

NTTI Media-Rich Lesson

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NAME

Science Jeopardy: Survival of the Fittest II

LESSON TITLE

Fourth - Fifth

GRADE LEVELS

One Hour

TIME ALLOTMENT

OVERVIEW

In this lesson, students will learn about the ecosystem, population, community, producers and consumers, pollution, and acid rain. Students will learn how organisms live with living and nonliving things and how they have a relationship with their environment. Students will find out how humans can disturb or upset the stability of an ecosystem by polluting the environment with chemicals and waste products.

SUBJECT MATTER

Science and Technology

LEARNING OBJECTIVES

Students will be able to...

*Explain the relationships among organisms, populations, communities, producers, consumers, and ecosystems.

*Describe how pollution affects ecosystems.

STANDARDS

4.23 Topic: Ecology: Cycles of Matter and Flow of Energy

Standard: Describes relationships in living communities, changes that occur, and the impact of these changes. Constructs a model or diagram of a food chain/food web.



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Describes the impact of an interruption in the chain.

4.24 Topic: Ecology: Cycles of Matter and Flow of Energy

Standard: Identifies how matter and energy do or do not cycle in a ecosystem.

Describes how matter cycles in a ecosystem (nutrients, producers, consumers and decomposers) but energy must always be added.

4.25 Topic: Ecology: Cycles of Matter and Flow of Energy

Standard: Discusses causes and possible solutions for pollution. Identifies types of pollution, such as air pollution, water pollution and noise pollution, and discusses how overpopulation contributes to pollution. Formulates ideas for solutions to existing pollution problems.

MEDIA COMPONENTS

Integrated Science #105 “The Environment”

Integrated Science # 107-Endangered Species

PeachStar This website offers numerous clips about ecosystems, organisms, populations, communities, producers, consumers, succession and pollution.

<http://unitedstreaming.com>

MATERIALS

Per Class

Quiz-o-Matic

Video

VCR

Television

Overhead Projector

Transparencies chalk

Dry erase board and marker.

PREP FOR TEACHERS

*Make transparencies of Transparencies handouts 1 and 2.

*Assemble the Quiz-DO-Matic (buzzers)

*Cue “The Environment” videotape

*Must be able to log in on PeachStar website with a password and user code..

*Bookmark the PeachStar website- <http://unitedstreaming.com>. Insert member user and password codes. Click “Advanced Search”. Type the topics in the “search by keyword” bar. Click “go”. Click on the selected subtitles listed below.

Go to Creature Features: All Part of a Whole: Click on **The Wetlands Ecosystems** (02:38)

Go to Food Chains and Webs- Click on **Producers and Consumers** (03:34)

Source of Life: Water in Our Environment: Click on **Pollution and Our Surface**



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Water Supply (00:37)

INTRODUCTORY ACTIVITY: SETTING THE STAGE

Teacher says, “How many of you have played Jeopardy or have watched Jeopardy on television? Well, today we are going to play Science Jeopardy. You will be asked a series of questions, watch video clips and several vocabulary words will be introduced. We are going to find out how much you know about the ecosystem.

Here are the rules:

1. There will be two teams with 4-8 players.
2. Select team captains and one scorekeeper.
3. The scorekeeper will write down the scores for each team and tally the scores at the end of the game.
4. A team may buzz in at anytime during the reading of the question. However, if you **buzz** in before the complete reading of the question, the reader will not finish the question and you must answer the question.
5. If your team misses a question, the other team will be given an opportunity to answer the question.
6. Points will not be deducted from your score for incorrect answers.
7. The team to accumulate the most points wins.

Are there any questions? If not, let’s play Science Jeopardy: Survival of the Fittest. “

LEARNING ACTIVITIES

Step 1

Tell the students that an **ecosystem** is the interaction among the populations of a community and the nonliving things in their environment. Organisms interact with nonliving things when they breathe air, drink water, or grow from the soil. Ecosystems occur on land and in the water. Ecosystems that occur in the water are called an aquatic ecosystem. Take a look at this clip. Provide students with a **Focus for Media Interaction** by telling students to identify aquatic organisms in the video -Intergraded Science #105 “The Environment” . **CUE** the video to the Bobwhite bird. Tell the students to identify four organisms that would live in an aquatic ecosystem. You will receive two points for each organism named. (Crocodile, beaver, electric eel, snake, water lilies, fish, plants, etc.) **STOP** the video after the schools of fish are visible. **CHECK FOR COMPREHENSION** by asking the students name four of the aquatic organisms in the video. **REWIND** the video to the Bobwhite bird. **MUTE, PLAY** and name the organisms in the previous clip.

