity and Exercises in the Textbook

Activity 2.5

- | | | | |
|---|-----------|------------|---------|
| 1 | a) 21°C | b) 77°F | c) 59°F |
| 2 | a) 3.5°C | b) 17.08°C | |
| 3 | a) 1167mm | | |

- b) Summer or *Kiremt* (June, July and August) are the wettest season and November, December and January (Winter or *Bega*) are the driest seasons

5. Review Exercise for Unit 2

Part I

1. F 2. F 3. T 4. F 5. T

Part II

6. A 7. D 8. B 9. C 10. D

Part III

1. The southwestern Ethiopia.
2. You can answer to the question as “Assaita and Gode”
3. You can answer to the question as “Metu and Bonga”
4. Altitude
5. Barometer

Part IV

1. The major elements of weather and climate are temperature, precipitation, humidity, wind, air pressure, cloud cover and sunshine.
2. The main factors controlling the distribution of climate in Ethiopia are latitude, altitude, mountain barriers, the revolution of the earth and the inclination of the earth’s axis, distance from the sea and ocean current.
3. The “*Kiremt* (summer) rainfall season.
4. The dominant wind systems over Ethiopia during the ‘*Bega*’ and ‘*Kiremt*’ seasons are the Equatorial Westerlies and Easterlies.
5. The common instruments for measuring elements of weather and climate are thermometer, barometer, anemometer, rain gauge, wind vane and hygrometer.

6. Check List

Check the student's performance according to the given competencies referring to questions under the check list for every unit. Put a tick (√) mark against each task whether they can perform in the competencies of each unit. The students are expected to respond saying Yes or No. then, you can make your evaluation whether the competencies are met or not.

Can you:

	Yes	No
1 Recognize the meaning and concepts of weather and climate?		
2 Identify elements of climate?		
3 Distinguish elements of climate from its controls?		
4 Compare and contrast the spatial and temporal variations of climate?		
5 Identify factors affecting climate of Ethiopia?		
6 Identify the major measurements of weather and climate?		

7. Unit Assessment

Students' performance has to be assessed continuously over the whole unit. The assessment will be made by comparing students' performance with the specified level of competencies. Besides, the teacher has to recognize the level of performance of each student and provide assistance accordingly.

Thus:

A student at a minimum requirement level will be able to recognize the meaning and concepts of weather and climate; identify elements of climate; distinguish elements of climate from its controls; compare and contrast the spatial and temporal variations of climate; identify factors affecting the climate of Ethiopia, and recognize the major measurements of weather and climate.

In addition, a student working above the minimum requirement level and considered as higher achiever should be able to write a minimum of three major

differences between weather and climate; explain how Ethiopia's latitudinal location affects the distribution of climate; state the reasons why most of the Ethiopian highlands receive rainfall during summer (*kiremt*); identify regions or areas of Ethiopia that get rain during spring and winter; identify factors that determine the spatial distribution of rainfall in Ethiopia; describe the climatic regions of Ethiopia; calculate mean daily temperature, daily range of temperature, mean monthly temperature, mean annual temperature and annual range of temperature of Addis Ababa.

Students working below a minimum requirement level will require extra help if they are to catch up with the rest of the class.

Students reaching the minimum requirement level but achieving a little bit more should be supported so that they attain the higher-achiever competencies. Students who fulfill the higher-achiever competencies also need special support to continue and achieve more.

UNIT THREE

3. NATURAL RESOURCE BASE OF ETHIOPIA

Total periods allotted: 10

1. Unit Introduction

Ethiopia is a country, which is well-endowed with natural resources but is facing ecological crises of grave proportion.

In this unit, students will learn about the meaning of natural resources; drainage systems of Ethiopia; water resources of Ethiopia; major soils types of Ethiopia; major mineral resources and their distribution in Ethiopia and Biotic resources of Ethiopia.

Each topic is presented by giving concise and clear explanations and illustrative diagrams, tables and charts. To deal with the contents, we suggest you use group discussions, explanations, demonstrations, field visits, practical activities, observation, questioning, and report writing as major techniques of presentation. The start-up questions and activities are given in each sub-unit to encourage students. Summaries and exercises are also designed to explore the key concepts in more details.

2. Unit Outcomes

At the end of this unit, the students will be able to:

- *elaborate major drainage systems of Ethiopia;*
- *explain the distribution of the major water resources in Ethiopia;*
- *describe the characteristics of major rivers of Ethiopia;*

- ➔ *recognize the significance of Ethiopian lakes and rivers;*
- ➔ *state soils types and distribution in Ethiopia;*
- ➔ *explain the factors responsible for the difference in types of natural vegetation in Ethiopia;*
- ➔ *describe the types of wildlife in Ethiopia and factors that affect their distribution; and*
- ➔ *describe the spatial distribution and variation minerals in Ethiopia.*

3. Main Contents

- ☞ Meaning of Natural Resources
- ☞ Drainage Systems of Ethiopia
- ☞ Water Resources of Ethiopia
- ☞ Major Soils Types of Ethiopia
- ☞ Major Mineral Resources and Their Distribution in Ethiopia
- ☞ Biotic Resources of Ethiopia

3.1. Meaning of Natural Resources

The period allotted: 1

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *describe the meaning and concept of natural resource; and*
- ➔ *classify natural resources.*

2. Contents

- ☞ Meaning of Natural Resources

3. Overview

Natural resources are natural assets occurring in nature that can be used for economic production or consumption. They are classified into renewable resources and non-renewable resources. Plants, animals, soil, water, geothermal energy, wind energy, solar radiation are categorized under renewable resources while all

minerals, coal, crude oil and natural gas are under non-renewable resources.

Renewable resources are resources that can be replenished by nature while non-renewable resources are resources that cannot be regenerated by nature and exist in a limited amount.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Physical map of Ethiopia
- ↪ Pictures, photographs and diagrams that show different types of natural resources (renewable resources and non-renewable resources)
- ↪ Thematic maps of Ethiopia that show the distribution of natural resources

4.2. Suggested Methods of Teaching

Commence your lesson by using the following methods:

- ↪ Brainstorming
- ↪ Demonstration
- ↪ Field visit
- ↪ Presentation of case studies.
- ↪ Group discussion
- ↪ Guest speaker

4.3. Pre-lesson Preparation

- ↪ Read relevant source materials related to the different resource types.
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Collect diagrams, pictures, photographs, and physical maps of Ethiopia that show natural vegetation, wild animals, minerals, and soils.
- ↪ Make chart and diagram that show classification of natural resources

4.4. Lesson Presentation

d) Introduction to the Lesson

Begin the lesson with brainstorming questions. The following questions might serve this purpose:

- *What are natural resources?*
- *What are the two types of natural resources?*
- *What do we mean when we say renewable and non-renewable natural resources?*
- *Can you mention some of the renewable and non-renewable resources available in your locality?*

e) Main Body of the Lesson

- Based on the results of the brainstorming session and your students' background knowledge of the lesson topics make your presentation to the whole class through the method of your preference.
- Explain more about the definition and concept of natural resources.
- Let students be arranged into groups and discuss the concept of natural resources and classify natural resources into renewable and non-renewable resources. Help them to relate their discussion with the practical situations of their local area.
- In addition, clarify to them why studying natural resources is important because and why Ethiopia's natural resources have been deteriorating from time to time.

f) Stabilization

Stabilize the lesson with a review of key ideas and concepts such as:

- A natural resource is defined as a naturally occurring, exploitable material that society perceives to be useful to its economic and material well-being.
- Based on renewability, natural resources can be categorized as:

renewable resources and non-renewable resources.

- ↪ Renewable resources are materials that can be regenerated in nature faster than they are exploited by the society. They include solar radiation, wind energy, running water, geothermal energy, ground water, soil, plants and animals.
- ↪ Nonrenewable resources are resources that cannot be regenerated and exist in limited amount. They include fossil fuels (coal, crude oil, natural gas) and metallic and non-metallic minerals

4.5. Evaluation and Follow Up

a) Evaluation

To evaluate your students' success, ask them questions like the following:

- *What does the term 'natural resource' mean?*
- *List renewable resources and non-renewable resources*
- *What are the direct uses of natural resources?*

b) Follow up

- ↪ At the end of the lesson, give different tasks to students that enable them to consolidate and broaden their understanding, share ideas, create awareness, and do things.
- ↪ Then encourage all students (for example, individually and in groups) and assign extra work to each student as needed. For below-average students, provide exercises and activities to help them meet the minimum competencies. For above-average students, provide work that will stimulate their further advancement and eliminate any possible complacency. For average students, assign work you think appropriate.

c) Additional Activity for Fast Learners

- ↪ Considering their origin natural resources can be classified into two. Identify to which?

Answer Key for Additional Question

- ↳ Based on their origin, resources can be divided into biotic and abiotic.

4.6. Answers for the Activity in the Textbook

Activity 3.1

1. It means the use of components of natural resources in a way and at a rate that does not lead to the long-term decline, thereby maintaining its potential to meet the needs and aspirations of present and future generations.
2. The major causes of natural resources degradation in Ethiopia are the high rate of population growth, severe soil loss, deforestation, low vegetative cover, unbalanced crop and livestock production and climate change.

3.2. Drainage Systems of Ethiopia

Periods allotted: 2

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *elaborate major drainage systems of Ethiopia.*

2. Contents

- ↳ Drainage Systems of Ethiopia

3. Overview

In this lesson, the students will learn about the drainage systems of Ethiopia. The drainage systems of Ethiopia are the results of the geological events of the Cenozoic era. In contrast to the other countries of the Horn, Ethiopia is endowed with many rivers and lakes. Because of this, the country is even described as the “water tower of eastern Africa.” The rivers of Ethiopia are grouped into three broad drainage systems, namely: The Western (Mediterranean) Drainage System, the Southeastern (Indian Ocean) Drainage System, and the Inland (Rift Valley)

Drainage System. The lakes of the country are also categorized into two: highland lakes and Rift Valley lakes.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Physical map of Ethiopia and Africa
- ↪ Drainage map of Ethiopia
- ↪ Pictures, photographs and diagrams that show the rivers and lakes of Ethiopia

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Lecture with a demonstration
- ↪ Jigsaw group projects
- ↪ Field visit
- ↪ Presentation of case studies.
- ↪ Group discussion
- ↪ Guest speaker

4.3. Pre-lesson Preparation

- ↪ Get the necessary teaching aids suggested above ready.
- ↪ Refer to relevant materials about the drainage systems of Ethiopia. Update yourself on current issues on the hydro-politics in East and North Africa.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Before starting the lesson about the drainage systems of Ethiopia, review the previous lesson and try to make a link between the previous lesson and the new one. Then, conduct a brainstorming session with

the students to try to assess their background knowledge of the topic that you are going to present to the class.

- ↳ During the brainstorming, raise such questions as the following: What is a drainage system? What are the major types of drainage systems of Ethiopia? Do you know the major rivers of Ethiopia? What natural factor influences the drainage systems of Ethiopia? Where do most rivers of Ethiopia end? Can you name some of the lakes that are found in Ethiopia?

b) Main Body of the Lesson

- ↳ Based on the results of the brainstorming session and students' previous knowledge, explain more about the concept of drainage and the drainage systems in Ethiopia. Your lecture should be supported by the drainage map of Ethiopia and other relevant teaching aids.
- ↳ With the help of the drainage map or physical map of Ethiopia, let the students identify the major drainage systems, lakes and rivers of the country.
- ↳ Explain the three drainage systems of Ethiopian rivers. Ask the students to identify the rivers that belong to each of the drainage systems (the Western/Mediterranean Sea drainage system), (the Southeastern/ Indian Ocean drainage system and the Inland/Rift Valley drainage system). Support your presentation with maps, diagrams, pictures, photographs and tables that show the drainage systems and the existing major rivers and lakes.
- ↳ Illustrate your discussion with local examples.

c) Stabilization

Review the main ideas and concepts of the lesson.

- ↳ In geography, drainage patterns differ from drainage systems. The term pattern refers to the fabric or surface arrangement of the main rivers and their tributaries. These features are the result of factors of the underlying rock and slope. In contrast, the term system refers to

the direction and destination of the rivers.

- ↪ Ethiopia has a number of rivers that drain its surface
- ↪ The rivers of Ethiopia are grouped into three drainage systems, based on the direction of their flow.
- ↪ The western drainage system is the largest of the three systems both in terms of catchment area and volume of water.
- ↪ The southeastern (Indian Ocean) drainage system is the second largest drainage system.
- ↪ The inland (Rift Valley) drainage system is the smallest of the three systems in terms of the catchment area, discharge of water and volume of water.

4.5. Evaluation and Follow Up

a) Evaluation

Ask question like the following to check students' understanding of the lesson topic.

- *Which drainage system is the largest in terms of its discharge and catchment area in Ethiopia?*
- *Which rivers of Ethiopia are found in the southeastern drainage system?*
- *What natural factor influences the drainage systems of Ethiopia?*
- *Where do most rivers of Ethiopia end?*

b) Follow up

To help students acquire more knowledge about the lesson topics, you can provide them with additional activities/tasks that can further assist the achievement of the objectives of the lesson. This can also help you in addressing the needs of students who are fast learners. You can assign tasks related to the following topics, on individual or group basis.

- ↪ The major rivers of Ethiopia
- ↪ The flow direction of Ethiopian rivers
- ↪ The three drainage systems of Ethiopian rivers

c) Additional Activities for Fast Learners

- ↪ Which river is the longest in the country?

Answer Key for Additional Question

- ↪ The Wabishebelle

4.6. Answers for the Activity and Exercises in the Textbook

Activity 3.2

1. Since it is a local-based activity, the answers are expected to vary from place to place. Therefore, please organize an educational field trip to a nearby river and have your students do the questions found in this activity.
2. Draw a sketch map that shows the drainage systems of Ethiopia (Refer to the student's text book)
3. The prevailing drainage patterns in all systems are dendritic drainage pattern.

3.3. Water Resources of Ethiopia

Periods allotted: 1

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *explain the distribution of the major water resources in Ethiopia;*
- ➔ *describe the characteristics of major rivers of Ethiopia; and*
- ➔ *recognize the significance of Ethiopian lakes and rivers.*

2. Contents

- ☛ Water Resources of Ethiopia

3. Overview

In this lesson, the students will learn about the water resources of Ethiopia. As you are well aware, Ethiopia has been known as the “Water Tower of Eastern Africa” for the last fifty to sixty years. Ethiopia is the second richest African country in terms of water resource potential, following the Democratic Republic of Congo. Generally, Ethiopia has adequate average annual rainfall in most areas, several major rivers and lakes, and significant groundwater resources.

The government of Ethiopia is now trying to exploit this enormous water resource potential of the country. It has formulated a water-resource policy of the country which has a goal of improving and enhancing the health and quality of life of all Ethiopians and promoting sustainable socio-economic development through the sound management and use of the water resources of the country. That is why a number of big hydroelectric power projects have been launched in the country in recent years.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Physical map of Ethiopia and Africa
- ↪ Drainage systems map of Ethiopia
- ↪ Pictures, diagrams, photographs, films, etc. that show the water resources of Ethiopia

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Lecture with a demonstration
- ↪ Jigsaw group projects
- ↪ Field visit
- ↪ Presentation of case studies
- ↪ Panel discussion
- ↪ Group discussion
- ↪ Guest speaker

4.3. Pre-lesson Preparation

- ↪ Get the necessary teaching aids suggested above. As some of the teaching aids might not be readily available in the school, try to prepare some of them yourself from locally available materials.
- ↪ Refer to relevant materials about the water resources of Ethiopia.
- ↪ Prepare notes, activities and exercises.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Before starting the lesson about the water resources of Ethiopia, review the previous lesson and try to link the previous lesson and the new one. Then, conduct a brainstorming session with the students to try to assess their background knowledge of the topic that you are going to present to the class.
- ↪ During the brainstorming, raise such questions as the following: What are water resources? What do you know about the water resources of Ethiopia? Can you name some of the rivers and lakes that are found in Ethiopia? Can you tell how the rivers and lakes of Ethiopia are significant to the people of the country? How are water resources used in Ethiopia?

b) Main Body of the Lesson

- ↪ Based on your student's previous knowledge and the result of a brainstorming session, explain more about the water resources of Ethiopia. With the help of the drainage system map and physical map of Ethiopia, have the students identify the major lakes and rivers of the country.
- ↪ Discuss the most important characteristics of Ethiopian rivers and their tributaries.
- ↪ Explain more about the highland and rift valley lakes of Ethiopia. Have the students categorize Ethiopian lakes as highland or Rift

Valley lakes. Also, present the artificial lakes of the country.

- ↪ Explain the significance of Ethiopian lakes and rivers and their potential, and contrast that with their current actual utilization. Finally, conduct a discussion about the nature of water resource conservation and management in Ethiopia and the water resource policy of the government.
- ↪ Illustrate your discussion with local examples.
- ↪ Make sure that all students are involved in the group activities and the entire teaching-learning process.

c) Stabilization

Stabilize the lesson with a review of key ideas and concepts such as:

- ↪ Ethiopia is rich in water resources, as it has several rivers and lakes.
- ↪ The lakes of Ethiopia are grouped into two: highland lakes and Rift Valley lakes.
- ↪ The lakes and rivers of Ethiopia have great potential for promoting socioeconomic development within the country.
- ↪ The major rivers of the country are not navigable due to their geological and structural formation except Baro River.
- ↪ Ethiopia's government has formulated and has been implementing a policy that helps in the proper and efficient utilization of the water resources of the country.

4.5. Evaluation and Follow Up

a) Evaluation

Ask questions like the following in order to check students' understanding of the lesson topic.

- ➔ *Do you know the major rivers of Ethiopia?*
- ➔ *List some important characteristics of Ethiopian rivers?*
- ➔ *Which lakes of Ethiopia are the highland lakes?*
- ➔ *Does Ethiopia have many lakes when compared to other African countries?*

- ☞ *Are there rivers and lakes in Ethiopia that have non-economic functions?*
- ☞ *List some of socioeconomic importance of Ethiopian lakes and rivers.*

b) Follow up

Ask your students to do the following tasks:

- ↪ Have them collect a map of the drainage system of Ethiopia, photographs, and block diagrams to understand in depth the water resources of the country discussed so far.
- ↪ Let students review government policy goals related to water resources and prepare material to present to the class through ordinary talk.
- ↪ You can also give them a short quiz or test. If there are students who received low grades, please try to understand their problems and arrange special classes to upgrade those students.

c) Additional Activities for Fast Learners

- ↪ Describe general characteristics of the Ethiopian rivers.

Answer Key for Additional Question

The major characteristics of the Ethiopian rivers are:

- ↪ They have rapids and falls
- ↪ The flow over steep slope courses
- ↪ They show seasonal fluctuation
- ↪ They are suitable for hydroelectric power generation
- ↪ Most of them are not navigable

4.6. Answers for the Activity in the Textbook

Activity 3.3

1. Because Ethiopia is the second richest African country in terms of water resource potential, following the Democratic Republic of Congo.

2. The major reasons for the unsuitability for navigation of most Ethiopian rivers are: because of their seasonal fluctuation, flow over very rugged and steep courses and rapids and falls.
3. Crater lakes are formed after an explosive volcano breaks a mountain open and leaves a deep mouth that water can fill. Watershed lakes are formed when a sheet of lava dams up a shallow surface depression. Lake Bishoftu is an example of a crater lake and Lake Tana is an example of a watershed lake.
4. Arrange a field visit to a nearby river and let student perform the planned task (Refer to the student's textbook)

3.4. Major Soil Types of Ethiopia

Periods allotted: 2

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *distinguish major soil types in Ethiopia; and*
- ➔ *explain the characteristics of major soils types in Ethiopia.*

2. Contents

- ☛ Major Soil Types of Ethiopia

3. Overview

In this lesson, students will learn about the soils of Ethiopia. First, they discuss the major types of soils found in Ethiopia. Then, they learn about the characteristics of these soils.

Soil is a complex mixture of organic and inorganic materials with variable amount of air and water (moisture). It consists of four major components, mineral materials, organic matter, water and air. The inorganic (mineral) portion of soil is variable in size. It is composed of small rock fragments and minerals of various kinds, mainly clay, silt and sand. There are two sorts of organic matter in the soil:

living and dead. The dead organic matter consists of the waste products excreted by organisms and the body tissues of dead plants and animals. The living organic matter comprises the millions of organisms that take part in the decomposition process and move materials around the soil. Soil water is underground water that partially fills pores between soil particles and rock within the upper soil and rock layers of the earth's crust, above the water table. Soil air occupies the pores space not currently filled by water.

The soil-forming processes are controlled by the action and interaction of five factors. These are climate, parent material, topography, organisms, and time.

Soils also differ in color, texture, chemical makeup, and the kinds of plants they can support. The soils of Ethiopia are basically derived from crystalline, volcanic and sedimentary rocks. According to the latest classification made by the FAO, there are about 18 types of soils in Ethiopia. However, the following are the most dominant soil types, and they cover more than 85% of the country.

- *Nithosols*
- *Regosols*
- *Luvisols*
- *Cambisols*
- *Vertisols*
- *Xerosols*
- *Lithosols*
- *Acrisols*
- *Yermisols*
- *Fluvisols*

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Thematic maps of Ethiopia that show the types and distribution of soils
- ↪ Sample soils of different types
- ↪ Soil map of Ethiopia
- ↪ Films and photographs that show soil types, if possible.
- ↪ Facilitate the required pre-conditions to invite a guest speaker and to organize a trip to nearby sites where students can observe soil types

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Demonstration
- ↪ Guest speaker
- ↪ Field visit
- ↪ Jigsaw group projects
- ↪ Panel discussion
- ↪ Pair and group discussion
- ↪ Case study
- ↪ Collaborative learning

4.3. Pre-lesson Preparation

- ↪ Get the suggested teaching aids and teaching materials ready.
- ↪ Read reference materials that could help you to present your lesson well.
- ↪ Prepare notes, activities and exercises.
- ↪ Prepare yourself especially on areas, which you think might be confusing or challenging to the students

4.4. Lesson Presentation

a) Introduction to the Lesson

You can start the lesson by posing questions like the following:

- ↪ Can you describe what soil is and how it is formed?
- ↪ What are the major components of soil?
- ↪ What are the major soil types that are found in Ethiopia?
- ↪ What are the uses of soil?
- ↪ Which soil types in Ethiopia are very unproductive? What are the reasons for this unproductivity?

b) Main Body of the Lesson

Based on the descriptive and illustrative information given in the student textbook:

- ↪ Explain the meaning, formation, components and uses of soil.
- ↪ You may divide students into small groups, provide them with a thematic and soil map of Ethiopia and have them discuss the major types of soils in the country and their association with the distribution of the vegetation, climate and relief of the country. Enhance the students' understanding by explaining these issues in depth. Also, show them some soil samples that you have prepared as one of the teaching aids.
- ↪ You may also organize a visit to local sites where students can observe different soils, soil problems and conservation methods. This helps them to relate the lesson with actual situations in their locality.
- ↪ Have the students do the activities and exercises found in their textbook. Make sure that all students are involved in the group activities and the entire teaching-learning process. Give them adequate time to ask questions and organize their notes.
- ↪ Motivate the students to identify the major problems of soils in Ethiopia together with their possible conservation strategies.

c) Stabilization

- ↪ Because of the presence of varied geologic formations, climatic zones and vegetation regions, Ethiopia is rich in terms of soils of different quality.
- ↪ Based on their geographical distribution and their characteristics, the soils of Ethiopia are classified into the following types: Nithosols, Regosols, Luvisols, Cambisols, Vertisols, Xerosols, Lithosols, Acrisols, Yermisols and Fluvisols.

4.5. Evaluation and Follow Up

a) Evaluation

In order to check whether the students have understood the lesson, ask them the following questions:

- ↪ What is soil?
- ↪ Can you describe how soil is formed?
- ↪ What are the factors that affect soil formation in Ethiopia?
- ↪ Can you mention names of soils you know in your locality or elsewhere?
- ↪ Which soil type, in Ethiopia, is intensively cultivated?
- ↪ Which soil type is suitable for agriculture? Why?
- ↪ Ask teams/students to present what they have discussed

b) Follow up

To help the students develop a better understanding of the lesson, you should support your teaching with additional activities. This could help you and the students to have wider views of the soils in Ethiopia. You can assign tasks like the following on individual or group basis.

- ↪ Major soils of Ethiopia
- ↪ The characteristics of major soils of Ethiopia
- ↪ The importance of soil
- ↪ The type of soil that can be found in each region

c) Additional Activities for Fast Learners

- ↪ Among the major soils of Ethiopia which one has high clay content?

Answer Key for Additional Question

- ↪ Vertisols

4.6. Answers for the Activity in the Textbook

Activity 3.4

1. Fluvisols, luvisols, nithosols, vertisols, acrisols, cambisols, lithosols, regosols, xerosols, and yermisols.
2. Black basaltic soils (Vertisols) have excellent nutrients that could provide support for agriculture and cover about ten percent of Ethiopia, while red basaltic soil (Nithosols) often found in regions that were previously covered by forest and cover about twelve percent of Ethiopia.
- 3.

Comparison: Three of them are young and shallow soils. They are not fertile or not good for farming purposes.

Contrasts: Cambisols are found on the rugged and sloping terrain while regosols are found in arid or semi-arid areas.

3.5. Major Mineral Resources and Their Distribution in Ethiopia

Periods allotted: 2

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *elaborate major mineral resources of Ethiopia; and*
- ➔ *describe the spatial distribution of minerals in Ethiopia.*

2. Contents

☞ Major Mineral Resources and Their Distribution in Ethiopia

3. Overview

A mineral is a combination of elements. It is an organic chemical element or compound found naturally in the crust of the earth. It is grouped as one set of the

non-renewable natural resources.

A survey conducted by the Ministry of Mining and Petroleum, with assistance from the United Nations Development Program (UNDP), shows that Ethiopia has substantial reserves of gold, gemstone, tantalum, platinum, lithium, cobalt, phosphorous, iron, salt, potash, soda ash, gemstones, coal, petroleum and natural gas. Industrial and construction materials are also extensively found in the country along with other mineral resources. However, the contribution of the mining industry to the GDP of the country is way lower than it should be.

In Ethiopia non-metallic minerals are more produced annually compared to the metallic ones. Except common salt, almost all other productions of metallic minerals (mainly gold and platinum) are produced on a small scale.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Thematic maps of Ethiopia that show the types and distribution of minerals
- ↪ Pictures and diagrams that show different types of minerals
- ↪ Samples of different types mineral-bearing rocks.

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Demonstration
- ↪ Guest speaker
- ↪ Field visit
- ↪ Presentation of case studies
- ↪ Jigsaw group projects
- ↪ Pair and group discussion
- ↪ Case study

4.3. Pre-lesson Preparation

- ↪ Get the suggested teaching aids and teaching materials ready.
- ↪ Read reference materials that could help you to present your lesson well.
- ↪ Prepare notes, activities and exercises.
- ↪ Facilitate the required preconditions to invite a guest speaker and to organize a trip to nearby sites where students can observe minerals.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce students to what they are going to learn (Major mineral resources and their distribution in Ethiopia)
- ↪ Make the objectives of the lesson clear to the students.
- ↪ Conduct a brainstorming session to find out the students' background knowledge about the mineral resources of Ethiopia. You may ask students questions such as: What are the uses of minerals? Is Ethiopia known for its mineral resources? What are a few of the known minerals exploited in Ethiopia? Name three gold mining areas in Ethiopia?

b) Main Body of the Lesson

- ↪ Based on the result of the brainstorming session and students' previous knowledge, explain more about the mineral resources of Ethiopia.
- ↪ With the help of the thematic map of Ethiopia, have the students identify a areal distribution of metallic and non-metallic minerals in the country.
- ↪ Discuss the most important metallic and non-metallic minerals under production currently.
- ↪ Let students discuss the importance of minerals in pairs or groups.
- ↪ Illustrate your discussion with local examples.
- ↪ Make sure that all students are involved in the group activities and

the entire teaching-learning process.

- ↪ Give time to the students to ask questions and organize their notes.

c) Stabilization

Complete your lesson presentation with a review of key ideas and concepts of map such as:

- ↪ Ethiopia has untapped deposits of gold, gemstone, tantalum, lithium, cobalt, phosphorous, iron, salt, potash, soda ash, gemstones, coal, petroleum and natural gas.
- ↪ Today the largest active gold mines in Ethiopia are Adola, Agere Mariam, Arero, Moyale, Akobo, Lega Dembi, Sakaro and the Tigray regions.
- ↪ The deposits of platinum are identified in the western parts of Ethiopia (northeast Yubdo, north of Gimbi and in the Akobo area of Gambella region).
- ↪ Kenticha, a place 50 kms South-east of Shakiso in Adola is identified as a tantalum rich area. In other areas of Adola, tantalum bearing minerals have been found but none of these areas has been explored in detail.
- ↪ Potash and Salt are found in the Danakil depression (Dallol) area of the Northern Rift Valley. This area is known for its rich potash and salt deposits.
- ↪ Massive reserves of natural gas and crude oil are believed to be found in the Ogaden basin.
- ↪ The lignite coal deposits are proved to exist in Shewa (Debre Brihan-Dessie road, Sululta and near Modjo), Sidamo, Wellega.

4.5. Evaluation and Follow Up

a) Evaluation

In order to check whether the students have understood the lesson, ask them the following questions:

- *What is non-metallic mineral?*
- *Can you describe how mineral is formed?*
- *Can you mention names of metallic minerals you know in your locality or elsewhere?*
- *State the three most important metallic minerals under production currently?*
- *Name three gold, tantalum, and platinum mining areas in Ethiopia?*
- *Which non-metallic mineral is widely mined nowadays in Ethiopia?*

b) Follow up

- Ask teams/students to present what they have discussed.
- Grade all the activities performed by the students. Classify the grades to understand how many of the students have understood the lesson as planned, and how many of them have not.
- Ask students to show the spatial pattern of minerals distribution in Ethiopia using a thematic map.

c) Additional Activities for Fast Learners

- Which type of coal is explored to be widely found in Ethiopia?

Answer Key for Additional Question

- Lignite coal

4.6. Answers for the Activity in the Text book

Activity 3.5

- ↪ As raw material for a variety of manufacturing establishments, as a source of energy that is used to run machinery used for making fertilizers, as materials in building construction and for aesthetic and ornamental purposes.

3.6. Biotic Resources of Ethiopia

Periods allotted: 2

Biotic resources are living organisms in an ecosystem. They are typically sorted into three main categories: 1) *Producers* (include all green plants); 2) *Consumers* (include all animals and 3) *Decomposers* (include bacteria and fungi).

3.6.1. Major Types of Natural Vegetation

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *describe the major types of natural vegetation in Ethiopia; and*
- ➔ *explain the distribution of natural vegetation in Ethiopia.*

2. Contents

- ☛ Major Types of Natural Vegetation

3. Overview

Natural vegetation refers to plants in general or the mass of original plants growing in a particular place. The type and distribution of natural vegetation vary from place to place, owing to factors such as climate (especially temperature and rainfall), altitude, soil type, drainage (water supply), and so forth. Since natural vegetation and its distribution are greatly affected by rainfall and temperature conditions, the natural vegetation that exists in an area is a good indicator of that

area's climate.

Natural vegetation is a valuable national resource because of the benefits that it provides to the physical environment and to human beings' socio-economic conditions. The most significant values of natural vegetation include the following, among other ones: serve as habitats of wild animals, reduce soil erosion, improve evapo-transpiration, there by moderate climatic conditions, provide wood for fuel, construction, and furniture, provide raw materials for pulp and paper manufacturing, serve as pasture for grazing, increase the natural beauty of an area, conserve biodiversity etc.

In Ethiopia, the type and distribution of natural vegetation are controlled mainly by altitude, which is the major factor that affects the distribution of rainfall and temperature in the country. Because of high rainfall and moderate temperatures, the highlands of Ethiopia are better vegetated. On the other hand, the arid and semi-arid lowland areas of the country have very sparse vegetation cover.

