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Forest ecosystem

SUBJECT AREAS:

Natural science - Ecology

ACTIVITY DESCRIPTION:

Enriching students' knowledge of the components of forest ecosystems.

OBJECTIVES:

- To classify forest ecosystems;
- To highlight the component elements of forest ecosystems;
- To describe the characteristics of deciduous and coniferous forests.
- To recognize forest stratification and the factors that determine it;
- To analyze and compare forest ecosystems with other ecosystems from the point of view of biodiversity;
- To become aware of the role that forest ecosystems have for human existence.

MATERIALS:

Video projector, blackboard, chalk, notebooks and pencils, flipchart sheets

GRADE/LEVEL:

Secondary school (15-18)

DURATION:

Preparation time: 30 min.

Activity time: 50 min.

PLACE:

Classroom, Online

AUTOR:

Sprijin si Dezvoltare Association, Romania

INTRODUCTION:

Develop a creative introduction to the topic to stimulate interest and encourage thinking.
Asks students to remember the classification of ecosystems by substrate.
Continue the lesson with a brief presentation about: -beech forest ecosystem -oak forest ecosystem -spruce forest ecosystem -pine forest ecosystem.

BACKGROUND:

Describe the topic you will cover during the lesson in order to attract attention and motivate your students to pay attention and learn about what you plan to teach. This is the part where you'll let your students know what they'll be learning and doing in class, helping them stay more engaged and on track.

Procedure:

Outline: announcing the title of the lesson and writing it on the notebooks Forest. - Clearly communicates the operational objectives of the lesson.

Instruction: defines the forest as a terrestrial ecosystem and classifies forest ecosystems -presents the characteristics of deciduous forests and coniferous forests
- Ask students to watch the video:
https://youtu.be/soZfDrxGBCk?si=E07NPXLQKn7-vTYx
To make connections, analyze and compare various forest ecosystems from their own experience.

Guided Practice:
- Draw on the board the structure of the ecosystems presented by each group.
- While presenting the new concepts, the teacher explains and draws the lesson plan on the board. (Annex 1)
- Establish the forest stratification and the factors that determine it.

Formative Assessment: Ask students to complete the evaluation sheet (Annex 3) and comment on their answers.

Collaborative Process: Four groups are formed, each receiving an activity sheet to solve (Annex 2). Guides the graphic creation of the type of forest ecosystem specific to each group.

Independent Practice: Set a homework topic: To describe their ecosystem from a forest that they often visit with their parents.

FUN FACTS:

- ***How interconnected all life is to the rest of life and the environment?***
  Every single niche of the environment and life is filled. If there is an empty spot, some life will come along and utilize it. And all life is dependent upon the rest of the life in that ecosystem. If you remove one form from that ecosystem, it is all thrown into chaos until some other life steps into the place where the now gone life was. It's a balancing act.

ASSESSMENT:

List or describe ways that you will check for understanding: drawing a picture, journal writing/reflection writing, and feedback.

- The students will be evaluated using Annex 3 Sheet, to identify: the ecosystem, list the elements of the biotope, list the elements of the biogenesis.

An appreciative evaluation of the entire class progress will be carried out using feedback and observation.

EVALUATION:

The students will be evaluated using Annex 3 Sheet, to identify the ecosystem, list the elements of the biotope, and list the elements of the biogenesis.
An appreciative evaluation of the entire class progress will be carried out using feedback and observation.

ANNEX 1

The sketch on the blackboard

Natural terrestrial ecosystems

FOREST

Forest is a natural terrestrial ecosystem. Classification of forest ecosystems:

- Beech forest ecosystem;

- Oak forest ecosystem - spruce forest ecosystem;

- Pine forest ecosystem .

BEECH FOREST ECOSYSTEM Beech forests are called beech forests, they are widespread in areas with altitudes between 600 – 1300 m Biotope: temperatures: 6-8^{0}C, precipitation of 1000 mm/year, brown forest soils light is weak.