Step 2

Tell students to look at Transparency #1. Living things depend on one another and on non-living things in the world around them. For 10 points, name two more things that



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animals depend on besides plants for food for survival. (Air, hear, water, soil, and energy from the sun)

Step 3

For 5 points, answer this multiple choice question. Organisms interact with, one another and with nonliving things in their environment, what do we call the study of the interactions among living things and the nonliving things in their environment?

A. **Ecology** B. Ecosystems C. Environment D. Biosphere

Step 4

Provide a **Focus for Media Interaction** by asking the students to determine how the terrestrial environment will change if the tree is cut down. Take a look at this clip. **CUE and PLAY** the video where Dr. Allen hears a chainsaw. **STOP** the video when Eric and Dr. Allen finish talking. **CHECK FOR COMPREHENSION** by asking the students, “For 10 points, how does cutting down trees affect the terrestrial ecosystem? (It will change the amount of light, temperature, shade and fungus grows and breaks down the tree in order to return it to the forest floor; the undergrowth is controlled, and the aquatic community is growing from the big hole on the ground from whence the tree was uprooted.)

Step 5

Tell students to watch this PeachStar clip on the Wetlands Ecosystems. Provide students with a **FOCUS FOR MEDIA INTERACTION** by asking students to able to state the order of the ecosystems cycle for 5 points. **PLAY** the clip. **CHECK FOR COMPREHENSION** by asking the students to state the order of the cycle. (The cycle begins with producers, consumers, scavengers and decomposers and it starts over again.)

Step 6

Place Transparency 1-Pyramid A on the overhead projector. Tell the students to look at the transparency. Tell students that organisms interact with the same species and with different species. This pyramid shows the organization of living things into different levels. The higher the level, the more interactions there are and the lowest level of organization is the individual organism. The pyramid shows how energy moves through an ecosystem.

For 10 points, what happens to the amount of energy as you move from the bottom to the top of th

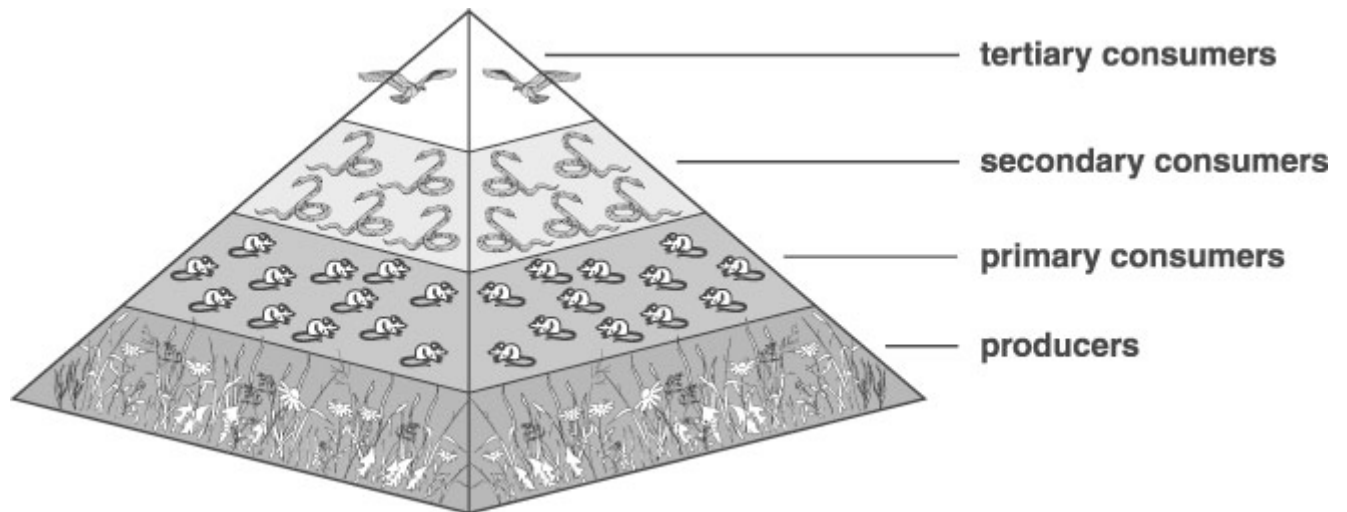


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- A. Energy increases and the number of animals increase.
- B. Energy increases and the number of animals decrease.
- C. Energy decreases and the number of animals increase.**
- D. Energy decreases and the number of animals decrease.

