



What is an Ecosystem?

Lesson 3 - Standards Checks!

Essential Questions:

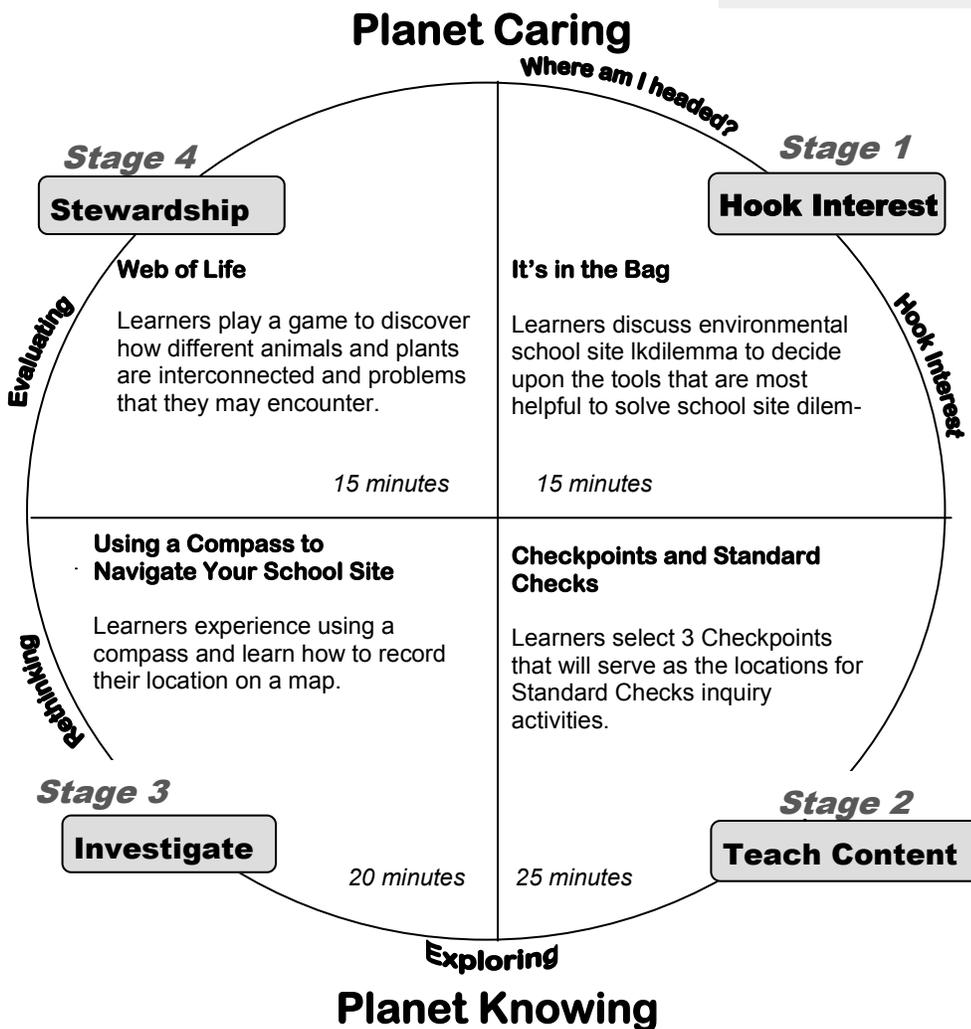
- How can I use tools to solve environmental dilemmas?*
- How can I keep track of ecosystem health on my school site?*
- How are animal and plant species interconnected?*

At a Glance:

This lesson starts with 'dilemma scenario cards' that can be solved by using science inquiry tools on the club site. Next, learners select three Checkpoints on their club site and conduct basic Standard Checks at each site. Learners gain experience using a compass and map. This module ends with an activity that depicts the interconnectedness of different plants and animals, showing the holistic view of Earth's ecosystems.

Concepts:

- Healthy functioning ecosystems maintain life in balance on Garden Earth.
- Although the type of ecosystems varies around the world, all ecosystems are important for maintaining a healthy planet.
- There are seven eco-services or life-support functions provided by planet Earth.
- Human activities can create stresses that alter normal ecosystem functions, and impair life support functions.



Objectives

Learners ...

- 1) problem solve with tools, knowledge and experience.
- 2) select Standard's checks' Checkpoints and collect related data.
- 3) gain experience using a compass.
- 4) record their location on a club site map by using a compass and estimating distance with steps and strides.
- 5) describe how different animals and plants are interconnected on the club site or other natural area.
- 6) state 2 problems that each species encounters.

