



A Lesson on Changing the Ecosystem by Lawrence Poluchowicz

Grade Level: Grade 4

Subject Area: English Language Arts

Lesson Length: 2 hours 15 minutes

Lesson Keywords: Ecosystem, Language arts, food chains, carnivore, herbivore, evidence, 4th grade

Lesson Description: The goal of this lesson is to use evidence and research-based strategies to learn more about ecosystems. The students will read this passage about changing the ecosystem, and answer questions based on key words. The students will also research a carnivore or herbivore that lives in the prairie and answer a few questions about it. Along with this research, the students will demonstrate ways to protect our ecosystems and identify how population growth affects an ecosystem. Finally, the students will write a letter to the farmer and convince him to plow less land in the prairie.

Common Core Standards Covered with This Lesson

CCSS.ELA-Literacy.RI.4.1: Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

CCSS.ELA-Literacy.RI.4.4: Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.

CCSS.ELA-Literacy.RI.4.7: Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

CCSS.ELA-Literacy.RF.4.3a: Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.

CCSS.ELA-Literacy.W.4.1: Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

CCSS.ELA-Literacy.W.4.7: Conduct short research projects that build knowledge through investigation of different aspects of a topic.

CCSS.ELA-Literacy.W.4.8: Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources.

Lesson Content: Book/Story/Reading Passage

Instructions: Please read the following reading passage as many times as needed (aloud and silent) before starting to go through other lesson pages. Understanding the content of this passage is very important since the lesson activities will be all about this content. Feel free to print the passage if needed.

Changing the Ecosystem

by

Content: A food chain is a link between plants and animals. It starts with a plant. The next part of the link is a plant eater. When the prairie plants were uprooted, the animals that depended on them lost their food source. So while the farmers produced more food for people, they broke the animals food chain.

A food chain is part of a bigger system called a food web. That web links the living things in an ecosystem. The herbivores in that system depend on the plants. If the plants are removed, the herbivores cannot survive. Then the carnivores, the animals that eat other animals, lose their food, too. Remove just one kind of plant from an environment and you disrupt the food web. Plow up the land and you destroy the whole system.

Read the following time-line and figure out the rate of population growth. To do that, divide the bigger number by the smaller number. You can estimate the answer. For example, one million is two times 500 thousand. For between 1880 and 1890 the population more than doubled.

1880 ? ? ? Population of the city is 503,185; farms continue to expand

1890 ? ? ? Population of the city is 1,099,850

1900 ? ? ? Population is 1,698,676

1910 ? ? ? Factories expand in the city; population is 2,185,283

1920 ? ? ? City population has grown to 2,701,705

1929 ? ? ? A farmer near Chicago reports plowing up several frogs as he

? ? ? ? ? got his field ready for planting this spring.

1930 ? ? ? City population is 3,376,438

We do not have population information on the butterflies, but we do know about the bison. By 1880, only a few hundred bison still live in this country. By 1900, Illinois and other Midwestern states were becoming known as the nations breadbasket. Millions of acres of land had been turned from prairie into farms. Read this letter from a farmer to understand what this change meant for the animals.

Dear Martha,

Today, I was plowing the new field, and I saw a meadowlark. I really like that kind of bird. I love its song. Its a good neighbor, too. It eats the insects, and you know we have too many of them. That bird kept flying back and forth. It seemed to be looking for something. Maybe it was looking for its nest from last year. Theres about ten acres of prairie that Ive left near the road. So I thought the bird would go there. But it flew away. Im not sure where it went.

I got the whole field plowed today. Tomorrow well put in the seed. This is going to be a great year. I hope you can come to visit this spring. Of course, well have some work for you to do, but it will be good to be together again.

Task 1: Vocabulary

Instructions: Please complete the following vocabulary activity by choosing the correct meaning of each word selected from the passage and use of each word correctly in a sentence.