Based on altitude, the natural vegetation of Ethiopia is grouped into five types. These are Afro-Alpine and Sub-Afro-Alpine vegetation, Forest, Woodland Savanna, and Desert and semi-desert vegetation.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Physical map of Ethiopia
- ↪ Climatic map of Ethiopia
- ↪ Thematic maps of Ethiopia that show the types and distribution of natural vegetation
- ↪ Pictures and diagrams that show different types of natural vegetation
- ↪ Species of different types of indigenous plants of Ethiopia
- ↪ Charts that show statistical data related to the natural-vegetation
- ↪ A film that shows Ethiopian natural vegetation.

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Demonstration
- ↪ Guest speaker
- ↪ Field visit
- ↪ Presentation of case studies
- ↪ Jigsaw group projects
- ↪ Pair and group discussion
- ↪ Case study

4.3. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials such as maps, pictures, diagrams and charts.
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.
- ↪ Facilitate the required preconditions to invite a guest speaker and to organize a trip to nearby sites where students can observe natural vegetation if any.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce students to what they are going to learn (Natural vegetation of Ethiopia)
- ↪ Make the objectives of the lesson clear to the students.
- ↪ Conduct a brainstorming session to find out the students background knowledge about the natural vegetation of Ethiopia. You may ask students questions such as: What are the major types of natural vegetation in Ethiopia? Which type of vegetation is dominant in Ethiopia? What do you know about the importance of natural vegetation? In Ethiopia, which types of trees are economically important?

b) Main Body of the Lesson

Based on the descriptive and illustrative information given in the student textbook:

- ↪ Describe the meaning of natural vegetation.
- ↪ Explain the major types of natural vegetation in Ethiopia. Using available maps helps the students to fully understand how altitude affects the distribution of natural vegetation in the country.
- ↪ Further, explain the values of natural vegetation and the major factors that affect the distribution of natural vegetation in Ethiopia.
- ↪ Discuss the value of indigenous tree species in Ethiopia
- ↪ Using maps that show natural vegetation, climate, relief, etc. of Ethiopia, have the students discuss, in small groups, the relationships between the distribution of natural vegetation and factors such as climate, relief, drainage, etc.
- ↪ You may invite a guest speaker from a local office working on the protection of natural vegetation. You may also organize a visit to local preserved sites where students can observe natural vegetation. This helps them to relate the lesson to actual situations.
- ↪ Make sure that all students are involved in the group activities and the entire teaching learning process. Give them adequate time to ask questions and jot down their notes.

c) Stabilization

Stabilize the lesson with a review of key ideas and concepts such as:

- ↪ The term natural vegetation refers to any form of vegetation that grows in a certain geographical area under the natural conditions of the place, without any human interference.
- ↪ The natural vegetation in an area serves many purposes and provides many advantages.
- ↪ The distribution of natural vegetation in Ethiopia is controlled mainly by altitude and other related factors such as climate, water supply, etc.
- ↪ The natural vegetation of Ethiopia is classified into four major types

based largely on altitude and climate.

- ↪ The wide variation in altitude and rainfall results in the formation of highland and lowland forests.

4.5. Evaluation and Follow Up

a) Evaluation

In order to check whether the students have understood the lesson, ask them the following questions:

- *What is natural vegetation?*
- *What are the uses of natural vegetation?*
- *What kinds of vegetation exist in the very low altitude areas of Ethiopia?*
- *In which areas riverine forests are found?*
- *Is there a remarkable difference between semi-desert and desert vegetation?*

b) Follow up

- ↪ Ask teams/students to present what they have discussed
- ↪ Grade all the activities performed by the students. Classify the grades to understand how many of the students have understood the lesson as planned, and how many of them have not.
- ↪ Ask students to show the spatial pattern of natural vegetation distribution in Ethiopia using a thematic map.

c) Additional Activities for Fast Learners

- ↪ Which types of natural vegetation grow in the very highest mountainous areas of Ethiopia?

Answer Key for Additional Question

- ↪ Afro-Alpine and Sub-Afro-Alpine vegetation.

4.6. Answers for the Activity in the Textbook

Activity 3.6.1

- ✎ Organize a field visit to a nearby natural vegetation site and let student perform the planned activity in pairs/group (Refer to the students textbook)

3.6.2. Main Kinds of the Wildlife of Ethiopia

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *explain variations in the distribution of wildlife in Ethiopia.*

2. Contents

- ☛ Main Kinds of the Wildlife of Ethiopia

3. Overview

The term ‘wild animal’ refers to any of the species of animals that are not domesticated. Ethiopia is rich in wildlife-resources. This is mainly the result of the diversified nature of the country’s climate, natural vegetation and relief. It is estimated that there are about 277 species of mammals, 862 species of birds and 63 amphibian species in the country. Of these, seven species of mammals and 25 species of birds are endemic. These wild animals are found in many parts of the country, but they are largely concentrated in the south and western parts.

Wild animals are important resources because they have the following values.

- ➔ *Scientific and educational values (i.e., for research purposes related to medicine, environment, etc.)*
- ➔ *Economic value (to promote tourism)*
- ➔ *Aesthetic value (natural beauty and recreation)*

As in the case of the natural vegetation, the wild animals of the country have been negatively affected, mainly by human-related factors. Some of our animals are greatly endangered. Others have already become extinct. Here are the main

factors that negatively affect Ethiopia's wild animals:

- ☉ *Destruction of natural vegetation which are the habitats of the animals.*
- ☉ *Illegal hunting.*
- ☉ *Expansion of grazing lands pushing into the habitats of the animals.*
- ☉ *Wildfires.*
- ☉ *Migration of animals into neighboring countries due to shortages of food and water.*

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Diagrams and diagrams that show different wild animals of Ethiopia.
- ↪ Thematic maps of Ethiopia that show the types and distribution of wild animals
- ↪ Film that shows Ethiopian wild animals
- ↪ Photographs of endemic animals of Ethiopia
- ↪ Charts that show statistical data related to the wild animal resources of Ethiopia.

4.2. Suggested Methods of Teaching

- ↪ Brainstorming questions
- ↪ Demonstration
- ↪ Guest speaker
- ↪ Field visit
- ↪ Presentation of case studies
- ↪ Jigsaw group projects
- ↪ Pair and group discussion
- ↪ Case study

4.3. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials such as maps, pictures, diagrams, photographs

and charts.

- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.
- ↪ Facilitate the required preconditions to invite a guest speaker and to organize a trip to nearby zoo parks where students can observe wild animals.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Before starting the lesson about the wildlife of Ethiopia, review the previous lesson and try to link the previous lesson and the new one. Then, conduct a brainstorming session with the students to try to assess their background knowledge of the topic that you are going to present to the class.
- ↪ During the brainstorming, raise such questions as the following: What is wildlife? What do you know about the importance of wild animals? Which types of wildlife are categorized as common wild animals? What are the factors negatively affecting wild animals in Ethiopia?

b) Main Body of the Lesson

- ↪ Listen to the students' responses to the above questions and try to identify where your students are in need of your instruction. Then, make your own presentation to the class, based on the students' responses to the above questions as follow by explaining the meaning of wild life; about six categories of wild life of Ethiopia and variations in the distribution of wildlife in Ethiopia.
- ↪ Ask the students to discuss the relationships between Ethiopia's wild animals and their surrounding natural vegetation, climate, topography, etc. Help them to use relevant maps during their discussions. Strengthen the students' understanding by further explaining the types, uses, problems and protection of Ethiopia's wild animals. During your presentation, encourage the students to discuss

the magnitude of human intervention and its negative effects on wild animals and the resulting negative consequences to the country. Also, have your students do the activities and exercises found in their textbooks.

- ↪ You may invite a guest speaker from a local office working on the protection of wild animals. You may also organize a visit to local zoo parks where students can observe wild animals.

c) Stabilization

Give a short summary of the following points:

- ↪ Because of its diversified climate, topography, natural vegetation, etc., Ethiopia is rich in wildlife.
- ↪ Ethiopia is the home of seven endemic mammals and 25 endemic birds.
- ↪ Because of human intervention, the wild animals of Ethiopia are in a state of danger, and some have become extinct.

4.5. Evaluation and Follow Up

a) Evaluation

In order to check whether the students have understood the lesson, ask them the following questions:

- ☉ *What are the significances of wild animals?*
- ☉ *List the wild animals found only in Ethiopia.*
- ☉ *Which types of wildlife are categorized as game animals?*
- ☉ *What are the major problems regarding wild animals in Ethiopia?*
- ☉ *Which animal species live in the afro-alpine region of Ethiopia? Are any of these species endangered?*

b) Follow up

- ↪ Ask teams/students to present what they have discussed

- ↪ Grade all the activities performed by the students. Classify the grades to understand how many of the students have understood the lesson as planned, and how many of them have not.
- ↪ Ask students to show the spatial pattern of wild life distribution in Ethiopia using a thematic map.
- ↪ Why are so many of Ethiopia's elephants now found in certain national parks, and not more widely distributed? And why do so many Gelada Baboons live in the Simien Mountains?

c) Additional Activities for Fast Learners

- ↪ Identify some of the endemic animals of Ethiopia and the place where they are living.

Answer Key for Additional Question

Some of the endemic wild animals of Ethiopia are:

- ☞ *Chelada Baboon—found in the Semein mountains*
- ☞ *Semein Fox—dominantly found in the Semein mountains and Bale mountains*
- ☞ *Walya Ibex—found in the Semein mountains*

4.6. Answers for the Activity in the Textbook

Activity 3.7

1. Yes. The contribution of wildlife to the national economy is threefold.
 - a. Economic value (for the purpose of promoting tourism)
 - b. Scientific and educational values (i.e., for research purposes related to medicine, environment, etc.)
 - c. Aesthetic value (natural beauty and recreation)
2. Common wild animals of Ethiopia include hyenas and jackals, while endemic wild animals of Ethiopia comprise Walia Ibex, Mountain Nyala,

Gelada, Menilik's Bushbuk, Semein Fox, Swayne's Hartebeest, and Wild Ass.

5. Unit Review Exercise

Part I

1. D 2. E 3. A 4. F 5. B 6. C

Part II

7. A 8. D 9. B 10. C

Part III

1. Fluvisoil
2. Highland and lowland forest
3. Hyena and Jackal
4. cambisols
5. Abbay, Tekezze and Baro with their tributaries
6. Highland and Rift Valley
7. Aquatic

Part IV

1. Altitude determines climate and soil which in turn affects vegetation and wild animals. In low altitude there is high temperature and low rainfall. Due to this, the species of plants which adapts low rainfall can exist. As we go to highlands the amount of rainfall increases so that the diversity of plants and animals increases.
2.
 - ➔ The topography of the outward sloping of the Western and South eastern plateaus
 - ➔ The structural formation of the Rift Valley with its in-ward-sloping escarpments resulting mainly in an inland drainage system.

- Faults and joints that structurally influence part of the courses of many rivers.
3. Luvisol, fluvisol and other due to their high chemical nutrient
 4. Afro-alpine
 5.
 - Walia Ibex (wild goat), found in the Semein highlands.
 - Mountain Nyala (Dega Agazon), found in the Bale Mountains.
 - ‘Gelada’ or ‘Chilada’ baboon, found in the Semein highlands.
 - Menilik’s Bushbuk (‘Dikula’) in the Shewan and Bale highlands.
 - Swayne’s Hartebeest (‘Korkay’), found in the Nechsar park and the Sankalle sanctuary.
 - Semein Fox (‘Key Kebero’), found in the Bale and Semein Highlands.
 - Wild Ass (‘Yedur Ahiya’), found in the Afar and Southeast Lowlands.
 6. Herbivores are the group of animals which feeds on green plants while carnivores feeds on meat. However, carnivores are dependents on herbivores because they hunt them in order to get their food.

6. Check List

Check the student’s performance according to the given competencies referring the questions under the checklist for every unit. Put a tick (√) mark against each task whether they can perform in the competencies of each unit. The students are expected to respond saying Yes or No. then, you can make your evaluation whether the competencies are met or not.

Can you:

		Yes	No
1	Elaborate major drainage systems of Ethiopia		
2	Explain the distribution of the major water resources in Ethiopia		
3	State soils types and distribution in Ethiopia		
4	Describe the spatial distribution and variation minerals in Ethiopia		
5	Explain the factors responsible for difference in types of natural vegetation in Ethiopia		
6	Describe the types of wildlife in Ethiopia and factors that affect their distribution		

7. Unit Assessment

Students' performance has to be assessed continuously over the whole unit. The assessment will be made by comparing students' performance with the specified level of competencies. Besides, the teacher has to recognize the level of performance of each student and provide assistance accordingly.

Thus:

A student at a minimum requirement level will be able to elaborate major drainage systems of Ethiopia; explain the distribution of the major water resources in Ethiopia; show appreciation for the significance of rivers and lakes of Ethiopia; state soils types and distribution in Ethiopia; describe the spatial distribution and variation minerals in Ethiopia; explain the factors responsible for the difference in types of natural vegetation in Ethiopia; describe the types of wildlife in Ethiopia and factors that affect their distribution and show interest to participate in the conservation of natural vegetation and wild animals.

In addition, a student working above the minimum requirement level and considered as a higher achiever should be able to explain how landform affect the drainage systems of Ethiopia, describe the impact of Ethiopian rivers and lakes on the livelihood and culture of the people; analyze why are so many of Ethiopia's Game animals now found in certain national parks, and not more widely; justify

why wild animals fiercely attack human being in varied places, demonstrate how to distinguish soil texture.

Students working below a minimum requirement level will require extra help if they are to catch up with the rest of the class.

Students reaching the minimum requirement level but achieving a little bit more should be supported so that they attain the higher-achiever competencies. Students who fulfill the higher-achiever competencies also need special support to continue and achieve more.

UNIT FOUR

4. POPULATION AND DEMOGRAPHIC CHARACTERISTICS OF ETHIOPIA

Periods Allotted: 11

1. Unit Introduction

In this unit you are going to deal with population and demographic characteristics of Ethiopia. The unit specifically addresses topics such as trends of population growth in Ethiopia, the composition and distribution of Ethiopia's population, urban and rural settlement patterns, health and disease in the highlands & lowlands and impacts of population structure on sustainable development in Ethiopia.

2. Unit Outcomes

At the end of this unit, the students will be able to

- ➔ *define the concept human population*
- ➔ *recognize the pattern of population growth in Ethiopia*
- ➔ *examine population structure and trends in Ethiopia*
- ➔ *explain the population characteristics of Ethiopia*
- ➔ *demonstrate the population distribution and settlement patterns of Ethiopia*
- ➔ *identify factors influencing spatial distribution of health and diseases in lowland and highland of Ethiopia*

- ➔ *describe the diversity of language and religion in Ethiopia; and*
- ➔ *analyze the influence of population pressure on resources in Ethiopia*

3. Main Contents

- ☛ Concept of human population
- ☛ The trends of population growth in Ethiopia
- ☛ Population Composition
- ☛ Population distribution
- ☛ Urban and rural Settlement patterns
- ☛ Health and disease in the highlands and lowlands of Ethiopia
- ☛ Impacts of population Structure on sustainable development in Ethiopia
- ☛ Language and religion diversity in Ethiopia

4.1. Concepts of Human Population

Periods Allotted 1

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *define the concept of human population*
- ➔ *discuss facts about human of population*

2. Contents

- ☛ Concepts of Human Population

3. Overview

In this lesson, the students will learn about concepts of human population and sources of population data. The term population, in population studies, refers to the total number of human inhabitants of a specified area. The study of human population is also necessary for development and socio-economic activities. Population is the major source of the labour force for the productive and non-productive economic sectors,

4. Teaching learning process

4.1. Suggested Teaching Aids

- ↪ A photograph that shows population
- ↪ Ethiopian population and housing census

4.2. Suggested Teaching Methods

In this lesson you are expected to apply the appropriate teaching methods such as:

- ↪ Brainstorming
- ↪ Questioning
- ↪ Pair and group Discussion
- ↪ Presentation

4.3. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials
- ↪ Refer to relevant materials about the various sources of population data and human population.
- ↪ Prepare notes, activities and exercises

4.4. Presentation of the Lesson

d) Introduction to the Lesson

Ask these questions by way of starting the lesson:

- ↪ What is human population?
- ↪ What makes the human population different from animal and plant population?
- ↪ Do you think that studying human population is useful and necessary?
- ↪ How do we acquire information or data about human population?

e) Body of the Lesson

- ↳ Let Students explain the meaning of human population from their experiences
- ↳ Give justifying reasons for the ‘usefulness’ of human population study in geography.

f) Stabilization

- ↳ Review the main ideas and concepts of the lesson. Mention the following points:
 - ➔ *Human population is the number of people living in a definite area.*
 - ➔ *Human population is the number of people living in a definite area.*
 - ➔ *Human population has been a matter of study for various academic disciplines, such as Geography, Biology, Sociology, Medical science, history, etc.*
 - ➔ *Population studies is important for planning, particularly by governments, in fields such as health, education, housing, social security, employment, and environment preservation.*
 - ➔ *The study of human population is necessary for development and socio-economic activities.*

4.5. Evaluation and Follow up

a) Evaluation

You have to evaluate the whole performance of students (in discussions, answering questions and etc) throughout the period.

Check your students’ understanding of the lesson by asking them questions such as:

1. *Why is studying human population?*
2. *For what purposes, the government use population information?*

b) Follow up

- *Form groups of five students. In each group, three will discuss the concept of human population, and the importance of population data sources.*

c) Additional Activities

1. Do you think the studies of human population are necessary? Discuss.

4.6. Answer Key for Activities

Activity 4.1

1. It is important for planning in fields such as health, education, housing, social security, employment and environmental preservation.
2. It provides information needed to formulate government population policies, which seek to modify demographic trends in order to achieve economic and social objectives.
3. There are a number of advantages of studying population. These include:-
 - ↳ It is essential for economic planning;
 - ↳ Studying population number and its pattern of distribution is important for satisfying social needs; -
 - ↳ It is important for the overall socio-economic development of a society.

Answer for Additional Activities

1. Yes it is necessary. Human population number is very dynamic as it demonstrates significant quantitative and qualitative changes over time and space.
 - ↳ Change in the size, composition, structure and the location of human populations can have policy implications.
 - ↳ Knowing about the characteristics of the human population is important in order to adjust situations to existing realities

4.2. The Trends of Population Growth In Ethiopia

Periods Allotted: 1

1. Competencies

At the end of this section, students will be able to:

- ➔ *explain the trends of population growth in Ethiopia;*
- ➔ *compare population size of Ethiopia on regional bases.*

2. Contents

- ☛ Trends of Population Growth in Ethiopia

3. Overview

In this lesson, students will learn the trends of population growth and structure in Ethiopia. They will discuss the sizes and growth rates of Ethiopia's population during different periods.

Ethiopia is the most populous country in the world; it stands second in Africa, next to Nigeria. In 2020 population is estimated at 114.9 million, which ranks 12th in the world, and the current growth rate is about 2.6 percent. The country's population is among the fastest growing in the world. In the entire history of Ethiopia, population and housing censuses were conducted three times. These censuses were conducted in 1984, 1994 and 2007.

4. Teaching-Learning Process

4.1. Suggested Teaching aids

- ☛ Reports of population pressures and surveys of Ethiopia
- ☛ Charts and diagrams that show statistical data regarding Ethiopia's population

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Group discussion
- ↪ Demonstration –
- ↪ Debate
- ↪ Presentation by group members

4.3. Pre-lesson Preparation

- ↪ Prepare or make ready the required teaching aids to support your instruction plan
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.

4.4. Presentation of the Lesson

a) Introduction to the Lesson

- ↪ Introduce your students to what they are going to learn (Trends of Population Growth)
- ↪ Make the objectives of the lesson clear to the students.
- ↪ Conduct brainstorming session with the students to ascertain their background knowledge of population growth. Ask them questions such as: What are the reasons for fast population growth in some countries and slow population growth in other countries? What do you think are the reasons for Ethiopia's very fast population growth?

b) Main Body of the Lesson

- ↪ After considering your students previous knowledge, explain trends of population growth in Ethiopia.
- ↪ Divide students into small groups, provide them with a figure/chart that shows the statistical data of the size and growth rates of Ethiopia's population different period, and then instruct them to discuss the trends population growth in the country.

- ↳ Now give the students a chance to critically observe table 4.1 for a while and to ask them the following questions:
 - ↳ What did you understand from table 4.1?
 - ↳ Why has the doubling time become shorter and shorter since 1960
- ↳ This will give them a chance to share their knowledge about the trend and growth of Ethiopia population. After extensive discussions, draw the attention of students to the following main points:
- ↳ It was estimated that, in 1900, Ethiopia had only 11.8 million persons. This number increased to about 13 million in 1920 and 23.5 million in 1960, as it is shown in (Table 4.1). The table shows the population of the country in 1960 was doubled in 1990. These values show that, during those decades, it took 60 years for the population to double its size. In contrast, since 1960, the time required for the population to double has been on the decline. This is because of a rapid rate of population growth. For instance, the population doubled in size between 1960 and 1990, indicating a doubling time of only 30 years.

c) Stabilization

Review the main ideas and concepts of the lesson. Emphasize the following points. With a total population of 114.9 million, Ethiopia is the second most-populous country in Africa.

- ↳ The 2.6% growth rate of Ethiopia's population is among the highest in the world.
- ↳ The three censuses of Ethiopia were conducted in 1984, 1994 and 2007.
- ↳ The growth rate of Ethiopia's population has been declining slightly since 1984.

4.5. Evaluation and Follow Up

a) Evaluation

Use all of the evaluation and follow-up techniques described in the Introduction.

As part of that process, perform these tasks:

- ↳ Check your students' understanding of the lesson by giving them an exercise to do independently.
- ↳ You have to evaluate the whole performance of students (in discussions, answering questions and etc) throughout the period as a part of continuous assessments.

b) Follow up

Rate and grade the various activities and exercises performed by the students. Analyze the results to understand whether or not the lesson has been well-understood and to identify those students who may need extra support.

Based on these and other evaluations you have performed for the lesson, assess each student and also the class as a whole. Decide whether you have succeeded in guiding them to meet the lesson objectives.

c) Additional Activities

1. What is the relationship between population growth rate and doubling time?
2. Describe the trends of population growth in Ethiopia.

4.3. Answer key for Activities

Activity 4.2

1. The major reason is the high rate of fertility that prevails in the country.

4.3. Population Composition

Periods Allotted : 1

1. Competencies

After completing this lesson, your students will be able to:

- explain how the population structure of Ethiopia changed overtime and
- describe the composition of Ethiopian population

2. Contents

- ☛ Age Structure or Composition
- ☛ Age Dependency Ratio

3. Overview

Age Structure is the classification of a given population into different age groups of various features. This structure becomes clear after we group all of the people in that population by age. In other words, age structure is the pattern that results from the distribution of members of a population into different age categories.

The distribution of population by age is among the most fundamental demographic characteristics of human populations and that of demographic statistics. It plays an important role in the development of any society. The economic and cultural life of society critically depends upon the age structure of the population. Moreover, the planning process of any country makes use of this data extensively for the development of the economy, culture and for its regions.

Age Groups: Although we can use different sets of numbers to define age groups, the most widely used age groups are the five-year age groups 0-4, 5-9, 10-14, ..., 60-64, 65+ and broad age groups 0-14, 15-64, 65+. In the broad age groups, age groups 0-14, 15-64 and 65+ are known, respectively, as young age (the young dependent population), working age (the economically active population) and old age (the elderly dependent population).

A Population pyramid is a very useful aid in examining the age structure of a population. It is a graphic representation of the distribution of the population by age and sex. The population pyramid of Ethiopia looks like a triangle with a very broad base tapering to a narrow apex. The broad base of the country's population pyramid indicates the preponderance of the young age population, which is the result of high fertility rates. On the other hand, the narrow apex shows that the level of mortality is high and that very few people reach old age.

Ethiopia's age dependency ratio in 2020; was 76.8/100, this shows that there are 76.8 dependents on 100 working population. A high dependency ratio in Ethiopia indicates that the economically active population and the overall economy face a greater burden to support and provide the social services needed by children and by elderly persons who are often economically dependent.

With regard to the sex structure of Ethiopia's population, its sex ratio (the ratio of male population to female population) indicates that the number of males has been increasing slightly over time. The nation's sex ratio increased from 99% in 1984 to 101.3% in 1994 and to 101.9% in 2007. In 2020, male to female ratio in Ethiopia was estimated to be 100.12 males per 100 females. In all the three censuses, sex ratios were higher in rural areas than in urban ones.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↳ Charts and diagrams that show statistical data regarding Ethiopia's population
- ↳ Population pyramids of Ethiopia and other country

4.2. Suggested Methods of Teaching

- ↳ Brainstorming
- ↳ Questioning
- ↳ Pair and group discussion
- ↳ Presentation

4.3. Pre Lesson Preparation

- ↪ In advance, read more about the various types of population pyramids and associated demographic implications. And get ready with figures of population pyramids that show the population structures of some sample countries including developing and developed ones
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.

4.4. Lesson Presentation

a) Introducing the Lesson

- ↪ Motivate the students to review what they learnt previously
- ↪ Introduce your students to what they are going to learn
- ↪ Conduct a brainstorming session with the students to ascertain their background knowledge of age structure, sex structure, etc. Ask them questions such as: Have they done the activity from their textbook, which includes questions such as: What is the significance of studying the sex composition of population?

b) Main Body of the Lesson

- ↪ Explain the meaning of age structure and population pyramid. Have the students work in groups and do the activity from their textbook and present their ideas to the class. The activity includes questions such as: What do you think are the benefits of knowing about the age structure of a given population? In addition, have the students work on activity the in small groups. This activity helps them to compare and contrast the population pyramid of Ethiopia with that of some developed countries.
- ↪ Use tables and diagrams to show students the proportion of the young age, working age, and old age populations of Ethiopia during the three census periods. In addition, explain the meanings and calculations of age dependency ratio. Have the students work in pairs on the activity

from their textbook, which includes questions on the calculations and interpretations of Ethiopia's age dependency ratio. Be sure that the students understand the high age dependency ratio in Ethiopia and the implications of the very high youth dependency ratio in the country.

- ↪ Explain sex structure and the calculation and interpretation of sex ratio. Have the students work in small groups to discuss questions such as: Why is it important to know the sex ratio of a given population?
- ↪ Make sure that all students are involved in group activities and in the entire teaching-learning process.
- ↪ Give your students enough time to ask questions and organize their notes.

c) Stabilization

Summarize the main ideas and concepts of the lesson.

- ↪ A population pyramid is a graphic representation of the age and sex structure of a given population. Ethiopia's population pyramid has a shape of a triangle with a narrow apex and broad base.
- ↪ Ethiopia's population has a very high proportion of young age population.
- ↪ The age dependency ratio of Ethiopia's population is very high.
- ↪ The very large young age population of Ethiopia has various implications for the socio-economic conditions of the country.
- ↪ The sex structure of a given population is measured by sex ratio, which refers to the ratio between males and females.
- ↪ The sex ratio of Ethiopia is increasing slightly over time. Sex ratio varies between rural and urban places and between different age groups.

4.5. Evaluation and Follow up

a) Evaluation

Use all of the evaluation and follow-up techniques described in the Introduction. As part of that process, perform these tasks:

- ↪ Check your students' understanding of the lesson by giving them an exercise to do independently. The exercise may contain questions such as:
 - ☞ Why is it important to know the age and sex structures of a given population?
 - ☞ What is a population pyramid?
 - ☞ What are the reasons for the broad base and narrow apex of Ethiopia's population pyramid? What does age dependency ratio mean?
 - ☞ What is the reason for the high age dependency ratio in Ethiopia?
 - ☞ What does sex ratio mean?

b) Follow up

Motivate the students to search for population pyramids of different countries from different sources. Encourage students to discuss in groups, the population structures of some sample countries from developed and developing regions.

Encourage all students (for example, individually and in groups) and assign extra work to each student as needed. For below-average students, provide exercises and activities to help them meet the minimum competencies. For above-average students, provide work that will stimulate their further advancement and eliminate any possible complacency. For average students, assign work you think appropriate.

c) Additional Activities

1. Explain the following:
 - a) *Population Pyramid*
 - b) *Age Dependency Ratio*
 - c) *Sex Ratio*
2. Why is it important to know the age and sex structure of a population?
3. Discuss the implications of very high age dependency ratio in Ethiopia.

4.4. Answer key for Activities

Activity 4.3.

1. the vertical axis of the population pyramid shows age of the population
2. the vertical axis of the population pyramid shows size of population by sex

Activity 4.4

1. Sex ratio refers to the ratio of the male population to the female population at different age groups. It is usually expressed as number of males per 100 females in a population.
2. The significance of studying the sex composition is very important for demographic analysis because it provides useful information about reproductive potential, human resources, and so on.
3. a, b and c

Country		
X	Y	Z
$SR = \frac{300,000}{500,000} \times 100 = 60\%$ $ADR = \frac{50\%(800,000)}{50\%(800,000)} \times 100$ $= \frac{400,000}{400,000} \times 100$ $= 100\%$	$SR = \frac{460,000}{790,000} \times 100 = 58\%$ $ADR = \frac{35\%(1,250,000)}{65\%(1,250,000)} \times 100$ $= \frac{437,500}{812,500} \times 100$ $= 53.8\%$	$SR = \frac{525,000}{405,000} \times 100 = 129\%$ $ADR = \frac{56\%(930,000)}{44\%(930,000)} \times 100$ $= \frac{520,800}{409,200} \times 100$ $= 127.3\%$

d. Country Z shows maximum dependency ratio.

Answers for Additional Activities

1.
 - a. Population pyramid: is the graphic representation of the distribution of a given *population by age and sex*.
 - b. *Age dependency ratio*: is the ratio between dependent (young and old age) population and working age (adult) population
 - c. *Sex ratio*: is the ratio between male population and female population.
2. Knowing the age and sex structure of a given population helps:
 - ↪ To design policies and strategies according to the actual characteristics of the population.
 - ↪ To plan for the future to make certain arrangements in the age and sex structure of the population
 - ↪ To take appropriate actions and decisions to meet the actual demands of the population.
3. It results in the following impacts
 - ↪ It is a set back to the development efforts of the country.
 - ↪ Large amount of resource is spent on the fulfilment of basic services such as education, health care, etc.
 - ↪ Scarcity of resources for investment.

4.4. Population Distribution

Periods Allotted : 1

1. Competencies

After completing this lesson, your students will be able to:

- ➔ *discuss the spatial distribution of population in Ethiopia.*

➔ *identify factors affecting population distribution in Ethiopia*

2. Contents

- ☛ Population distribution in Ethiopia
- ☛ Factors Affecting Population Distribution in Ethiopia

3. Overview

In this lesson, the students will learn about the spatial distribution of population in Ethiopia. First, they will learn the concepts of population distribution and population density along with their measurement. Then, they will discuss the distribution of population and the densely and sparsely populated regions of the country.

The manner in which population is spread out over a given area is known as population distribution. The distribution of population in a given country or region is measured by population density. Population density is simply defined as the average number of people per square kilometre in a given country or region. Areas with high population densities are known as densely populated areas,

The distribution of Ethiopia's population generally is related to altitude, climate, and soil type. Figure 4.2 indicates that uneven population distribution in Ethiopia. The highest population concentration is found in the highlands, which are endowed with moderate temperature, rich soil and adequate rainfall. The lowlands are very sparsely populated mainly this happens because of high temperatures and low rainfall.

This extreme unevenness is the result of a number of factors operating in combination. These factors can be grouped into two: physical and human.

The most significant physical factors affecting the distribution of population in Ethiopia are:

Climate, soil fertility, natural water supply, relief, and vegetation cover. In Ethiopia, most of the physical factors are influenced by altitude. Therefore, altitude is the most crucial physical factor influencing patterns of population distribution and settlement in the country.

