

LESSON PLAN**[2019 -- 2020]****DLF Public School**

THE LEARNING ACADEMY

Managed By *Darbari Lal Foundation*

Teacher Name	Class	Subject	Time slot	Date	Lesson	Topic
	IX	Biology	35 min. Pd-1	December	Natural resources	Introduction of the lesson, Components of biosphere,

Expected Learning Outcome:

*Identify the reasons for existence of life on Earth.

*Define the terms-Lithosphere, Hydrosphere, Atmosphere and their interaction zone biosphere.

*Identify the biotic and abiotic components of biosphere.

* Review the terms Green- house effect and global warming.

Expected skill development:

*Listening skills while discussing the content in the class.

* Reading skills while comprehending the question asked.

*Comprehension of the text while asking questions and writing answers.

*Critical thinking through open ended questions.

*Communication with scientific vocabulary, global citizenship

FLOW OF LESSON WITH RESPECT TO TIME (Introduction/warm-up, Content, Think Line, Closure)

Introduction-

Students would be asked a few question s to review their concepts taught in the previous classes as-[5 min]

How many planets are there in our solar system?

Life is existing only on Earth. Why?

*Students would identify the reason.

What do you mean by natural resources?

They would thus correlate with Land as lithosphere, water as hydrosphere, and air as atmosphere.

*Define the term biosphere.[5 min]

The class would be divided into five groups.

Instructions-Each group will prepare a MIND MAP on the specified topic using NCERT book as base source of information. Each group would then present the **MINDMAP** in front of entire class. [15 min]

The facilitator will add on necessary points during presentation and discuss the respective **Thinkline** with each group.

Each group will **brainstorm** and prepare Questions using prompts provided by the facilitator.

(Visual thinking Routine- Question starts.. Prompts like---

What if...?

What are the reasons...?

How would it be different if...?

What if we knew..?

What is the purpose of...?

The responses to these questions will visually reflect the multi-dimensional understanding of each topic by the class.

Group 1- Atmosphere

Group 2- Hydrosphere

Group 3- Lithosphere

Group 4- Global warming and green -house effect

Group 5-Ozone layer depletion

Teaching methodology- Brainstorming through examples from life , Question answer through open ended situations.

Closure-The concepts would be summarized asking students questions as mentioned.-

Proposed Questions Q1. How is our atmosphere different from the atmosphere on Venus and Mars?(c.w) Q2. What is the significance of the atmosphere? Q3. How is human intervention destroying the atmosphere?	
Evaluation/Assessment: *Oral questionnaire	
Learners on the way *Individual attention within the class. *Extra input time outside the class. *Peer learning through appropriate seating arrangement.	Advanced Learners Assist the peers in comprehending the questions and writing answers with scientific vocabulary.
Materials needed/Resources: *Class IX NCERT textbook *Blackboard, chalk	
Common Misconceptions: *Unable to comprehend the concept of biosphere.	Addressing the misconceptions: Trace examples to understand each of them. Discuss Temperature change and its effect in marine life.

- Home Assignments:** Q. Define- Atmosphere, Hydrosphere, Lithosphere, Biosphere[5 min]

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Teacher Name	Class	Subject	Time slot	Date	Lesson	Topic
	IX	Biology	35 min +35 min. Pd-2,3	December	Natural resources	Atmosphere, Hydrosphere, Lithosphere

Expected Learning Outcome:

- **Acknowledge the role of atmosphere in climate control during the day and night.
- *Decipher the cause of movement of winds and their direction during day and night especially in the coastal areas.
- *Review the process of formation of clouds and rainfall and have a brief insight into the rainfall patterns of India.
- *Define the term air pollution and list its causes and effects.
- *Estimate the amount of fresh water available on Earth and the amount which can be used for consumption in India.
- *Enlist the importance of water in our life
- *Correlate the availability of water at a place to its Biodiversity and number of plants and animals in that area.
- *Define the term water pollution and list its causes and effects.
- *Students will be able to Define the terms Earth's crust and soil and acknowledge their importance.
- *Enlist the factors responsible for weathering of soil.
- *Identify the composition of soil and role of humans in altering its composition.
- *Define the term soil erosion and list its causes and effects.

Expected skill development: Reading skills while comprehending the question asked.

