Food Chains and Webs

Shopping at Nature's Grocery Store

Resource Items

- Teacher Information Packet: found in the Kit's White Envelope, contains Science center information and the links to the NYS Science Standards
- Teacher Notes (note taking): see the Teacher Resource webpage related to this kit
- Teacher Guide: comes with and returned with the Kit box

Orienteering

Teacher Guide

- Overview (p.2 – 3): What
- The Science (p.5 – 6): Why
- Materials (p.7 – 8): How (with What?)
  Materials List vs Packing List: The Materials List in the Teacher Guide indicates the necessary items for the activities. The Packing List in the Science Center Kit's White Envelope tells you what is supplied.
- Activity Summary and Preparation (p. 9 – 13):

The Doing

- Teacher Guide p. 15 – 102: How

Objectives	Materials	Guiding the Act.
Schedule	Preparation	Reinforcement
Vocabulary	Background Info	Connections

Activity 1: Soil

Preparation:

- Local soil (~8 cups)
- **Spring water = Aged water,** see next slide
- Newspaper or … to cover tables
- Distribution of materials?
  - Water
  - Potting soil
  - Peat humus (moistened)
  - Local soil
  - Gravel
  - 11” x 17” paper
  - Tweezers
  - Magnifiers
  - Small containers
  - Paper towels

Housekeeping: use masking tape for labels, rinse out containers, CAUTION: don’t clog your sink

WHY?

What is soil?

Where does it come from?

Tips and Hints:

- Cover the tables with newspaper.
- Use the large (6 qt.) containers to supply water and for clean up.

Terrarium (p. 20)

- Picture is misleading as to the amount of soil there is placed in the terrarium. The total height of gravel and peat soil is about 2.5 inches.
- Bags to cups: one bag = 2 cups
- Place a piece of paper towel or some leaf litter between gravel and peat layers.
- Water using the sprayer, or pour water down side wall until visible in gravel layer. Cover - ↓ evap.

Use “Connections” to diff. instruction, apply concepts & review.

“Aged Water”

The Teacher Guide lists “Spring Water” as a needed material item. What is needed is water for the terrariums that does not contain high levels of chlorine or other such materials. In most cases, aging water will remove the main water issue, chlorine .

- Place a quantity of water into a well rinsed bucket, pail, gallon jug or other container.
- Leaving the top open or lightly covering place the container in a spot out of the way of “traffic”.
- Allow the water to sit for a few days or longer for the chlorine to dissipate out of the water and into the air.

Activity 2: Plants and Soil

Preparation:

- Newspaper or … to cover tables
- Distribution of materials?
  - Ryegrass seeds (60/team)
  - 5c Potting soil/5c Sand
  - Peat humus (moistened)
  - Potting soil
  - Water in large cup/team
  - Small cup
  - 3 Flower pots/team
  - Trays

WHY?

How does soil type affect plant growth?
How can we set up an experiment?

Tips and Hints:

- Engage the students to plan the experiment.
- Cover the tables with newspaper.
- Potting soil/sand mix: use the bucket provided with the kit.
- Cover the flower pots to reduce evaporation?

Act. 3 : use plants from Act. 2 and/or plant extra seeds in the small cups for Act. 3

Use “Connections” to diff. instruction, apply concepts & review.

Housekeeping: masking tape labels, rinse out small containers
CALL FOR CRICKETS, EARTHWORMS AND ANOLES

Activity 3: Plants as Producers

Preparation:

- Newspaper or … to cover tables
- Distribution of materials?
  - Ryegrass seeds (60/team)
  - 5c Potting soil/5c Sand
  - Peat humus (moistened)
  - Potting soil
  - Water in large cup/team
  - Small cup
  - 3 Flower pots/team
  - Trays

WHY?

Why are plants called producers?

How can we set up an experiment?

Tips and Hints:

- Grass seeds will sprout in 3 – 4 days.
- Ask students to think of answers to the question and to plan the investigation.
- Cover the flower pots to reduce evaporation?
- Follow up with the Science Challenge (p. 37)

Use “Connections” to diff. instruction, apply concepts & review.