The major human factors which have influenced population distribution in Ethiopia are: types of economic activity and historical patterns of population movement.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Population distribution/density map of Ethiopia
- ↪ Physical map of Ethiopia
- ↪ Reports of population censuses and surveys of Ethiopia
- ↪ Charts and diagrams that show population densities in Ethiopia

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Questioning
- ↪ Explanation
- ↪ Pair and group discussion
- ↪ Presentation

4.3. Pre Lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials such as a map of population density Ethiopia, the physical map of Ethiopia, and charts and diagrams that summarize population densities in Ethiopia.
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce students to what they are going to learn (The Spatial Distribution of Population in Ethiopia).

- ↪ Make the objectives of the lesson clear to students.
- ↪ Conduct a brainstorming session with the students to ascertain their students background knowledge of population distribution and density. Ask them questions such as: What are the reasons for the variation of population distribution in a given country? What is population density?

b) Main Body of the Lesson

- ↪ After considering your students' previous knowledge, start your presentation with the explanation of the meanings of population distribution, population density.
- ↪ Divide the students into small groups, provide them with a map of population distribution in Ethiopia, and instruct them to identify the densely and sparsely populated areas of the country. In addition, have them use the data available in their textbook to calculate the crude density of each region and identify the most densely and sparsely populated regions of Ethiopia.
- ↪ Further explain the variation of population densities in Ethiopia in terms of regions, zones and weredas. You may enhance their learning by using charts and diagrams that clearly show the variations of population densities between the densely and sparsely populated areas of the country.
- ↪ Make sure that all students are involved in the group activities and in the entire teaching-learning process.
- ↪ Give your students enough time to ask questions and organize their notes.

c) Stabilization

Review the main ideas and concepts of the lesson. Stress the following points:

- ↪ Population distribution in a given country/region is measured by population density. Population density refers to the number of people in a square kilometre area.

- ↪ The population of Ethiopia is unevenly distributed because of certain natural and human factors.
- ↪ In Ethiopia, there is significant variation in population density between regions, zones, and weredas.

4.5. Evaluation and Follow Up

a) Evaluation

Use all of the evaluation techniques described in the Introduction. As part of that process, perform these evaluation tasks:

- a. Check your students' understanding of the lesson by giving them different activities.

b) Follow up

- ↪ Motivate students to discuss in group.
- ↪ Facilitate and coordinate the discussion.
- ↪ Rate and grade the various activities and exercises performed by the students.

c) Additional Activities

1. What is the current figure of Ethiopia's population density?
2. Why is Ethiopia's population distributed unevenly?
3. Discuss the implications of uneven distribution of population in Ethiopia.

4.4. Answer key for Activities

Activity 4.5

1. Most densely populated region are SNNPR, Amhara and Oromia regions.
2. This question has different response based on their region (Their response will be densely, moderately or sparsely distributed),

Activity 4.6

1.
 - ↪ Favourable climate (moderate temperature and adequate rainfall)
 - ↪ Adequate supply of water
 - ↪ Absence of tropical diseases
 - ↪ Availability of fertile soil

2. It is because of:
 - ↪ The harsh climatic condition
 - ↪ Inadequate water
 - ↪ Infertile soil
 - ↪ The presence of tropical diseases

3. It is because the river valleys are found in the low land areas where there are tropical diseases.

Answers for Additional Activities

1. The current (2020) population density in Ethiopia is about 103.9 persons per square kilometre.
2. Ethiopia's population is distributed unevenly due to certain physical and human related factors.
 - ☛ Physical Factors: Climate, altitude, water supply, soil type, etc.
 - ☛ Human Factors: Economic activities, historical population movements, etc.

3. It has an impact on the:
 - ☛ Provision of social services for the people
 - ☛ Development of infrastructure within the country
 - ☛ Land use pattern of the country
 - ☛ Resource use pattern of the country

4.5. Urban and Rural Settlement Patterns

Periods Allotted: 2

1. Competencies

After completing this lesson, your students will be able to:

- ➔ *describe settlement patterns of Ethiopian population; and*
- ➔ *differentiate urban and rural settlements patterns of Ethiopia.*

2. Contents

- ☛ Rural Settlements
- ☛ Urban Settlements

3. Overview

In this lesson, the students will learn the settlement patterns of the Ethiopian population. The settlements in Ethiopia are broadly categorized into two groups. They are rural and urban settlements. In this lesson, the students will learn the patterns of these two types of settlements.

Settlements in Ethiopia are categorized as urban and rural, on the bases of dominant economic activities and degree of population density. Ethiopia's rural settlements are almost totally agricultural, while the urban settlements are categorized by non-agricultural economic activities. In addition, urban settlements often have higher population densities than rural settlements.

Rural settlements of Ethiopia are categorized into two classes: permanent and temporary. The permanent rural settlements are mostly associated with the crop farming highland areas of the country. The temporary/mobile rural settlements, on the other hand, are associated with the nomadic herding lowland areas of the country.

In Ethiopia, a given settlement is said to be urban when it fulfils the following criteria.

- ↪ The settlement has a minimum of 2000 people.
- ↪ Two-thirds of the population in the settlement are engaged in non-agricultural activities
- ↪ The settlement has a chartered municipality.
- ↪ The presence of social services and amenities.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Settlement map of Ethiopia
- ↪ Pictures of urban settlements in Ethiopia
- ↪ Pictures of permanent and mobile settlements in rural Ethiopia

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Questioning
- ↪ Explanation
- ↪ Pair and group discussion
- ↪ Presentation

4.3. Pre Lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials such as a settlement map of Ethiopia, pictures of urban centers (towns and cities) in Ethiopia, pictures of permanent (scattered and grouped) rural settlements found in the crop farming highland areas of Ethiopia, and pictures of mobile settlements found in the nomadic herding lowland areas of Ethiopia.
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises..

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce the students to what they are going to learn (Settlement Patterns of Ethiopian Population)
- ↪ Make the objectives of the lesson clear to the students.
- ↪ Conduct a brainstorming session with the students to ascertain their background knowledge of the meaning of settlement and the reasons for the variation of settlement patterns. Ask them questions such as: What is settlement? Why do settlements vary from place to place?

b) Main Body of the Lesson

- ↪ After considering your students' previous knowledge, start your presentation with an explanation of the meaning of settlement and the reasons for the variations of settlement patterns from place to place, particularly in Ethiopia. Explain how settlements in Ethiopia are categorized as rural and urban. Show the students the settlement map of Ethiopia and help them to realize the locations of most of the rural and urban settlements of the country.
- ↪ Provide the students with some pictures of permanent and temporary rural settlements in Ethiopia and have them work in groups to discuss the characteristics of the two types of rural settlements and to identify the areas in Ethiopia associated with these settlements.
- ↪ Explain the nature of urban settlements in general and how they are differentiated from rural settlements in Ethiopia in particular. Explain the historical development of urban settlements in the country. You may show them a map that portrays the distribution of urban settlements and some pictures of towns and cities in Ethiopia and have them discuss the reasons why most urban settlements of the country are concentrated along the major transport routes and networks.
- ↪ Make sure that all students are involved in the group activities and in the entire teaching-learning process.
- ↪ Give the students enough time to ask questions and organize their

notes.

c) Stabilization

Review the main ideas and concepts of the lesson. The following are the highlights.

- ↪ In Ethiopia, the development and patterns of settlements vary from place to place due to certain physical and human factors.
- ↪ Settlements in Ethiopian population are broadly categorized into two classes: rural and urban. •
- ↪ The rural settlements of Ethiopia are also categorized into two classes: permanent and temporary. The permanent rural settlements are associated with the crop farming highlands, while the temporary ones are associated with the nomadic herding lowland areas of the country.
- ↪ The origin and development of most urban settlements in Ethiopia is associated with the construction of roads that connect different parts of the country and the five-year Italian occupation that resulted in the setting up of industries, roads, and service-giving institutions.
- ↪ In Ethiopia, most urban settlements have come into existence along major transport routes and networks.

4.5. Evaluation and Follow Up

a) Evaluation

- ↪ Use all of the evaluation and follow-up techniques described in the Introduction. As part of those activities, use these approaches:
- ↪ Check the students' understanding of the lesson by giving them an exercise to do independently. The exercise may contain questions such as:
 - *What is settlement?*
 - *What are the two major kinds of settlements in Ethiopia?*
 - *Why are temporary settlements found in the nomadic herding areas of Ethiopia?*

- *What are the criteria used in Ethiopia to differentiate urban settlements from rural settlements?*
- *What were the major factors that contributed to the development of urban settlements in Ethiopia?*

b) Follow up

- ↳ Motivate the students to participate actively in group discussions, independent task and the likes.
- ↳ Grade and record every performance of the students.

c) Additional Activities

1. Explain the reasons why temporary rural settlements of Ethiopia are concentrated over the lowland areas.
2. Why the permanent rural settlements of Ethiopia are mainly found over the highland areas?
3. What were the major factors contributed to the development of urban settlements in Ethiopia?

4.4. Answer key for Activities

Activity 4.7

In Ethiopia crop-farming areas have greater carrying capacity and higher densities of population. This is typically the case in the highland areas of Ethiopia where natural conditions are suitable for crop cultivation. In the crop-farming highland areas, the man-land ratio is significantly higher than the one in the pastoralist lowlands.

The arid and semi-arid lowland areas of Ethiopia are areas that are more suitable for pastoralist activities than for crop farming. By its nature, pastoralism is an economic activity that requires large areas of grazing lands. In most pastoralist areas of Ethiopia, the land requirement for grazing is as large as 20 hectares or more per head of cattle. The arid and semi-arid lowlands of Ethiopia that are inhabited by pastoralists and semi-pastoralists are sparsely settled. Hence, with

pastoral herding, population densities are extremely low.

Activity 4.8

1. Settlement is a concept that refers to the way of populating a place with permanent or temporary residents.
2. The reasons for the variation of settlements from place to place are because of the spatial variation of factors such as relief, climate, the kind of land ownership, economic activities, the level of development, etc.

4.3. Answers for Additional Activities

1. It is mainly due to:

- *The scarcity of pasture lands*
- *The scarcity of fresh water*
- *The pastoralist way of life of the people*

2. It is mainly due to:

- *The favourable conditions for crop cultivation such as adequate rainfall, adequate supply of fresh water, relatively fertile soil, etc.*
- *The dependence of the people on the cultivation of crops.*
- *The scarcity of farm lands and settlement areas to move from place to place.*

3. The major factors were:

- *The development of transport infrastructure especially roads*
- *The development of social services such as education, health care, etc.*
- *Industrial development that creates better employment opportunities.*

4.6. Health and Disease in Ethiopia

Periods Allotted: 1

1. Competencies

After completing this lesson, your students will be able to:

- ➔ *Identify factors influencing spatial distribution of health and diseases in lowland and highland of Ethiopia*

2. Contents

- ☛ Health and disease in Ethiopia

3. Overview

In this lesson, the students will learn the distribution of health and disease in Ethiopia. Ethiopia's investment in health has resulted in improvements in the health condition of its population. Despite great progress, Ethiopia is still facing a high burden of disease.

The health extension program HEP has certainly contributed to the increased access and coverage of high-impact public health interventions in the country. Improved public health interventions such as malaria control efforts, access to safe drinking water, improved toilet facilities, and vaccination against childhood diseases are some of the factors behind the improved health outcomes in Ethiopia.

The Government of Ethiopia has been investing heavily in health system strengthening through its pro-poor policies and strategies that brought about significant gains in improving the health status of Ethiopians. Despite recognizable improvements, Ethiopia has still a heavy burden of diseases but a low rate of self-reported illness and low health facility coverage and utilization.

The lowlands of Ethiopia tend to be infested with tropical diseases like malaria and yellow fever that contribute to the sparse population distribution. The major killer diseases accounting for about 75% of all deaths include prenatal-maternal conditions, acute respiratory infection, malaria, nutritional deficiency for children

under 5 years, diarrhea, AIDS and tuberculosis.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Graphs and charts indicate trends of mortality in Ethiopia
- ↪ Maps the which show the spatial distribution of Disease highlands and lowlands of Ethiopia

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Questioning
- ↪ Explanation
- ↪ Pair and group discussion
- ↪ Presentation

4.3. Pre Lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials such as a map of Ethiopia indicate distribution of disease, trends and spatial distribution of malaria in Ethiopia.
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises..

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce the students to what they are going to learn (Health and disease in Ethiopia)
- ↪ Make the objectives of the lesson clear to the students.
- ↪ Conduct a brainstorming session with the students to ascertain their background knowledge of the spatial distribution of disease in Ethiopia. Ask them questions such as: What are the major types of

diseases in lowlands of Ethiopia?

b) Main Body of the Lesson

- ↪ After considering your students' previous knowledge, start your presentation with an explanation of the health and disease in Ethiopia.
- ↪ Explain the contribution of health extension program HEP such as increased access and coverage of high-impact public health interventions in the country.
- ↪ Explain some of the root causes of the poor health status of the population are:
 - a. Lack of access to clean water
 - b. Lack of adequate nutrition
 - c. Disease related to beliefs, behaviours and traditional practices
 - d. Lack of health services:
- ↪ Explain variations among the regions of Ethiopia in population per hospital and hospital bed.
- ↪ Make sure that all students are involved in the group activities and in the entire teaching-learning process.
- ↪ Give the students enough time to ask questions and organize their notes.

e) Stabilization

Review the main ideas and concepts of the lesson. The following are the highlights.

- ↪ Variation in distribution of disease between highlands and low lands of Ethiopia
- ↪ The lowlands of Ethiopia tend to be infested with tropical diseases like malaria and yellow fever that contribute to the sparse population distribution.
- ↪ The major killer diseases accounting for about 75% of all deaths include prenatal-maternal conditions, acute respiratory infection, malaria, nutritional deficiency for children under 5 years, diarrhea,

AIDS and tuberculosis.

4.5. Evaluation and Follow Up

a) Evaluation

- ↪ Use all of the evaluation and follow-up techniques described in the Introduction. As part of those activities, use these approaches:
- ↪ Check the students' understanding of the lesson by giving them an exercise to do independently. The exercise may contain questions such as:
 - ⊕ *Why distribution of diseases varies between highlands and lowlands of Ethiopia?*
 - ⊕ *What are the major killer diseases in Ethiopia?*
 - ⊕ *What are the criteria used in Ethiopia to differentiate urban settlements from rural settlements?*

b) Follow up

- ↪ Motivate the students to participate actively in group discussions, independent task and the likes.
- ↪ Grade and record every performance of the students.

c) Additional Activities

1. Explain the root causes of the poor health status of the population in Ethiopia.
2. Explain the contribution of health extension program for the improvement in health condition of Ethiopia's population.

4.3. Answer key for Activities

Activity 4.9

1. The main diseases most commonly encountered are: malaria, diarrhea, intestinal acute respiratory infections, tuberculosis and diarrhoeal diseases

including cholera are also common during droughts.

Answers for Additional Activities

1.
 - i. Lack of access to clean water: Rivers and lakes remain the most important sources of water particularly for people in rural areas although such waters are largely unsafe.
 - ii. Lack of adequate nutrition: Studies reveal that malnutrition is rampant and is among the highest in the world. About half of the children under the age of five are malnourished, stunted or wasted. Malnutrition remains high as the country has not attained food security, or due to poor knowledge about nutritional requirements and dietary habits.
 - iii. Disease related to beliefs, behaviours and traditional practices which have a negative effect on health status include circumcision, early marriage, and low value of girls and children.
 - iv. Lack of health services: The health care infrastructure of the country had suffered from underfunding, and health service coverage is less than 50% of the population. The services tend to be urban biased.
2. The health extension program HEP has certainly contributed to the increased access and coverage of high-impact public health interventions in the country. Improved public health interventions such as malaria control efforts, access to safe drinking water, improved toilet facilities, and vaccination against childhood diseases are some of the factors behind the improved health outcomes in Ethiopia.

Activity 4.10

Some of the indirect consequences of deforestation include:

- ↪ Reduced agricultural productivity.
- ↪ Reduced socio economic progress.
- ↪ -Climatic change.

4.7. Impacts of Population growth on Sustainable Development in Ethiopia

Periods Allotted: 2

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *explain the impact of population growth on Ethiopia's socioeconomic condition; and*
- ➔ *describe the impact of population growth on Ethiopia's environmental condition*

2. Contents

- ☛ Impacts of population Growth on Sustainable development

3. Overview

In this lesson, the students will learn about impacts of population growth on sustainable development in Ethiopia. In particular, they will come to appreciate how rapid population growth leads to environmental degradation such as deforestation, pollution of water and air, noise, and soil erosion. In addition, they will have a discussion on the impact of rapid population growth on socio-economic resources such as education, health-care, employment, security, food supply, etc.

In lessons before this, the students have learned that Ethiopia's population is one of the most rapidly growing in the world. The rate of population growth in the country is much higher than the rate of economic growth. Also, the population is growing beyond the carrying capacity of the natural environment and its resources. Therefore, the rapid population growth of the country has been causing a variety of environmental and socioeconomic problems.

Rapid population growth causes serious environmental degradation in areas where it occurs. It causes, for example, deforestation, water and air pollution, soil erosion, destruction of resources, etc., all of which are both consequences

and causes of climatic change. Climatic change brings about global warming, desertification, drought and famine. Emphasize that all of these are results of environmental degradation which, as has just been pointed out, is itself caused by rapid population growth. In Ethiopia, many places have been suffering from these problems. Because of climatic changes, rainfall has become unreliable in many places, and many places are suffering from inadequate rainfall for the cultivation of crops. In addition, because of over-cultivation, which results from shortage of farmlands, soil erosion has become a very serious problem in many parts of the country. The productivity of farmers has been seriously affected by climatic changes and soil degradation. This, in turn, has resulted in scarcity of food (inadequate food supply) in many regions of the country. Generally, due to rapid population growth, the quality and ability of the environment to support the people of the country has been deteriorating over time.

As well as having negative environmental impacts, rapid population growth in Ethiopia has been negatively affecting socio-economic conditions of the people. For instance, it is causing serious challenges to the government in meeting the growing demands of the people for education, health care, housing, employment, etc. Although it has few available resources, the government has been placing great emphasis on expanding and maintaining the quality of these social services in all parts of the country.

4. Teaching learning process

- ↳ Statistical data presented in tables and charts that show impacts of rapid population growth on forests, soil erosion, farmland, food supply, education, housing, healthcare, employment, etc.
- ↳ Pictures of different places exposed to environmental degradation (deforestation, soil erosion, pollution, etc.) because of population pressure.
- ↳ Pictures of different places with problems such as over-crowded classrooms, overcrowded health institutions, land defragmentation, over-crowded and sub-standard housing (slums).
- ↳ Case studies of different places in Ethiopia that have been suffering from problems resulting from rapid population growth.

4.1. Suggested Teaching Aids

- ↪ Brainstorming
- ↪ Questioning
- ↪ Explanation
- ↪ Pair and group discussion
- ↪ Presentation

4.2. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials such as statistical data, tables and charts, pictures, and case studies that deal with the environmental and socio-economic impacts of rapid population growth in Ethiopia.
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.

4.3. Presentation of the Lesson

a) Introduction to the Lesson

- ↪ Introduce the students to what they are going to learn (Impacts of Rapid Population Growth in Ethiopia)
- ↪ Make the objectives of the lesson clear to the students.
- ↪ Conduct a brainstorming session with the students to ascertain their background knowledge of the impacts of rapid population growth on the environmental and socio-economic conditions of countries. Ask them questions such as: How does rapid population growth lead to environmental degradation? What do you know about global warming? How does rapid population growth lead to inadequate food supplies? How does rapid population growth affect the quality of education and health-care services in a country?

b) Main Body of the Lesson

- ↪ After considering your students' previous knowledge, start your

presentation by describing the growth rate of Ethiopia's population in relation to the country's economic growth and available resources.

↪ You use pictures and case studies of areas affected by deforestation, soil erosion, and water and air pollution. You can organize trips to areas not far from the students' locality where they can actually observe these problems. Have the students work in groups to discuss the direct and indirect consequences of deforestation, soil erosion, and water and air pollution.

↪ Give them appropriate instructions to carry out the group project given in their textbook. In this context:

➤ *Help the students to form small groups.*

➤ *Have each group discuss one of the following topics in connection with the impact of rapid population growth in Ethiopia:*

1. ***Housing***
2. ***Food supply***
3. ***Farmland***
4. ***Education***
5. ***Health care***
6. ***Employment***

↪ Have each group present its paper to the class for further discussion

c) Stabilization

↪ Review the main ideas and concepts of the lesson. Emphasize the following points.

➤ *In Ethiopia, population growth is faster than economic growth.*

➤ *The population of Ethiopia is rapidly growing beyond the carrying capacity of the natural environment and its resources.*

➤ *Rapid population growth in Ethiopia has resulted in environmental degradation such as deforestation, pollution, and soil erosion.*

➤ *Because of environmental degradation, the productivity of farmers in*

Ethiopia has been seriously negatively affected, and this has resulted in scarcity of food (inadequate food supply) in many parts of the country.

- *Rapid population growth in Ethiopia has a huge impact on the provision of social services such as education, health care, housing, etc.*

4.4. Evaluation and Follow up

a) Evaluation

Use all of the evaluation and follow-up techniques described in the Introduction. As part of those activities, use these approaches:

- ↪ Check the students' understanding of the lesson by giving them an exercise to do independently. The exercise may contain questions and activities such as:
 - *How does rapid population growth affect the natural environment in Ethiopia?*
 - *What are some of the consequences of deforestation in Ethiopia?*
 - *Explain how rapid population growth in Ethiopia affects the productivity of farmers.*
 - *Explain how rapid population growth affects the quality of education in Ethiopia.*

b) Follow up

Rate and grade the various activities and exercises performed by the students. Analyze the results to understand whether or not the lesson has been well-understood, and to identify those students who need extra support.

Based on these and other evaluations you have performed for the lesson, assess each student and also the class as a whole. Decide whether you have succeeded in guiding them to meet the lesson objectives.

c) Additional Activities

1. Explain how rapid population growth affects the provision of health care services.
2. Explain how agricultural activity is affected by rapid population growth.

4.3. Answer Key for Activities

Activity 4.11

1. Rural area the answer will be no, because lack of educational facilities
2. Rural area the answer will be no.
3. No, because fragmented farmlands, over cultivation of farm lands and soil erosion.
4. Possible answers: Family planning service, minimum age of marriage, spread of education. Raising the status of women, etc.

Answer for Additional Activities

1. When population grows rapidly, it leads to:
 - *High demand for health care services*
 - *Difficulty of the government in meeting the demands of the people for more health care services.*
 - *High pressure on the existing health care services that causes deterioration of the quality of the services.*
2. When population grows rapidly, it affects agricultural activity due to mainly:
 - *The scarcity of farmlands*
 - *Fragmentation of farmlands*
 - *Over-cultivation of farmlands*
 - *High rate of soil erosion*
 - *High rate of deforestation*
 - *Over-grazing*

4.8. Language and Religion Diversity in Ethiopia

Periods Allotted: 1

1. Competencies

After completing this lesson, your students will be able to:

- ➔ *describe the language diversity of Ethiopia*
- ➔ *distinguish the major religions in Ethiopia*

2. Contents

- ☛ Language
- ☛ Religion

3. Overview

In this lesson, the students will learn the language diversity and the major religions in Ethiopia. Ethiopian languages belong to two Super Families: Afro-Asiatic and Nilo-Saharan.

- i. Afro-Asiatic** The Afro-Asiatic super family is divided into three families, namely: Cushitic; Semitic and Omotic.
 - a. Cushitic:** the Cushitic languages are predominantly spoken in central, southern, eastern and northeastern parts of Ethiopia mainly in Afar, Oromia, Sidama, and Somali Regional States. It has the largest number of speakers and the widest spatial coverage.
 - b. Semitic:** the Semitic languages are spoken in northern, central and eastern parts of Ethiopia particularly in the regional states of Tigray, Amhara, Harari and northern Southern Nations, Nationalities and Peoples' Regional State.
 - c. Omotic:** the Omotic languages are predominantly spoken in the south-central and south-western parts of Ethiopia mainly between the Lakes of southern Rift Valley and the Omo River. The languages, which make up this family, are numerous although they are not as widely spoken as the

Cushitic and Omotic.

ii. Nilo-Saharan

The Nilo-Saharan languages are spoken in the western lowlands of Ethiopia along the border with Sudan, in Gambella and Benishangul Gumuz Regional States.

Religion: According to the Ethiopian Central Statistical Agency (2007) census data, the national religious composition of Ethiopian include: Orthodox 43.5%, Protestantism 18.6%, Roman Catholicism 0.7%, Islam 33.9%, traditional 2.6%, and others 0.6%.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Map of Ethiopia showing Ethnic composition and language in Ethiopia

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Questioning
- ↪ Explanation
- ↪ Pair and group discussion
- ↪ Presentation

4.3. Pre Lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials such as a map of Ethiopia that indicate the distribution of ethnic group and languages,
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce the students to what they are going to learn (Language and Religion in diversity in Ethiopia)
- ↪ Make the objectives of the lesson clear to the students.
- ↪ Conduct a brainstorming session with the students to ascertain their background knowledge of the Language and religious diversity in Ethiopia. Ask them questions such as: What are the two major super families of languages in Ethiopia?

b) Main Body of the Lesson

- ↪ After considering your students' previous knowledge, start your presentation with an explanation of language and religious diversity in Ethiopia.
- ↪ Explain linguistic categories and language spoken in Ethiopia
- ↪ Explain two superfamilies of languages in Ethiopia namely:
 - i. Afro-Asiatic and
 - ii. Nilo-Saharan.
- ↪ Make sure that all students are involved in the group activities and in the entire teaching-learning process.
- ↪ Give the students enough time to ask questions and organize their notes.

c) Stabilization

Review the main ideas and concepts of the lesson. The following are the highlights.

- *Ethiopians are ethnically **diverse**, with the most important differences on the basis of linguistic categorization.*
- *Ethiopia is a country where more than 80 languages are spoken. The Ethiopian languages belong to two Super Families: Afro-Asiatic and Nilo-Saharan.*
- *Most Ethiopian languages belong to the Afro-Asiatic Super Family.*

- *The Afro-Asiatic super family is divided into three families, namely: Cushitic, Semitic, and Omotic.*

4.5. Evaluation and Follow Up

a) Evaluation

- Use all of the evaluation and follow-up techniques described in the Introduction. As part of those activities, use these approaches:
- Check the students' understanding of the lesson by giving them an exercise to do independently. The exercise may contain questions such as:
 - *What are the three families of language belongs to Afro Asiatic Superfamilies?*
 - *In which part of Ethiopia the Nilo-Sahara languages predominantly spoken?*
 - *What are the major religious compositions of Ethiopia?*

b) Follow up

- Motivate the students to participate actively in group discussions, independent task and the likes.
- Grade and record every performance of the students.

c) Additional Activities

1. Which parts of Ethiopia Semitic languages are predominantly spoken?
2. List down individual languages that belongs to the Cushitic language family

4.3. Answer key for Activities

Answers for Additional Activities

1. Northern, central and eastern part of Ethiopia.
2. This family of languages consists of many individual languages such as Afan Oromo, Somali language, Sidama language, Afar language, Kembata

language, Hadiya language, Alaba language and Gedeo language and others.

5. Answer for Review Exercise on Unit 4

Part I. True False Item

1. False 2. False 3. True 4. False 1. *True*

Part II. Multiple Choice

6. B 7. D 8. C 9. D

Part III. Fill in the blank Spaces

10. Population Pyramid
11. Types of economic activity and Historical patterns of population movement
12. Age Dependency Ratio (ADR)
13. Low or sparse
14. Pollution
15. Population Density

6. Check List

Check the students' performance according to the given competencies referring the questions under the check list for every unit. Put a tick () mark against each task weather they are able to perform in the competencies of each unit. The students are expected to respond saying YES or NO. Then, you can make your own evaluation whether the competencies are met or not.

1. Explain trends of population growth in Ethiopia.
2. Discuss the spatial distribution of population in Ethiopia.
3. State factors affecting population distribution in Ethiopia
4. Realize settlement patterns of Ethiopian population.
5. Analyze impacts of rapid population growth on natural environment and socio-economic development of Ethiopia.
6. Analyse population structure of Ethiopia

Yes	No

7. Assessment

Students’ performance has to be assessed continuously over the whole unit. The assessment will be made by comparing students’ performance with the specified level of competencies. Besides, the teacher has to recognize the level of performance of each student and provide assistance accordingly, Thus

- ↪ A student at a minimum requirement level will be able to explain trends of population of growth and structure in Ethiopia; discuss the spatial distribution of population in Ethiopia and state factors affecting population distribution in Ethiopia. Realize settlement patterns of Ethiopian population and analyse impacts of rapid population growth on natural environment and socio-economic development of Ethiopia.
- ↪ In addition, a student working above the minimum requirement level and considered as higher achiever should be able to: compute population growth rates, and justify Ethiopia’s rate of urbanization and development.
- ↪ Students working below a minimum requirement level will require extra help if they are to catch up with the rest of the class.
- ↪ Students reaching at the minimum requirement level but achieved a little bit higher should be supported so that attain the higher achiever competencies students who fulfil the higher achiever competencies also need special support to contribute and achieve more.

UNIT FIVE

5. MAJOR ECONOMIC AND CULTURAL ACTIVITIES IN ETHIOPIA

Periods Allotted: 10

1. Unit Introduction

In this unit, you are going to deal with concepts and facts about economic and cultural activities. The major economic activities such as: primary, secondary, and tertiary activities in Ethiopia and cultural activities (language & religion and cultural landscape of Ethiopia will be discussed in detail.

2. Unit Outcomes

At the end of this unit, students will be able to

- ➔ *recognize the importance of the major economic activities of Ethiopia;*
- ➔ *examine the trade and transport systems of Ethiopia;*
- ➔ *appreciate cultural landscapes and their contribution to the tourism industry.*

3. Main Contents

- ☛ Major economic activities in Ethiopia;
- ☛ Contribution of subsistence farming and cash crop to the Ethiopian economy;
- ☛ Problems of agriculture in Ethiopia;

- ☛ Trade and transport in Ethiopia;
- ☛ Road safety in Ethiopia;
- ☛ Cultural landscape and tourism in Ethiopia.

5.1. Major Economic Activities in Ethiopia

Periods Allotted: 2

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *list the five types of economic activities;*
- ➔ *explain the major characteristics of economic activities; and*
- ➔ *examine how economic activities modify and transform resources.*

2. Contents

- ☛ Primary Economic Activities
- ☛ Secondary Economic Activities
- ☛ Tertiary Economic Activities
- ☛ Quaternary Economic Activities
- ☛ Quinary Economic Activities

3. Overview

In this lesson, the students will learn about concepts of economic activities, the importance of major economic activities, language diversity, and cultural landscape in Ethiopia. In human life, food, shelter and clothing are basic needs for sustenance of life, and goods of luxury and comfort for its enjoyment. To obtain these necessities of life, human beings are engaged in various occupations. These occupations are called economic activities. Some of the occupations or activities are hunting, fishing, farming, grazing, mining, manufacturing, transportation, and trade, among others.

In Ethiopia, there are numerous activities through which human beings earn their living. In order to live, a person must produce his/her basic necessities. In the efforts of producing and obtaining their basic needs, humans use natural resources a lot.

Economic activities - processes of making a living and accumulating wealth -encompass different economic sectors that include industries, trade and services, among others. These various economic activities practiced in Ethiopia are grouped into five, namely primary, secondary, tertiary, quaternary and quinary. Each type of economic activity is important to a society. The majority of jobs in the economic activities of a country show where a country is on a scale of development

Primary Economic Activities

Primary economic activities are directly tied to the extraction of resources of the earth. Such economic activities occur at the beginning of the production cycle where people live in close contact with the resources of the land. The primary economic activities which produce basic foodstuff and raw materials for industry may include: agriculture, hunting and gathering, pastoral farming, crop cultivation, forestry, mining, logging and fishing.

Agriculture: is one of the primary economic activities which is concerned with the production of crops and animals, both traditionally and scientifically. Agriculture employs the majority (80%) of the Ethiopian total population. There are different types of agricultural activities that include crop production and animal husbandry. Crop production is concerned with the production of food and cash crops at different levels in modern or traditional methods. Animal husbandry consists of beef farming, dairy farming, and pastoralist activity.

