

Teaching Plan

Subject: Science

Std: VIII

Time Duration: 450 minutes

Chapter: Conservation of Plants and Animals

Term: II

Concepts/Subtopics

1. What is biodiversity?
2. Importance of biodiversity
3. Threats to biodiversity
4. Deforestation - its causes and consequences
5. Endemic species, Extinct species, Threatened species and Migratory birds
6. Conservation of forests and wildlife
7. Wildlife Sanctuaries, National Parks and Biosphere Reserves
8. Government regulations and projects
9. Red data book

Teaching Strategies

1. Jigsaw strategy
2. Flipped classroom
3. Activity-based learning

Reference Books: Science matters 8 (Textbook, Workbook, and Activity book)

Resources

Entry Task (Diagnostic Test)	-	AS of Entry Task (Diagnostic Test)	1
Exit Task (Achievement Test)	-	AS of Exit Task (Achievement Test)	1
PPT	2	Video	1
Workbook	1	AS of Workbook	1
Worksheet Sheet	1	AS of Worksheet Sheet	1
Exit Task	1	SSD for Jigsaw	1

Teaching Plan

Lesson Goal/ Purpose of the Lesson

This chapter provides a comprehensive understanding of conservation of plants and animals. This will help us to understand the need and methods to preserve biodiversity, conserve forests and wildlife.

Prerequisite Knowledge

The students will be able to:

- analyse the interdependence of living things and its significance
- explain the causes, consequences, and prevention of deforestation
- describe the importance of wildlife and methods for conserving them

Entry Task (Diagnostic Test)

- *The Entry Task (Diagnostic Test) is a Baseline Test which assesses the student's prior/prerequisite knowledge, skill level, and gaps of missing information.*
- *The test will be available on the Loop Learning platform for schools enrolled in Loop Learning. **The test can be conducted through Google Forms for schools not yet on Loop Learning.***
- *Self-learning PPTs and videos for students who score less than 60% will be available on the platform. These resources are designed to help students bridge their learning gaps.*

Teaching Plan

Concepts/Sub Topics
<ul style="list-style-type: none"> What is biodiversity? Importance of biodiversity Threats to biodiversity Deforestation - its causes and consequences
Learning Outcome
<p>Students will be able to:</p> <ul style="list-style-type: none"> define biodiversity explain the importance of biodiversity state the threats to biodiversity state the causes of deforestation explain the consequences of deforestation
Academic Skills:
Analytical skills, Problem-solving skills, Active listening skills, Critical Thinking skills, Research skills, Presentation skills
Social/Life Skills:
<ul style="list-style-type: none"> respect each other's view help each other in understanding the content share the information improves communication and collaboration ability develops concern towards the members of the group develops patience among students to lend their ears to others in the group develops empathy by giving each member of the group an essential part to play in the academic activity develops integration attitude in the students
Teaching strategy: Jigsaw strategy

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Vocabulary/Keywords

Biosphere, ecosystem, habitat, environment, species, decomposition, recycling, deforestation, overexploitation, extinction, extinction, pollution, global warming, urbanisation, industrialisation, mining, forest fires, greenhouse gases, water table, soil erosion, desertification

Preparation and Presentation Phase

Introduction

- Conduct the 'Tune In' activity with the participation of students. Use their answers to introduce the topic in the class.

Jigsaw Strategy

- Provide the guidelines of the jigsaw strategy as mentioned in phases 1 and 2 and assess their learning through the activity as mentioned in phase 3.

Phase 1: Classroom Activity preparation by teacher in the classroom

Formation of 'Home Groups'

- Form **five** groups of **five** students each. These groups are called - **Home groups**.
- Assign each member of every home group a number 1, 2, 3, 4, and 5.
- Assign the topics to each student in all five home groups as given below and ask them to read the allotted topics from the textbook chapter.