Housekeeping: masking tape labels, rinse out small containers CALL FOR CRITTERS?

Activity 4: Observing Crickets

Preparation:
- Terrarium
- Distribution of materials?
  - Small containers
  - Magnifying glasses

Housekeeping: every few days wipe out the cricket container

WHY?

What do you observe about crickets?

Tips and Hints:
- Do not name (personify) the crickets as they have a life's journey to follow.
- Ask students to make observations and formulate questions about crickets.
- Follow up with the Science Challenge (p. 45)

Crickets will arrive in a small container (plastic box or bag). Clean out the large bucket that arrived with the kit and "dump" the crickets in. You do not have to put the lid on as they cannot climb nor jump out. Give them places to hide (crumpled paper, cardboard tubes).
Feed them the supplied food and water them using damp paper towels or slices of apple/potato.

Use "Connections" to diff. instruction, apply concepts & review.

Activity 5: Observing Anoles

Preparation:

- Terrarium – grass should be growing, crickets chirping …
- You may order up to 8 Anoles
- Anoles are climbers and are most comfortable hanging out on branches. Prepare the terrarium with a stick for the Anole to hang out upon.
- Will you need the "Anole Greenhouse"?
- Fishnet = Anole catcher

Housekeeping:

Spray the grass and wall of the terrarium with water – 2x/day

Cover the top to decrease evaporation (leave one hole for ventilation).

Water/feed/clean crickets

WHY?

What do you observe about anoles?

Tips and Hints:

Anoles will be drop shipped in a small box or delivered in a plastic bag. If drop shipped, have a clear, large, plastic bag available and open the box inside the bag. Dump the contents into the bag. Collect the Anoles one by one to place in terrariums. Secure the top (large rubber bands in kit)

- Share with your students that the Anoles are captured from the wild and may or may not survive captivity.
- Ask students to make observations and formulate questions about Anoles.
- Consider doing the Science Extension (p. 52) but not with mealworms – ask students to bring in other insects/insect larvae.
- Follow up with the Science Challenge (p. 52)

Anole Greenhouse

If you are concerned about the temperature of your room/school, we have provided some materials to keep your terrariums warm.

Activity 6: Observing Earthworms

Preparation:

- Terrarium – grass should be growing, crickets chirping , Anoles are basking…
- Our earthworms, red wigglers, do not need to be kept cold (refrigerated) but don't leave them in a super warm place.
- Add some leaf litter to the terrarium for the earthworm.

Housekeeping:

Add some vegetable scraps or pieces of leaf litter for the worms.

Spray the grass and wall of the terrarium with water – 2x/day
Cover the top to decrease evaporation (leave one hole for ventilation).

Check on crickets

WHY?

What do you observe about earthworms?

Tips and Hints:

The earthworms will arrive in a container which they can be kept in for a few days. (Keep them in a cool spot to slow them down.) They are composting worms so you can add vegetable scraps or even some leaf litter to keep them "happy".

Longer timeframe? Place in a larger container in some soil and add vegetable scraps, sprinkle w/water.

- Share with your students that these earthworms are different from the ones found in our soil. They live closer to the surfaces; our earthworms burrow down to cooler temperatures, as needed.
- Ask students to make observations and formulate questions about earthworms.
- Consider doing some investigations (for ideas see Science Extension (p. 58)

Activity 7: Animal Behavior

Preparation:

- Terrarium – grass should be growing, crickets chirping , Anoles are basking, earthworms are being "earthy" …

WHY?

How do animals behave in the terrarium?

Tips and Hints:

Students will be studying the behavior of the animals in the terrarium by making observations.

Encourage students to list or share (chart?) questions that may come from these observations.

Are there investigations that might come out of these questions? (use Science Extension (p. 66) as a guide)

Housekeeping:

Add some vegetable scraps or pieces of leaf litter for the worms.

Spray the grass and wall of the terrarium with water – 2x/day
Cover the top to decrease evaporation (leave one hole for ventilation).

Check on crickets

Activity 8: What do crickets eat?