Forestry: is also a primary economic activity, which is concerned with the exploitation of trees and other forest products. Even though the importance of forest and forest products is little in earning foreign exchange, their significance at a local level is large. For instance, its contribution to the national economy in the form of GDP is about 6.10%.

Fishery: is another primary economic activity which is concerned with the catching of fish and other marine creatures. Fishing is one of the oldest occupations of mankind. Most fishing activities in Ethiopia take place in freshwater, such as rivers, lakes and ponds. In general, the Ethiopian fishing grounds could be classified as Lakes and Rivers.

Mining: is a primary economic activity which is concerned with the extraction of mineral-bearing substances from the earth's crust. The earth's crust is composed of rock containing minerals. A mineral is an inorganic chemical element or compound found naturally in the crust of the earth. Mining is important to the economy of Ethiopia. Currently, mining contributes to only 1.5 % of GDP.

Secondary Economic Activities

These economic activities add value to the raw materials by changing their forms or combining them into useful and, hence, more valuable commodities. Examples are: steel making from a combination of minerals, milk production from pastoral farming, textile production from cotton farming, furniture production from logging, etc. Manufacturing and processing industries are included in this phase of the production process.

Secondary economic activities include manufacturing, which is a process that turns the raw material into something finished or semi-finished product with additional values. The mechanical or chemical process of turning raw materials into finished products is known as manufacturing. Manufacturing industries in Ethiopia can be classified into two. These are: cottage (traditional) industries and modern manufacturing industries

Tertiary Economic Activities

The basic characteristic of tertiary economic activities is the production of services instead of end products. It provides services to other businesses as well as final consumers. Services may involve transportation, distribution, and sales of goods. An example list of tertiary economic activities could include legal services, medical services, trade, transportation services, tourism, etc.

Quaternary Economic Activities

The quaternary sector may realistically be seen as an advanced form of service activity involving specialized knowledge, technical skills, communication ability, or administrative competence. These activities include research, financial services, and government activities. These are the activities performed in office buildings, elementary and university classrooms, hospitals and doctors' offices, theatres and television stations. They are activities primarily concentrated in

large urban places and require higher levels of education than the other sectors. This section also includes other pure services, such as the entertainment industry.

Quinary Economic Activities

The quinary sector is an economic activity that involves the highest level of decision making in a society or economy. Having a quinary economic activity means you are the top boss and oversee everything. An example of this would be the president of a country, or companies and industries.

4. Teaching learning process

4.1. Suggested Teaching Aids

- ↪ A diagram that shows the classification of economic activities.
- ↪ Pictures that represent primary, secondary, tertiary, quaternary and quinary economic activities.

4.2. Suggested Teaching Methods

In this lesson you are expected to apply appropriate teaching methods such as:

- ↪ Brainstorming
- ↪ Questioning
- ↪ Pair and group Discussion
- ↪ Presentation

4.3. Pre-lesson Preparation

Before the lesson you are required to:

- ↪ collect photographs of different sectors of economic activities,
- ↪ prepare a diagram and show the relationship among the five economic activities,
- ↪ prepare a chart showing the major industrial sectors of the world,
- ↪ consult relevant documents on economic activities.

4.4. Presentation of the Lesson

d) Introduction to the Lesson

Encourage students to reflect on the following questions:

1. What is a primary economic activity? How does it differ from secondary economic activity?
2. What makes industries different from the primary economic activities?
3. Can you give an example of secondary economic activities?
4. What is the major difference between quaternary and quinary economic activities?

e) Body of the Lesson

➔ *During the lesson,*

- ➔ Explain the major characteristics of primary, secondary, tertiary, quaternary and quinary sectors of economic activities.
- ➔ Help students to distinguish the five types of economic activities.
- ➔ Explain how economic activities modify and transform resources.
- ➔ Let students compare and contrast primary and secondary economic activities.
- ➔ Ask students to discuss, compare and contrast quaternary and quinary economic activities.
- ➔ By giving relevant examples of different economic sectors, indicate the relationship among the five types of economic activities.

f) Stabilization

Ask students to identify the key points of the lesson as you stabilize your lesson presentation by reviewing all essential points, including those not mentioned by the students. You may mention the following.

- ➔ Economic activity is the production, distribution and exchange of goods and services.
- ➔ The economic activities practiced in the world are grouped into five, namely primary, secondary, tertiary, quaternary and quinary.

4.5. Evaluation and Follow up

a) Evaluation

You have to evaluate the whole performance of students (in discussions, answering questions and, etc) throughout the period.

Check your students' understanding of the lesson by asking them questions such as:

- ☞ *What is the meaning of manufacturing industry?*
- ☞ *Mention the different types of economic activities.*
- ☞ *Explain the importance of different economic sectors in Ethiopia's economy.*
- ☞ *What are the major characteristics of secondary economic activities?*
- ☞ *What are the major sectors of tertiary economic activities?*

b) Follow up

- ↳ Form the class into groups. Assign them to identify the relationship among the five types of economic activities and identify what makes each types of economic activity different from the other. Then ask them to share the results of group discussions with other groups and the whole class.
- ↳ Finally ask them to present their discussion points/summaries to the whole class.

c) Additional Activities

1. What is the difference between manufacturing and industry?
2. What are the major types of secondary economic activities?
3. Which types of economic activities are service sector industry?
4. What types of economic activities depend on a place's natural resources and climate?

4.5. Answer Key for Activities

Activity 5.1

1.
 - a. Agriculture, fishing, forestry, mining and fishery
 - b. Manufacturing, construction and power production
 - c. Legal services, medical services, trade, transportation services, tourism, etc.
 - d. Research development, financial services and government activities.
 - e. The special and highly paid skills of top business executives, government officials, research scientists, financial and legal consultants.
2. Primary economic activities focus directly on the extraction of resources from the environment, whereas the category of secondary economic activities is the activity of making articles. Tertiary, quaternary and quinary economic activities are service giving activities.

Activity 5.2

1. Shifting cultivation is mainly the cut-and-burn cultivation system. This is because this type of cultivation is based on land rotation due to frequent fertility decline of the soil. Hence, new plots of farming are made available by cutting and burning forests and bushes. In this system, a given plot of land, is cultivated after clearing until its fertility is diminished to a level it can't support plant life any longer.
2. Fuelwood, charcoal, Chair, door, shelf, window, etc.
3. For question number 3 you are expected to guide the students based on the available environment in your surroundings.
4. **Agriculture:** Among the primary economic activities Ethiopian national economy base itself on agriculture. It constitutes the principal source of income and employment for the majority of the population in Ethiopia. The greater proportion of the foreign exchange the country earns also comes from this sector The importance and predominance of the agricultural

economy in the country can be suggested by the following facts:

- a. Agriculture employs the majority (80%) of the Ethiopian total population
- b. Agriculture supplies more than 90% of export commodities. Thus, agriculture is the main source of Ethiopia's export earnings
- c. Agriculture contributes 32.7% of the Gross Domestic Products (GDP) of the country

Forestry: Even though the importance of forest and forest products is little in earning foreign exchange, their significance at a local level is large. For instance, their contribution to the national economy in the form of GDP is about 6.10%. Most of the trees cut in Ethiopia today are used for domestic purposes like for: fuelwood, timber household furniture, for building and construction.

Fishing: Despite the sector's low contribution to the Gross Domestic Product (0.1 percent), fishery in Ethiopia plays an appreciated role in terms of providing employment and income at the local level and contributing to food supply at the national level.

Mining: generates revenue from sales, taxes, royalty, generates foreign currency earnings: and employment opportunities. Mining is important to the economy of Ethiopia. Currently, mining contributes to only 1.5 % of GDP

Answer for Additional Activities

1. Manufacturing is a process which turns raw materials into products, using labour, energy and equipment, whereas industry is the place where manufacturing is conducted.
2. Manufacturing, construction, and power production.
3. Tertiary, quaternary and quinary.
4. Primary economic activities.

5.2. Contribution of Subsistence Farming and Cash Crop to the Ethiopian Economy

Periods Allotted: 2

1. Competencies

At the end of this section, students will be able to:

- ➔ *describe agricultural practices in Ethiopia;*
- ➔ *explain the importance of subsistence farming to the Ethiopian economy; and*
- ➔ *explain the contribution of cash crop production to the Ethiopian Economy.*

2. Contents

- ☛ Contribution of subsistence farming to the Ethiopian Economy
- ☛ Contribution of Cash Crop Production to the Ethiopian Economy

3. Overview

Subsistence farming, method of farming in which nearly all of the crops or livestock raised are used to maintain the farmer and the farmer's family, leaving little, if any, surplus for sale or trade. It is a common feature of developing countries including Ethiopia. Both crop farming and animal rearing use backward tools and techniques and hence, subsistence agriculture is traditional. As a result the products grown are primarily for family needs. This, therefore, leaves little surplus production entering the market.

Agriculture in Ethiopia is typically characterized by smallholder and subsistence farming which is highly dependent on rainfall. The urban livelihood is also highly dependent on the rural economy and as such small farm constitutes the life support mechanism of the country.

Subsistence farming is the practice of self-sufficiency in which the farmers focus only on producing enough food for personal consumption. Thus, it can play an important role in Ethiopia's economy by reducing the vulnerability of

rural food-insecure households, improving livelihoods.

Commercial farming as opposed to the subsistence farming sector, it is concerned with producing crop for sale. Hence the main objective of this sector is to make money. In this regard, Ethiopian farmers produce varieties of cash crops such as coffee, oilseeds, pulses, chat, sugar cane, cotton and fruit. Contributions of cash crop production to the Ethiopian economy are: source of food and raw material, source of capital and contribution to employment,

4. Teaching-Learning Process

4.1. Suggested Teaching aids

- ↪ Various important figures are included in the textbook and so you have to use them as teaching aids.
- ↪ Charts and diagrams that show statistical data regarding Ethiopia's agriculture

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Group discussion
- ↪ Explanation
- ↪ Presentation by group members

4.3. Pre-lesson Preparation

- ↪ Prepare or make ready the required teaching aids to support your instruction plan
- ↪ Prepare a chart showing the major agricultural sectors of Ethiopia
- ↪ Consult relevant documents on the agricultural sector in Ethiopia
- ↪ Prepare notes, activities and exercises.

4.4. Presentation of the Lesson

a) Introduction to the Lesson

- ↪ Introduce your students to what they are going to learn (Contribution of subsistence and commercial farming in Ethiopia)
- ↪ Make the objectives of the lesson clear to the students.
- ↪ Conduct brainstorming session with the students to ascertain their background knowledge of contribution of agriculture in Ethiopia. Ask them questions such as: What are the contribution of subsistence and commercial farming in Ethiopia?

b) Main Body of the Lesson

- ↪ Explain agriculture contribution of Gross Domestic product the country.
- ↪ Let students compare and contrast subsistence and commercial farming
- ↪ Explain the contribution of subsistence farming to the Ethiopian Economy
- ↪ By giving relevant examples of types of agriculture, indicate the relationship among types of agriculture.
- ↪ Make sure that the students have realized the contribution of agriculture to Ethiopian economy.

c) Stabilization

Complete your lesson presentation with a review of the following key points.

- ↪ Subsistence farming, method of farming in which nearly all of the crops or livestock raised are used to maintain the farmer and the farmer's family, leaving little, if any, surplus for sale or trade.
- ↪ The subsistence farming sector of Ethiopia produces varieties of food crops, which grow in different agro-climatic conditions.
- ↪ Subsistence farming the play an important role in Ethiopia's economy by reducing the vulnerability of rural food-insecure households,

improving livelihoods.

- ↳ Commercial farming as opposed to the subsistence farming sector, it is concerned with producing a crop for sale.
- ↳ Contributions of cash crop production to the Ethiopian economy are: source of food and raw material, source of capital and contribution to employment,

4.5. Evaluation and Follow Up

a) Evaluation

Use all of the evaluation and follow-up techniques described in the Introduction.

As part of that process, perform these tasks:

- ↳ Check your students' understanding of the lesson by giving them an exercise to do independently.
- ↳ You have to evaluate the whole performance of students (in discussions, answering questions and, etc.) throughout the period as a part of continuous assessments.

b) Follow up

Rate and grade the various activities and exercises performed by the students. Analyze the results to understand whether or not the lesson has been well-understood and to identify those students who may need extra support.

Based on these and other evaluations you have performed for the lesson, assess each student and also the class as a whole. Decide whether you have succeeded in guiding them to meet the lesson objectives.

c) Additional Activities

1. Discuss why agriculture becomes the mainstay of the Ethiopian economy.
2. Explain the contribution of agriculture as a source of capital in Ethiopia

4.3. Answer key for Activities

Activity 5.3

1. a) In 2019/20 service sector

➔ *b) Industry sector*

2. Agriculture had been the leading sector followed by the service sector until 2014/15. But, after 2015/16, the service sector emerged as the dominant sector mainly due to natural factors and economic factors. Natural factors such as: climate changes, soil erosion and lack of adequate rain fall and economic factors such as: land Tenancy, size of holdings and fragmentation of agricultural lands, marketing facilities, etc.

Answers for Additional Activities

1. It is because agriculture is the major source of food for the people, raw materials for industries and export items. In addition, it is an activity that supports more than 80% of the country's labour force and holds the lion's share of the GDP of the country.
2. Cash crop production in Ethiopia provides funds for capital formation such as: agricultural taxation and export of agricultural products.

➤ **Agricultural taxation:** *Taxes paid by cash crop producer.*

➤ **Export of Agricultural products:** *The major cash crop production for export items of the country include: coffee, oilseeds, flower, chat and pulses.*

Problems of Agriculture in Ethiopia

The Ethiopian agriculture reveals a picture of virtual stagnation in production; a rapidly rising population, and declining domestically produced food per capita. In other words, because of the instability in agriculture production, agriculture has failed to play the decisive role expected of it. The major obstacles to the development of this sector include:

Land degradation: Studies revealed that because of the topography of the

land 50% of the cultivable land of Ethiopia is exposed to various levels of soil erosion. The soil in many areas has lost some biological productivity and physical properties needed for optimal plant growth. Land degradation can reduce soil fertility, depth, and essential nutrients and water holding efficiencies thereby reducing the crop production capacity.

Fragmentation of Farm Plots and Small Size of Holdings

The land owned by peasants is getting smaller and smaller over time due to the continuous division of farmland among the number of families in the form of inheritance. The agricultural lands are therefore highly fragmented.

Backward Technology: In Ethiopia smallholder farming is characterized by dependence on traditional tools and farming practices. Land preparing is done by oxen-drawn plough. Planting is generally performed by manual broadcasting which hampers effective weeding and spraying activities. Weeding is done manually and harvesting is also performed manually with the help of sickle.

Poor Rural Infrastructure: Agricultural infrastructure primarily includes a wide range of public services that facilitate production, procurement, processing, preservation and trade. It has mainly focused on irrigation, transportation, electric power and agricultural markets. As the Ethiopian economy is largely subsistence the country's transport and communication systems are poorly developed. Rural infrastructure, like other public investments, raises agricultural productivity, which in turn induces growth in the rural areas, bringing about higher agricultural wages and improved opportunities for nonfarm labour. Electricity and roads are significant determinants of agricultural productivity.

Additional Activities

1. In Ethiopia the size of farmland owned by rural households is decreasing from time to time. What do you think are the effects of decreasing rural households farmland? Would you suggest some possible solution to overcome this problem?
2. What measure do you propose to be taken to improve the agricultural sector

of the country so that food self-sufficiency is maintained?

4.3. Answer key for Activities

Answers for Additional Activities

1. Due to rapid population growth the share of land among families is getting smaller and smaller. Therefore, at present the average size of cultivable land per household in the country is less than half a hectare. Thus, land fragmentation has resulted in over cultivation. Over cultivation has caused every fragmented land become worse and worse from year to year. This has contributed to low productivity.

➤ *Improved landholding system: Though this has its own contribution towards agricultural promotion in Ethiopia, it necessitates a thorough examination of the previous and existing land tenuring systems. Based on such studies it would be possible to take amicable measures to distribute land to farmers. The idea of resettlement and land reclamation are also among the necessary options to improve land holding system in Ethiopia.*
2. In order to improve the existing low level of agricultural productivity in Ethiopia, the following measures are of special significance.
 - a. Effective erosion control methods
 - b. Use of Improved Technology
 - c. Improved land holding system
 - d. Develop better extension services

5.3. Trade and Transport in Ethiopia

Periods Allotted: 2

1. Competencies

After completing this lesson, your students will be able to:

- ➔ *explain the need for expanding trade;*
- ➔ *describe the major types of trade in Ethiopia; and*
- ➔ *explain the importance of transport to the Ethiopian economy.*

2. Contents

- ☛ Trade
- ☛ Transportation in Ethiopia

3. Overview

In this lesson, the students will learn about trade in Ethiopia. Trade is a basic economic concept involving the buying and selling of goods and services, with compensation paid by a buyer to a seller, or the exchange of goods or services between parties. Trade can take place within an economy between producers and consumers. In Ethiopia there are two main types of trade namely:

a) Internal (Domestic) trade: This refers to the exchange of goods and services within the country. Internal trade is the base for foreign trade.

b) External (Foreign) trade: is the process of trading, which involves the exchange of commodities among different countries. Since there is no country that is self-sufficient in all demands, the movement of items from one country to another in the form of trade is unavoidable.

- i. Export Trade Sector of Ethiopia: As the Ethiopian economy is an agrarian economy raw materials mainly originate from the agricultural sector are the export items of the country. These include coffee, oilseeds, flower, chat, pulses, gold, textile and textile products, etc.
- ii. Import Trade sector of Ethiopia: Ethiopia imports mainly finished

products like machinery, transport equipment, electrical and electronic goods, fuel and the like. The overall annual import values of Ethiopia have been constantly declining both by value and percentage.

Trade balance is the yearly difference between the export and import values. If the yearly export value of a given country exceeds its yearly import value it will be a positive or surplus trade balance. If import exceeds export it will be a negative trade balance. In Ethiopia import values exceed export values; hence the country experiences a trade deficit (negative trade balance).

Transportation may be defined as a movement of materials and goods, or people from one place to another with a specified objective. Transportation is fundamental to the functioning of any society. One of the major functions of the transport system is to facilitate the movements of different goods or commodities from areas of surplus to areas of deficit. Transport plays a vital role in the expansion and development of the socio-economic life of people at all levels.

Based on their stage of development the existing modes of transport in Ethiopia are broadly divided into two:

- i. Traditional modes of transport: include the use of pack animals and human portorage
- ii. Modern modes of transport: the modern transport sector in Ethiopia uses four different modes of transport. These include: Road transport, Railway transport, Inland waterways, and Air transport.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Charts
- ↪ Annual report of import and export trade
- ↪ Diagrams that show modern means of transport.

4.2. Suggested Methods of Teaching

- ↪ Brainstorming questions
- ↪ Group discussion
- ↪ Debate
- ↪ Presentation by group leaders

4.3. Pre Lesson Preparation

- ↪ Make the suggested teaching aids ready to use in the teaching learning process.
- ↪ Always plan your instruction and read reference materials in advance. Guide students to adapt reading suggested reference materials.
- ↪ Prepare a diagram that shows trade and transport sectors in Ethiopia
- ↪ Refer and read relevant materials that can help you enrich the content of the lesson.
- ↪ Prepare additional activities that are local and plan how such activities can be treated by the students.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce students to what they are going to learn (Trade and transport in Ethiopia)
- ↪ Make the objectives of the lesson clear to students.

b) Main Body of the Lesson

- ↪ The core idea of the lesson should be discussed taking more time. (Types of trade, trade balance, types of transport and the role of transport, etc)
- ↪ Ask students to comment on the existing trade relations of Ethiopia on the neighbouring countries and others.
- ↪ Give them chances to forward questions for more explanation.

c) Stabilization

Review the main ideas and concepts of the lesson. Stress the following points:

- ↪ Trade is an economic activity that involves buying and selling of goods and services, with compensation paid by a buyer to a seller,
- ↪ The two main types of trade in Ethiopia are domestic and foreign trade
- ↪ Agricultural products are the main export items in Ethiopia
- ↪ Ethiopia imports mainly finished products
- ↪ Trade balance is the yearly difference between the export and import values
- ↪ In Ethiopia import values exceed export values; hence the country experiences a trade deficit (negative trade balance).
- ↪ Transport in Ethiopia is broadly divided into traditional modes of transport and modern modes of transport.

4.5. Evaluation and Follow Up

a) Evaluation

- ↪ Check whether your students have achieved the expected levels of competence or not. In doing so ask your students questions from the lesson you taught. You can ask the students questions like the following:
 - a. Describe types of trade in Ethiopia.
 - b. What are the main export items in Ethiopia?
 - c. Which mode of transport is used to transport bulky products?

d) Follow up

- ↪ Motivate students to discuss in groups.
- ↪ Facilitate and coordinate the discussion.
- ↪ Rate and grade the various activities and exercises performed by the students.

e) Additional Activities

1. Why does Ethiopia experiences a trade deficit (negative trade balance)?
2. What are the advantages of road transport?
3. Why are inland waterways extremely limited in Ethiopia?

4.4. 4.6 Answer key for Activities

Activity 5.4

1. Capital goods
2. Semi-finished goods, raw materials, and miscellaneous goods.

Activity 5.5

1. Because it gives service for the movement of people, commodities and mail.
2. Land transport.
3. Road transport, railway transport and animal transport.
4. Yes, because it is a service giving activity.

Answer for Additional Activities

1. In Ethiopia import values exceed export values; hence the country experiences a trade deficit (negative trade balance).
2. Road transport gives door-to-door service, service in rural areas, flexible service, suitable for short distance.
3. The use of Ethiopian rivers and lakes as inland waterways is extremely limited. This is due to the ruggedness of the topography and the seasonal nature of rainfall in most parts of the country.

5.4. Road Safety in Ethiopia

Periods Allotted : 2

1. Competencies

After completing this lesson, your students will be able to:

- ➔ *describe the cause and consequences of road traffic accident in Ethiopia; and*
- ➔ *explain the performance of road safety in Ethiopia*

2. Contents

- ☛ Road Traffic crashes in Ethiopia
- ☛ Causes of road traffic accident
- ☛ Consequences of road traffic accidents

3. Overview

In this lesson, the students will learn road safety in Ethiopia. Road safety is safety in using roads. Road crashes are a global problem affecting all parts of society. However, road safety has received insufficient attention at national and regional levels. As a result, traffic accident has been increasing dramatically from time to time. Ethiopia has experienced high rates of road traffic accidents, as the road is the major means of transportation.

There are four major factors influencing road traffic accidents. These are: Vehicle related factors, road related factors, road user related factor, and environmental related factors.

Causes of Road Traffic Accidents: Many factors result in car crashes, and sometimes multiple causes contribute to a single crash. Factors include:

- a. Driver distraction,
- b. Driver Impairment by Tiredness,
- c. Mechanical failure,
- d. Road conditions, and
- e. Speed exceeding safe conditions.

Consequences of road traffic accidents include:

- *Loss of productivity of the victims,*
- *The cost of the legal system,*
- *The cost of pain and suffering*
- *Loss of quality of life of the victim and their family.*
- *The loss of productivity represents a significant proportion of the total social costs*

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Tables and figures showing road traffic accident in Ethiopia
- ↪ Photographs that show road traffic crashes in Ethiopia

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Questioning
- ↪ Explanation
- ↪ Pair and group discussion
- ↪ Presentation

4.3. Pre Lesson Preparation

- ↪ Prepare or make ready the required teaching aids to support your instruction.
- ↪ Plan your instruction and update yourself with up-to-date information concerning the lesson. Refer to materials that can help you develop a better understanding of the concept related to the topic.

4.4. Presentation of the Lesson

a) Introduction to the lesson

Before presenting the lesson to the students, you should brainstorm the students so as to identify their prior knowledge of the topic that you are going to present. This would help you to identify the existing gaps in the students learning. You can start your lesson by raising such questions as:

- ↪ What is road safety?
- ↪ What are the causes of road traffic accidents?
- ↪ What are the consequences of road traffic accidents?

b) Main Body of the Lesson

- ↪ Listen to the students' responses to the above questions and try to identify where your students are in the due course of your instruction.
- ↪ Then, make your own presentation to the class by basing yourself on what has been provided by the students as response to the above questions.
- ↪ Explain the cause and consequences of road traffic accident in Ethiopia and describe the performance of road safety in Ethiopia
- ↪ By displaying the teaching aids which you have arranged earlier to the class, make the students say something about road safety in Ethiopia.

c) Stabilization

Review the main ideas and concepts of the lesson. The following are the highlights.

- ↪ Road crashes are a global problem affecting all parts of society.
- ↪ Ethiopia has experienced high rates of road traffic accidents, as the road is the major means of transportation.
- ↪ Road traffic injuries in Ethiopia, mostly affect passengers; and pedestrians.
- ↪ There are four major factors influencing road traffic accidents. These are: vehicle related factors, road related factors, road user related factors, and environmental related factors

- ↪ Causes of Road Traffic Accident are: Driver distraction, driver impairment by tiredness, mechanical failure, road conditions, and speed exceeding safe conditions.
- ↪ Consequences of road traffic accidents include: Loss of productivity of the victims, the cost of the legal system, the cost of pain and suffering, loss of quality of life of the victim and their family, and the loss of productivity represents a significant proportion of the total social costs.

4.5. Evaluation and Follow Up

a) Evaluation

- ↪ Ask questions to check whether the students have understood or not.
- ↪ Give assignments so that the students will produce reports referring to the activity they are assigned for (Project work write a report on “Road Accidents in Ethiopia: Causes, consequences and Possible Remedies”)
- ↪ Prepare a quiz

b) Follow up

- ↪ Motivate the students to share their knowledge and experiences through group work and pair tasks.
- ↪ Grade and record every performance of the students.

c) Additional Activities

1. Define the following terms.

- a. *Fatal accident*
- b. *Serious injury*
- c. *Slight injury*
- d. *Property damage*

2. Describe the main road safety actors of Ethiopia.

4.3. Answer key for Activities

Activity 5.6

1. Poor road network; absence of knowledge on road traffic safety; mixed traffic flow system; poor legislation and failure of enforcement; poor conditions of vehicles; poor emergency medical services; and absence of traffic accident compulsory insurance law have been identified as key determinants of the problem.

Activity 5.7

Check students' reports and presentation on road accidents in Ethiopia, causes, consequence and possible remedies

Answers for Additional Activities

1.
 - a. **A fatal accident** is one in which one or more individuals die as a result of a traffic accident within the same reporting 30 days of the occurrence of the accident.
 - b. **A serious injury** is one in which a victim sustains severe cuts, bleeding, breaks, and other damages, which requires medical treatment as “in-patient” in hospital.
 - c. **A slight injury** is the one as a result of which the victim sustains only small cuts, scratches, and other small damages which may be treated as an out-patient without requiring admission to a hospital.
 - d. **Property damage only** accident is the one as a result of which no person is injured only one or more vehicles involved in the accident are damaged.
2. The National Road Safety Council (NRSC) of Ethiopia is overseen by several ministries and private stakeholders. The Council is led by the Ministry of Transport, the Ministry of Finance, the Ministry of Education, the Ministry of Health, the Federal Police Commission, the Ethiopian

Roads Authority, the Federal Transport Authority, and private and public transport associations.

5.5. Cultural Landscapes and Tourism in Ethiopia

. Periods Allotted : 2

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *identify cultural landscape places in Ethiopia;*
- ➔ *explain the importance of tourism; and*
- ➔ *identify natural and human-made tourist attraction sites.*

2. Contents

- ☛ Cultural Landscape in Ethiopia
- ☛ Tourism in Ethiopia

3. Overview

In this lesson, the students will learn about the cultural landscape and tourism in Ethiopia. A cultural landscape is a geographic area (including both cultural and natural resources), that is associated with a historic event, activity or person, or exhibiting any other cultural or aesthetic values. Cultural landscapes represent the “combined works of nature and man”. Konso cultural landscape one of the example of the cultural landscape in Ethiopia. The Konso cultural landscape is located in a dry, hilly environment at the edge of the Rift Valley in southern Ethiopia. The Konso cultural landscape is characterized by dry stone terrace agriculture and walled town settlement. This cultural Landscape was officially recognised by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) in 2011.

Tourism is a collection of activities, services and industries that delivers a

travel experience, and they include transportation, accommodations, eating and drinking establishments, retail shops, entertainment businesses, activity facilities and other hospitality services provided for individuals or groups travelling away from home. Tourism is a source of both job opportunities and income. It is known as a ‘smokeless industry’. The main tourist attractions include natural and human-made features.

4. Teaching learning process

4.1. Suggested Teaching Aids

- ↪ Pictures that show cultural landscapes in Ethiopia
- ↪ Maps that show natural and human made tourist sites in Ethiopia
- ↪ Photographs that show tourist attraction sites in Ethiopia.

4.2. Suggested Teaching Methods

- ↪ Brainstorming
- ↪ Group discussion
- ↪ Explanation

4.3. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials.
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.

4.4. Presentation of the Lesson

a) Introduction to the Lesson

To start the lesson, you may ask the students the following questions:

- ↪ What is a cultural landscape?
- ↪ What is tourism?

The above questions, which can be used as a brainstorming activity, enable you to identify the prior knowledge of the students on the issues and to guide the discussion accordingly.

b) Main Body of the Lesson

- ↪ The responses of the students to the above questions can be used as a basis to begin your presentation.
- ↪ After listening to the student's responses, present your lesson to the class by focusing on the most important points of the lesson. –
- ↪ Your lecture should be supported by a tourist attraction sites map of Ethiopia and other relevant teaching aids.
- ↪ Display the teaching aids to the class and have the students identify the major tourist attraction sites of Ethiopia.
- ↪ Ask the students to locate the major tourist attraction sites of Ethiopia.

c) Stabilization

Review the main ideas and concepts of the lesson. Emphasize the following points.

- ↪ **Cultural Landscapes:** a cultural landscape as a geographic area (including both cultural and natural resources), that is associated with a historic event, activity, or person, or exhibiting any other cultural or aesthetic values.
- ↪ Konso cultural landscape is one of the examples of the cultural landscape in Ethiopia.
- ↪ Tourism is a collection of activities, services and industries that delivers a travel experience.
- ↪ The main tourist attractions include natural and humanmade features.

4.5. Evaluation and Follow up

a) Evaluation

- ↳ You can ask your students questions that are drawn from your lesson. The questions should be prepared in such a way that each question is in congruence with the specific objectives of the lesson. You can ask questions like the following:

- ➔ *Mention cultural landscape places in Ethiopia.*
- ➔ *Explain the importance of tourism in Ethiopia*

b) Follow up

To help students acquire more knowledge about the lesson topics, you can provide them with additional activities that can provide them with additional activities that can further assist the achievement of the objectives of the lesson. This can also help you in addressing the needs of students who are fast learners. You can assign tasks related to the following topics, on individual or group bases.

