Lesson: Science Grades 4-6
Animal Life Cycles

Survival Tips

Charlotte, Wilbur, Templeton, Fern, Sheep, Goose and Gander live and share an ecosystem. What does each of these organisms take and give to the ecosystem in which they live?

Introduction

Objective:

Students will explore the natural food chain/web for an organism and required tips for survival in a farm ecosystem.
Student will examine the relationships and patterns that exist between the organism and their needs within the ecosystem.

Academic Content Standards:

- National Science Education Standards: Life Science
  - *Characteristics of organisms*
  - *Life cycles of organisms*
  - *Organisms and environments*
  - *Structure and function in living systems*
  - *Reproduction and heredity*
  - *Regulation and behavior*
  - *Populations and ecosystems*
  - *Diversity and adaptation of organisms*
  - *Biological evolution*
  - *Interdependence of organisms*
  - *Matter, energy and organization in living systems*
- National Science Education Standards: Science as Inquiry
  - *Abilities necessary to do scientific inquiry*
  - *Identify questions and concepts that guide scientific investigations*
  - *Design and conduct scientific investigations*
  - *Understanding about scientific inquiry*
- Ohio Academic Content Standards for Science: Life Sciences
  - *Students demonstrate an understanding of how living systems function and how they interact with the physical environment. This includes an understanding of the cycling of matter and flow of energy in living systems. An understanding of the characteristics, structure and function of cells, or organisms and of living systems are developed as well as a deeper understanding of the principles of heredity, biological evolution and the diversity and interdependence of life. Students also demonstrate an understanding of different historical perspectives, scientific approaches and emerging scientific issues associated with the life sciences.*
    - *Benchmark:* No relevant indicators for grade 4 (focus is on plants)
    - *Benchmarks:* B and C (5th Grade)
    - *Benchmarks:* C (6th Grade)
- Ohio Academic Content Standards for Science: Scientific Ways of Knowing
  - *Students realize that the current body of scientific knowledge must be based on evidence, be predictive, logical, subject to modification and limited to the natural world. This includes demonstrating an understanding that scientific knowledge grows and advances as new evidence is discovered to support or modify existing theories, as well as to encourage the development of new theories. Students are able to reflect on ethical scientific practices and demonstrate an understanding of how the current body of scientific knowledge reflects the*

historical and cultural contributions of women and men who provide us with a more reliable and comprehensive understanding of the natural world.

- *Benchmark:* A (4th, 5th & 6th Grades)

Getting Started

Materials:

- Chart and mural paper (Each group will need several pieces, plus several large pieces to record for class data and create an ecosystem mural.)
- Markers, crayons, colored pencils, etc.
- Illustrations of each of the organisms (Charlotte the spider, Wilbur the pig, Templeton the rat, Fern the child, Goose and Gander, birds, and sheep.) One set should be numbered 1 through 6 on the back of the illustration. Several additional illustrations needed for creating the class food web/chain and an ecosystem mural.
- Research materials
- Survival Tips Group instruction sheet

Vocabulary:

- Characteristics
- Food web/chain
- Organism
- Ecosystem
- Survival
- Basic needs
- Herbivore
- Carnivore
- Decomposer

Technology:

- Students use a drawing or graphing software program to create the food web/chain, accompanied by illustrations (computer scanned) or some other visual representations.
- Students create a presentation slide show for the steps of the food web/chain for each organism. Combine individual presentations to make a larger class show.

Lesson

Orientation Activity:

Teacher and students will generate a list of the characters from the play, *Charlotte's Web,* and record on chart paper. Ask students to describe the ecosystem in which these characters live. Have students identify physical descriptions as well as relationships between the members of the ecosystem. Record all of the information on chart paper or the board. (Extend discussion of the listings to include factors of a larger ecosystem of which the smaller one is a part.)

Learning Activity:

Have illustrations of the characters that you have selected to use for this activity available to share with the students. Each illustration will have a number on the back of it that equals the number of student small groups for the activity. (If you use the characters in the production you will have six groups.) Count off students by that number (e.g., 1,2,3,4,5,6, etc.). All the 1's work in a group, all the 2's work in a group, and so on. Explain to the class that each group will be create a "top ten list" of tips for their selected organism's survival in the farm ecosystem and create a food chain/web for the same organism.