Preparation:

- Place one cricket in each of 8 small containers with a small piece of crumpled paper towel. Do not feed the crickets for 2 days, just moisten part of the paper towel.
- Hamburger is not necessary, you can substitute a small piece of bologna or a piece of vegetable (lettuce, carrot …)

WHY?

What do crickets eat?

Tips and Hints:

Encourage students to list or share (chart?) questions that may come from these observations.

Are there investigations that might come out of these questions? (use Science Extension (p. 66) as a guide)

Housekeeping:

Check on Terrarium

Spray the grass and wall of the terrarium with water – 2x/day

Check on crickets (food /water, add some lettuce or apple slices?)

Activity 9: Earthworms and Decomposers

Preparation:

- Carefully read the "Background Information" section (p.73). and the relationship between earthworms and decomposers.

Housekeeping:

Check on Terrarium

Spray the grass and wall of the terrarium with water – 2x/day

Check on crickets (need to order more?)

WHY?

Why are earthworms called "decomposers"?

Tips and Hints:

Encourage students to list or share (chart?) questions that may come from these observations.

Are there investigations that might come out of these questions? (use Science Extension - p. 66 as a guide)

Suggestion:

It may be difficult to observe the "feeding" habits of the earthworms in the terrarium. One option is do this in a small container. Place some worms in the small containers and add very small pieces of wilted vegetative matter (scraps, peels). That "spoiled" stuff that we often throw away is perfect. Place a damp piece of paper towel on bottom and top of the container, occasionally misting to keep moist. Students can observe the worm's behavior.

Activity 10: Mystery Pellets

Preparation:

- Pieces of newspaper or news print to cover desks.
- Note: Owl pellets are microwaved to be sterile.
- Soak Owl pellets in warm water for 20 – 30 min. to soften.

WHY?

How do you draw a food chain that includes an owl?

Tips and Hints:

Have at least four students working on part of one owl pellet. Some students will be interested in finding different bones and sorting them. Other students may be interested in constructing a complete skeleton. Additional resources can be found on the Teacher Resource webpage

Encourage students to list or share (chart?) questions that may come from these observations.

Research Projects – see Connections (p. 87)

Housekeeping:

Check on Terrarium

Spray the grass and wall of the terrarium with water – 2x/day

Check on crickets (food /water, add some lettuce or apple slices?)

Activity 11: Food Chain Game

Preparation:

- Label index cards (p. 89)
- Punch holes in cards
- Bowls of popcorn?
- Cut yarn pieces

WHY?

How can you compare our food chain game to a real food chain?

Tips and Hints:

Reinforcement (p.11)

Research Projects – see Connections (p. 95)

Housekeeping:

Check on Terrarium

Spray the grass and wall of the terrarium with water – 2x/day

Check on crickets (food /water, add some lettuce or apple slices?)

Activity 12: Web of Life

Preparation:

- Food web cards cut out

WHY?

How does a food chain compare to a food web?

Tips and Hints:

Reinforcement (p.11)

Reinforcement Activities and Extensions– see Connections (p. 101)

Housekeeping:

Check on Terrarium

Spray the grass and wall of the terrarium with water – 2x/day

Check on crickets (food /water, add some lettuce or apple slices?)

Assessments: Formative

Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

Act. 1 What is Soil?
Act. 2 How does soil type affect plant growth?
Act. 3 Why are plants called producers?

Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

Act. 4, 5, 6 What do you observe …
Act. 7 How do the animals behave in the terrarium?
Act. 8 What do crickets eat?
Act. 9 Why are earthworms called decomposers?

Describe the relationship between scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

Act. 10 How do you draw a food chain …
Act. 11 How can you compare our food chain game …
Act. 12 How does a food chain compare to a food web?

Assessment: Summative

Delta

Assessments TG 103 – 108

Other Options

Project: Ask students to research and create a food chain using "Food Chain Stackers". (see teacher resource webpage, Gr. 3 – Food Chains and Webs)
Have the students explain their project by writing explanatory text using specific terms and guidelines.

Use Food Chain Stackers to share a food chain with the students and have the students write explanatory text using specific terms.

Give students two simple food chains to compare and contrast using specific terms and guidelines.