- ↳ The major tourist attraction sites in Ethiopia
- ↳ Problems related to tourism sector

c) Additional Activities

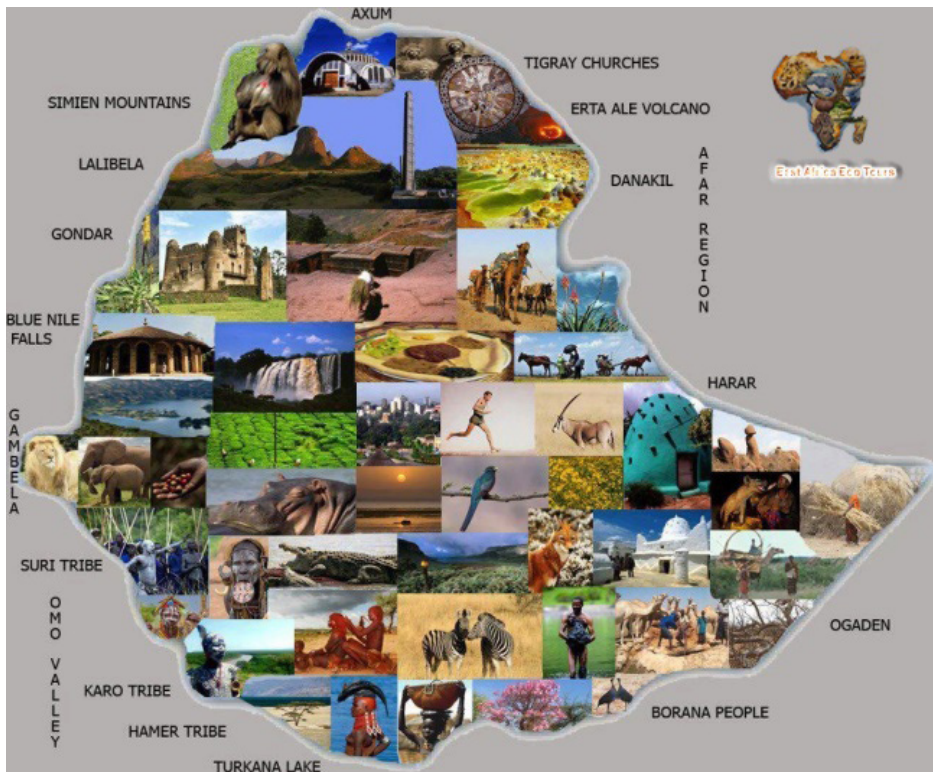
1. Describe the Konso cultural landscape.
2. List down natural tourist attraction sites in Ethiopia.

4.3. Answer Key for Activities

Activity 5.8

1. The importances of tourism are: strengthening communities. Preservation heritage, empowering communities, protect nature, environmental improvements, rest and relaxation, and Enhanced wellbeing.
2. Benefits of tourism to our economy: foreign exchange generation, employment generation, regional development, contributions to government revenues, contribution to local economies, and overall economy boost.

3. Tourist attraction sites:



Answer for Additional Activities

1. The Konso cultural landscape is located in a dry, hilly environment at the edge of the Rift Valley in southern Ethiopia. The Konso cultural landscape is characterized by dry stone terrace agriculture and walled town settlement. The dry stone terrace agriculture is an indigenous adaptation to the dry environment of Konso that is mountainous, barren and rocky. These terraces retain the soil from erosion and create terrace saddles that are used for agriculture.
2. The Simien Mountains National park, Awash National Park, Omo National park, Gambella National park, Abijata – Shalla National park, Bale Mountains National Park, NechSar National Park, The Blue Nile Falls (Tisat Falls), etc.

5. Answer Key for Review Exercise

Part I True or False Item

- | | | | |
|----------|---------|----------|---------|
| 1. False | 2. True | 3. True | 4. True |
| 5. True | 6. True | 7. False | |

Part II. Multiple Choice Item

- | | | | |
|-------|-------|-------|-------|
| 8. D | 9. A | 10. C | 11. C |
| 12. D | 13. D | 14. D | 15. C |

Part III. Matching Item

- | | | | |
|-------|-------|-------|-------|
| 16. F | 17. E | 18. D | 19. B |
| 20. A | | | |

6. Checklist

Check the students' performance according to the given competencies referring the questions under the checklist for every unit. Put a tick () mark against each task whether they are able to perform or not. The students are expected to respond by saying YES or NO. Then, you can make your own evaluation whether the competencies are met or not.

Can you:

1. List the five types of economic activities?
2. Explain the major characteristics of economic activities?
3. Examine how economic activities modify and transform resources?
4. Explain the performance of road safety in Ethiopia?
5. Explain the cause and consequences of road traffic safety in Ethiopia?
6. Describe the language diversity of Ethiopia?
7. Distinguish the major religions in Ethiopia?
8. Identify cultural landscape places in Ethiopia?
9. Explain the importance of tourism?
10. Identify natural and humanmade tourist attraction sites?

Yes	No

7. Assessment

Students' performance has to be assessed continuously throughout the whole unit. The assessment will be made by comparing students' performance with the specified level of competencies. Besides, the teacher has to recognize the level of performance of each student and provide assistance accordingly, Thus

- ↪ A student at a minimum requirement level will be able to define the concept and discuss facts on economic activities, list the five types of economic activities and explain their major characteristics; and examine how economic activities modify and transform resources.
- ↪ A student at a minimum requirement level will be able to explain the performance of road safety in Ethiopia. Identify the main road safety actors, and causes and consequences of road traffic accidents in Ethiopia.
- ↪ A student at a minimum requirement level will be able to identify cultural landscape places in Ethiopia, explain the importance of tourism and identify natural and human made tourist attraction sites in Ethiopia.
- ↪ In addition, a student working above the minimum requirement level

and considered as higher achiever should be able to: describe the language diversity of Ethiopia and distinguish the major religions in Ethiopia.

- ⇒ Students working below a minimum requirement level will require extra help if they are to catch up with the rest of the class.
- ⇒ Students reaching the minimum requirement level but achieved a little bit higher should be supported so that attain the higher achiever competencies students who fulfil the higher achiever competencies also need special support to contribute and achieve more.

UNIT SIX

6. HUMAN-NATURAL ENVIRONMENT INTERACTION IN ETHIOPIA

Periods Allotted: 10

1. Unit Introduction

In this unit you are going to deal with human-environment interaction in Ethiopia. The unit specifically addresses topics such as human-environment relationship. Optimum population and resource use, overpopulation and resource use, under population and resource use, and impacts of rapid population growth in Ethiopia.

2. Unit Outcomes

At the end of this unit, the students will be able to

- ➔ *describe the relationship between human activities and the environment by giving examples from their localities;*
- ➔ *describe the link between ‘optimal’ population and sustainable development;*
- ➔ *explain how protecting the environment is in the interest of humans and other living beings;*
- ➔ *examine the dynamic flows, interactions and exchanges within an integrated human-environment system at different spatial and temporal scales in the highlands and lowlands of Ethiopia*

- ➔ *recognize the implication of trends in population growth on sustainable resources*
- ➔ *assess how humans use natural resources and give examples that illustrate over-exploitation in the over-populated area of Ethiopia*
- ➔ *explain the advantages and disadvantages of under-population for environment and socio-economic development; and*
- ➔ *assess the impacts of rapid population on environmental and socioeconomic development*

3. Main Contents

- ☞ Human – environment relationship
- ☞ Optimum population and resource use
- ☞ Overpopulation and resource use
- ☞ Under-population and resource use
- ☞ Impacts of rapid population growth

6.1. Human-Environment Relationship

Periods Allotted: 3

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *describe the relationship between human beings and the environment;*
- ➔ *identify the three modes of human-environment interaction ; and*
- ➔ *explain how human beings affect the physical environment and vice versa.*

2. Contents

- ☞ Use of natural resources
- ☞ Production of waste and pollutants

3. Overview

In this lesson, the students will learn about the human-environment relationship.

Our environment means our physical surroundings and the characteristics of the place in which we live. It also refers to the wider natural world of land, sea, and atmosphere. Humans have been interacting with their environment since people first walked the Earth. For example, humans have been cutting down forests to clear land to grow crops for centuries and by doing so we have altered the environment. Conversely, the environment affects us in many different ways as well. A simple example is the way we change our clothes in response to cold or hot weather.

A good climate, accessible clean water, fertile soil, etc. are aspects of the physical environment that enable people to live and thrive. However, harsh environments, such as a very hot climate, limited water, and infertile land, make it more difficult for people to survive. We are also affected by major environmental events such as earthquakes, floods and drought that damage homes, property and agriculture. These can lead to the displacement of people and can cause injury, loss of life and destruction of livelihoods. They can also damage water sources and pipelines, causing water contamination and spreading waterborne diseases. The type of connection between people and the environment is discussed hereunder:

- **Dependence on the Environment:** *Every single living thing on this planet is dependent on the environment it lives in. Whether it is for air, water, food, or shelter, living beings simply cannot survive without some form of interaction. Basically, everything you see around you is entirely dependent on environmental resources that come from thousands of miles away.*
- **Modification of the Environment:** *Human activities frequently result in environmental change, both with negative and positive results. Even the most ecologically sustainable farming methods and renewable energy projects require resources provided by nature. Human beings use increasing amounts of land to build homes, shopping centers, and schools. When it gets cold, we burn coal, wood, and oil that we all collect from our environment.*
- **Adaptation to the Environment:** *People seem to live in the strangest places on this planet, which is partly due to successes in evolution. The more successful species are able to adapt to changes in their environment, the more likely they are to survive. For example, when you find people*

living above the Arctic Circle, in dense jungles, and dry savannahs, you get the idea of how much we have adapted to our natural environment.

The links between human activities and the environment are complex and varied, but can be grouped into two main types of activities:

- ↪ use of natural resources such as land, food, water, soils, minerals, plants and animals, and
- ↪ production of wastes from a range of activities including agriculture, industry and mining, as well as wastes from our bodies.

These are described as the use of natural resources and production of waste and pollutants

4. Teaching learning process

4.1. Suggested Teaching Aids

- ↪ Pictures that show natural resources
- ↪ Photographs that show the production of waste and pollutants

4.2. Suggested Teaching Methods

In this lesson you are expected to apply the appropriate teaching methods such as:

- ↪ Brainstorming
- ↪ Questioning
- ↪ Pair and Group Discussion
- ↪ Explanation
- ↪ Presentation

4.3. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials
- ↪ Refer to relevant materials about the various sources of human environment interaction.

- ↪ Prepare notes, activities; and exercises.

4.4. Presentation of the Lesson

d) Introduction to the Lesson

- ↪ Introduce the students to what they are going to learn (Human environment relationship)
- ↪ Make the objectives of the lesson clear to the students.
- ↪ Conduct a brainstorming session with the students to ascertain their background knowledge of the human environment relationship. Ask them questions such as:
 - *What kinds of relationships exist between human beings and environments?*
 - *What is deforestation?*
 - *What is pollution?*

e) Body of the Lesson

- ↪ After considering your students' previous knowledge, start your presentation by defining environment and explain human environment relationship.
- ↪ Have the students work in groups to discuss the activity given in their textbook. That activity includes questions such as: How human being is dependent on physical environment? How can human modify his/her environment? How do human beings adapt to the environment?
- ↪ Give a brief explanation of human environment interaction, dependency on the environment, modification of the environment, and adaptation of the environment.

f) Stabilization

- ↪ Review the main ideas and concepts of the lesson. Mention the following points:
- ↪ Our environment means our physical surroundings and the characteristics of the place in which we live.

- ↪ Humans have been interacting with their environment since people first walked the Earth. For example, humans have been cutting down forests to clear land to grow crops for centuries and by doing so we have altered the environment.
- ↪ Conversely, the environment affects us in many different ways as well.
- ↪ Human beings are dependent on the physical environment, modify their environment, and adapt to the environment.
- ↪ The links between human activities and the environment are complex and varied, but can be grouped into main types of activities: The use of natural resources and the production of wastes from a range of activities.

4.5. Evaluation and Follow up

a) Evaluation

Use all of the evaluation and follow-up techniques described in the Introduction. As part of those activities, use these approaches:

- ↪ Check the students' understanding of the lesson by giving them an exercise to do independently. The exercise may contain questions and activities such as the following:
 - ➔ *What kinds of relationships exist between human beings and environment?*
 - ➔ *How human being is dependent on physical environment?*

b) Follow up

- ↪ Rate and grade the various activities and exercises performed by the students.
- ↪ Analyze the results to understand whether or not the lesson has been well-understood, and to identify weaker students to whom you want to give extra support.
- ↪ Based on these and other evaluations you have performed for the

lesson, assess each student and also the class as a whole. Decide whether you have succeeded in guiding them to meet the lesson objectives.

c) Additional Activities

1. Explain the difference between renewable and non-renewable resources.
2. What are the consequences of deforestation?

4.3. Answer Key for Activities

Activity 6.1

1. Humans have continuously influenced and manipulated the environment since they first inhabited Earth. When we think of how humans impact the environment today, we may consider such things as the development of cities, exploration of space and notable technological advances but equally, we may also consider the number of species rendered extinct, the vast amounts of waste and pollution generated and the level of inequality in society. Whatever ways we look at it, of all living species, humans have had the greatest influence on our planet.
2. A good climate, accessible clean water, fertile soil, etc. are aspects of the physical environment that enable people to live and thrive. However, harsh environments, such as a very hot climate, limited water, and infertile land, make it more difficult for people to survive. We are also affected by major environmental events such as earthquakes, floods and drought that damage homes, property and agriculture. These can lead to the displacement of people and can cause injury, loss of life and destruction of livelihoods. They can also damage water sources and pipelines, causing water contamination and spreading waterborne diseases.
3. The blue arrows indicate Human environment interaction (Human activities such as industry, energy production, transport, agriculture, recreation domestic and personal activities and environment such as water, air, soil and mineral and plant and animals interact with each other).

- *The green arrow indicates the waste generated as a product of this interaction. The red arrows indicate the negative effect on both the environment and humans if the waste is not properly managed.*

Answer for Additional Activities

1. Natural resources are classified into renewable resources and non-renewable resources. Renewable resources are resources that are replenished naturally in the course of time. The use of these resources corresponds with the principles of sustainability, because the rate at which we are consuming them does not affect their availability in the long term. Renewable resources are solar energy, wind energy, geothermal energy, biofuels, cultivated plants, biomass, air, water and soil. In contrast, non-renewable resources are those that are available to us in limited quantities, or those that are renewed so slowly that the rate at which they are consumed is too fast. This means that their stocks are getting depleted before they can replenish naturally. Non-renewable resources are coal, oil, uranium, aluminium etc.
2. Consequences of deforestation are: Increase in temperature and global warming, increase in pollution, soil erosion, loss of habitat of wild animals, shortage of food and forest produce, leads to natural calamities like floods and droughts and disruption of the water cycle.

6.2. Optimum population and Resource Use

Periods Allotted: 1

1. Competencies

At the end of this section, students will be able to:

- ➔ *define the concepts of optimum population; and*
- ➔ *demonstrate the balance between population size and the amounts of resources available using concrete examples.*

2. Contents

- ☛ Optimum population size

3. Overview

In this lesson, students will learn optimum population and resource use. They will discuss indications of optimum population. Optimum population is where the amount of resources available in a country is equal to the country's population needs; therefore there are enough resources to maintain its population. The optimum population means the best and the most desirable size of a country's population. Thus optimum population yields the highest quality of life, which means each person has access to adequate food, water, energy and air of the highest quality, adequate medical care, recreational facilities and cultural outlets. The optimum size of a population is which along with the existing natural resources and a given state of technology, yields the highest income per capita in a country.

4. Teaching-Learning Process

4.1. Suggested Teaching aids

- ☛ Chart and diagrams that show the relationship between GDP/capita optimum population
- ☛ Natural resource distribution map

4.2. Suggested Methods of Teaching

- ☛ Brainstorming
- ☛ Questioning
- ☛ Group discussion
- ☛ Presentation

4.3. Pre-lesson Preparation

- ☛ Prepare or make ready the required teaching aids to support your instruction plan

- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.

4.4. Presentation of the Lesson

a) Introduction to the Lesson

- ↪ Introduce the topic by raising relevant questions. Therefore, you may begin the lesson by asking questions such as:
 - *What is an optimum population size?*
 - *What are the advantages of optimum population size?*
- ↪ Introduce the lesson by giving concepts and definitions of optimum population.
- ↪ Be sure the students understand the objectives of the lesson.

b) Main Body of the Lesson

- ↪ After considering your students' previous knowledge, explain the concept of optimum population and resource use.
- ↪ Divide students into small groups and instruct them to discuss the advantages of optimum population size.
- ↪ Now give the students a chance to critically observe figure 6.5 from the textbook for a while and ask them the following questions:
 - *What did you understand from figure 6.5?*
 - *What are the advantages of optimum population size?*
- ↪ This will give them a chance to share their knowledge about optimum population size and resource use.

c) Stabilization

- Review the main ideas and concepts of the lesson. Emphasize the following points.

- ↪ Optimum population is where the amount of resources available in a country is equal to the country's population needs.

- ↪ The optimum population means the best and the most desirable size of a country's population.
- ↪ Optimum population yields the highest quality of life, which means each person has access to adequate food, water, energy and air of the highest quality, adequate medical care, recreational facilities and cultural outlets.

4.5. Evaluation and Follow Up

a) Evaluation

- ↪ Use all of the evaluation and follow-up techniques described in the Introduction.
- ↪ As part of that process, perform the following tasks:
 - *Check your students' understanding of the lesson by giving them an exercise to do independently.*
 - *You have to evaluate the whole performance of students (in discussions, answering questions and, etc.) throughout the period as a part of continuous assessments.*

b) Follow up

Rate and grade the various activities and exercises performed by the students. Analyze the results to understand whether or not the lesson has been well-understood and to identify those students who may need extra support.

Based on these and other evaluations you have performed for the lesson, assess each student and also the class as a whole. Decide whether you have succeeded in guiding them to meet the lesson objectives.

c) Additional Activities

1. What are the indications of an optimum population?

4.2. Answer key for Activities

Activity 6.2

1. Optimum population is where the amount of resources available in a country is equal to the country's population needs; therefore there are enough resources to maintain its population. The optimum population means the best and the most desirable size of a country's population.
2. Optimum population yields the highest quality of life, which means each person has access to adequate food, water and farmland; and soil and forest resources of the highest quality, adequate medical care, recreational facilities and cultural outlets. The optimum size of a population is which along with the existing natural resources and a given state of technology, yields the highest income per capita in a country

Answer for Additional Activities

1. Indications of an optimum population may be high average living standards, full employment, rational development of increasing resources and balanced demographic structure, but these are not precise criteria.

6.3. Over Population and Resource Use

Periods Allotted: 1

1. Competencies

After completing this lesson, your students will be able to:

- ➔ *define the concepts of overpopulation;*
- ➔ *explain how the growth and decline of a population affects the availability of natural resources; and*
- ➔ *justify how the availability of natural resources, in turn affects the pattern of population growth.*

2. Contents

- ☛ Overpopulation and Resource use
- ☛ Effects of Over Population

3. Overview

Overpopulation occurs when there is an excess of population over-utilized or potential resources. It may result from an increase in population, a decline in resources, a decline in the demand for labour, or a combination of these factors. In other words, overpopulation may take place where resource development does not go hand in hand with population growth, and where the growth of tertiary services lags behind technical progress.

Overpopulation happens when there are too little resources to maintain the growing population. It is a condition when an organism's numbers exceed the carrying capacity of its ecological place. Carrying capacity is the maximum numbers of individuals of a species that can exist in a habitat indefinitely without threatening other species in that habitat.

Effects and manifestations of overpopulation are: depletion of resources fossil fuels, the problem of water shortages, increased levels of air pollution, water pollution, soil erosion and noise pollution, deforestation and loss of ecosystems, changes in atmospheric composition and consequent global warming, permanent loss of arable land and increases in desertification, migration, mass species extinctions, starvation, malnutrition or poor diet with ill health and diet-deficiency diseases (e.g. rickets), low life expectancy, high crime rate, and conflict over scarce resources.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ☞ Charts and diagrams that show population resource relationship
- ☞ Population growth trend tables and graphs

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Questioning
- ↪ Pair and group discussion
- ↪ Presentation

4.3. Pre Lesson Preparation

- ↪ In advance, read more about overpopulation and resource use and effects of overpopulation. And get ready with figures and diagrams of population resource relationships that show the population growth of some developing countries including Ethiopia.
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.

4.4. Lesson Presentation

a) Introducing the Lesson

- ↪ Motivate the students to review what they learnt previously.
- ↪ Introduce your students to what they are going to learn.
- ↪ Conduct a brainstorming session with the students to ascertain their background knowledge of over population and resource use, etc. Ask them questions such as: Have they done the activity from their textbook, which includes questions such as: What do you think about the population of Ethiopia?

b) Main Body of the Lesson

- ↪ Explain the link between population growth and resource use and its effect. Have the students work in groups and do the activity from their textbook and present their ideas to the class. The activity includes questions such as: What do you think about population growth of Ethiopia? In addition, have the students work on activity in small groups. This activity helps them to recognize relationship between

the greater the population density and the availability of natural resources in the area?

- ↪ Ask the students to make a debate on what do they think that Ethiopia is poor because of overpopulation or not?
- ↪ Explain to them the effect of overpopulation on natural resources and infrastructures.
- ↪ Make sure that all students are involved in group activities and the entire teaching-learning process.
- ↪ Give your students enough time to ask questions and organize their notes.

c) Stabilization

Summarize the main ideas and concepts of the lesson. This may include the following points:

- ↪ Overpopulation occurs when there is an excess of population over utilized or potential resources.
- ↪ It may result from an increase in population, a decline in resources, a decline in the demand for labour, or a combination of these factors.
- ↪ Carrying capacity is the maximum numbers of individuals of a species that can exist in a habitat indefinitely without threatening other species in that habitat.
- ↪ Overpopulation results a great demand for resources.
- ↪ Effects of overpopulation are: depletion of resources fossil fuels, the problem of water shortages, increased levels of air pollution, water pollution, soil erosion and noise pollution, deforestation and loss of ecosystems, changes in atmospheric composition and consequent global warming,

4.5. Evaluation and Follow up

a) Evaluation

Use all of the evaluation and follow-up techniques described in the introduction.

As part of that process, perform these tasks:

Check your students' understanding of the lesson by giving them an exercise to do independently. The exercise may contain questions such as:

- ↪ What is the impact of population density on the availability of natural resources?
- ↪ Can you state the general relationship between the greater the population density and the availability of natural resources in the area?

b) Follow up

- ↪ Encourage all students (for example, individually and in groups) and assign extra work to each student as needed. For below-average students, provide exercises and activities to help them meet the minimum competencies. For above-average students, provide work that will stimulate their further advancement and eliminate any possible complacency. For average students, assign work you think appropriate.

c) Additional Activities

1. Explain the following:
 - a. Carrying capacity
 - b. Absolute overpopulation
 - c. Relative overpopulation

4.2. Answer key for Activities

Activity 6.3

1. Overpopulation is an undesirable condition where the number of the existing human population exceeds the actual carrying capacity of Earth. Overpopulation is caused by a number of factors. Reduced mortality rate, better medical facilities, depletion of precious resources are a few of the

causes which result in overpopulation. It is possible for a sparsely populated area to become densely populated if it is not able to sustain life.

2. Yes, with the increases of population comes adverse and e problems such as, scarcity of resources, over farming, deforestation, and water pollution, which degraded the environment and undermined development..

Answers for Additional Activities

- a. Carrying capacity is the maximum numbers of individuals of a species that can exist in a habitat indefinitely without threatening other species in that habitat.
- b. Absolute overpopulation occurs when the absolute limit of production that has been attained through living standards remain low,
- c. Relative overpopulation occurs when present production is inadequate for the population although greater production is feasible. Relative overpopulation is more common than absolute overpopulation.

6.4. Under Population and Resource use

Periods Allotted: 1

1. 1Competencies

After completing this lesson, your students will be able to:

- ➔ *define the concepts of underpopulation; and*
- ➔ *identify the causes of underpopulation.*

2. Contents

- ☛ • Under Population

3. Overview

In this lesson, students will be familiarized with the concept of under-population. Absolute under-population is quite rare, save in the case of isolated populations where numbers are incapable of normal demographic replacement of adequate

economic production with their measurement. Then, they will discuss the distribution of population Ethiopia and identify the and the densely and sparsely populated regions of the country.

Under population is when there are more resources in an area (for example, food, energy and minerals) than can be used by the people living there. Under population is when a region or country has insufficient workers to exploit their resources efficiently, to support retired populations and to provide growth. Therefore, too few people use all the resources of an area to maximum efficiency. In this sense, the number of people is not sufficient to utilize the resources of the country, the resources are vast, and much can be produced,

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Population distribution/density map
- ↪ Charts and diagrams that show population distribution

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Questioning
- ↪ Explanation
- ↪ Pair and group discussion
- ↪ Presentation

4.3. Pre Lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials such as a map of population distribution.
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce students to what they are going to learn (under population and resource use)
- ↪ Make the objectives of the lesson clear to students.
- ↪ Conduct a brainstorming session with the students to ascertain their background knowledge of under-population and resource use. Ask them questions such as:

- *What is under-population?*
- *What are the causes of under-population?*

b) Main Body of the Lesson

- ↪ After considering your students' previous knowledge, start your presentation with the explanation of the meanings of underpopulation.
- ↪ Give definition of underpopulation
- ↪ Explain the causes of underpopulation.
- ↪ Make sure that all students are involved in the group activities and in the entire teaching-learning process.
- ↪ Give your students enough time to ask questions and organize their notes.

c) Stabilization

Review the main ideas and concepts of the lesson. Stress on the following points:

- ↪ Under population may be said to exist where a population is too small to utilize fully its resources.
- ↪ Under population is when there are more resources in an area (for example, food, energy and minerals) than can be used by the people living there
- ↪ Most areas considered under-populated today are large in area and rich in resources.
- ↪ The impacts of under-population include: a shortage of workers,

fewer people to pay tax closure of services, wasted resources, etc.

4.5. Evaluation and Follow Up

a) Evaluation

Use all of the evaluation techniques described in the Introduction. As part of that process, perform these evaluation tasks:

- a) *Check your students' understanding of the lesson by giving them different activities such as: Is under-population a problem in Ethiopia?*

b) Follow up

- ↪ Motivate students to discuss in groups.
- ↪ Facilitate and coordinate the discussion.
- ↪ Rate and grade the various activities and exercises performed by the students.

c) Additional Activities

1. How can we solve the problem of under population?
2. What are the causes of under-population?

4.3. Answer key for Activities

Activity 6.4

1. Some of under-populated countries of the world are: Australia, Canada, Argentina, Namibia, Mongolia, Bolivia, etc.
- 2.

Advantages

Low pollution and fewer environmental problems,

Decreased strain on social amenities and physical resources.

Sufficient employment opportunities

Disadvantages

underutilisation of resources

shortage of labour

Lesser taxpayers

Answers for Additional Activities

1. Encouraging people to increase their birth rates, allowing for immigration, and government subsidies for child care.
2. Increase in the death rate due to natural disaster like earthquake, Tsunami, flood or man-made disasters such as war, decrease in birth rate due to genetic reasons, infertility in the people, emigration – people moving out of a country.

6.5. Impacts of Rapid Population Growth

Periods Allotted: 4

1. Competencies

After completing this lesson, your students will be able to:

- ➔ *explain how the growth and decline of a population affects the availability of natural resources, and how the availability of natural resources in turn affects the pattern of population growth;*
- ➔ *demonstrate the balance between the population size and the amounts of resources available using concrete examples; and*
- ➔ *assess the impacts of rapid population growth on the environment and socio-economic development using concrete examples.*

2. Contents

- Impacts of Rapid Population Growth

3. Overview

The rapid increase of human population is putting an incredible strain on our environment. While developed countries continue to pollute the environment and deplete their resources, developing countries are under increasing pressure to compete economically and their industrial advancements are damaging as well. The demands that this growth places on our global environment are threatening the future of sustainable life on earth. One of the largest environmental effects of human population growth is the problem of global warming.

Ethiopia is the most populous country in Africa with a higher rate of population growth. Its population was estimated to be over 114.9 million in 2020 and currently growing at a rate of 2.6%. The majority of the population are making their livelihoods in lands that are now categorized as moderately to severely degraded areas; mostly in the Ethiopian highlands. Unless significant conservation measures are set out and implemented accordingly, many of the moderately degraded lands might be rigorously degraded in the future. This often becomes the underlining cause for over-exploitation of the natural resources and subsequent environmental degradations.

These negative results of rapid population growth have caused many environmental and socio-economic problems. For example, population growth causes serious environmental degradation in the area where it occurs, including deforestation, pollution, soil erosion, depletion of resources, etc.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- Census data
- Population distribution map of Ethiopia
- Pictures and diagrams show deforestation

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Questioning
- ↪ Explanation
- ↪ Pair and group discussion
- ↪ Presentation

4.3. Pre Lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials such as a population size and growth rate in Ethiopia, pictures of deforestation and land degradation in Ethiopia.
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce the students to what they are going to learn (Impacts of rapid population growth)
- ↪ Make the objectives of the lesson clear to the students.
- ↪ Conduct a brainstorming session with the students to ascertain their background knowledge of the impacts of rapid population growth in Ethiopia. Ask them questions such as: What causes deforestation? What are the consequences of deforestation?

b) Main Body of the Lesson

- ↪ After considering your students' previous knowledge, start your presentation with explanation impacts of rapid population growth and discuss the negative results of rapid population growth.
- ↪ Provide the students with some pictures of deforestation and land degradation in Ethiopia and have them work in groups to discuss some of the problems caused by deforestation in Ethiopia.

- ↪ Explain to them the consequences of deforestation
- ↪ Explain the causes and consequences of air and water pollution
- ↪ Make sure that all students are involved in the group activities and the entire teaching-learning process.
- ↪ Give the students enough time to ask questions and organize their notes.

c) Stabilization

Review the main ideas and concepts of the lesson. The following are the highlights.

- ↪ The rapid increase of human population is putting an incredible strain on our environment.
- ↪ Ethiopia is one of the most populous countries in Africa with a higher rate of population growth. Its population was estimated to be over 114.9 million in 2020 and currently growing at a rate of 2.6%.
- ↪ Population growth causes serious environmental degradation in the area where it occurs, including deforestation, pollution, soil erosion, depletion of resources, etc.
- ↪ Deforestation refers to the removal of forest cover of an area without adequate replacement. In other words, it is the process of the indiscriminate destruction of the natural vegetation cover of a forest area.
- ↪ In Ethiopia, rapid population growth leads to deforestation mainly because of people's increasing needs for more: wood, agricultural land, grazing land, etc.
- ↪ Pollution refers to any undesirable change in natural conditions of water, air, and other components of the natural environment that has negative effects on the health and activities of human beings and other living creatures.

4.5. Evaluation and Follow Up

a) Evaluation

- ↪ Use all of the evaluation and follow-up techniques described in the Introduction. As part of those activities, use these approaches:
- ↪ Check the students' understanding of the lesson by giving them an exercise to do independently. The exercise may contain questions such as:
 - *What is deforestation?*
 - *What are the causes of deforestation?*
 - *Mention some of the causes of air and water pollution*

b) Follow up

- ↪ Motivate the students to participate actively in group discussions, independent task and the likes.
- ↪ Grade and record every performance of the students.

c) Additional Activities

1. Mention some of the problems caused by deforestation.
2. What are the causes of air and water pollution?

4.3. Answer key for Activities

Activity 6.5

1. Global warming is the unusually rapid increase in Earth's average surface temperature over the past century primarily due to the greenhouse gases released as people burn fossil fuels. Global Warming is defined as the increase of the average temperature on Earth. As the Earth is getting hotter, disasters like hurricanes, droughts, and floods are getting more frequent. Causes of Global Warming:

- *Industrial Activity.*
- *Agricultural Activity.*

➤ *Deforestation.*

2. Population impacts on the environment primarily through the use of natural resources and production of wastes and is associated with environmental stresses like loss of biodiversity, air and water pollution and increased pressure on arable land. This often becomes the underlining cause for over-exploitation of the natural resources and subsequent environmental degradations, for example the size of Ethiopia's population has been growing very rapidly. The population growth rate is much higher, and is increasing much faster than the economic growth rate and is growing beyond the carrying capacity of the country's natural resources, such as land, water, soil, forest, etc. These negative results of rapid population growth have caused many environmental and socio-economic problems. For example, population growth causes serious environmental degradation in the area where it occurs, including deforestation, pollution, soil erosion, depletion of resources, etc.
3. The effects of deforestation on the socio-economic activities: with reduced forests, people are less able to benefit from the natural resources these ecosystems provide. This can lead to increased poverty and in cases; people may need to move in order to find forests which can sustain them.
4. **Effect on Housing:** Ethiopia currently facing a serious problem of housing due to limited supply. The shortage is aggravated by a high rate of growth of the urban population. Besides the high rate of natural increase, growing rural-urban migration is another major factor of the fast population growth in Ethiopia.

