

CHAPTER

1

GEOGRAPHY AS A DISCIPLINE

Introduction

This unit aims to introduce geography as an integrating discipline and a science of spatial attributes. The nature and scope of Geography, its relation with other natural and social sciences and various branches and sub branches of geography based on approaches are dealt here. Effective transaction of this unit provides the learner a strong base for dealing with the different Physical and Human aspects of the earth.

Values/Attitude: Positive attitude towards the study of various natural and cultural aspects.		Time: 4 Periods
Concept/Content/Ideas	Process/Activities	Learning Outcome
<p>Nature and Scope of Geography</p> <p>Geography as an Integrating Discipline</p> <ul style="list-style-type: none"> ➤ Geography and Natural Sciences ➤ Geography and Social Sciences <p>Branches of Geography based on Approach</p> <ul style="list-style-type: none"> ➤ Systematic Approach ➤ Regional Approach <p>Importance of Physical Geography</p>	<p>Interactive discussion on the relationship between the physical environment with humans based on reading materials and preparation of discussion notes.</p> <p>Interactive discussion based on fig 1.1 in the text book. Preparing a table showing the relationship of geography to other natural and social sciences.</p> <p>Through interactive discussion based on a detailed flow chart (fig 1.2 and fig 1.3 of TB).</p> <p>Interactive discussion based on reading material (TB) and making notes.</p>	<ul style="list-style-type: none"> • Establish the relationship between physical and cultural environment and explain the importance of Geography as a discipline. • Classifies the fields related to Geography and identifies the different disciplines associated with Geography • Construct a flow chart showing branches and sub branches of geography based on two approaches. • Explain the importance of physical geography in evaluating and managing natural resources

Towards the Unit

Unit Analysis

The unit can be introduced by raising some questions based on the previous knowledge of the learners.

- What is Geography?
- What all aspects we have studied in geography?
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Nature and Scope of Geography

Group the learners and provide each group with relevant reading materials on the nature and scope of geography. After in-group discussions allow the group representatives to present the concepts internalized. The other groups can interact during presentations. The teacher should consolidate the discussion highlighting the following points.

- Geography derives its data base from all the natural and social sciences
- Geography as a study of areal differentiation
- Geography as a discipline concerned with three sets of questions -What? Where? and Why?

Geography as an integrating discipline

Bring the attention of the class to fig 1.1 in the text book-Geography and its relation with other subjects. Learners themselves identify the relationship of various natural and social sciences to geography. Lead a discussion so that the learners can have a clear picture how the different subjects are contributing to geography and sharing from geography. The learners can prepare a table showing the relationship of various natural and social sciences to different sub-branches of geography in the following format.

Natural Sciences	Related branch of Geography	Social sciences	Related branch of Geography
• Geology	• Geomorphology	• Economics	• Economic Geography
•	•	•	•
•	•	•	•
•	•	•	•

Branches of Geography based on approach

Let the learners recall the different aspects in the chapters they have learned in Geography so far. By categorizing of these aspects, the teacher can lead them to the two major approaches in Geography.

- Systematic approach
- Regional approach

Select one or two students to draw a flow chart showing the branches and sub branches of geography based on the above approaches (Text book fig 1.2 and fig 1.3) and to exhibit it in the class. Discussion based on this flow chart is the effective means to convey the concepts one by one.

- Systematic Geography
 - Physical Geography and its branches
 - Human geography and its branches
 - Bio geography
 - Principle or Philosophy
 - Methods and techniques
- Regional Geography
 - Regional studies
 - Regional development
 - Regional analysis
 - Regional planning

Learners should note down the relevant concepts along with the flow charts.

Importance of Physical Geography

Provide handouts (reading materials) related to the importance of Physical geography. Let them read and internalize the content in groups. Lead a discussion based on it emphasizing the following points.

- Physical geography includes the study of lithosphere, hydrosphere, atmosphere and biosphere.
- The study of physical geography is emerging as a discipline of evaluating and managing natural resources.