Step 7

Tell the students to look at the pyramid again. Teacher uses Transparency II-Pyramid A on the overhead again. Teacher starts at the bottom of the pyramid, read and point to each group of consumers and the producers. Tell the students that the next level of organization is a **population**. A **population** is a group of organisms of the same species that live in the same area. For 10 points, how do animals in a population interact with each other? (Answer: The members of a population interact with one another when they mate or compete for food, water, and space)

Step 8

Tell the students to look at the pyramid again. Tell the students that the third level of the organization of living things is called a **community**. A **community** is made up of populations of different species that live in the same area. For 10 points, “How is a community different from a population?” (Answer: A community includes all plants and animals that live together in an ecosystem. A population is a group of just one kind of plant or animal in the ecosystem.)

Step 9

Tell the students to listen to this clip about plants. Provide a **Focus for Media Interaction** by asking the students to look at a variety of plants and listen to why plants are important in our ecosystem and what might happen to an ecosystem that does not have plants. **CUE** the video, Integrated Science # 107-Endangered Species to the beginning of the tape. **MUTE** the volume and read the paragraphs below. **CUE** the video, Integrated Science # 107-Endangered Species, at the beginning of the tape. Plants use energy from the sun to make food. Plants absorb energy from the sun. A plant's chlorophyll and other pigments absorb some of the light energy. By the process of **photosynthesis**, the plant uses the absorbed energy to make sugar molecules. Plants are **producers** because they make their own food. Producers capture light energy from the sun and transform it into food. **STOP** the video upon reading the paragraph. **CHECK FOR COMPREHENSION** by asking the students to tell you what might happen to an ecosystem that does not have plants for 10 points. (Since plants produce their own food, they are the beginning of the food chain. Without plants, we would not have oxygen to breathe, food or shelter.)

Step 9

BOOKMARK the PeachStar website. Tell the students to listen to clip about Consumers and Producers. Provide the students with a **FOCUS FOR MEDIA INTERACTION** by asking the students to be able to distinguish between producers and consumers. **PLAY** the PeachStar clip on Producers and Consumers. **CHECK FOR COMPREHENSION** by asking the students to tell the difference between producers and consumers. (Producers make their own food. Consumers eat producers and/or other consumers.)

Step 10

Place Transparency 2 on the overhead projector. Tell students to look at the transparency. For 5 points, which diagram show how energy flows in the ecosystem?
(C)

Which diagram shows how energy flows in the ecosystem?

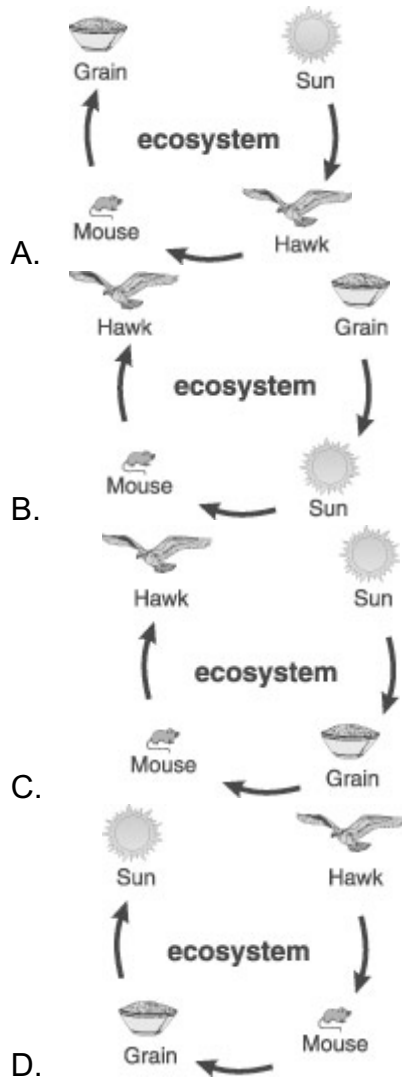


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For 10 points, what is the difference between a producer and a consumer? (Producers make their own food and consumers eat producers or other consumers to stay alive.)