- ❖ Student 1: Importance of biodiversity

[What to study: What is biodiversity and Importance of biodiversity]

- ❖ Student 2: Threats to biodiversity

[What to study: Overexploitation of animals, Pollution, Climate Climate change]

- ❖ Student 3 : Deforestation

[What to study: Deforestation as a threat to biodiversity and causes of deforestation]

- ❖ Student 4: Consequence of deforestation

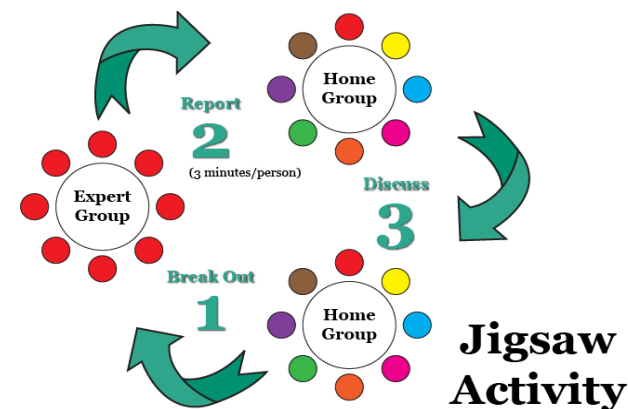
[What to study: Global warming, Soil erosion, Desertification]

- ❖ Student 5: Consequence of deforestation

[What to study: Habitat destruction, Decrease in oxygen levels, Change in rainfall pattern, Flooding, Depletion of resources]

[Note: The number of students and allocation of topics per group may vary as per class strength, but it is essential to keep the same number of students in each group for this strategy. Hence, form the group accordingly.]

- Provide the **SSD (reading material)** and instruct the students to go through them alongwith the textbook concepts.



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[**Note:** The reading material is for enrichment only. It will help in better understanding of concepts.]

- At this point, students don't really interact with other members of their group; they just read and study the allotted content independently.

Phase 2: Focus on Students Activity

Formation of 'Expert Groups'

- Create "expert groups" that consist of students across "home groups" who have read the same topics. Within each expert group, students compare their ideas and work together to prepare some kind of presentation to give to their home groups. During this time, gaps in individual students' knowledge can be filled, misconceptions can be cleared up, and important concepts can be reinforced. Ask the expert groups to create **teaching resources** such as - 'summary charts/ mind maps/graphic organisers /T- comparison tables/ notes/ ppt presentations on the allotted topics.
- A set of key questions can be provided to the experts.

- Sample questions:

Topic 1:

- Define biodiversity.
- What is the difference between flora and fauna?
- Why is the habitat of a species important for the species' survival?
- Biodiversity plays an important role in the sustenance of an ecosystem. Justify.
- How do microorganisms in the soil contribute to agriculture?

Topic 2:

- If illegal hunting leads to the extinction of a prey species, what is a possible consequence for predators in that ecosystem?
- How does the extinction of a species due to illegal hunting affect the ecosystem's balance?
- Do you think overexploitation of animals for products like tusks and fur is a sustainable practice? Why or why not?
- Suggest a way to reduce the impact of overexploitation of animals on biodiversity.

Topic 3:

- Name one natural cause of deforestation.
- Explain how agricultural expansion contributes to deforestation.
- How does urbanization directly impact forests and biodiversity?

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- Why might deforestation for industrialization be considered harmful to both ecosystems and local communities?
- Suggest one way to balance the demand for timber and the need for forest conservation.

Topic 4:

- Why does deforestation increase carbon dioxide levels in the atmosphere?
- What might happen to polar bears if the Arctic Sea ice continues to melt due to global warming?
- How does soil erosion contribute to desertification?
- Suggest one method to reduce desertification caused by soil erosion.

Topic 5:

- What process in trees helps in cloud formation?
- How does deforestation affect oxygen levels in the atmosphere?
- If a region loses a large amount of forest cover, what might happen to its rainfall pattern?
- If a forest is cleared, how might the local water table be affected?
- How does the loss of forest cover contribute to flooding?
- Why is the depletion of natural resources due to deforestation a global concern?

[**Note:** Experts may be asked to create a set of key questions on the allotted topics on which they will work while making teaching resources (after being reviewed by the teacher).]

- Remind students that “**expert group**” members are responsible:
 - ❖ to learn all content from one another
 - ❖ for reviewing the material created on the allotted concept, so that they can share this information with their peers
- Tell the **expert groups** that it is important that all group members understand the material they are responsible for presenting.

[**Note:** To avoid having students present inaccurate or misleading information, review and approve of content before this information is shared with students in the other groups.]