Sample questions

1. List out the subjects you are studying other than geography. Identify the branches of geography related to each of them.
2. Suppose you are authorized to study the geography of your local body (panchayat/municipality). Identify the approach to which the study pertains. Who introduced this approach in Geography?
3. Identify the branch of geography which deals with map making.
4. The interface between physical and human geography has led to the development of another branch in systematic geography. Identify the branch. List its sub branches and related disciplines.
5. The study of geography is concerned with three sets of question- 'What? Where? and Why?' Substantiate it through examples.

references

☞ Human Geography- Majid Hussain



CHAPTER

2

THE ORIGIN AND EVOLUTION OF THE EARTH

Introduction

T This unit provides the learner some sparks regarding the origin of the earth and the stages of evolution of different spheres of our planet. Through the effective transaction of this unit, the learner can realize that the biosphere in which human beings are a part exists only through the dependence on other physical spheres of the earth-the lithosphere, the hydrosphere and the atmosphere. This will generate a positive attitude towards the conservation of environment.

Values/Attitude: Develops a positive attitude towards conservation of environment.

Time: 4 Periods

Concept/Content/Ideas	Process/Activities	Learning Outcome
<p>Origin of the Earth</p> <p>Origin of Universe -Big bang theory -Steady state theory</p>	<p>Discussion based on reading materials regarding the origin of earth and incorporating the concepts in activity log.</p> <p>Demonstrating the expansion of universe through balloon splat experiment and discussion on expanding universe theory and steady state theory.</p> <p>Illustrating the stages of development of Universe</p>	<ul style="list-style-type: none"> List out and explain the various hypotheses regarding the origin of the earth Illustrate the stages of evolution of Universe.
<p>Solar System Evolution of the Earth</p>	<p>Watching animations documentaries (CD ROMs, Internet...) related to the features of different planets and their satellites and preparation of notes in activity log.</p>	<ul style="list-style-type: none"> Classify the planets in to terrestrial and jovian and can distinguish them.
<p>Geologic Time Scale</p>	<p>Discussion based on reading materials (text book, handouts...) and making notes.</p> <p>Preparing chart by arranging the events of the earth's evolution as given in Geologic Time Scale.</p>	<ul style="list-style-type: none"> Enlist the stages of evolution of Lithosphere, Hydrosphere, Atmosphere and Biosphere. Explain the fact that the existence of the biosphere depends on the other three spheres and hence expresses the positive attitude towards the conservation of environment through various club activities.

Towards the Unit

Unit Analysis

The unit can be introduced by showing animated videos of the universe and solar system using ICT and by raising some questions based on the previous knowledge of the learners.

- Have you ever observed the sky on a cloudless night?
- Do you have any idea about the number of stars there?
- Which is the star closest to the earth?
- List out the planets revolving around the sun?
- Name the system of Sun and planets?
- Do you have any perspective on the formation of these celestial bodies?
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Origin of the earth

Through an interactive discussion, the teacher can lead the class to the hypotheses related to the origin of the earth. Group the learners and give them handouts or books related to the relevant hypotheses.

- Nebular hypothesis
- Binary theories
- Accretion hypothesis, etc.

The learners to internalize the concepts through in-group discussion and to present it in the class. After each presentation the other groups can clarify their doubts by raising questions. The teacher can supplement information wherever required. Animated videos can be made use of. The learners should note down the concepts in their discussion diary, which may be subjected for portfolio assessment.

Origin of the Universe

Motivate the learners to express their views about the origin of Universe. Through an interactive discussion, the teacher can establish Big bang theory as the most widely accepted one. Introduce the basic concept of the theory and lead the class to - The balloon splat experiment.

Mark circles on a balloon considering the galaxies (groups of stars). Let the learners recall that the galaxies are groups of millions of stars. On inflating the balloon, the circles marked will appear to

move away from each other. The teacher should supplement the idea that the universe is expanding in this manner.

Convey the concept that even if the inter galaxial spaces are increasing, the space between the stars are not increasing. Highlighting this concept ask the learners to find out the demerit (What is wrong with) of Balloon splat experiment. The presentations can be concluded as 'In the balloon splat experiment the circles themselves are also expanding, that means the inter-star spaces are increasing. It is not in accordance with the fact.'