STEP 11

Tell students that sometimes people produce a variety of wastes and poisons that affect ecosystems. Pollution is anything added to the environment that is harmful to living organisms. **PROVIDE A FOCUS FOR MEDIA INTERACTION** by asking students to watch a clip on pollution and find out how water becomes polluted. **PLAY** the PeachStar Pollution clip. **CHECK FOR COMPREHENSION** by asking the students to state two examples on how water becomes polluted. (Humans dump chemicals and waste in the water source. Trash and litter is thrown in the streets. Humans pour paints and

chemicals in the ground.) Tell students that pollution is most often caused by human activities. When harmful substances are added to Earth's water, air, or land, we call the problem pollution.

STEP 12

This concludes our Science Jeopardy Game for today. Let's tally up the points and see what your final scores are." Have the scorekeeper tally the scores. After revealing the final scores, allow students to shake hands with their opponents.

CULMINATING ACTIVITY

Step 1

Students can create their own Science Jeopardy version of the ecosystems by using information from the BrainQuest cards and <http://unitedstreaming> website.

Step 2

Students will write questions and answers on one side of index cards.

Step 3

Write "Ecosystems" on the opposite side of the card.

Step 4

Place cards on a pocket chart. Play "Science Jeopardy".

CROSS-CURRICULAR EXTENSIONS

Language Arts-Have a crossword puzzle contest. Show students how to design a crossword puzzle using the **DiscoverySchool** www.puzzlemaker.com website. Click "Puzzlemaker" under Favorites. Go to "Puzzlemaker Extras!" Double click on "Puzzlemaker Users's Guide." Follow the steps on how to create different puzzles. Have students to design puzzles using the ecosystem vocabulary words: ecosystem, producers, consumers, population, community, and pollution.

Technology Students can use this website (www.puzzlemaker.com) to create a crossword puzzle. Students will use as many science words and other key words from the lesson as possible.

COMMUNITY CONNECTIONS

Visit a nearby pond. Collect samples of pond water to examine.

Invite a marine biologist to talk to the class about water pollution and how to solve it.



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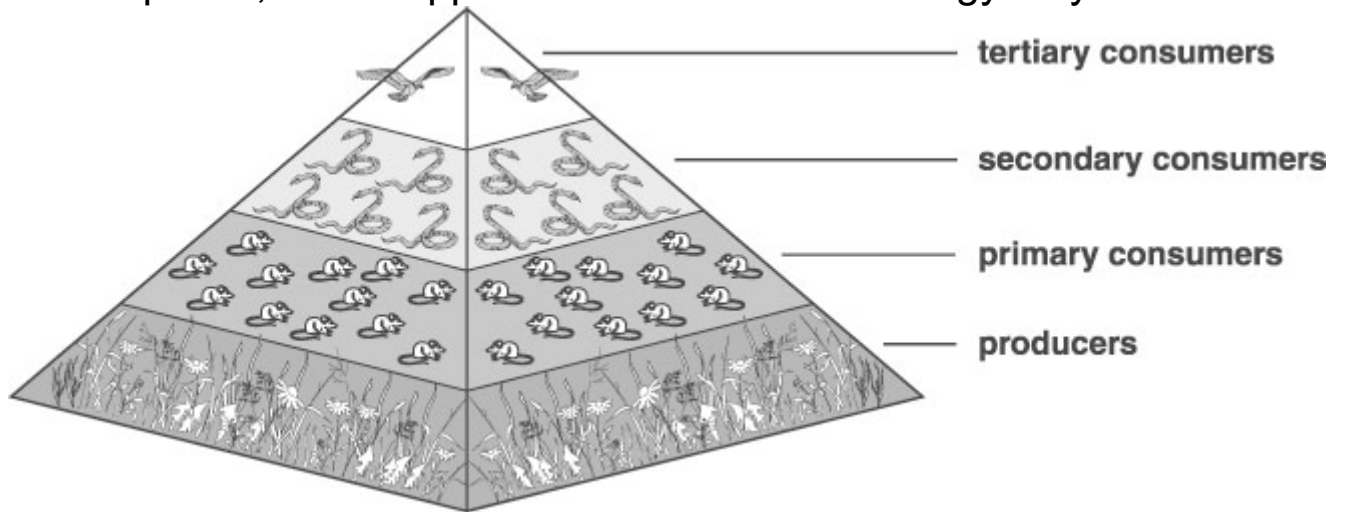


Science Jeopardy: Survival of the Fittest

Transparency 1

Pyramid A

For 10 points, what happens to the amount of energy as you move from the



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Transparency 2

Which diagram shows how energy flows in the ecosystem?