- *Comprehension of the text while asking questions and writing answers.
- *Developing scientific vocabulary and its proper usage.
- *Critical thinking through open ended questions to evaluate our role in maintaining balance in nature.
- *Systematic approach to estimate the availability of various natural resources.
- * Communication and collaboration
- *Global citizenship

FLOW OF LESSON WITH RESPECT TO TIME (Introduction/warm-up, Content, Think Line, Closure)

Introduction-. [10 min]

ATMOSPHERE presentation should include-

- *Composition of air on Earth and other planets
- *Role of atmosphere in maintaining moderate climatic conditions on Earth.

*Cause of movement of air and land breeze and sea breeze.(students would be asked to draw the patterns on the blackboard)

*Formation of clouds and rainfall pattern in India.(students would be asked to draw the water cycle on the blackboard)

*Definition of Air pollution, its causes and effects.

Thinkline- If the Percentages of nitrogen and oxygen present in the Earth gets reversed, what could be the possible consequences?(Non-routine question)[5 min]

Thinkline- Recently Delhi NCR region faced the problem of heavy smog which compelled the schools to remain closed for a few days until conditions were normalized. Do you as an individual had any role to play in it.

Followed by Visual thinking routine--Question starts....

Lithosphere-[10 min]

Q. what do you mean by fresh water?

We have the great Himalayas but still we are in crisis of water always. why?

**Estimate the amount of fresh water available on Earth and the amount which can be used for consumption in India. And identify the importance of water for us.

*Identify availability of water and biodiversity by quoting example of rain forests.

*Define water pollution- causes and effects on all living organisms.(also mention the role of humans in the process)

Thinkline- Does the fresh water has any minerals dissolved in it?[5 min]

Followed by Visual thinking routine-Question starts....

Lithosphere-[10 min]

*Define the terms crust of Earth and its importance for living organisms.

*Define weathering of soil and discuss the factors responsible for it.

Students would enlist the Composition of soil and the effect of variation in soil particle size on type of soil and biodiversity associated with it.

*Students would Define the term soil erosion and identify its causes and effects.

Thinkline- For a soil type with large soil particle size and high inter particle space , what types of crops can be grown? 5 min

How can forests influence the quality of our soil, air and water resources?[5 min]

Followed by Visual thinking routine-Question starts....
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Teaching methodology- Brainstorming,
Mind map, Question answer through
open ended situations. Visual thinking
routine- Question starts

Closure-The concepts would be summarized asking students questions as mentioned.-

- Proposed Questions [5 min each]

Q2.What is the direction of blowing wind?

Q3.Why is the climate near coastal areas always equable?

Q4. How are clouds formed?(c.w)

Q1. What is potable water?

Q2. Can the presence of an industry around your area have an impact on the types of diseases prevalent in the area.

Q3. What is eutrophication? ***** Q2. Do we contribute in increasing water pollution? Q3.Can change in water temperature be considered as pollution? how? Q4. Which is the most applicable method to prevent soil erosion?	
• Evaluation/Assessment: *Oral questionnaire *Reasoning questions * Enlisting causes and effects of pollution.. *Comparing atmospheric condition on Earth and other planets. *Reasoning questions related to Pollution(Problem solving) *Identifying the means to prevent pollution..MINDMAP	
Learners on the way *Individual attention within the class. *Extra input time outside the class. *Peer learning through appropriate seating arrangement. Q. Is removal of oxygen from the water body, also a type of water pollution?	Advanced Learners Assist the peers in comprehending the questions and writing answers with scientific vocabulary. Q. Is the R.O water same as fresh water?
Materials needed/Resources: *Class IX NCERT textbook *Blackboard, chalk	
Common Misconceptions: *Reverse movements of sea breeze during day and night. *Sea breeze and land breeze shows effects only in coastal areas. *Air pollution is only because of man made factors. *Water pollution doesnot involve change in temperature. *Potable water is same as fresh water.	Addressing the misconceptions: Discuss Temperature change and its effect in marine life.

- **Home Assignments:** [10 min]
- NCERT- pg 193, Q2- How does the atmosphere act as a blanket?
- 3- What causes winds?
- Pg 194 Q1- Why do organisms need water?
- Q 3- Do you know any activity which may be polluting the water source in your locality?

Pg 196- Q1- How is soil formed?

Q2- What is soil erosion?

Q3- What are the methods of preventing or reducing soil erosion?

Pg202- Can isolating human activities to specific and limited areas would help in reducing pollution? Justify your answer.