Each group will create a list of their animal's needs within the given ecosystem. They will also discuss and identify patterns for the organism's survival within the ecosystem. Research may be necessary in order to identify specific needs for an organism, and to discover its rank within a food chain/web that exists within the ecosystem. The group may select the visual means of representing this information for presentation to the entire class. Each group shares and posts their collected data and organized findings for the entire class to see. This posting includes the "top ten list" of tips for survival of their selected organism to help it stay alive, as well as the web/chain for the organism within this ecosystem.

Conduct a discussion related to the findings of each group. Make comparisons between the data for each organism. Ask students, why would differences exist between the organisms if all are living within the same ecosystem? What impact do these differences have on the survival of each organism? What would happen if one of the organisms were eliminated? What impact would it have on the entire balance of the ecosystem? What survival tips are common for all of the organisms? What does this indicate about the needs of an organism?

Using the food web/chains created by each group, create a giant web/chain for the ecosystem. Have multiple copies of the organism's illustration available in order to place them accordingly within the web/chain, especially if the organism is involved in multiple chains. Make comparisons in the data.

Have a mural representation of the ecosystem available for class input. Each group confers and selects the "safest" place within the ecosystem for their organism to live in order to survive. When placing an illustration of an organism in the chosen location, the group provides to the class as to why, and records their rationale on chart paper next to the organism's name.

All of the data collected by the groups and created by the class is posted within the classroom. Each student writes a description of the ecosystem using the data that has been presented. Evidence from these findings is included in the description as well as a suggested name for this ecosystem. The description will also make connections between the six organisms and their relationship within this ecosystem.

Evaluation and Follow-Up

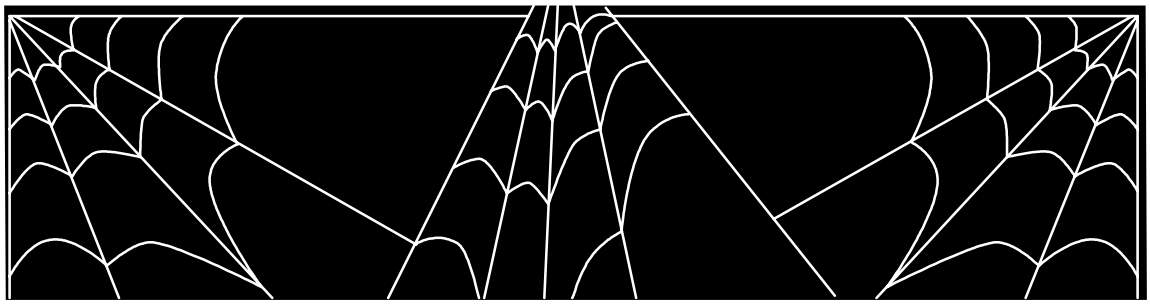
Assessment Tools and Methods:

Observation of students and anecdotal notes during planning and construction will demonstrate students' ability to follow procedures, cooperate within the team and class, and participate in activities. Charts posted around the room will illustrate group effort and contribution by and to the entire class. The individual student's written description of the ecosystem will provide evidence of the student's ability to use data to explain thinking and for drawing conclusions. It also allows the student to evaluate the work of other students and the class.

Interdisciplinary Connection:

Language Arts: The written description will be completed using the requirements for an expository writing. The lists and charts will indicate student abilities to locate and record information pertinent to the assignment. Research skills may be necessary if the group needs additional information for their conclusions.

Social Studies: Identify locations around the world where this ecosystem could survive. Explain why.



Survival Tips Group Instruction Sheet

The characters from *Charlotte's Web* must know what they will need for survival in their ecosystem. Your group will help the class determine these necessities.

Determine:

1. **What are the needs of each organism?**
2. **What pattern(s) does the organism follows to survive in its environment?**
3. **What type of animal (herbivore, carnivore, omnivore, decomposer) is each character and what is the food web/chain vital for a member of that group or category?**
4. **What are the ten most important things your organism needs to know to survive? Create a "Top Ten List". Yes, if David Letterman can do it so can you!**

Start researching your organism. Use any resources that you like, Yes, you may go to the library, Yes, you may use the computers, Yes, you may use the books I have borrowed from the local library. Yes, you can talk to your group members!

You will share your findings with the class on _____. Your presentation must include a visual that can be posted on the classroom walls for others to read and evaluate. This presentation must have a "Top Ten List" for your organism's survival (be creative but factual), an illustrated diagram of the food web/chain for your organism, and any other data that your group feels is important for understanding the relationship between your organism's patterns and needs within this ecosystem.

Be prepared to place your organism in the safest place for it to survive within the ecosystem. Your group should be able to explain why you placed it there and how it will benefit the ecosystem.