

Ecosystem Organization and Functions

The role of energy

Digital tools utilized	Technical/digital skills to be possessed by the teachers
<ul style="list-style-type: none"> - Computer with Internet access, use of the electronic platforms e-class - Worksheets - Educational software 1st-3rd Junior High School Biology Ministry of Education interactive simulations - Screen Sharing - digital pen (Whiteboard) 	<ul style="list-style-type: none"> - How to make a ppt presentation - Ability to select and use information from websites for classroom work, create interactive contents.

Difficulty analysed

- Engaging all students in tasks so that they all can contribute to the lesson
- Offering students a range of choices (video, simulations, animated graphics, group-collaborative processing and debate) to participate in the learning process
- Using electronic platforms e-class, webex for online learning in order to deal with situations such as a pandemic or other harsh/unexpected conditions

Objectives

- Distinguish organisms into autotrophs and heterotrophs.
- Recognize the role of producers and decomposers in an ecosystem
- Recognize which trophic relationships connect organisms and how energy flows in an ecosystem.
- To illustrate the trophic relationships with food chains and food webs
- Construct food pyramids and justify the downward trend of energy in them

Description of the Lesson Plan

Phase 1

Material posted by the teacher on the e-Class platform has to be investigated by students who work individually.

They watch a video and an interactive presentation and prepare the Worksheet "Ecosystem Structure"

Students perform the digital Activity "I create food chains "and place organisms in the correct order in simple food chains

<http://photodentro.edu.gr/v/item/ds/8521/10772>

Phase 2 Using WebEx

Material used: Educational software Biology 1st-3rd Junior High School, Ministry of Education interactive simulations: "Food relationships and energy flow", "Food web" and "Food pyramids" "energy loss." The teacher using Webex screen sharing tool demonstrates the simulations to be used. These simulations are used by students in a playful way to assess their knowledge of

- 1) The flow of energy in natural ecosystems,
- 2) The concept of a food web
- 3) The information provided by its study and
- 4) The criterion for ranking populations in trophic levels
- 5) The teacher encourages students to ask questions.

- Observing the food webs of terrestrial and aquatic ecosystems composed of different plant and animal populations,
- The students are divided into groups and asked to classify these organisms in the correct trophic level. The teacher acts as a mediator and coordinator. Then with the use of animated graphics, short texts and narration, the teacher presents the causes that lead to energy loss during its flow between the organisms of an ecosystem.
- After engaging students interactively with the simulations and answering clarifying questions the teacher goes through the main points and check what students learned from the activity. Then students work individually to complete on- line comprehension exercises in the form of Multiple Choice and Matching Exercises
- We conclude the presentation of the unit with the question:

Suppose that in some terrestrial ecosystem decomposers are dramatically reduced due to a change in the local microclimate. How much will this affect the energy flow in the ecosystem? Do you agree with the opinion that "death and life are two sides of the same coin"?

The activity includes the group-collaborative critical processing of the relevant question which is completed in the form of a public dialogue (debate) by the groups of students

Phase 3

1) Students are asked to complete a revision task with open and closed type questions on the e-Class platform which is posted in Assignments

2) Reinforcement of positive attitudes.

This is achieved through the on-line viewing of a wildlife conservation video which aims to raise students' awareness and provide answers to the following topic:

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Many times we hear that animals, such as wolves or jackals, are harmful and that they should be killed, because they are dangerous. Do you agree with this suggestion? Do you think that the presence of these animals is not necessary in ecosystems?

<https://vyridis.weebly.com> Biology B' Gymn. Section 2.1
<https://www.facebook.com/Newsnergreece/videos/1315386985256592/>

Assessment

Go through the main points and check what students learned from the activity.

What was the most exciting thing you learnt from this activity?

Students complete an online questionnaire in the form of a poll.

Self-assessment is mainly carried out with exercises that are automatically corrected by the system and provide immediate feedback to students.

Further links

- <http://photodentro.edu.gr>
- <https://vyridis.weebly.com>