**LESSON PLAN [2019-- 2020]**

Teacher Name	Class	Subject	Time slot	Date	Lesson	Topic
	IX	Biology	35 min. Pd-4	December	Natural resources	Biogeochemical cycles- carbon cycle, Oxygen cycle
Expected Learning Outcome: *Define the term biogeochemical cycles and identify its importance to us. *Identify the importance of carbon for living organisms and represent carbon cycle through a flowchart and acknowledge the role of microorganisms in it. *Acknowledge the phenomenon of green house effect and global warming. *Identify the importance of oxygen for living organisms and represent oxygen cycle through a flowchart. *Decipher the formation of ozone layer and its role in protecting us from harmful UV radiations. *Enlist the reasons for depletion of ozone layer.						
Expected skill development: Reading skills while comprehending the question asked. *Comprehension of the text while asking questions and writing answers. *Developing scientific vocabulary and its proper usage. *Critical thinking through open ended questions and to evaluate our role in maintaining balance in nature. *Systematic approach to estimate the availability of various natural resources. *Reasoning and analytical skills to estimate the effect of pollution on us and our environment.. *Identifying the means to reduce pollution in nature. *Observational skills during day to day interaction with the environment. * Communication and collaboration *Global citizenship						

FLOW OF LESSON WITH RESPECT TO TIME (Introduction/warm-up, Content, Think Line, Closure)

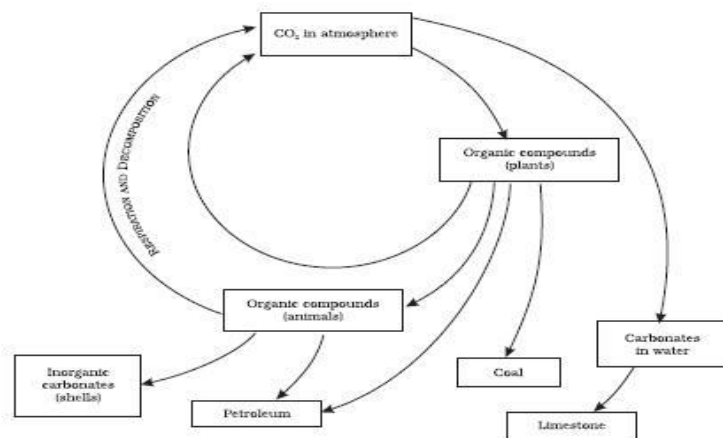
Introduction-. Students will be asked to review the concepts discussed in the previous class.

Students would discuss on-

Group 4- Global warming and green -house effect[10 min]

*Importance of carbon for living organisms.

*Represent carbon cycle through a flowchart.(ways through which carbon can be fixed and then released in the environment) by facilitator



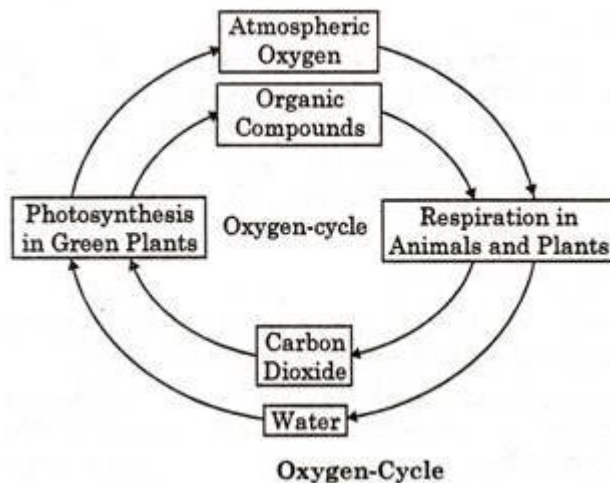
*Acknowledge the importance of green house effect for our environment And ill effects of global warming.

Thinkline- Identify any two forms wherein carbon is fixed in our body

Followed by Visual thinking routine-Question starts....[5 min]

Group 5- Ozone layer depletion[10 min]

*Define the oxygen cycle and represent it.(draw on board)



*Formation of ozone layer and its role in UV protection.

*Identify the reasons for Ozone depletion

Thinkline- The Earth years ago was reducing in nature, after the advent of aerobic organisms the Earth started becoming oxidizing. Find out the changes in the atmosphere then and now.