PROCEDURES IN BRIEF: Lesson 3—Standard Checks

Stage 1. It's in the Bag

Procedure:

1. Divide GEN Club members into groups.
2. Give each group a dilemma and a card with a list of Standards Checks Field Bag contents.
3. Learners will identify environmental issues and brainstorm ways to use the tools in the field bag to solve the potential problem.
4. When finished, ask each group to present their dilemma and solution.
5. Ask learners to generate discussion questions for the entire group to discuss. Questions may include problems that could arise from the first issue, impacts on different eco-service departments, and possible causes of the initial issue and ways to prevent and correct the problems.

Supplies

- Standards Checks Field Bag
- Tape measures
- Probes or level one tools
- Identification guides
- thermometer

Possible Answers

Dilemma 1: map, compass

Dilemma 2: flagging, identification guide, rubber gloves

Dilemma 3: identification guide, ruler, camera

Dilemma 4: soil moisture probe, or hygrometer, temperature probe or thermometer, identification guide, light probes

Dilemma 5: identification guide, ruler, magnifying glass

Dilemma 6: soil moisture probe or hygrometer, identification guide, soil color card

Stage 3. Using a Compass to Navigate Your School Site

Procedure:

1. To determine your bearing with respect to a certain feature of your club site, point the arrow on the circular plate surrounding the face of your compass toward this feature.
2. Turn the dial of the compass until North matches the tip of the compass needle. The arrow of the surrounding plate will be pointing to a number in degrees on the dial; this is the bearing for the feature on your club site or landmark.
3. A great way that scientists estimate distances in the field is to measure their strides. A stride is a comfortable step, not too close together and not too far apart - about a shoulders' width apart. Someone would walk the distance while counting the number of strides. The number of strides can then be multiplied by the length of one stride to come up with an estimation of the distance.
4. The map is a template that can be used for all GEN Standards Checks. When recording location information regarding Standards Checks on the map, club members can work in groups to locate direction with a compass, measure distances to landmarks with tape measures and strides and record information with drawings and text on the map template.

Supplies

- Compass
- Map template
- Clipboard
- Pencil
- Calculator
- measuring tape

Stage 2. Checkpoints and Standard Checks

Procedure:

Part A: Choosing & Marking Checkpoints!

1. This only needs to be completed once; in subsequent years you will use the same checkpoints. When the three sites are chosen, they will be marked with markers.
2. Choose a name for each checkpoint that distinguishes it from the others and helps you to remember which Standards Checks are done there. Standards Checks for each department should be done at two locations.
3. Next, add the three official locations for your GEN Club Checkpoints to your club site map (*see How to Get a Club Site Map*). This may require instruments like a tape measure or compass.
4. Data will be recorded at each checkpoint each year (preferably in two different seasons each year).
5. Data sheets will be kept in the GEN Club Log Book.

Supplies

- Worksheets
- Soil thermometer
- Air thermometer
- Soil Color Chart
- Stick to dig in soil
- Digital camera
- Cord to transfer image to computer

Part B: Documenting Checkpoints!

Divide club members into three teams and have learners collect data at the three Checkpoint sites. The data can then be compiled on the comprehensive chart and placed in the Log.

Stage 4. Web of Life

Procedure:

1. Tell learners, "in this activity we will imagine that we are different plants or animals that live in the school ecosystem".
2. Have learners form a circle and sit down. Give each student a card that identifies the role they will play in the activity. Have learners hold their card so everyone can see it.
3. Tell learners, "You all are important parts of the school site ecosystem and you depend upon each other for survival. Identify one (or more) parts of the school ecosystem that you need."
4. Choose one student to start the activity. Give this student one end of the ball of string; you hold the complete ball. Ask this student to name one part of the ecosystem that he/she needs to survive and explain why. Pass the string to the student holding the card named by the first student. Continue until all the learners have participated.
5. Next, tell the learners, "Look at the links from your part to other parts of the ecosystem. We have formed a web of life and you are all closely related in this fragile web."
6. "Now imagine this - All the trees and plants on our club site had to be cut down to allow space for more trailers and parking spaces. The first thing that happened when the trees were cut was many animals that depended upon the trees fled or died."
7. Instruct learners that if they depended upon these plants in any way, then they need to drop their strings since the trees were cut down.
8. "Unfortunately, after the trees were cut down, topsoil was exposed to rain and eroded away - and eventually washed into the streams. The quality of the nearby stream, at least temporarily, is very poor. If you needed the stream for your survival, you need to drop your string."
9. Learners can see that with a few changes to the ecosystem, the web of life is damaged or destroyed.

Supplies

- Ball of string
- Role play cards