The teacher can convey the stages of Big bang event with the aid of Fig 2.1 in the text book. Introduce the idea of Steady state theory and let the learners distinguish the Big bang hypothesis from Steady state theory. This can be noted in the discussion diary.

The teacher can introduce the stages of development of Universe with supporting animations (CD ROMS published by IT@School from the Internet) and interactive discussions in the following order.

- Formation of galaxies
- Formation of stars
- Formation of planets
- Formation of satellites (Moon)

While introducing the stages, make use of the students who can sketch these stages to illustrate them in the black board. Co-learners can have more clarity of concepts by following these illustrations, which can be subjected for portfolio assessment.

Solar system

Assign the learners to collect details about different planets in the solar system either by watching animations or documentaries published by authentic sources (IT@school, web sites...) or form reading materials. Consolidate the presentations by classifying the planets as inner planets and outer planets. Learners can list out the characteristic features of these two groups of planets.

Also assign them to draw the solar system and label the planets and other celestial bodies as part of 'My own atlas.'

Let the learners internalize the hypotheses related to the formation of moon from reading materials (text book page 16, 17) and to present in the class. Insist them to note down the concepts on consolidation.

Evolution of the earth

Lead an interactive discussion based on the previous knowledge about the four different spheres of earth's environment. Generate the curiosity on the evolution of these spheres. Provide them with essential reading materials (Text book page 17, 18). One out of the following concepts can be assigned to each group to internalize and present.

- Evolution of lithosphere
- Evolution of atmosphere
- Evolution of hydrosphere
- Evolution of biosphere.

After the presentations, the teacher consolidates by sequencing the above processes highlighting the following phenomena.

- Differentiation
- Degassing
- Photosynthesis
- Origin of life

Discussion can be concluded by imparting the awareness that the biosphere has been formed and sustained by the interactive relationship between different physical spheres-the lithosphere, the hydrosphere and the atmosphere. Thereby the learners can have a positive attitude towards the need of conservation of environment. Ensure that the learners had noted down the concepts.

Geologic Time Scale

As an extension of the above activities, introduce the Geologic Time Scale. Assign the groups to prepare a chart showing the events of earth's evolution as given in the Geologic Time Scale (Text book page 18), This can be displayed in the classroom or Geography lab. The teacher should convey the idea how to read the events in the Geologic Time scale.

Sample questions

1. Which among the following processes led to the evolution of layered earth?
 - (a) Differentiation
 - (b) Solar wind
 - (c) Degassing
 - (d) Photosynthesis

2. Earth is Jovian planet. Do you agree? Justify your answer.
3. Balloon splot experiment for showing expanding universe is only partially correct. Substantiate.
4. The formation of moon as a satellite of the earth is an outcome of a giant impact. Can you explain this concept?
5. Terrestrial planets are rocky while the Jovian are gaseous giants. Why?
6. Identify the period considered as the age of dinosaurs.
 - (a) Triassic
 - (b) Jurassic
 - (c) Cretaceous
 - (d) Carboniferous
7. Which among the following sequence rightly indicate the respective ages of Universe, the earth, the moon, the oceans, and the life on earth?
 - (a) 13.7 billion years, 4.6 billion years, 4.44 billion years, 3.8 billion years, 4 billion years
 - (b) 13.7 billion years, 4.44 billion years, 4.6 billion years, 4 billion years, 3.8 billion years
 - (c) 13.7 billion years, , 4.44 billion years, 4 billion years, 3.8 billion years, 4.6 billion years
 - (d) 13.7 billion years, 4.6 billion years, 4.44 billion years, 4 billion years, 3.8 billion years
8. Differentiate the arguments put forward by Hubble and Hoyle.
9. Compare the arguments of the following scholars about the origin of planets.
 - (i) Kant and Laplace
 - (ii) Jeans and Jeffrey
 - (iii) Schmidh and Weizascar
10. Examine the roll of the following processes in the evolution of earth's atmosphere.
 - Solar wind
 - Degassing
 - Photosynthesis

references

- ☞ Modern Physical Geography - Arthur N Strahler
- ☞ Principles of Physical Geography - Das Gupta and Kapoor