➤ **Effect on Food Supply:** *The demand for food is directly associated with the size of the population. Rapid population growth requires a fast increase in agricultural production in order to ensure enough food supply for the up-coming generation.*

➤ **Effect on farmland:** *is associated with smaller farm sizes. Higher rural population density is also associated with greater demand for inorganic fertilizer. Maize and teff yields do not rise with population density. Farm income per hectare decreases as rural population density rises.*

- **Effect on Education:** *Student/teacher ratio, student/classroom ratio, and the number of students per text book have all increased. Thus, the quality of education is directly affected by the rapid growth of school age children, which is the only segment of the total population.*
- **Effect on Health care:** *Rapid population growth causes a low level of education, inadequate access to clean water, shortage of sanitary facilities have contributed to the poor health situation in Ethiopia.*
- **Drought and Famine:** *rapid population growth in Ethiopia has contributed to over-farming and deforestation, which have degraded the environment and undermined development. These result in drought and famine.*

Answers for Additional Activities

1.

- *It accelerates soil erosion.*
- *It destroys biodiversity.*
- *It affects rainfall by decreasing evapotranspiration.*
- *It results in shortages of wood supply.*
- *It affects the natural beauty of the affected areas.*

2. Water and air pollution are mainly caused by human activities in households, industries, farmlands, means of transportation, and so on. However, it can also be caused by natural events such as volcanic eruptions, wildfire, and the like.

5. Answer for Review Exercise on Unit 6

Part I. True False Item

1. False 2. True 3. True 4. True 3. *False*

Part II. Matching Item

6. E 7. C 8. A 9. D 10. B

Part III. Short Answer

11. Human beings use natural resources such as land, food, water, soils, minerals, plants and animals
12. Human being uses many different types of natural resources in daily lives. We depend on food and water for survival and we need energy for many different purposes, from domestic cooking through to major industrial processes. Our clothes, transport, buildings, tools, and all other items we use require many different resources for their production. Let us take a simple example. Think of the resources that have been used to produce a notebook of the type you may be using right now as you study this subject. Manufacturing the paper needed raw materials of wood and water as well as energy for its production process. The trees that supplied the wood required soil, water and land to grow on. There may be ink or metal staples or other components in your notebook that were made from other types of resources. Our need for resources is vast and it is growing as the population and consumption per person increases with socio-economic progress.
13. Deforestation, pollution, land/soil degradation, and impact on social development.

6. Checklist

Check the students' performance according to the given competencies referring to the questions under the checklist for every unit. Put a tick () mark against each

task whether they are able to perform or not. The students are expected to respond by saying YES or NO. Then, you can make your own evaluation of whether the competencies are met or not.

Can you:

1. Identify the three modes of human environment interaction?
2. Explain how human being affects the physical environment?
3. Explain the impacts of optimum population natural resources?
4. Define the concept of over-population?
5. Analyze impacts of rapid population growth on natural environment and socio-economic development of Ethiopia.
6. Explain how the growth and decline of the population affect the availability of natural resources.

Yes	No

7. Assessment

Students' performance has to be assessed continuously over the whole unit. The assessment will be made by comparing students' performance with the specified level of competencies. Besides, the teacher has to recognize the level of performance of each student and provide assistance accordingly, Thus

- ↳ A student at a minimum requirement level will be able to explain human environment interaction, identify the three modes of human environment interaction, explain how human beings affect the physical environment, explain the impacts of optimum population natural resources, and identify the causes of under-population.
- ↳ In addition, a student working above the minimum requirement level and considered as a higher achiever should be able to: explain global warming and discuss the impact of rapid population growth in Ethiopia.
- ↳ Students working below a minimum requirement level will require extra help if they are to catch up with the rest of the class.
- ↳ Students reaching-at the minimum requirement level but achieved a

little bit higher should be supported so that attain the higher achiever competencies students who fulfil the higher achiever competencies also need special support to contribute and achieve more.

UNIT SEVEN

7. CONTEMPORARY GEOGRAPHIC ISSUES AND PUBLIC CONCERNS IN ETHIOPIA

Total periods allotted: 4

1. Unit Introduction

Deforestation, accelerated soil erosion, and land degradation are serious national problems in Ethiopia. It is believed that about 40 percent of the country was forested at the turn of the century. At present, the forest reserves are estimated to be fewer than 15 percent and about 100,000 hectares of forest are lost annually. In Ethiopia, about 1.9 billion tons of topsoil are washed away from the highlands every year. The loss of topsoil has been estimated to cost billions of Ethiopian birr per year. Since topsoil production rates are so slow, the lost topsoil is essentially irreplaceable.

To overcome these environmental problems, efforts have been made to launch afforestation and soil conservation program by the government of Ethiopia, success to date, however, has been limited.

2. Unit Outcomes

At the end of this unit, the students will be able to:

- ➔ *state causes of natural resource degradation;*
- ➔ *explain the effects of natural resource degradation; and*
- ➔ *elaborate Ethiopia’s vision to achieve development without undermining the potential of the natural environment.*

3. Main Contents

- ☛ Natural Resource Degradation
- ☛ The Ethiopian “Green Legacy” Movement

7.1. Natural resource degradation

7.1.1. Soil

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *describe the meaning of soil erosion;*
- ➔ *state causes of soil erosion; and*
- ➔ *recognize the effects of soil erosion.*

2. Contents

- ☛ Soil Erosion

3. Overview

Soil degradation refers to the decline in soil productivity through adverse changes in nutrient-status, organic matter and structural stability. Soil erosion, caused by natural and human-related factors, is the most critical problem in Ethiopia. Rugged topography and heavy summer rainfall are the major natural factors in soil erosion in Ethiopia. The main human-related factors are deforestation, overgrazing, over cultivation, traditional cultivation techniques, etc., Reforestation, afforestation, terracing, contour ploughing, controlled grazing, etc. are some of the commonly

used conservation strategies in Ethiopia.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Physical map of Ethiopia
- ↪ Soil map of Ethiopia
- ↪ Pictures, diagrams, films, posters, etc. that show sheet erosion, rill erosion and gully erosion.
- ↪ Pictures, diagrams, films, posters, etc. that show different soil conservation strategies

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Lecture with a demonstration
- ↪ Guest speaker
- ↪ Field visit -
- ↪ Panel discussion -
- ↪ Jigsaw group projects
- ↪ Pair/group discussion
- ↪ Case study
- ↪ Debate

4.3. Pre-lesson Preparation

- ↪ Have the required teaching aids at hand ahead of time. Plan your lesson before you get to class. Read up on the lesson's topics by referring to different documents including brochures, leaflets, magazines, newspapers and other relevant reference materials that could supplement your presentation. In particular, read about problems of soil and its conservation in Ethiopia, resource-population link, link between poverty and natural resource degradation, over cropping and overgrazing.

- ↪ Facilitate the required preconditions to invite a guest speaker and to organize a trip to nearby areas where students can observe soil erosion and conservation methods.

4.4. Lesson Presentation

d) Introduction to the Lesson

Review the previous lessons about the climate, relief, and natural vegetation of Ethiopia and try to create an association between the spatial distribution of the aforementioned conditions and the soils in Ethiopia. You can ask the students about soil types, their problems and conservation in Ethiopia based on their local experiences. You can use the brainstorming approach and ask the students questions like: What is soil erosion? What do you know about the causes of soil erosion? Which type of soil erosion is common in your locality? What are the consequences of soil erosion? What are some conservation measures to combat soil erosion?

e) Main Body of the Lesson

- ↪ Listen to the students' responses to the above questions and try to identify where your students need your instruction. Then, make your presentation to the class, based on the students' responses to the above questions.
- ↪ Motivate the students to identify the major problems of soils in Ethiopia together with their possible conservation strategies. Provide them with some pictures, diagrams, films, and posters etc. that illustrate the problem of soil erosion in Ethiopia and its conservation techniques.
- ↪ Explain capacity building and institutional development to combat soil erosion
- ↪ Organize students into groups to debate on the link between poverty and soil erosion and the link between overpopulation and soil erosion etc.
- ↪ You may also organize a field visit to local areas where students can

observe soil problems and conservation methods. This helps them to relate the lesson with actual situations in their locality.

- ↪ You may invite a guest speaker from the agricultural extension office working on the protection of soil.
- ↪ Have the students do the activities and exercises found in their textbook. Make sure that all students are involved in the group activities and the entire teaching-learning process. Give them adequate time to ask questions and organize their notes.

f) Stabilization

Give a summary of the following points:

- ↪ Soil quality may be defined as the capacity of a soil to function for human survival and for the related biogeochemical cycling.
- ↪ Soil erosion caused by natural and human-related factors is the most critical problem in Ethiopia. Among others, deforestation, overgrazing, over cultivation, pollution and traditional farming practices are the major human-made factors that contribute to soil erosion. Topography and heavy summer rainfall are natural factors that contribute to soil erosion.
- ↪ Reforestation, afforestation, agro-forestry, terracing, contour ploughing, controlled grazing, etc. are among the major soil conservation measures in the country.

4.5. Evaluation and Follow Up

a) Evaluation

In order to check whether the students have understood the lesson, ask them the following questions:

- ↪ What is soil degradation?
- ↪ What are natural and man-made factors that contribute to soil erosion in Ethiopia?
- ↪ What is the impact of soil erosion in Ethiopia?

- ↪ Which forces of soil erosion are most damaging in the highlands?
- ↪ List possible soil conservation measures for Ethiopia.

b) Follow up

To help the students develop a better understanding of the lesson, you should support your teaching with additional activities. This could help you and the students to have wider views of the extent of soil erosion in Ethiopia. You can assign tasks like the following on group bases: Concept of soil erosion, causes of soil erosion, evidence and impacts of soil erosion, ways peoples' lives are affected by soil erosion, etc.

c) Additional Activities for Fast Learners

- ↪ Mention some possible conservation methods that can be used to reduce the loss of soil by erosion in Ethiopia.

Answer Key for Additional Question

➔ Some of the soil conservation methods are:

- ↪ Terracing
- ↪ Crop rotation
- ↪ Afforestation
- ↪ Rotation of grazing lands
- ↪ Reforestation
- ↪ Strip cultivation
- ↪ Contour ploughing
- ↪ Mulching

4.6. Answers for the Activity in the Textbook

Activity 7.1.1

7. Soil degradation refers to a change in the state of soil due to increased erosion, leaching and both processes.

8. Some causes of soil degradation in Ethiopia are natural causes and human causes.
9. The cheapest and most effective soil conservation measures are crop rotation, rotation of grazing lands, afforestation, reforestation, contour ploughing and strip cultivation.
10. Reforestation is the planting of trees on land previously forested but from which the trees have been removed by natural causes or by cutting, burning, or other means. Afforestation refers to the planting of land, not formerly so covered, with trees to make a forest for commercial or other purposes.

7.1.2. Vegetation

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *describe the meaning of deforestation;*
- ➔ *state causes of deforestation; and*
- ➔ *recognize the effects of deforestation.*

2. Contents

- ☛ Natural Vegetation Degradation

3. Overview

Deforestation refers to the removal of forest cover of an area without adequate replacement. In other words, it is the process of the indiscriminate destruction of the natural vegetation cover of a forest area.

The natural vegetation cover of Ethiopia has been declining very fast, mainly due to the rapid growth of the population. The estimated 40% forests cover of the country at the beginning of the 20th century has been reduced to a total of less than 15% now. This drastic destruction of natural vegetation in the country is caused by the unwise cutting of trees due to highly increasing demand for wood for various purposes (mainly for fuel, construction, and furniture), overgrazing due to increasing numbers of livestock and the expansion of grazing lands into

forestlands and expansion of agriculture/cultivation into forestlands due to shortages of farmland, and rapidly increasing demands for it.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Vegetation map of Ethiopia
- ↪ Pictures, diagrams, films, posters, etc. that show deforestation in Ethiopia
- ↪ Pictures, diagrams, films, posters, etc. that show reforested and afforested campaigns in Ethiopia.
- ↪ Charts that show statistical data related to the natural vegetation of Ethiopia

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Demonstration -
- ↪ Guest speaker
- ↪ Panel discussion
- ↪ Field visit
- ↪ Presentation of case studies
- ↪ Jigsaw group projects
- ↪ Pair and group discussion
- ↪ Case study
- ↪ Debate

4.3. Pre-lesson Preparation

- ↪ Have the required teaching aids at hand ahead of time. Plan your lesson before you get to class. Read up on the lesson's topics by referring to different documents including brochures, leaflets, magazines, newspapers and other relevant reference materials that could supplement your presentation. In particular, read about

problems of natural vegetation and its conservation in Ethiopia, resource-population link, overpopulation, the link between poverty and natural resource degradation, overgrazing and expansion of settlements and agriculture.

- ↪ Facilitate the required preconditions to invite a guest speaker and to organize a trip to nearby areas where students can observe deforestation, reforestation and afforestation.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce students to what they are going to learn (natural vegetation degradation)
- ↪ Make the objectives of the lesson clear to the students.
- ↪ Conduct a brainstorming session to find out the students background knowledge of the natural vegetation of Ethiopia. You may ask students questions such as: What is deforestation? What do you know about the causes of deforestation in Ethiopia? Can you mention some of the consequences caused by deforestation? Is deforestation a problem in your locality? Are the forests in Ethiopia healthy and flourishing? Why or why not?

b) Main Body of the Lesson

- ↪ Listen to the students' responses to the above questions and try to identify where your students need your instruction. Then, make your presentation to the class, based on the students' responses to the above questions.
- ↪ Motivate the students to identify the major causes for the destruction of natural vegetation in Ethiopia and the conservation measures that help to mitigate the problem.
- ↪ Provide them with some pictures, diagrams, films, and posters etc.

that illustrate the deforestation in Ethiopia and the “Green Legacy” movement.

- ↪ Explain capacity building and institutional development to combat deforestation
- ↪ Organize students into groups to debate on link between poverty and deforestation/link between overpopulation and deforestation, etc.
- ↪ Guide them also to discuss over the method of conservations with which they are familiar and about their benefits.
- ↪ You may also organize a visit to local sites where students can observe deforestation and its conservation methods. This helps them to relate the lesson with actual situations in their locality.
- ↪ Have the students do the activities and exercises found in their textbook. Make sure that all students are involved in the group activities and the entire teaching-learning process. Give them adequate time to ask questions and organize their notes.

c) Stabilization

Review the main ideas and concepts of the lesson.

- ↪ Deforestation is the process of the indiscriminate destruction of the natural vegetation cover of a forest area.
- ↪ Deforestation is caused mainly by rapid population growth and the increasing population’s needs for forest resources such as wood and land.
- ↪ Deforestation has various negative consequences, both directly on the natural environment, and indirectly on the socio-economic conditions of the people.
- ↪ The direct consequences of deforestation include sever soil erosion, loss of biodiversity, affect the spatial and temporal distribution of rainfall, shortages of wood supply, affects the natural beauty of the affected areas, etc.
- ↪ Conservation measures include reforestation, afforestation, controlling forest fire, controlling overgrazing, using an alternative

source of energy, etc.

4.5. Evaluation and Follow Up

a) Evaluation

Ask students questions like the following:

- ↪ What are the major problems regarding natural vegetation in Ethiopia?
- ↪ What causes deforestation and what are the consequences of deforestation in Ethiopia?
- ↪ What should be done to protect, rehabilitate and achieve sustainable use of forests in Ethiopia?

b) Follow up

- ↪ Ensure that the Students are paying attention to the group project.
- ↪ Let students read to the class findings of their project.
- ↪ Monitor the debate and provide feedback.

c) Additional Activities for Fast Learners

- ↪ How much land in Ethiopia is currently forested?

Answer Key for Additional Question

- ↪ According to the U.N. FAO (2020), 14.2% of Ethiopia is forested.

4.6. Answers for the Activity in the Textbook

Activity 7.1.2

1. The major problems that affect the natural vegetation of Ethiopia are:

- ↪ Unwise cutting of trees due to highly increasing demand for wood for various purposes (mainly for fuel, construction, and furniture);
- ↪ Overgrazing due to increasing numbers of livestock and the expansion of grazing lands into forestlands; expansion of agriculture/cultivation

into forestlands due to shortages of farmland and rapidly increasing demands for it; and

↳ Expansion of settlements into forestlands due to rapidly increasing demands for settlement areas, etc.

2. Some conservation measures include reforestation, afforestation, controlling forest fire, controlling overgrazing, using alternative source of energy, avoiding slash and burn practices, etc.
3. Since it is a local-based activity, the answers are expected to vary from place to place. Possibly the answer to the question is reforestation and afforestation.

7.1.3. Water

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *state causes of water resource depletion; and*
- ➔ *explain the rationale behind the federal water resource management policy that attempt to conserve water resource.*

2. Contents

☛ Water Resource Depletion

3. Overview

Needless to say, Ethiopia has been known as the “Water Tower of Eastern Africa” for the last fifty to sixty years. However, due to climate change, the rapid growth of human population, pollutants, poor water resource management, etc. water resource in Ethiopia is under depletion. Water scarcity in rural areas of Ethiopia takes two main forms: low coverage levels and poor water quality, and these have implications for human health, economic and social life.

These and other factors have led to the need for the conservation and management of water resources in Ethiopia. In response to this need, the Federal Democratic Republic of Ethiopia has adopted a national conservation strategy for natural

resources under the Ethiopian Environmental Protection Authority. The Authority has developed water-resource policy goals, objectives and guiding principles.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Physical map of Ethiopia
- ↪ Drainage map of Ethiopia
- ↪ Pictures and diagrams that show the rivers and lakes of Ethiopia
- ↪ Pictures, diagrams, films, posters, etc. that show the shrinking and disappeared lakes of Ethiopia.
- ↪ Pictures, diagrams, films, posters, etc. that show aquatic weed water hyacinth and fight against it
- ↪ Pictures, diagrams, films, posters, etc. that show water conservation measures

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Demonstration
- ↪ Guest speaker
- ↪ Panel discussion
- ↪ Field visit
- ↪ Presentation of case studies
- ↪ Jigsaw group projects
- ↪ Pair and group discussion
- ↪ Case study
- ↪ Debate

4.3. Pre-lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials such as maps, pictures, diagrams, films, photographs and charts.

- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.
- ↪ Facilitate the required preconditions to invite a guest speaker and to organize a trip to nearby water resources where students can observe the water supply crisis and the conservation measures that help to mitigate the problem.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Review the previous lessons about climate change, soil erosion and deforestation in Ethiopia and try to create an association between the spatial distribution of the aforementioned conditions and water resource depilation in Ethiopia. You can ask the students about types of water resource, their problems and conservation attempts in Ethiopia based on their local experiences. You can use the brainstorming approach and ask the students questions like: Why do we conserve water resources? What do you know about water scarcity? Can you mention some of the problems caused by water scarcity? Are our water resources running out? Can you list some ways that you are able to contribute to water conservations? Are policy measures the correct solution to problems?

b) Main Body of the Lesson

- ↪ Explain what water scarcity is meant. Have the students discuss the problems of water crisis in Ethiopia. Guide them also to talk over the major causes of water resource depilation in the country and the conservation measures that help to mitigate the problem.
- ↪ Provide them with some pictures, diagrams, films, posters, etc. that illustrate the problem of water-bodies and some water resource protection strategies in Ethiopia.
- ↪ Organize students into groups to discuss the causes of why lakes are shrinking and drying up in Ethiopia.

- ↪ Explain more about the formulated water resource policy of the country which has a goal of improving and enhancing the health and quality of life of all Ethiopians and promoting sustainable socio-economic development through the sound management and use of the water resources of the country.
- ↪ You may also organize a visit to local water-bodies where students can observe challenges of water supply and conservation techniques that help to alleviate the problem.
- ↪ Have the students do the activities and exercises found in their textbook. Make sure that all students are involved in the group activities and the entire teaching-learning process. Give them adequate time to ask questions and organize their notes.

c) Stabilization

Complete your lesson presentation with a review of key ideas and concepts of map such as:

- ↪ The **water supply crisis** refers to a global situation where people in many areas lack access to sufficient water, clean water, or both.
- ↪ Conservation means using less water and using it more efficiently.
- ↪ Water resource depletion in Ethiopia is caused mainly by climate change, the rapid growth of human population, pollutants and poor water resource management
- ↪ Ethiopia's government has formulated and has been implementing a policy that helps in the proper and efficient utilization of the water resources of the country.

4.5. Evaluation and Follow Up

a) Evaluation

In order to check whether the students have understood the lesson, ask them the following questions:

- ➔ *What causes water resource depletion and what are the consequences*

of water scarcity in Ethiopia?

➤ *How do we protect, rehabilitate and sustainably use water resources in Ethiopia?*

➤ *Ask teams/students to present what they have discussed*

b) Follow up

➤ Rate and grade the various activities performed by the students. Analyze the results to understand whether or not the lesson has been well-understood, and to identify those students who may need extra coaching.

➤ Furthermore, decide whether you have succeeded in guiding them to meet the lesson objectives. Then encourage all students and assign extra work to each student as needed. For below-average students, provide exercises and activities to help them meet the minimum competencies. For above-average students, provide work that will stimulate their further advancement and eliminate any possible complacency. For average students, assign work you think appropriate.

c) Additional Activities for Fast Learners

➤ List the major consumptive use of water in Ethiopia.

Answer Key for Additional Question

➤ The major consumptive uses of water are domestic use, agricultural use, industrial use, and generation of electricity.

4.6. Answers for the Activity in the Textbook

Activity 7.1.3

➤ Since it is a local-based activity, the answers are expected to vary from place to place. Therefore, please organize an educational field trip to a nearby water-body and have your students do the questions found in this activity.

7.2. The Ethiopian “Green Legacy” Movement

Periods allotted: 1

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *describe the concept of “The Green Legacy” movement in Ethiopia; and*
- ➔ *recognize the effects of the “The Green Legacy” movement in Ethiopia.*

2. Contents

- ☛ “The Green Legacy” Movement in Ethiopia

3. Overview

The “Green Legacy” movement is a program initiated by the government of Ethiopia that aspires to build a green and climate-resilient economy. With its “Green Legacy” program, the Ethiopian government wants to restore the soil and provide Ethiopia with a forest cover that would enable the country to reduce the effects of the El Niño climate phenomenon. Its plan to do so comprises actions to reduce greenhouse gas emissions while safeguarding economic growth (“green economy”) as well as adaptation initiatives to reduce vulnerability to the effects of climate change (“climate resilience”).

Furthermore, the “Green Legacy” movement will create macroeconomic benefits. By establishing a more secure electric power supply, an essential prerequisite for sustainable economic development, and increasing energy efficiencies in the transport, industry, and buildings sectors, Ethiopia can reduce its current dependency on fossil fuel imports by about one-third.

The “Green Legacy” movement also entails wider socio-economic benefits. Public health will improve with better water and air quality. Green growth will accelerate rural development by reducing soil erosion and increasing soil fertility, hence food security, and rural employment. Households will benefit from higher energy efficiency – especially from more efficient cooking/baking and transport.

This should increase domestic savings and thus the capacity to invest in improving labor and land productivity and to participate more profitably in domestic and export markets. These tangible benefits for local communities should stimulate a virtuous cycle of mutually reinforcing effects in support of green growth.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Physical map of Ethiopia
- ↪ Forest map of Ethiopia
- ↪ Models/diagrams to show environmental degradation in association with population pressure in Ethiopia
- ↪ Pictures, diagrams, films, posters, etc. that show the seedling nursery site
- ↪ Pictures, diagrams, films, posters, etc. that show projects on green shoots of recovery.

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Demonstration
- ↪ Guest speaker
- ↪ Panel discussion
- ↪ Field visit
- ↪ Presentation of case studies
- ↪ Jigsaw group projects
- ↪ Pair and group discussion
- ↪ Case study
- ↪ Debate

4.3. Pre-lesson Preparation

- ↪ Have the required teaching aids at hand ahead of time. Plan your lesson before you get to class. Read up on the lesson's topics by

referring to different documents including brochures, leaflets, magazines, newspapers and other relevant reference materials that could supplement your presentation. In particular, read about land degradation and its conservation strategies in Ethiopia.

- ↪ Facilitate the required preconditions to invite a guest speaker and to organize a trip to nearby areas where students can observe deforestation, reforestation, and afforestation.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Review the previous lessons about climate change, soil erosion, deforestation and water resource depilation in Ethiopia and try to create an association between the spatial distribution of the aforementioned conditions and natural resource degradation in the country. You can ask the students about land degradation and its conservation attempts in Ethiopia based on their local experiences. You can conduct a brainstorming session to find out the students' background knowledge about the natural resource degradation in Ethiopia. You may ask students questions such as: Why do we plant trees? What do you know about the “Green Legacy” incentive? Can you mention some of the problems caused by natural resource degradation? Did you take a part in the “Green Legacy” movement in your school? What is meant by projects on green shoots of recovery?

b) Main Body of the Lesson

- ↪ Explain what “Green Legacy” movement and project on green shoots of recovery is.
- ↪ Have the students discuss the problems of land degradation in Ethiopia. Guide them also to talk over the major causes of natural resource degradation in the country and the conservation strategies that help to mitigate the problem. Provide them with some pictures, diagrams, films, posters, etc. that illustrate the problem of

environmental degradation and some environmental conservation strategies in Ethiopia.

- ⇒ In addition, clarify what has been happening in Ethiopia to tackle natural resource degradation.
- ⇒ You may also organize a visit to local sites where students can observe land degradation and conservation techniques. This helps them to relate the lesson with actual situations in their locality.
- ⇒ Explain more about the “Green Legacy” movement strategy which has a goal of curbing the effects of climate change and deforestation thereby intensifying climate smart agricultural to increase productivity, improving improve food security, preventing environment-related conflicts, ensuring gender equality and building climate resilient green economy
- ⇒ Make sure that all students are involved in the group activities and the entire teaching-learning process. Give them adequate time to ask questions and organize their notes.

c) Stabilization

Complete your lesson presentation with a review of key ideas and concepts such as:

- ⇒ The “Green Legacy “ Movement is part of the Government’s plan launched in 2019 by Ethiopian Prime Minister Abiy Ahmed, aimed at a tree-planting campaign to curb the effects of climate change and deforestation.
- ⇒ The “Green Legacy” movement encompasses agroforestry, forest sector development, greening and renewal of urban areas and integrated water and soil resources management.
- ⇒ The “Green Legacy” movement will create macroeconomic and socio-economic benefits
- ⇒ Ethiopia’s government has formulated and has been implementing a plan to plant 20 billion seedlings across the country over four years (2020-2023).

4.5. Evaluation and Follow Up

a) Evaluation

Before formally concluding your lesson, conduct a brainstorming session with your students to assess the students' level of understanding, to check the effectiveness of the teaching learning experience, and to see if the expected level of competence has been achieved. You can ask them some questions such as:

- ↪ What causes climate change and what are the effects of climate change in Ethiopia?
- ↪ What should be done to protect, rehabilitate and achieve sustainable use of natural resources in Ethiopia?

b) Follow up

To have students grasp the most important essence of the lesson give them activities to be done either individually or in small groups.

- ↪ Write a list of reasons why you think lakes are shrinking and drying up in Ethiopia.
- ↪ The history of drought in Ethiopia
- ↪ The major degraded areas in Ethiopia.

c) Additional Activities for Fast Learners

- ↪ What are the project areas of green shoot of recovery in Ethiopia?

Answer Key for Additional Question

- ↪ The major project areas of green shoots of recovery are: creation of pocket parks, tree planting, use of renewable forms of energy, re-using resources, recycling resources, adaptation and living with the future impacts of climate change, etc.

4.6. Answers for the Activities and Exercises in the Textbook

Activity 7.2

1. Since it is a local-based activity, the answers are expected to vary from place to place. Therefore, please organize an educational field trip to a nearby reforested and afforested area and have your students perform the tasks included in the activity.
2. Climate variability refers to variations in the mean state and other climate statistics (standard deviations, the occurrence of extremes, etc.). Climate change refers to any change in climate over time, whether due to natural variability or anthropogenic forces.

5. Review Exercise for Unit Seven

Part I

1. True 2. False 3. True 4. False 5. False

Part II

6. D 7. A 8. C 9. B 10. D

Part II

6. Topography and heavy summer rainfall
7. Afforestation is planting trees on bare and unproductive lands
8. Lake Haromaya and Lake Cheleklektu
9. The Ethiopian “Green Legacy” is a movement launched in 2019 by Ethiopian Prime Minister Abiy Ahmed, which was aimed at tree planting to mitigate the effects of climate change and soil Erosion.

6. Check List

Check the student’s performance according to the given competencies referring

to the questions under the checklist for every unit. Put a tick (✓) mark against each task whether they can perform in the competencies of each unit. The students are expected to respond saying Yes or No. then, you can make your evaluation whether the competencies are met or not.

Can you:

		Yes	No
1	Describe the meaning of soil erosion		
2	State causes of soil erosion		
3	Recognize the effects of soil erosion		
4	Define the meaning of deforestation		
5	State causes of deforestation		
6	Recognize the effects of deforestation		
7	State causes of water resource depletion		
8	Explain the rationale behind the federal water resource management policy that attempt to conserve water resource		
9	Describe the concept of green legacy movement in Ethiopia		
10	Recognize the effects of the green legacy movement of Ethiopia		

7. Unit Assessment

Students' performance has to be assessed continuously over the whole unit. The assessment will be made by comparing students' performance with the specified level of competencies. Besides, the teacher has to recognize the level of performance of each student and provide assistance accordingly.

Thus:

A student at a minimum requirement level will be able to state the causes of soil erosion; realize soils erosion problems and its conservation attempts in Ethiopia ; define the concept of deforestation; recognize the effects of deforestation and their conservation measures; state causes of water resource depletion in Ethiopia; explain the rationale behind the federal government water resource management

policy and its contribution to conserve water resource; describe the concept of green legacy movement in Ethiopia and recognize the effects of the green legacy movement of Ethiopia.

In addition, a student working above the minimum requirement level and considered as a higher achiever should be able to explain how natural resource degradation affects people's lives; discuss the solution to problems of resources degradation, including the green legacy movement of Ethiopia; and realize the project areas of green shoot of recovery in Ethiopia.

Students working below a minimum requirement level will require extra help if they are to catch up with the rest of the class.

Students reaching the minimum requirement level but achieving a little bit more should be supported so that they attain the higher-achiever competencies. Students who fulfill the higher-achiever competencies also need special support to continue and achieve more.

UNIT EIGHT

8. GEOGRAPHICAL ENQUIRY, SKILLS AND TECHNIQUES

Periods Allotted: 13

1. Unit Introduction

In this unit you are going to deal with geographical enquiry, skills and techniques. The unit specifically addresses topics such as the meaning of map, basic components of the map, scale conversion and measurement on maps, position on maps, map sketching and interpreting maps and graphs.

2. Unit Outcomes

At the end of this unit, the students will be able to

- ➔ *recognize the concept of a map and its basic components;*
- ➔ *categorize scales and interpret maps at different scales;*
- ➔ *make measurements of area and distances using maps;*
- ➔ *demonstrate position on maps and make sketch maps and*
- ➔ *undertake investigate, gather geographic information and analyze the data using appropriate techniques.*

3. Main Contents

- ☛ Map and its basic components
- ☛ Scale, scale conversion and measurements on maps
- ☛ Position on maps

- ☛ Map sketching
- ☛ Interpreting maps and graphs

8.1. Maps and its Basic Components

Periods Allotted: 2

1. Competencies

At the end of this lesson, students will be able to:

- ➔ *explain the meaning of a map;*
- ➔ *express the historical development of maps; and*
- ➔ *describe the basic components of a map.*

2. Contents

- ☛ The Meaning of a Map
- ☛ Basic Components of a Map

3. Overview

In this lesson, the students will learn about the meaning and basic components of a map. A map is a simplified, diminished, plain representation of all or part of the earth's surface as viewed vertically from above. The two main stages of the historical development of map-making are: Traditional map-making and Modern map-making.

Maps are used for identifying locations, distance, area, and direction. Maps may contain a variety of elements or components. However, all maps have some common components. A map should include the following components namely: the title, scale, direction, grid reference, legend, date, place of publication and publisher, the magnetic declination (variation), and compass.