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Phase 3: Performance/ Evaluation

Return to the 'Home groups'

- Now that students have studied their allotted concepts in their expert groups, they return to their original jigsaw groups, where each student takes a turn presenting their chunk of information.
- Experts take turns presenting information.
For example, student 1 in the home group will teach students 2, 3, 4, and 5 then, student 2 will teach students 1, 3, 4, and 5...and so on. Students may be asked to take notes while the experts present.
- **Walk around the classroom and analyse students' understanding. Clarify misconceptions or doubts, if any.**
- Assess each group's learning by asking questions, conducting quizzes, etc.
- Appreciate their efforts.

Revision

- Show the **PPT1** and the **Video** to revise the concepts.

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Concepts/Sub Topics
<ul style="list-style-type: none"> Endemic species, Extinct species, Threatened species and Migratory birds
Learning Outcomes
Students will be able to:
<ul style="list-style-type: none"> define the terms endemic species with examples explain why it is needed to preserve biodiversity to protect endemic species define extinct species with examples describe the different categories of threatened species with examples explain why migratory birds migrate seasonally and state the threats faced by migratory birds
Vocabulary/Key words
endemic, extinct and threatened species, migration, migratory birds
Teaching Strategy: Flipped classroom
Student Learning Resources at Home
<ul style="list-style-type: none"> PPT2 Textbook
Student Learning Activities at Home
<ul style="list-style-type: none"> Have students: <ul style="list-style-type: none"> → read page numbers 92- 94 of the textbook → go through PPT2 → tell the students to make notes on the concepts that they have studied.

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Classroom Activities

Class Activity (Time bound Activity)

Materials Required (to be sourced by the teacher): Sticky note (one for each team), Class board or 3 Chart papers

- Divide the class into three groups – A, B and C.
- Create the following captions on the class board or on the chart papers for three groups – A, B and C.

Group A			
Endemic species	Extinct species	Threatened species	Migratory birds

- Distribute the stiky notes.
- Tell them that:
 - each team will have to write features/examples/definitions about the topics and paste them under the relevant headings
 - it is time bound activity and each team will get 3 minutes to write
 - the team with maximum correct informations will be the winner
- After 3 minutes, all the teams to stick their notes in their charts/ classboard sections under relevant headings.
- Review the information on sticky notes, then:
 - announce the winner
 - appritiaste their efforts
 - analyse their understanding and clarify concepts if required

Class Activity (Writing assignment)

- Have the students complete **Worksheet**.

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Assessment for the session

[**Note:** The **Entry Task given before topic 1** of this chapter, is a baseline test to check prior knowledge **before starting** to teach the chapter, while the **diagnostic assessment** mentioned **after this topic** caters **specifically to the topic** (s) dealt with in a session. It will help the teacher to get prepared for the session.]

Diagnostic Assessment:

- Before the class, review student notes and analyse concepts that need further clarification. Provide necessary feedback/ clarify those concepts in the class accordingly.

Formative Assessment:

- Walk around the classroom to answer individual student questions during activities and the writing assignment. Briefly go over each point mentioned in sticky notes in the class and address any further questions.

Summative Assessment:

- Conduct **a fire question round** that includes all essential key concepts that students need to know after this session such as:
 - characteristics of endemic and extinct species with examples
 - why it is needed to preserve biodiversity to protect endemic species
 - difference and similarities between different categories of threatened species
 - modification of root system limited to storage, support, and breathing
 - explain why migratory birds migrate seasonally
 - threats to the survival of migratory birds

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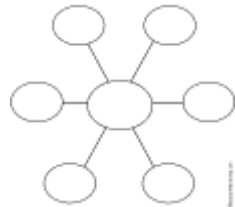
Concepts/Sub Topics

- Conservation of forests and wildlife
- Wildlife Sanctuaries, National Parks and Biosphere Reserves
- Government regulations and projects
- Red data book

Teaching strategy: Activity-based learning

Vocabulary/Keywords

conservation, afforestation, reforestation, overgrazing, poaching, Recycling, Biosphere Reserves, wildlife sanctuaries, national parks, biosphere reserves, Project Tiger, Red Data Book

Learning outcome	Suggested Activities	Assessments
<p>Students will be able to:</p> <ul style="list-style-type: none"> • list the Wildlife sanctuaries, national parks, and biosphere reserves and state their significance • explain the importance of biosphere reserves • explain the government regulations and projects related to wildlife conservation • describe features of the red data book 	<p>Class Activity (Group, Brainstorming) - 10 mins</p> <ul style="list-style-type: none"> • Form groups and select a volunteer student in each group as a writer. • Instruct the groups to brainstorm and create a star-shaped graphic organiser (GO)/ concept map with a central idea - Conservation of Forests and Wildlife • Prompt them if needed. • Once the GO/Concept map is ready, invite each group to share their points one by one. • Appreciate their ideas. <p>(Note: this activity will help the students to analyse the importance of the conservation of forests and wildlife.)</p> <ul style="list-style-type: none"> • After the activity, show the graphic organiser and revise the concept. 	