Biogenesis: Trees - beeches accompanied by birch, sycamore and hornbeam and conifers; Shrubs - hawthorn, blackberry, hazelnut; Herbaceous plants: mosses, lichens, fern, bear's honey, wine berry; Invertebrate animals - insects (wood beetle, beech tailor); Vertebrate animals: woodpecker, woodpecker, woodpecker, woodpecker, woodpecker, woodpecker, deer, brown bear, marten, lynx, wild boar, wild cat.

OAK FOREST ECOSYSTEM

It is found at altitudes below 800 m Biotope: temperatures 10^{0}C, precipitation of 800 mm/year, brown forest soils, light reaches the soil surface, Biocenosis: oak trees or related species (gorun, cer, garnita), rosehip shrubs, hawthorn, dove, herbaceous plants golomat, fruit of the earth, bulbous plants, Invertebrate animals, worms, spiders, snails, insects (rudiment, tailor)

Vertebrate animals: brown frog, toad, salamander, lizard, snake, woodpecker, gugustiuc, cuckoo, pupaza, wolf, fox., hedgehogs, squirrel.

THE SPRINKLE FOREST ECOSYSTEM

Spruce forests are called spruce forests and occupy the mountains throughout the Carpathian chain in the high regions from the upper limit of the beech to the subalpine zone.

Biotope: temperatures 3-5^{0}C, precipitation of 800-1300 mm/year, brown podzolic soils, the light is weak, the forests are dark, the winds are strong Biocenosis: predominant trees: spruce, larch, fir and pine, beech; Shrubs: in the forest clearings: blueberry, cranberry, raspberry, currant.

Herbaceous plants: mushrooms on the ground, mosses and lichens on the bark of trees, rarely ferns. animals: invertebrates, few insects (wasp, hairy spruce caterpillar, spruce beetle) vertebrates: woodpecker, pine tit, earwig, mountain grouse, marten

ZAVOI FOREST ECOSYSTEM

• It is located in meadows and along rivers, at altitudes of 70-300 m;

• with sandy, coarse soil;

• softwood trees: willow, white alder, black alder, poplar;

• herbaceous plants - wolf's foot, marigolds;

• animals - insects - white ant, red poplar beetle; birds - sitar, owl, blackbird and mammals - fox, wild boar.

ANNEX 2

Activity sheet GROUP I

Aim: To learn about the characteristics of the beech forest ecosystem; Required materials: manual, flipchart sheets, markers, glue.

Tasks: List the components of the beech forest biotope and its biocenosis and create a graphic representation of them with the materials provided.

The beech forest biotope is:

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The beech forest biocenosis is made up of:

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Activity sheet GROUP II

Aim: to learn about the characteristics of the oak forest ecosystem.

Required materials: flipchart sheets, markers, glue.

Tasks: list the components of the oak forest biotope and its biocenosis and create a graphic representation of them with the materials provided.

The oak forest biotope is:

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The oak forest biocenosis is made up of

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GROUP III

Activity sheet Goal: To learn about the characteristics of the spruce forest ecosystem.

Required materials: flipchart sheets, markers, glue.

Tasks: list the components of the spruce forest biotope and its biocenosis and create a graphic representation of them with the materials provided.

The spruce forest biotope is:

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The spruce forest biocenosis is made up of

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Activity sheet GROUP IV

Purpose: To learn about the characteristics of the Zavoi forest ecosystem.

Required materials: flipchart sheets, markers, glue.

Tasks: List the components of the Zavoi forest biotope and its biocenosis and create a graphic representation of them with the materials provided.

The Zavoi forest biotope is:

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The Zavoi forest biocenosis is made up of:

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ANNEX 3

EVOLUTION SHEET 1

The text is given:

“The forest surrounded the village like a wall, where the beaches and oaks looked like sentries. The warm, clean air made you breathe often, so that all your cells could enjoy the oxygen in it. The gentle light fell through the branches of the poplars and maples, on the dew drops transforming them into diamonds. Rusty leaves began to fall on the rich soil.”

Required:

A. Identify the ecosystem.....

B. List the elements of the biotope.....

C. List the elements of the biocenosis.....
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Score: a.1p; b.4p; c.4p; 1p by default

TOTAL: 10p

Working time: 5 minutes