4. Teaching learning process

4.1. Suggested Teaching Aids

- ↩ A Map,
- ↩ A Globe,
- ↩ Compass

4.2. Suggested Teaching Methods

In this lesson, you are expected to apply the appropriate teaching methods such as:

- ↩ Brainstorming
- ↩ Questioning
- ↩ Explanation
- ↩ Pair and Group Discussion
- ↩ Presentation

4.3. Pre-lesson Preparation

- ↩ Make ready essential materials and tools suggested above as teaching aids.
- ↩ Collect sample maps in each case so that they are displayed in class.
- ↩ Select different maps with marginal information.

4.4. Presentation of the Lesson

d) Introduction of the lesson

Ask the following questions to start the lesson:

- ↩ What is a map?
- ↩ What is the difference between traditional and modern maps?
- ↩ What are the basic uses of a map?
- ↩ What are the basic components of a map?

e) Body of the Lesson

- ↪ Present the meaning of the map and discuss its historical development.
- ↪ Explain the difference between traditional and modern map making
- ↪ Explain the importance of marginal information on a map.
- ↪ Ask students to read information from a map with the help of marginal information.

f) Stabilization

You may stabilize the lesson by revising the key ideas and concepts of the lesson such as:

- ↪ A map is a simplified, diminished, plane representation of all or parts of the earth's surface as viewed from vertically above.
- ↪ The two main stages of the historical development of map-making are: traditional and modern map-making
- ↪ Maps are basically used for finding location, distance, area, and direction
- ↪ Basic Components of a map are the title, scale, direction, grid reference, legend, date, place of publication and publisher, the magnetic declination (variation), and compass.

4.5. Evaluation and Follow up

a) Evaluation

- ↪ Check your students' understanding of the lesson by giving them an exercise to be done independently. The exercise may contain such questions as:
 - ➔ *What is a map?*
 - ➔ *What is the difference between traditional map-making and modern map-making?*
 - ➔ *What are the basic components of a map?*

b) Follow up

1. Organize students into small groups to discuss the uses of a map, its classification as well as marginal information.
2. Help them to do practical exercises on map and its interpretation

c) Additional Activities

1. Explain the main features of a map.
2. What are the basic components of a map?

4.3. Answer Key for Activities

Activity 8.1

1. A map might be printed on a piece of paper. In map three dimensional objects or features are represented using only two dimensions on a flat sheet of paper.
- 2.

Globe

- ➔ *It cannot show all geographical phenomena at a time.*
- ➔ *It is three-dimensional.*
- ➔ *It is difficult to measure distance on a globe.*
- ➔ *Globes are always made on small scales.*
- ➔ *It is expensive.*

Map

- ➔ *It can show all geographical phenomena at a time.*
- ➔ *It is two-dimensional.*
- ➔ *It is possible measure distance on a map.*
- ➔ *Maps can be made on small, medium and large scale.*
- ➔ *It is less expensive.*

Activity 8.2

1. Traditional map-making and modern map-making.
2. Modern map-making is characterized by extensive map production and intensive use of more accurate and detailed maps of atlas, globe and charts.
3. Maps are used for identifying locations, distance, area, and direction.

Location: A map shows the exact site of a place as well as the general situation relative to other areas.

Distance: With the help of a map, we can measure the distance between places. This is done by using the scale of the map.

Area: is the size of a certain place, a country, a region, and a continent that can be calculated from a map.

Direction: A map can enable us to identify the direction and bearing of any place on the map.

Answer for Additional Activities

1.

- ↪ A map represents all or part of the earth's surface.
- ↪ A map is a two-dimensional (plane) representation.
- ↪ Maps show the earth's surface as if it were seen from directly above.
- ↪ All maps are smaller than the area they represent.
- ↪ Maps are drawn to scale.
- ↪ Maps are simplified representations.
- ↪ Most maps use generally accepted symbols to represent natural, artificial, or cultural features of the area they represent.

2. Maps may contain a variety of elements or components. However, all maps have some common components. A map should include the following components namely: the title, scale, direction, grid reference, legend, date, place of publication and publisher, the magnetic declination (variation), and compass.

8.2. Scale, Scale Conversion and Measurements on Maps

Periods Allotted: 4

1. Competencies

At the end of this section, students will be able to:

- ➔ *distinguish between a small scale, medium scale and large scale map*
- ➔ *calculate the scale of a map;*
- ➔ *measure distance using the scale of the map; and*
- ➔ *measure area using the scale of a map-*

2. Contents

- ☛ Scale
- ☛ Scale Conversion
- ☛ Measurements on maps

3. Overview

Each map is a diminished representation of the whole world or a part of it. The exact degree to which the map has been reduced in size is known as scale. Thus, scale is the ratio or proportion of the distance and areas shown on the map to the corresponding distance and area on the earth's surface.

Types of maps can be characterized based on variation in scale. Thus, according to variations in scales, maps are named as:

1. Large scale maps drawn at a scale of 1:50,000 or larger. They show detailed information of small areas like villages, towns, cities, etc.
2. Medium scale maps drawn at a scale of between 1:50,000 - 1:250,000.
3. Small scale maps drawn at a scale of less than 1:250,000. They show very general or summarized information about large areas like countries, continents and the world.

A map scale can be expressed on a map in three ways. These are:

- a. **Scale Statement:** It is a technique by which scale can be expressed in words.
- b. **Representative Fraction:** In this method, a map scale is expressed as a ratio or fraction.
- c. **Graphic Scale/Linear scale:** Graphic scale is a line drawn on a map and it is subdivided into units appropriate to the scale of the map.

Measurement on Maps

A variety of information about the earth, and about the features distributed on its surface, is obtained by direct measurements from maps. Two measurements of primary importance are the distance between locations and the area of a region

All distances obtained through measurements on maps and the use of the scale only are called **map distances (MD)** which are expressed in cm. Map distance is the straight-line air distance, which does not take into account the ups and downs of the earth's surface. On the other side distances which consider the ups and downs are called the actual or field distances (FD). It is expressed in km or meter. We can find three different types of distances through measurements and calculation. These are:

- i. Distance along straight-line:** A straight-line distance is the one measured simply along a straight line without considering the real earth's features. It is called air distance.
- ii. Distance along the curved line:** The distance along a curved line is called the bending line curve. It includes distance along roads, railways, rivers and coastal lines
- iii. Field Distance:** All distances obtained through measurements on maps and the use of the scale only are called map distances. Such distances do not take into account the ups and downs of the earth's surface, which is the actual or field distance

Measurement of Area

- i. **Measuring Regular shaped area:** These include squares, rectangles, triangles and circles.
- ii. **Measuring Irregular-Shaped Areas:** The area of the irregular shaped

piece of land such as islands, farmlands, parks, etc. cannot be obtained accurately by simple methods as the regular shapes. Such areas can be obtained by devices like planimeter and other methods such as the grid square method

4. Teaching-Learning Process

4.1. Suggested Teaching aids

- ↪ Large, medium and small scale map.
- ↪ Rulers and pencils
- ↪ Chalkboard sketches
- ↪ Diagram and charts

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Questioning
- ↪ Group discussion
- ↪ Demonstration
- ↪ Explanation
- ↪ Presentation

4.3. Pre-lesson Preparation

- ↪ Get the materials suggested as teaching aids ready.
- ↪ Collect sample maps in each case so that they are displayed in class.
- ↪ Select different maps with marginal information.
- ↪ Draw diagrams that demonstrate different scales.

4.4. Presentation of the Lesson

a) Introduction to the Lesson

- ↪ Introduce your students to the topic they are going to learn (Scale, Scale Conversion, and Measurements on Maps).

- ↪ Make the objectives of the lesson clear to the students.
- ↪ Conduct a brainstorming session with the students to find out what they know about scale conversion and measurement on maps.
- ↪ Present powerful questions to stabilize the various views that the students have offered. Also, present the correct ideas suggested by the students.

b) Main Body of the Lesson

- ↪ After assessing your students' previous knowledge, explain ways of map scale expression.
- ↪ Explain how types of maps are categorized based on purposes, the information conveyed and variation in scales.
- ↪ Discuss types of maps based on variation in scales.
- ↪ Explain conversion of a map scale
- ↪ Explain measurement of distance along a straight line and curved line
- ↪ Explain measurement of regular and irregular shaped areas
- ↪ Give time to the students to practice measuring distance on a map.

c) Stabilization

You may stabilize the lesson by revising the key ideas and concepts of the lesson such as:

- ↪ The scale of a map is the ratio between the measurement of distance on the map and the corresponding measurement on the earth's surface.
- ↪ Based on scale differences, maps can be classified into three: Large-scale maps, Medium-scale maps, and Small-scale maps.
- ↪ A map scale can be expressed on a map in three ways. These are: Scale Statement, Representative Fraction, and Graphic Scale.
- ↪ There are three different types of distances through measurements and calculation. These are: distance along straight-line, distance along the curved line, and field distance.
- ↪ Measurements of the area on map are areas with a regular shape and areas with an irregular shape.

4.5. Evaluation and Follow Up

a) Evaluation

Ask questions like the following:

- ↪ What is a map scale?
- ↪ What is linear scale?

b) Follow up

It is important to include activities and emphasize them in each lesson. You may produce your own exercises and activities, based on your students' capacity, in addition to the exercises and activities provided in the text.

c) Additional Activities

1. What does a map scale indicate?
2. Explain the way to measure irregular shaped areas.

4.3. Answer key for Activities

Activity 8.3

1.

a) *Given RF = 1:50,000*

This implies that 1cm to 50,000cms

To change 50,000 cm into kilometres, divided it by 100,000

(Because 1km= 100,000cm)

Therefore the answer is: $\frac{50,000}{100,000} = 0.5\text{km} = 1\text{cm to }0.5\text{Km}$

b) *Given RF = 1:250,000*

This implies that 1cm to 250,000cms

To change 250,000 cm into kilometres, divided it by 100,000

(Because 1km= 100,000cm)

Therefore the answer is: $\frac{250,000}{100,000} = 2.5\text{km} = 1\text{cm to } 2.5\text{Km}$

c) Given $RF = 1:400,000$

This implies that 1cm to 400,000cms

↪ To change 400,000 cm into kilometres, divided it by 100,000

↪ (Because 1km= 100,000cm)

↪ Therefore the answer is: $\frac{400,000}{100,000} = 4\text{km} = 1\text{cm to } 4\text{Km}$

2.

a) Given 1cm to 100kms

First change 100kms into centimetres

1cm to 100 x 100,000 cms

RF is 1:10,000,000

b) Given 4cm to 1kms

First, change 1km into centimetres

4cm to 1km x 100,000 cms (divide both sides by 4)

4cm to 100,000cm

RF is 1:25,000

c) Given 2.5cm to 2.5kms

First, change 2.5kms into centimetres

2.5cm to 2.5km x 100,000 cms

2.5 cm to 250,000cm (divide both sides by 2.5)

RF is 1:100,000

Answer for Additional Activities

1. The scale of a map indicates the ratio between the measurement of distance on the map and the corresponding measurement on the earth's surface.
2. The area of the irregular-shaped piece of land such as islands, farmlands, parks, etc. cannot be obtained accurately by simple methods as the regular shapes. Such areas can be obtained by devices like planimeter and other methods such as the grid square method.

Planimeter: is an instrument used to get accurate areas of both regular and irregular shaped features from maps.

Grid Square method: it deals with the area of purely irregular shape. It is manual and involves tremendous labor.

8.3. Position on Maps

Periods Allotted: 3

1. Competencies

After completing this lesson, students will be able to:

- ➔ *define what the geographic grid system means;*
- ➔ *demonstrate the position of a given place by means of a geographic grid system;*
- ➔ *acquire the skill of finding direction on a map; and*
- ➔ *show the direction of a given place on a map using compass direction and bearings.*

2. Contents

- ☛ Grid References
- ☛ Points Compass Direction
- ☛ North Points

3. Overview

The position is given accurately with the help of a grid composed of a network of lines known as *parallels and meridians*. One set of lines run from the North Pole to the South Pole and these imaginary lines are called *Meridians* and join all the points with the same longitude. The other set of lines run around the globe parallel to the equator and are called *Parallels* and these lines join all the points with the same Latitudes.

Compass is an instrument that indicates or identifies direction, used by mariners, aviators, campers, hunters, and other travelers to enable them to get from one

place to another. There are *thirty-two* points of the compass. Many of us are familiar with the four *cardinal* points of the compass—North, East, South and, West.

In map reading, reference may be made to the three North Points. *These are: True north, Magnetic north and Grid north.*

True North/Geographic North: The most commonly used north for finding direction is True North (sometimes called Geographic North). True North is the northerly direction along a line on Longitude (Meridian Direction).

Magnetic North: The position of the north magnetic pole varies slightly from year to year. The direction a compass needle points is known as *Magnetic North*.

Grid North: The grid lines on a map do not lie true north and south except along one standard Easting called the central meridian.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ A chart that shows compass points
- ↪ An ordinary compass/magnetic compass
- ↪ A globe
- ↪ Protractor, ruler and charts for measuring bearings

4.2. Suggested Methods of Teaching

- ↪ Questions and answers:
- ↪ Explanation
- ↪ Discussion
- ↪ Demonstration

4.3. Pre-lesson Preparation

- ↪ Get ready a wall chart that shows compass points.
- ↪ An ordinary compass.

- ↪ Make ready essential materials and tools suggested above as teaching aids.
- ↪ Find large-scale maps (like the topographic map) suitable for measuring direction in all parts of Ethiopia.

4.4. Presentation of the Lesson

a) Introduction to the lesson

A teacher is expected to use his own method of presentation on the basis of the unique nature of the topic and the factors that govern the situation in class. However, it seems appropriate to introduce the lesson by raising questions related to the topic. Questions will motivate students and stimulate competition and assist them to share ideas among themselves.

- ↪ Let the students observe the chart that shows compass points.
- ↪ Invite them to focus on cardinal points.

To facilitate the discussion and sharing experience, ask students the following questions.

- ↪ What are some of the methods and expressions used to identify directions in your locality?
- ↪ How often do you use compass points to describe the direction in your daily activities?
- ↪ Have you ever used a compass when you travelled out of your hometown?

b) Main Body of the Lesson

How do we identify direction?

- ↪ Explain Geographic and National grid references
- ↪ Let the students draw Fig 8.8 and identify the four cardinal points and the points that are midway between cardinal points.
- ↪ Define True North, Magnetic North, and Magnetic North

c) Stabilization

- ↪ We use North as a cardinal direction and measure all other bearings from it.
- ↪ Directions or bearing from one point to another are measured using compass points or directions in degrees and fractions of degrees clockwise from North.
- ↪ Geographic grid system is a method by which a place can be located accurately using a grid composed of a network of parallels and the meridians.
- ↪ There are two major map grid systems. These are the international (Geographic) grid system and national grid system.

4.5. Evaluation and Follow up

a) Evaluation

- ↪ Check your students' understanding of the lesson by giving them an exercise to be done independently. The exercise may contain such questions as:
 - *What are the two grid references?*
 - *What are the three North Points?*

b) Follow up

It is important to include activities and emphasize them in each lesson. You may produce your own exercises and activities, based on your students-capacity, the exercises and activities provided in the text.

- *Let the students work on questions given in activities 8.4 and 8.5*
- *Help them read bearings using the compass in their school compound.*

c) Additional Activities

1. *In what direction do lines of longitude run?*
2. *From where do we start measuring directions?*

3. *What compass points do these bearings indicate?*

- a) 135° b) 315° c) 112.5° d) 67.5° e) 292.5°

4.6. Answer key for Activities

Activity 8.4

1.

- a) 20°N and 30°E
- b) 20°S and 45°W
- c) 20°S and 60°E
- d) $30^\circ\text{-}38^\circ\text{N}$ and $15^\circ\text{-}30^\circ\text{W}$

Activity 8.5

- 1. a) 6520 b) 7822
- 2. a) 638590 b) 632580 C) 626585

Activity 8.6

- 1. Let students try and practice
- 2. North, East, South, West
- 3. 32
- 4. $90^\circ = \text{E}$, $135^\circ = \text{SE}$, $225^\circ = \text{SW}$, $270^\circ = \text{W}$, $315^\circ = \text{NW}$

Answers for Additional Activities

- 1. From prime meridian towards East and West.
- 2. North
- 3. a) $\text{SE} = 135$ b) $\text{NW} = 315$ c) $\text{ESE} = 112.5$ d) $\text{ENE} = 67.5$ e) $\text{WNW} = 292.5$

8.4. Map Sketching

Periods Allotted: 1

1. Competencies

After completing this lesson, your students will be able to:

- ➔ *draw sketch map of existing situation of local areas, and*
- ➔ *indicate the positions of selected features.*

2. Contents

- ☞ Sketch Map

3. Overview

In this lesson, the students will learn about map sketching. A sketch map is an outline map drawn from observation rather than from exact survey measurements and showing only the main features of the area. Sketch maps are freehand maps drawn on a blackboard or drawing pad to present geographic ideas and facts. Sketch mapping minimizes irrelevant detail and maximizes major geographic points.

One of the most important geographical skills is the ability to create maps. Maps are an ideal way to organize and present a large amount of information. As technology advances, students can create increasingly sophisticated maps using GIS, Google Earth, and other platforms. The sketch map can lay a foundation for understanding geographic relationships, organizing information, and answering questions.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ☞ Sketch maps that show regular and irregular shaped areas
- ☞ Rulers and pencils
- ☞ Chalkboard sketches

4.2. Suggested Methods of Teaching

- ↪ Explanation
- ↪ Discussion
- ↪ Exercise
- ↪ Question and answer
- ↪ Demonstration
- ↪ Field study

4.3. Pre Lesson Preparation

- ↪ Get ready in advance with the suggested teaching aids and other reference materials
- ↪ Collect sample maps in each case so that they are displayed in class.
- ↪ Select different maps with marginal information.
- ↪ Prepare a sketch map and show important marginal information on it.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce students to what they are going to learn (Map Sketching).
- ↪ Make the objectives of the lesson clear to students.
- ↪ Conduct a brainstorming session with the students to ascertain their background knowledge of map sketching.
- ↪ Ask them questions such as:
 - *What is a sketch map?*
 - *How to draw a sketch map?*

b) Main Body of the Lesson

- ↪ After considering your students' previous knowledge, start your presentation with an explanation of the sketch map.
- ↪ On a sketch map, demonstrate how to represent different information with the help of signs and symbols.

- ↪ Help students practice representing information using signs and symbols on a sketch map.

c) Stabilization

Review the main ideas and concepts of the lesson. Stress the following points:

- ↪ A sketch map is an outline map drawn from observation rather than from exact survey measurements and showing only the main features of the area.
- ↪ Sketch maps are freehand maps drawn on a blackboard or drawing pad to present geographic ideas and facts.
- ↪ Sketch mapping minimizes irrelevant detail and maximizes major geographic points..
- ↪ The sketch map can lay a foundation for understanding geographic relationships, organizing information, and answering questions.

4.5. Evaluation and Follow Up

a) Evaluation

. As part of that process, perform these evaluation tasks:

- ↪ Check your students' understanding of the lesson by giving them different exercises

b) Follow up

- ↪ Let students draw a sketch map and use different signs and symbols to show various features of their school compound.
- ↪ Rate and grade the various activities and exercises performed by the students.

c) Additional Activities

1. Explain how to draw a sketch map?

4.2. Answer key for Activities

Activity 8.7

1. Please encourage students to prepare their own sketch map and show on the sketch map of their school compound.
2. Please encourage students to prepare their own sketch map and show on the sketch map of Ethiopia in major economic activities and population density.

Answers for Additional Activities

1.
 - a. Decide what region your map will show.
 - b. Determine how much space you need for your map.
 - c. Decide on and note the orientation of your map. Most maps use a directional indicator. On most maps, north is “up”.
 - d. Select reference points so that viewers of your map can quickly and easily figure out what they are looking for.
 - e. Decide how much detail your map will show.
 - f. You are ready to begin sketching. First, sketch general shapes.
 - g. Now, fill in more details, as they occur to you – names of places, major land features, and so on.
 - h. Do not spend more than an hour working on your map, and do not try to make it perfect or overly detailed.

8.5. Interpreting Maps and Graphs

Periods Allotted: 3

1. Competencies

After completing this lesson, students will be able to:

- ➔ *interpret different physical and human landscapes on maps; and*
- ➔ *construct statistical diagrams based on the provided data.*

2. Contents

- ☛ Interpreting Features of the Physical and Human Landscapes
- ☛ Interpreting Graphs, Tables and Diagrams

3. Overview

In this lesson, the students will learn interpreting maps and graphs: Interpreting Features of the physical and human landscapes and Interpreting graphs, tables and diagrams

Geographers have developed a standard set of symbols and other graphic conventional signs to represent features shown on maps. Conventional signs and symbols are those signs and symbols that are used on maps through the agreement of all map-makers of the world.

They are used to represent the same detail on a map in all the countries of the world. Signs and symbols help the map reader to understand maps. Therefore, the map reader has to look first at the key or legend of the map.

Statistical diagrams are pictorial representations of numerical information. Charts, graphs and diagrams are examples of statistical diagrams. By using statistical diagrams, geographers make information easier to present and understand. It is easier to make comparisons, see trends (changes over time) and draw conclusions. Statistical diagrams are particularly important tools for presenting large amounts of statistical data. In this section, you will learn about some of these statistical diagrams: Simple line graphs, simple bar graphs, and pie charts.

4. Teaching-learning Process

4.1. Suggested Teaching Aids

- ↪ Diagrams/charts
- ↪ Rainfall Data
- ↪ Temperature data

4.2. Suggested Methods of Teaching

- ↪ Brainstorming
- ↪ Questioning
- ↪ Explanation
- ↪ Discussion
- ↪ Exercise
- ↪ Demonstration

4.3. Pre Lesson Preparation

- ↪ Get the materials suggested as teaching aids ready.
- ↪ Collect different graphs and display them in the classroom.
- ↪ Collect data on climate, population, crop production, trade, commodities, etc.
- ↪ Design the most appropriate teaching methods for the lesson.
- ↪ Prepare notes, activities and exercises.

4.4. Lesson Presentation

a) Introduction to the Lesson

- ↪ Introduce the students to what they are going to learn (Interpreting Maps and Graphs)
- ↪ Make the objectives of the lesson clear to the students.
- ↪ Conduct a brainstorming session with the students to ascertain their background knowledge of interpreting maps and graphs. Ask them questions such as:

- ↪ Distinguish the difference among line graphs, bar graphs and pie charts that you have displayed in the classroom.

b) Main Body of the Lesson

- ↪ After considering your students' previous knowledge, start your presentation with an explanation interpreting features of the physical and human landscapes and graphs, tables and diagrams.
- ↪ Demonstrate of conventional signs and symbols that are widely used, and understood worldwide.
- ↪ Help students practice representing information using signs and symbols on a sketch map.
- ↪ Discuss points that should be considered for constructing simple line graphs, simple bar graphs and pie charts.
- ↪ By using data, demonstrate how to construct the various graphs and diagrams.
- ↪ Make sure that all students are involved in the group activities and the entire teaching-learning process.
- ↪ Give the students enough time to ask questions and organize their notes.

c) Stabilization

You may stabilize the lesson by revising the key ideas and concepts of the lesson such as:

- ↪ Conventional signs and symbols are those signs and symbols that are used on maps through the agreement of all map-makers of the world.
- ↪ The space occupation, orientation and size of the symbols should be constant.
- ↪ When you create a map, the symbols you select should satisfy the following requirements:
 - ➔ *They should be uniform throughout the map.*
 - ➔ *They should be easy to read and understand.*
 - ➔ *The space occupation, orientation and size of the symbols should*

be constant.

- ↪ Statistical diagrams are pictorial representations of numerical information. Charts, graphs and diagrams are examples of statistical diagrams.
- ↪ Statistical diagrams are particularly important tools for presenting large amounts of statistical data.

4.5. Evaluation and Follow Up

a) Evaluation

- ↪ Check the students' understanding of the lesson ask questions like the following:
 - ➔ *Explain the main uses of line graphs.*
 - ➔ *List the different types of graphs and explain what purpose each serves.*
 - ➔ *Describe the procedures used to draw a pie-chart.*

b) Follow up

- ↪ Motivate the students to participate actively in group discussions, independent tasks and the likes.
- ↪ Organize students into small groups to discuss the uses of symbols, statistical diagrams.
- ↪ Grade and record every performance of the students.

c) Additional Activities

1. What is an advantage of using graphs, charts, or tables to display information?
2. Change the following data to a line graph.

Months	J	F	M	A	M	J	J	A	S	O	N	D
Max Temp °C	23.3	24.1	26.6	25.2	25.8	25.5	21.3	21.3	22.9	23.0	23.9	22.2
Min Temp °C	9	10	11.9	12.0	12.1	12.3	11.5	11.6	11.9	10.5	8.7	10.7

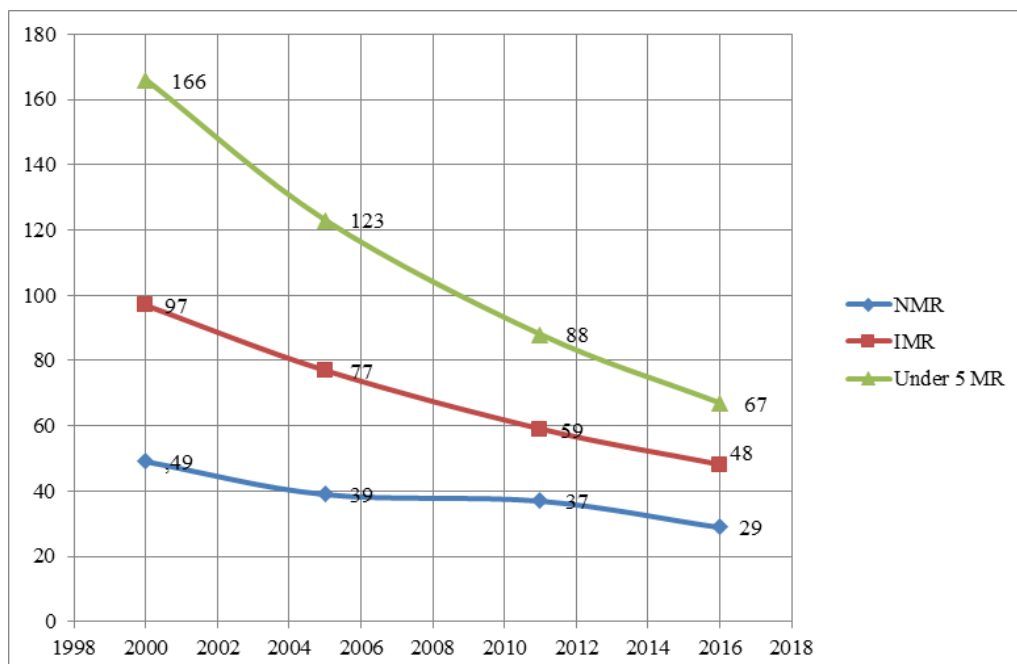
3. Draw a pie chart by using the following data.

Imports Items of Country Z (%)

Items	Percentage (%)
Machinery and transport equipment	38
Manufactured goods	21
Fuel and Chemicals	19
Food Stuffs	15
Raw materials	7

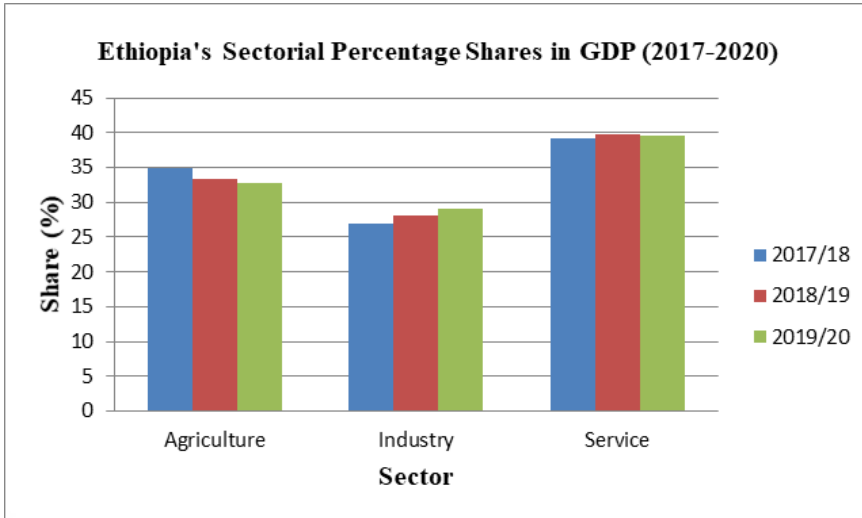
4.4. Answer key for Activities 1.

Activity 8.8

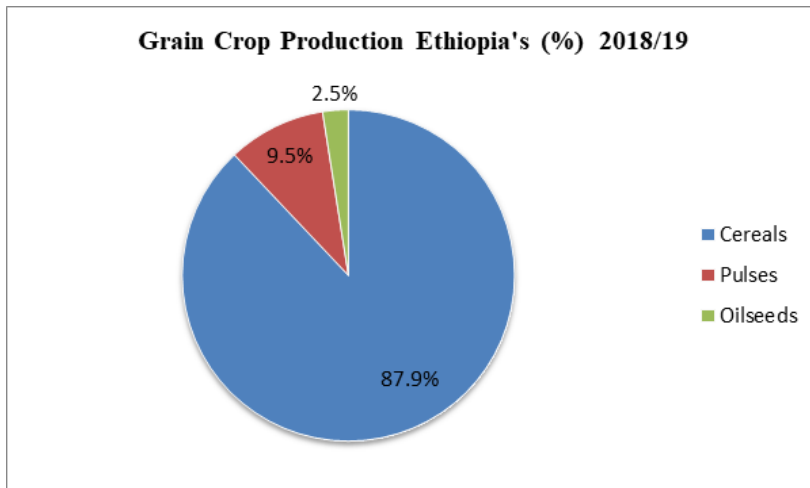


Trends in early child mortality rate in Ethiopia (2000-2016)

2.



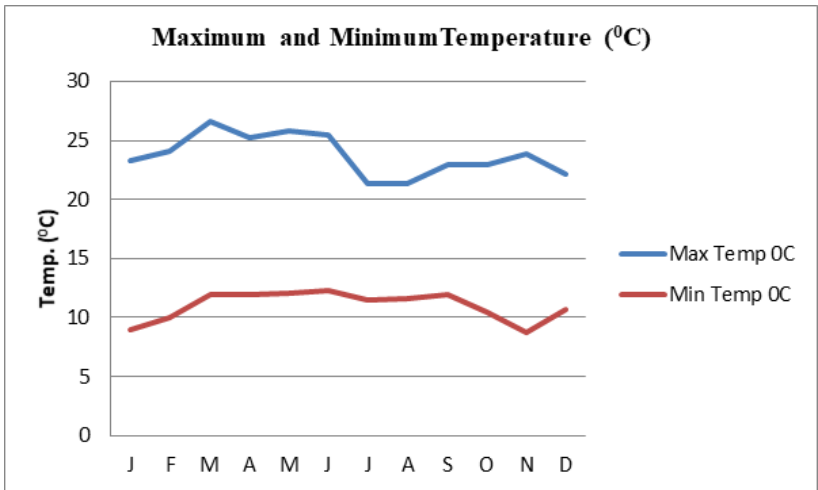
3.



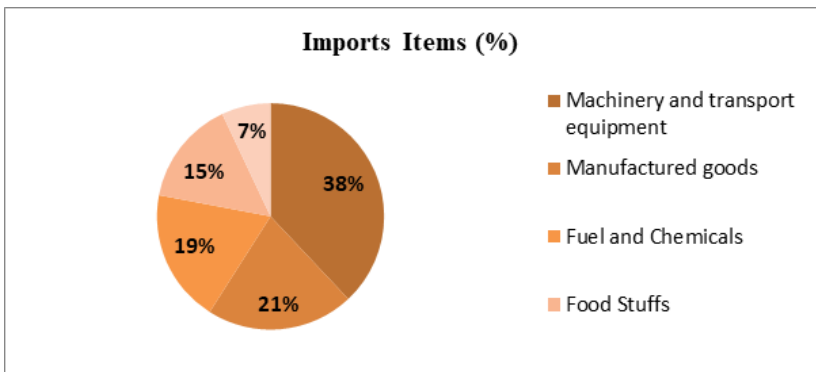
Answers for Additional Activities

1. Statistical diagrams are particularly important tools for presenting large amounts of statistical data.

2.