Q: 1 WordPhrase: disrupt **WordPhraseTier:** 2

Question: "Remove just one kind of plant from an environment and you disrupt the food web." What does the word "disrupt" mean in the sentence?

- A: annoy
- B: interrupt
- C: destroy
- D: delay

Question: Which sentence uses the word "disrupt" correctly?

- A: The snake was angry with us and started to disrupt.
- B: I disrupt to the store every day.
- C: I use a disrupt to look at the night sky.
- D: Viruses disrupt the human body, by attacking healthy cells.

Q: 2 WordPhrase: estimate **WordPhraseTier:** 2

Question: "To do that, divide the bigger number by the smaller number. You can estimate the answer." What does the word 'estimate' mean in the sentence?

- A: demonstrate
- B: guess
- C: view
- D: scream

Question: Which sentence uses the word "estimate" correctly?

- A: The students needed to estimate how many jellybeans were in the jar.
- B: My mom estimates the dishes after we eat.
- C: The bus estimated us to school.
- D: The waiter will estimate our food to the table after it was cooked.

Q: 3 WordPhrase: population **WordPhraseTier:** 3

Question: "For between 1880 and 1890 the population more than doubled." What does the word "population" mean in the sentence?

- A: Number of clouds in the sky
- B: Number of people living in an area
- C: Number of people eating chocolate cake
- D: Number of movies in the movie theater

Question: Which one of these sentences uses the word "population" correctly?

- A: The population is my favorite place to go to.
- B: The population at the buffet is really tasty.
- C: There were many populations in the sky last night.
- D: The population of a large city will continue to grow each year.

Q: 4 WordPhrase: Herbivore **WordPhraseTier:** 3

Question: "If the plants are removed, the herbivores cannot survive." What does the word herbivore mean in the sentence?

- A: An animal that jumps
- B: An animal that eats meat
- C: An animal that eats plants
- D: An animal that eats nothing.

Question: Which sentence uses the word "herbivore" correctly?

- A: My rabbit is an herbivore, because it eats hay.
- B: The herbivores wanted their steak medium rare.
- C: The herbivore helped us recommend a yummy burger place.
- D: My cat is an herbivore, because it likes fish.

Task 2: Forum Discussion

Instructions: This discussion forum will have questions for students to respond. Read the posted questions, and respond to each. Students are responsible for posting one initial and two peer responses for each topic.

1 - How can we save an ecosystem?

The reading passage mentioned that uprooting prairie plants will disrupt a food chain, and its ecosystem. What are some things we can do to protect plants in prairie ecosystems? How can we raise awareness on these issues?

2 - Research an herbivore or carnivore and provide information.

The reading passage states, The herbivores in that system depend on the plants. If the plants are removed, the herbivores cannot survive. Then the carnivores, the animals that eat other animals, lose their food, too. Remove just one kind of plant from an environment and you disrupt the food web. You are going to research one herbivore or carnivore that lives in a prairie and answer these questions below.?

Is your animal a carnivore (an animal that eats meat), an herbivore (an animal that eats plants), or an omnivore (an animal that eats both plants and meat)??

What foods does it eat??

Are there any animals that eat your animal??

3 - Why does the author provide the timeline for population growth?

In the reading passage, the author provides a timeline to show how much the population changed from 1880 to 1930.?

1880 ? ? ? Population of the city is 503,185; farms continue to expand

1890 ? ? ? Population of the city is 1,099,850

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? ? ? ? ? got his field ready for planting this spring.

1930 ? ? ? City population is 3,376,438.?

?

Why do you think the author wrote about the growing population, and what does this have to do with a decrease in farmland??

If the change in population doubled in 60 years on this timeline, how big do you think the population changed from 1930 to today??

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Task 3: Writing Activity

Instructions: You are to write and post a letter to the farmer on why he should not plow up the field. Your letter should be three paragraphs and should persuade the farmer to save the ecosystem. Use evidence from the text to support your ideas.?

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