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Class Activity (SQ3R)

Note:

- ❖ Students will complete the following topics, from page numbers 96 to 102 by **SQ3R** method.
- ❖ Analyze the problem zones of the concept in which the students are facing difficulty and explain those concepts during or after conducting this activity

Step 1: SURVEY

Ask the students to:

- read the topics and their subtopics given on pages 96 to 102 of the textbook
- focus on the important points under each subtopic
- observe the images carefully

Step 2: QUESTION

Ask the students to:

- find out - What are the topics about?
- make a note of all the questions that they can make from these topics (before reading the paragraphs below the topics)

[Give an example: if the heading is "Biosphere Reserves", read it as "What is Biosphere Reserves?" Now, you have created a purpose for reading because you are looking for the answer to the question.]

Step 3: READ

Ask the students to:

- read all the topics very slowly from pages 96 to 102 of the textbook
- after reading each section, stop and recall the questions that they have identified from the topic
- make mind maps for remembering any difficult topic (optional)

Exit ticket

- Share the **Exit ticket** with the students and ask them to complete it.
- Use the exit ticket to analyse their learning and revisit doubts, if any.

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Step 4: **RECITE**

Ask the students to:

- look at the questions they have created or those at the end of the chapter after reading (step 3)
- analyse if they can answer them.
[If they cannot, tell them to reread the appropriate sections and take notes.]
- Take the time to recite or recall whatever you can remember as soon as you finish reading.

Step 5: **REVIEW**

- Ask the student to write down the answers to the questions which they have identified in step 2.
- **Pair assessment:** To finally review the level of concept knowledge acquired by them, form pairs and ask them to exchange and check each other's questions and answers.

(Note: Walk around in the class, analyse their learning, and guide the students wherever needed)

Muddiest point: Ask students to write one point that they have not yet understood. Clarify any doubts.

Map Activity (Integration with social studies and general knowledge):

Materials required (to be sourced by the students): political map of India and colour pencils

Prior preparation: Ask students to mark the location of the following on the political map of India using colour pencils:

- Ranthambore National Park
- Gir National Park
- Kaziranga National Park

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- Kanha National Park
- Sasan Gir Sanctuary
- Periyar National Park
- Chinnar Wildlife Sanctuary
- Pachmarhi Biosphere Reserve
- Nilgiri Biosphere Reserve

In the class:

- Ask the students to show the political map of India and tell the states in which the above-listed national parks, biosphere reserves, and wildlife sanctuaries are located.
- **Real-life connect through Discussion:** Ask - if they have visited any of the wildlife sanctuaries, national parks, or biosphere reserves. If yes, then tell them to share their experiences in the class.

Activity (Art Integration Activity)

- Ask the students to complete the '**Let Us Create**' activity given on page number 107 of the textbook. Appreciate student's creativity.

OR

- Ask students to create a creative and colourful **stamp** on threatened animals or plants and show them in class. Appreciate student's creativity.

[**Note:** This activity can also be given as a home assignment, as per the teachers' discretion.]

Class Activity (Discussion followed by writing assignment)

- Allow the students to discuss the answers to the **Workbook worksheet** in the class and complete the worksheet. Guide if required.
- Discuss the answers to the **Let Us Exercise questions**, given on page numbers 20 and 21 of the textbook, and ask the students to write them in their notebooks.

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Vocabulary Building Strategy

Word Alive

- Draw the following table and ask the students to copy it.

WORD: _____ What do you think the word means ?	
What does the dictionary say the words means?	
Write a definition of the word using your own words.	
What are some other words that mean the thing as the word?	What are some other words that mean the opposite of the word?
Sketch the Word	
Picture caption using the word	

- Instruct students to write a vocabulary word above the first box.
- Ask students to answer each of the five questions below the word.
- Direct students to draw a picture depicting the word's meaning.
- Have students write a caption that describes the picture and uses the vocabulary word.
- Let the students share their table in the table.