3.



5. Checklist

Check the students’ performance according to the given competencies referring to the questions under the checklist for every unit. Put a tick (✓) mark against each task whether they are able to perform in the competencies of each unit. The students are expected to respond by saying YES or NO. Then, you can make your own evaluation whether the competencies are met or not.

Can you:

1. Explain the meaning of a map?
2. Appreciate the historical development of maps?
3. Distinguish the conventional signs and symbols used to represent different features on map?
4. Categorize maps based on scales and purposes?
5. Identify some of the marginal information given on maps?
6. Calculate the scale of a map?
7. Calculate the areas of regular and irregular-shaped figures by referring to the scale of a map?
8. Acquire the skill of finding direction on a map?
9. Show the direction of a given place on a map by means of compass direction and bearings?
10. Practice how to find direction and bearings of points on maps?
11. Define what geographical grid system mean?
12. Construct statistical diagrams using simple line graphs, bar graphs, and pie charts based on the provided data.

Yes	No

6. Assessment

Students' performance has to be assessed continuously over the whole unit. The assessment will be made by comparing students' performance with the specified level of competencies. Besides, the teacher has to recognize the level of performance of each student and provide assistance accordingly, Thus:

A student at a minimum requirement level will be able to explain the meaning, appreciate the historical development, state the basic uses of maps, identify some of the marginal information, distinguish conventional signs and symbols on maps and categorize maps based on scale and purpose; calculate scales of maps and areas of regular/irregular shaped areas from a map; explain the use of magnetic compass, define a geographical grid and national grid systems; demonstrate the position of a given place using a geographical grid system and construct simple

statistical diagrams.

In addition, a student working above the minimum requirement level and considered as a higher achiever should be able to evaluate varied definitions of geography, state the fundamental differences of maps that are classified based on scale, design her/his own signs and symbols to convey information on maps, calculate the scales of maps based on given degree distance information, and evaluate the relationships and differences of two kinds of information presented on maps, using simple statistical diagrams.

Students working below a minimum requirement level will require extra help if they are to catch up with the rest of the class.

Students reaching the minimum requirement level but achieving a little bit more should be supported so that they attain the higher-achiever competencies. Students who fulfil the higher-achiever competencies also need special support to continue and achieve more.

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GRADE 9 GEOGRAPHY STUDENTS FIELD TRIP SAFETY GUIDE

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1. Definition of Field Trip

Field trips are essential outside-of-the-classroom learning experiences which get students away from traditional classroom settings and into new environments. Field trips should be correlated with the goals of the educational program requesting the trip.

Field trips can take many forms. The simplest form is an on-campus trip during

class time. For example, walking one's students to hear an on-campus speaker talk about a classroom topic in the school auditorium requires minimal planning and little or no paperwork. Off campus and/or longer duration experiences require progressively more planning, paperwork, and permissions as their complexity increases.

2. Supervision

In many situations fieldwork and other outdoor activities cannot be supervised in the same manner as laboratory or classroom activities. The Head of Discipline is ultimately responsible for ensuring adequate supervision is in place at all times and the Fieldwork Leader should adhere to the supervision requirements and organize this accordingly when in the field. The supervision of people undertaking activities must be adequate. A staff to student ratio of around 1:20, dependent on environment and experience is recommended. Complete head counts throughout the trip and ensure all participants stay together.

If, during the course of the fieldwork, sub-groups are formed, there should be a nominated leader for each sub-group. This applies for groups of two or more. When there are both male and female students on a trip, there should always be male and female leaders. Sub-group leaders will remain under the general supervision of the Fieldwork Leader. It should be clearly understood by all fieldworkers that they are in a work situation under supervision.

3. Responsibility of the Individual Student

Fieldwork is an activity involving inherent risks and hazards - e.g. coastal exposure, quarries, river sections, power stations, farms, and some urban areas. Severe and potentially dangerous weather conditions may be encountered, and it is the responsibility of each student to be equipped with suitable clothing and to take appropriate action to reduce the risk of accidents. Students are asked to observe sensible standards of behavior and to conduct themselves with good manners and consideration for others. For certain work, students may be required to identify themselves and their place of study. They should bring no disrepute

to the College. Any student not conforming to the standards required may be dismissed from the field course.

4. Participation of Students with Disabilities

No student should be automatically excluded from participating due to his or her disability. If a student with a disability needs an accommodation or related aids and services to participate in a field trip, those services must be provided.

5. Consideration for the Environment

All students should make themselves familiar with the Country Code. They should protect the natural and human environment - e.g. by avoiding littering fields or roads and not smoking in areas of high fire risk such as forested areas. Students must avoid unjustifiable disturbance to wildlife. Plants and animals may inadvertently be displaced or destroyed by careless actions.

6. Permissions for Access to Study Areas

Permission should be sought to carry out fieldwork on private land, including National Parks, and Commons, etc. Students must agree to abide by the regulations imposed by the landowner.

7. Expectations for Excursions

Students should stay with the party, except by clear arrangement with the leaders. Students must report any personal injury or illness.

8. Avoid Danger

Students should avoid, where possible, confrontations with dogs, snakes, livestock and wild animals. Students must be especially careful when working near machinery, farm implements and in the vicinity of firing ranges. They should avoid touching metal objects discovered in the field. They should not consume

water from dubious sources, and they should not walk barefoot where glass or other objects could inflict damage (e.g. in streams and on beaches). Do not go into the water more than knee deep.

9. Mountainous Areas

Certain parts will more properly be defined as dangerous, notably areas where there is steep or loose rock, or a layer of ice and/or snow. Furthermore, mountainous areas can be subject to dramatic changes in weather conditions. Students should be equipped with safety rucksacks containing first aid kit, compass, whistle, torch, survival bags and extra food. Participants should move carefully over rough, rocky or vegetation-covered ground, avoiding loose boulders: they should never run down steep hills or screes. They should never attempt to cross a bog of any type unless it is unavoidable. Students should note that carrying a map and compass is not in itself sufficient. They must also be able to use them. Consider carrying a GPS unit, especially if poor visibility is a possibility; the combination of mobile phone and GPS will greatly aid recovery of lost and injured fieldworkers.

10. In and Near Water

Safety lines must be used by students engaged in fieldwork activity in fast flowing water or in the surf zone when conditions demand. Fast flowing water is hazardous and students should minimize risks. Also sometimes, in exceptional weather conditions normally dry rivers may become dangerous because of flash floods. Do not attempt to cross such streams in haste.

11. Woods and Forests

The main safety hazards in woods and forests are associated with the difficulty of movement and limited visibility. It is easy to become lost so if you do have an accident; it may be difficult for you to be found or for you to find the way out. Consider carrying a GPS unit; the combination of mobile phone and GPS will greatly aid recovery of lost and injured fieldworkers.

12. Bogs and Swamps

Of the several types of wet unstable ground likely to be encountered, those in which a raft of vegetation overlies water are perhaps the most dangerous. These can usually be distinguished by their swaying movement when walked on. Any continuous carpets of sphagnum or peat mud should also be avoided. Reed-swamps are difficult to traverse on foot and extra care should be taken. Probe ahead with a pole.

13. Excavations

With excavations think about what type of soil you are working in, a sand section is a lot less stable than clay sided one, a rubble section has the added danger of falling debris. Always assess the safety of the trench before going in and decide if any shoring is required. Some trenches may need shoring at shallower depths dependent on the local conditions. The situation of a trench may change depending on weather, size of spoil heap, heavy machinery passing by. Spoil heaps should not be allowed to creep ever closer to the edge of your trench, the weight pressing down on can cause a collapse. Debris and stones will also roll off the spoil heap and into the trench - a hard hat only protects your head so wear protective footwear as well. Make sure the spoil heap is secure. Great care should be taken to avoid injury to passers-by, especially when the site is unattended overnight. When visiting sites all local rules must be complied with.

14. Lakes, Rivers and Other Inland Waterways

Except for very shallow ponds and ditches, all work in water should be regarded as hazardous, because of currents, submerged objects and slippery or muddy bottoms. Lone working in water should be avoided, and lone working using boats is not permitted.

15. Biological Hazards – General

There are many species of plant and animal that presents a health hazard to

humans. An ability to recognize the dangerous/poisonous species indigenous to the particular fieldwork environment is therefore desirable.

16. Plan Questionnaires

When planning an interview, survey, or similar fieldwork, students should be guided by their tutor in the preparation of questionnaires and interview schedules to minimize potential disturbance to interviewees. All questionnaires employed by students, either during led fieldwork or in self-guided work, **MUST** be reviewed by their Tutor before surveying begins.

17. Interview Procedure

In all types of social survey, students must carry a letter of introduction from the School which will confirm that they are members of the School engaged on work for their geography course. In making contact with potential respondents, it is important that they are informed of the student's name and their status as a student at given school. Purposes of the study must be explained, avoiding extravagant claims of its value. It may be necessary to offer reassurance about the confidentiality of a respondent's answers - a pledge which must be honored. If appointments for return visits are made, it is imperative that they are kept. Dress inconspicuously taking account of cultural norms and avoid clothing that could be considered provocative. Equipment and valuable items should be kept out of sight.

18. First Aid Kits

A comprehensive first-aid kit must be taken on every field trip. If the group breaks into smaller groups, a basic kit should be carried by every sub-group working away from the main fieldwork control point. A basic first-aid kit should be carried by individuals undertaking fieldwork. The nature of the location and the type of work being undertaken should be considered when determining the contents of first-aid kits.

MINIMUM LEARNING COMPETENCY OF GEOGRAPHY FOR GRADE 9

<i>Theme</i>	<i>Competencies</i>
I. Geological History and Topography of Ethiopia	<ul style="list-style-type: none">▪ Define geography as a subject▪ Describe the scope and branches of geography▪ State features that characterise the physical environment▪ Locate Ethiopia on map of Africa▪ Compare the size and shape of Ethiopia with that of other countries of Africa▪ Explain the geological history of Ethiopia▪ Distinguish the geological processes that gave Ethiopia current form▪ Distinguish the geological processes that result in the current landform of Ethiopia
II. Climate of Ethiopia	<ul style="list-style-type: none">▪ Identify the elements of climate▪ Explain factors controlling the distribution of climate in Ethiopia▪ Assess how the seasonal variations in climate affect people's lives in two contrasting regions of Ethiopia

<p>III. Natural Resource Base of Ethiopia</p>	<ul style="list-style-type: none"> ▪ Explain the major drainage systems in Ethiopia ▪ Describe the distribution of major water resources in Ethiopia ▪ Explain the characteristics of major soils types in Ethiopia ▪ Locate the major soil types in Ethiopia ▪ Describe the spatial distribution of minerals in Ethiopia ▪ Describe the major types of natural vegetation in Ethiopia ▪ Explain variations in the distribution of wildlife in Ethiopia
<p>IV. Population and Demographic Characteristics of Ethiopia</p>	<ul style="list-style-type: none"> ▪ Describe the trends of population change in Ethiopia ▪ Explain, referring to population pyramids, how population structure of Ethiopia has changed overtime ▪ Describe the composition of the Ethiopian population ▪ Identify factors affecting population distribution in Ethiopia ▪ Identify areas of high and low population density and their impacts on natural resources ▪ Demonstrate the population distribution and settlement patterns of Ethiopia ▪ Explain factors influencing the distribution of health and disease in Ethiopia ▪ Explain the impact of population structure on Ethiopia vision for sustainable development
<p>V. Major Economic and cultural activities in Ethiopia</p>	<ul style="list-style-type: none"> ▪ Identify the major economic activities of Ethiopia ▪ Articulate the contribution of subsistence farming and cash crop production to the economy via transport and manufacturing ▪ Explain the importance of trade and transport to the economy of Ethiopia ▪ Describe the cause and consequences of road traffic crashes in Ethiopia ▪ Explain the performance of road safety in Ethiopia ▪ Describe and explain the language and religious diversities in Ethiopia ▪ ‘Ethiopia has a rich cultural heritage. Why is it important that we know about it and treasure it?’

<p>VI. Human – Natural Environment Interactions in Ethiopia</p>	<ul style="list-style-type: none"> ▪ Define the concepts of optimum population, over population, and under population ▪ Demonstrate scenarios where there is ‘overpopulation’ and ‘under population’ using actual or invented cases ▪ Describe and explain how the growth and decline of population affects the availability of natural resources, and how the availability of natural resources in turn affects the pattern of population growth ▪ Demonstrate the balance between the population size and the amounts of resources available using concrete examples ▪ Assess the impacts of rapid population growth on the environment and socio-economic development
<p>VII. Geographic Issues and Public Concerns in Ethiopia</p>	<ul style="list-style-type: none"> ▪ Explain how natural resource degradation affects people’s lives ▪ Discuss the solution to problems of resources degradation, including the green legacy movement of Ethiopia
<p>VIII. Geographic Enquiry, Skills and Techniques</p>	<ul style="list-style-type: none"> ▪ Define map and its basic components ▪ Convert map scales ▪ Compute area and distances on maps ▪ Show positions of using grid references, and point compass direction ▪ Sketching the distribution of major natural resources in a given area ▪ Interpreting different physical and human landscapes on maps

GEOGRAPHY GRADE 9 SYLLABUS

Unit One: Geological History and Topography of Ethiopia(14 hrs.)

Learning Outcomes: By the time students complete this unit, they would be able to:

- Recognize the concept, scope and branches of geography.
- Express the basic land features of the physical environment.
- Describe the absolute and relative location of Ethiopia.
- Compute the size and shape of Ethiopia.
- Explain geologic processes that shaped the land surface of Ethiopia
- Describe different landforms in Ethiopia.

Competencies	Contents	Learning Strategies	Assessment
<ul style="list-style-type: none"> ▪ Define geography as a subject ▪ Describe the scope and branches of geography ▪ State the basic land features that characterise the physical environment ▪ Locate Ethiopia on map of Africa ▪ Compare the size and shape of Ethiopia with that of other countries of Africa ▪ Explain the geological history of Ethiopia ▪ Distinguish the geological processes that result in the current landform of Ethiopia 	<p>1. Geological History and Topography of Ethiopia (14 hrs.)</p> <p>1.1. Geography: Meaning and scope</p> <p>1.2. Basic land features</p> <p>1.3. Location, size, and shape of Ethiopia</p> <p>1.4. Geological history of Ethiopia</p> <p>1.4.1. Geological processes</p> <p>1.4.2. Landforms</p>	<ul style="list-style-type: none"> ▪ Form groups each consisting of five students to discuss on meaning of geography and the physical environment ▪ Show students either in photography or video a variety of landform for them to identify and describe. ▪ Discuss any local landforms ▪ The teams investigate processes and prepare material to feedback to the class through ordinary talk, poster, power point presentation etc. 	<ul style="list-style-type: none"> • Systematic observation while learners engage in group work, fieldwork and collaborative learning • Provide feedback following class discussions and collaborative learning processes.

Unit Two: Climate of Ethiopia(13 hrs.)

Learning Outcomes: By the time students complete this unit, they would be able to:

- Recognize the meaning and concepts of weather and climate.
- Identify elements of climate.
- Distinguish elements of climate from its controls.
- Compare and contrast the spatial and temporal variations of climate.
- Identify factors affecting climate of Ethiopia.

Competencies	Contents	Learning Strategies	Assessment
<ul style="list-style-type: none"> ▪ Identify the elements of climate ▪ Explain factors controlling the distribution of climate in Ethiopia ▪ Assess how the seasonal variations in climate affect people's lives in two contrasting regions of Ethiopia ▪ Identify the major measurements of weather and climate 	<p>2. Climate of Ethiopia (13 hrs.)</p> <p>2.1 Meaning of weather and climate</p> <p>2.2 Elements of Climate</p> <ul style="list-style-type: none"> ✓ Temperature, ✓ Rainfall, ✓ Winds, ✓ Air pressure, ✓ Clouds <p>2.3 Controls of climate in Ethiopia</p> <ul style="list-style-type: none"> ✓ Latitude, ✓ Altitude, ✓ Distance from sea, ✓ Ocean current <ul style="list-style-type: none"> • 2.4. Climatic regions and seasonal variations in Ethiopia • 2.5. Measurements of weather and climate 	<ul style="list-style-type: none"> ▪ Form teams each consisting of 5 students to discuss on the following issues: <ul style="list-style-type: none"> ✓ Elements and controls of climate ✓ How does climate affect the lives of people in Ethiopia? ▪ Divide learners into groups and let them analyze the climatic regions of Ethiopia on a map, and ask students to present their work to the class for comments and discussions ▪ Case studies: <ul style="list-style-type: none"> ✓ Choose one region and work up a case study to show the effects of climate on peoples' lives there ✓ Students could consider their own region but some could move on to a case study of contrasting regions ✓ Field work Assign students to observe the measurements site of weather and climate, and write a report on how climate data are generated using different instruments 	<ul style="list-style-type: none"> ▪ Investigating students' participation to allow them to find out the process as they engage in the group/team activities ▪ Review and provide feedback on the performance of each group/team/student at the end of each class ▪ Record students' performance and provide detailed feedback at the end of the unit.

Unit Three: Natural Resource Base of Ethiopia(15 hrs.)

Learning Outcomes: By the time students complete this unit, they would be able to:

- Elaborate major drainage systems of Ethiopia
- Explain the distribution of the major water resources in Ethiopia
- State soils types and distribution in Ethiopia
- Explain the factors responsible for difference in types of natural vegetation in Ethiopia
- Describe the types of wildlife in Ethiopia and factors that affect their distribution
- Describe the spatial distribution and variation minerals in Ethiopia

Competencies	Contents	Learning Strategies	Assessment
<ul style="list-style-type: none"> ▪ Explain the major drainage systems in Ethiopia ▪ Describe the distribution of major water resources in Ethiopia ▪ Explain the characteristics of major soils types in Ethiopia ▪ Locate the major soil types in Ethiopia ▪ Describe the spatial distribution minerals in Ethiopia ▪ Describe the major types of natural vegetation in Ethiopia ▪ Explain variations in the distribution of wildlife in Ethiopia 	<p>3. Natural Resource Base of Ethiopia (15 hrs.)</p> <p>3.1. Meaning of natural resources</p> <p>3.2. Drainage systems of Ethiopia</p> <p>3.3. Water resources of Ethiopia</p> <p>3.4. Major soils types of Ethiopia</p> <p>3.5 Major mineral resources and their distribution in Ethiopia</p> <p>3.6. Biotic resources of Ethiopia</p> <p>3.6.1 Major Types of Natural vegetation</p> <p>3.6.2 Main Kind of Wild life of Ethiopia</p>	<ul style="list-style-type: none"> ▪ Ask students to find out about the three main drainage systems in Ethiopia and label them and their principal rivers on a map ▪ Organize the students into teams to carry out collaborative learning that more focused on relevant enquiry questions to investigate, such as: <ul style="list-style-type: none"> ✓ What are ‘water resources?’ ✓ How is water used in Ethiopia? ✓ Where is water resources found in Ethiopia? ✓ Why water resources are not evenly spread across the country? ▪ Discuss’ the characteristics of major soils of Ethiopia in a buzz group without having some directed input ▪ Activities could be done individually or in pairs or threes. ▪ g a thematic map ▪ Homework for some specific enquiry question examples: Why are so many of Ethiopia’s elephants now found in certain national parks, and not more widely distributed? And why do so many Gelada Baboons live in the Simien Mountains? 	<ul style="list-style-type: none"> ▪ S y s t e m a t i c observation of groups/teams as they conduct group work/ discussions ▪ Ask teams/students to present what they have discussed ▪ Provide feedback on class discussion and collaborative learning process at the end of the class ▪ Record the performance and provide feedback at the end of the Unit.

		<ul style="list-style-type: none">✓ A matching exercise with statements about the soils to match up, with the names of the soil type on the one hand and their locations and characteristics on the other, but not in the right places.✓ Students could study a simplified outline map with the broad regions of soil types marked but identified with numbers only. With the learning above, students then decide which area is which and complete the key.▪ Case study: organize student in a team work to carry out simple tests that can be done outside or even in the classroom. For instance, soil texture identification, and if it is feasible to dig a small soil pit then the profile of the soil could be observed.▪ Ask students to show the spatial pattern of minerals distribution in Ethiopia using a thematic map.▪ Ask students to discuss on the distribution of major types of natural vegetation in Ethiopia, and present spatial distribution in Ethiopia usin	
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Unit Four: Population and Demographic Characteristics of Ethiopia(15 hrs.)

Learning Outcomes:By the time students complete this unit, they would be able to:

- Recognize the pattern of population growth in Ethiopia
- Examine population structure and trends in Ethiopia
- Explain the population characteristics of Ethiopia
- Demonstrate the population distribution and settlement patterns of Ethiopia
- Identify factors influencing spatial distribution of health and diseases in lowland and highland of Ethiopia
- Analyze the influence of population pressure on resources in Ethiopia

Competencies	Contents	Learning Strategies	Assessment
<ul style="list-style-type: none"> ▪ Describe the patterns of population growth in Ethiopia ▪ Explain, referring to population pyramids, how population structure of Ethiopia has changed overtime ▪ Describe the composition of Ethiopian population ▪ Identify factors affecting population distribution in Ethiopia ▪ Identify areas of high and low population density and its impacts on natural resources • Demonstrate the urban and rural settlement patterns of Ethiopia ▪ Explain factors influencing the distribution of health and disease in Ethiopia ▪ Explain impact of population structure on Ethiopia vision for sustainable development 	<p>4. Population and Demographic Characteristics of Ethiopia (15 hrs.)</p> <p>1.1 The pattern of population growth in Ethiopia</p> <p>1.2 P o p u l a t i o n composition</p> <p>1.3 Population distribution</p> <p>1.4 Urban and rural settlement patterns</p> <p>1.5 Health and disease in lowland and highland of Ethiopia</p> <p>1.6 Impacts of population structure on sustainable development in Ethiopia</p>	<ul style="list-style-type: none"> ▪ Organize students into smaller groups/teams to undertake a collaborative learning on how population pyramids, and population structure of Ethiopia has changed overtime ▪ Ask students to make brief presentations on composition of the Ethiopia population ▪ Form buzz groups to discuss on factors affecting population distribution in Ethiopia ▪ Ask students to explain the effect of population on natural resources ▪ Assign students to show the pattern of population distribution using a thematic map ▪ Divide learners into groups and let them describe and explain the nature of health and diseases in areas where they come from ▪ Organize students to debate on Ethiopia can find ways to control population and so help achieve sustainable development 	<ul style="list-style-type: none"> ▪ Systematic observation of groups/teams as they conduct group work/discussions ▪ Ask students to present to the class what they discussed ▪ Monitor the debate for development of core competencies of communication and collaboration, leadership and decision making, creative thinking and problem solving ▪ Provide feedback and conclusions booth at the end of the class and unit

Unit Five: Major Economic and cultural activities in Ethiopia (15 hrs.)

Learning Outcomes: By the time students complete this unit, they would be able to:

- Recognize and value the importance of the major economic activities of Ethiopia
- Examine the trade and transport systems of Ethiopia
- Describe and explain the diversity of language and religion in Ethiopia
- Appreciate cultural landscapes and their contribution to tourism industry in Ethiopia

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Competencies	Contents	Learning Strategies	Assessment
<ul style="list-style-type: none"> ▪ Identify the major economic activities of Ethiopia ▪ Articulate the contribution of subsistence farming and cash crop production to the Ethiopia economy ▪ Explain the importance of trade and transport to the economy of Ethiopia ▪ Describe the cause and consequences of road traffic crashes in Ethiopia ▪ Explain the performance of road safety in Ethiopia ▪ Describe and explain the language and religious diversities in Ethiopia ▪ Ethiopia has a rich cultural heritage. Explain how is it important for tourism industry in the country? 	<p>5. Major Economic and Cultural Activities in Ethiopia (15 hrs.)</p> <p>5.1 Major economic activities in Ethiopia</p> <p>5.2. Contribution of subsistence farming and cash crop to the Ethiopian economy</p> <p>5.3 Trade, and transport in Ethiopia</p> <p>5.4. Road safety performance in Ethiopia</p> <p>5.5. Language and religious diversity in Ethiopia</p> <p>5.6. Cultural landscapes and tourism in Ethiopia</p>	<ul style="list-style-type: none"> ▪ Form small groups to draw a pie graph for the major economic activities in the whole country and pose some questions for discussion on: <ul style="list-style-type: none"> ✓ How do the jobs in your own area fit within the Primary / Secondary / Tertiary groups? ✓ How typical is your area of economic activities in Ethiopia as a whole? ✓ What kind of jobs not found in your area are found in other parts of the country? ✓ Why is this? ▪ Ask students to discuss about different kinds of farming and farm products, and the importance of subsistence farming and cash crop to the Ethiopian economy? ▪ Divide learners into groups/teams and let them discuss on the interdependence between trade and transport ▪ Project: Assign students into pairs to write a small report on “Road Accidents in Ethiopia: Causes, Consequences and Possible Remedies ▪ Ask groups to make presentation of distribution of language and religion in Ethiopia using a thematic map ▪ Form groups each consisting of 5 students: <ul style="list-style-type: none"> ✓ ask them to identify common cultural landscapes, and ✓ discuss on their importance to tourism industry development in Ethiopia 	<ul style="list-style-type: none"> ▪ S y s t e m a t i c observation of groups/teams as they conduct group work/discussions ▪ Ask students to evaluate (peer evaluation) each other’s e presentation on list of economic activities they identified ▪ Provide feedback and conclusions at the end of each class ▪ Record the performance and provide feedback at the end of the unit.

Unit Six: Human–Natural Environment Interactions in Ethiopia (16 hrs.)

Learning Outcomes: By the time students complete this unit, they would be able to:

- Describe the relationship between human activities and the environment by giving examples from their localities
- Describe the link between ‘optimal’ population and sustainable development
- Explain how protecting the environment is in the interest of humans and other living beings,
- Examine the dynamic flows, interactions and exchanges within an integrated human-environment system at different spatial and temporal scales in the highlands and lowlands of Ethiopia
- Recognize the implications of trend in population growth on sustainable use of natural resources
- Assess some of the ways in which humans use natural resources and give examples that illustrate over-exploitation in the over-populated area of Ethiopia
- Explain the advantages and disadvantages of under population for environmental and socioeconomic development
- Assess the impacts of rapid population on environmental and socioeconomic development

Competencies	Contents	Learning Strategies	Assessment
<ul style="list-style-type: none"> ▪ Define the concepts of optimum population, over population, and under population ▪ Demonstrate scenarios where there is ‘overpopulation’ and ‘under population’ using actual or invented cases ▪ Describe and explain how the growth and decline of population affects the availability of natural resources, and how the availability of natural resources in turn affects the pattern of population growth ▪ Demonstrate the balance between the population size and the amounts of resources available using concrete examples ▪ Assess the impacts of rapid population growth on environment and socioeconomic development using concrete examples 	<p>5. Human – Natural Environment Interactions in Ethiopia (16 hrs.)</p> <p>5.1. Human – environment relationship</p> <p>5.2. Optimum population and resource use</p> <p>5.3. Over population and resource use</p> <p>5.4. Under population and resource use</p> <p>5.5. Impacts of rapid population growth</p>	<ul style="list-style-type: none"> ▪ Ask the students’ understanding of terms optimum population, overpopulation and under population ▪ Ask students to discuss on importance of optimal population on local resources development ▪ Divide learners into groups and let them justify the link between ‘optimal’ population and sustainable development ▪ Organize the students into teams to undertake a collaborative learning how does the availability of natural resources vary in Ethiopia? Why does it vary? What is the impact of population density on availability of natural resources? Can you state the general relationship between the greater the population density and the availability of natural resources in the area? ▪ Case study: assign students to demonstrate the impact of local population density on available forest resources ▪ Debate: Divide the class into two and hold a debate on “Population growth has more disadvantages than advantages for a country like Ethiopia.” 	<ul style="list-style-type: none"> ▪ Observe activities while learners engage in group activities/teamwork, field trips and collaborative learning ▪ Ask students to present results of their survey and discussions ▪ Provide feedback on class discussion and collaborative learning at the end of each class ▪ Record the performance of each group and provide feedback at the end of the unit.

Unit Seven: Contemporary Geographic Issues and Public Concerns in Ethiopia (13 hrs.)

Learning Outcomes: By the time students complete this unit, they would be able to:

- Explain the effects of natural resource degradation
- Elaborate Ethiopia’s vision to achieve development without undermining the potential of the natural environment

Competencies	Contents	Learning Strategies	Assessment
<ul style="list-style-type: none"> ▪ Explain how natural resource degradation affects people’s lives ▪ Discuss the solution to problems of resources degradation, including the green legacy movement of Ethiopia 	<ul style="list-style-type: none"> • 7. Geographic Issues and Public Concerns in Ethiopia (13 hrs.) 7.1 Natural resource degradation <ul style="list-style-type: none"> 7.1.1. Soil 7.1.2. Vegetation 7.1.3. Water 7.2 The Ethiopian “Green Legacy” Movement 	<ul style="list-style-type: none"> ▪ Prior learning on short refresher question and answer session on the resource-population link, especially on overpopulation, ▪ Organize students into groups/teams and debate on the link between poverty and Natural resource degradation ▪ Group work on: What is natural resource degradation? Where is there evidence of this? How does it happen? What problems arise from it? In what ways are people’s lives affected? etc ▪ Project on green shoots of recovery? What has been happening in Ethiopia to tackle natural resource degradation? 	<ul style="list-style-type: none"> ▪ Monitor the debates ▪ Ask students to read to class findings of their project ▪ Provide feedback and conclusions at the end of the class •

Unit Eight: Geographic Enquiry, Skills and Techniques(16 hrs.)

Learning Outcomes: By the time students complete this unit, they would be able to:

- Recognize the concept of a map and its basic components
- Categorize scales and interpret maps at different scales
- Make measurements of area and distances using maps
- Demonstrate position on maps and make sketch maps
- Undertake investigate, gather geographic information and analyze the data using appropriate techniques

Competencies	Contents	Learning Strategies	Assessment
<ul style="list-style-type: none"> ▪ Define map and describe its basic components ▪ Convert map scales ▪ Compute area and distances on maps ▪ Show positions of using grid references , and point compass direction ▪ Sketching the distribution of major natural resources in a given area ▪ Interpreting different physical and human landscapes on maps 	<p>8 Geographic enquiry, skills and techniques (16 hrs.)</p> <p>1.1. Map and its basic components</p> <p>1.2. Scale, scale conversion and measurements on maps</p> <p style="padding-left: 20px;">1.2.1. Area</p> <p style="padding-left: 20px;">1.2.2. Distance</p> <p>1.3. Position on maps</p> <p style="padding-left: 20px;">8.3.1 Grid reference</p> <p style="padding-left: 20px;">8.3.2. Point compass direction</p> <p>1.4. Map sketching</p> <p>8.5.1 Interpreting features of the physical and human landscape from maps.</p> <p>8.5.2 Interpreting graphs, tables and diagrams including line graphs, pie</p>	<ul style="list-style-type: none"> ▪ Give practical exercises on map interpretation including measuring distances, identifying compass directions between places or features, estimating area etc ▪ Ask students to sketch map of their school compound ▪ Assign groups to sketch and interpret geographic information using line, graphs, pie chart ▪ Project: Sketch, locate, and interpret Ethiopia in major economic activities and population density 	<ul style="list-style-type: none"> ▪ Short written exercises to be completed and assessed ▪ Systematic observation of groups/teams as they conduct group work/discussions ▪ Provide feedback at the end of each class ▪ Record interactions and performance and provide feedback at the end of the unit

GEOGRAPHY

TEACHER GUIDE

GRADE 9



FEDERAL DEMOCRATIC REPUBLIC OF ETHIOPIA
MINISTRY OF EDUCATION