Followed by Visual thinking routine-Question starts...[5 min]

Teaching methodology- MINDMAP presentations. question answer though open ended situations by **Visual thinking routine- Question starts...**

Continued:

Closure-The concepts would be summarized asking students questions as mentioned.-

Q. Represent carbon cycle schematically.

Proposed Questions Q4. Carbon is fixed in water as well. How? Is this fixation dependent on temperature? Q5. Are there any more gases then CO₂ which can cause green house effect ? ame any two important bio molecules in your body containing carbon. Q2.Identify the importance of microorganisms in the carbon cycle. Q3.Can the variation in carbon content cause any damage to the ecosystem? Q4.What could be the consequences if the oxygen content in the atmosphere increases?	
- Evaluation/Assessment: *Oral questionnaire *Through flowcharts and mind maps.	
Learners on the way *Individual attention within the class. *Extra input time outside the class. *Peer learning through appropriate seating arrangement. Q. How can we decrease the percentage of carbon dioxide released in atmosphere? . Name the microorganisms involved in the release of oxygen in atmosphere.	Advanced Learners Assist the peers in comprehending the questions and writing answers with scientific vocabulary. Q. Explain the dissolution of carbon dioxide in marine water (in oceans) during the summers? effects of ozone layer depletion is felt more on rtica than on America or India?

Materials needed/Resources: *Class IX NCERT textbook *Blackboard, chalk	
Common Misconceptions: Usage of incorrect scientific vocabulary.	Addressing the misconceptions: On discussion key words to be written on the board. Explain the process using diagram on the board with names of locations specified.

Home Assignments.[5 min]

Q1.Represent carbon cycle through a flowchart

Q2. Define a) Green- house effect b) Global warming

Q3.Represent the Oxygen cycle using flowchart

Pg201- Q3- List three human activities which would lead to an increase in the carbon dioxide content of air?

Q5- What are the two forms of oxygen found in the atmosphere?

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Teacher Name	Class	Subject	Time slot	Date	Lesson	Topic
	IX	Biology	35 min. Pd-5	December	Natural resources	Biogeochemical cycle- Nitrogen cycle

Expected Learning Outcome:

- *Students will be able to acknowledge the importance of nitrogen in our body and atmosphere.
- * To represent and explain the nitrogen cycle and the role of various organisms in it.

Expected skill development: Reading skills while comprehending the question asked.

- *Comprehension of the text while asking questions and writing answers.
- *Developing scientific vocabulary and it's proper usage.
- *Critical thinking through open ended questions and to evaluate our role in maintaining balance in nature. *Systematic approach to estimate the availability of various natural resources.
- *Reasoning and analytical skills to estimate the effect of pollution on us and our environment..
- *Identifying the means to reduce pollution in nature.
- *Observational skills during day to day interaction with the environment.
- * Communication and collaboration
- *Global citizenship

FLOW OF LESSON WITH RESPECT TO TIME (Introduction/warm-up, Content, Think Line, Closure)

Introduction- Importance of nitrogen for our body 5 min

Content. 15 min

Forms of nitrogen available in atmosphere

Nitrogen cycle- representation on board with the various organism involved in it;

Closure-The concepts would be summarized asking students questions as mentioned by the students in Question starts activity.-

The lesson will be summarized using selective questions from each topic created by the students.[10 min]

These questions can be given as home assignment to be done in the notebook.

- Proposed Questions

What are the different ways in which nitrogen can be fixed from the atmosphere??

Q2. If the nitrogen concentration in the atmosphere decreases, can it be considered as pollution?

Q3. "Crop rotation helps in maintaining atmospheric balance" Justify the statement.

- Evaluation/Assessment:

*Oral questionnaire

*Asking to summarize at the end through MINDMAP.

Learners on the way *Individual attention within the class. *Extra input time outside the class. *Peer learning through appropriate seating arrangement. Q What is nitrogen fixation?	Advanced Learners Assist the peers in comprehending the questions and writing answers with scientific vocabulary. Can humans have an impact on the nitrogen cycle directly or indirectly?
Materials needed/Resources: *Class IX NCERT textbook *Blackboard, chalk	
Common Misconceptions: Usage of incorrect scientific vocabulary. *Unable to acknowledge nitrogen fixation by lightening. Nitrogen fixation is same as nitrification	Addressing the misconceptions: On discussion key words to be written on the board. Explain the process using diagram on the board with specific names

Home Assignments.[5 min]

- Q. Represent nitrogen cycle and define the following terms-
Nitrogen fixation, ammonification, nitrification, denitrification
Pg201- Q2- Name any two biologically important compounds that contain both oxygen and nitrogen