ACES WILDLIFE RESCUE
AMBERGRIS CAYE, BELIZE

LESSON plan

Grade: Standard 3

Subject: Science

Cycle 4 Week 1 of 3 Lesson #5
Duration: 60 Minutes Page 1

lesson Standards: SC 6.07 Determine, describe, and investigate how selected plants and animals grow and discuss the factors that affect the plant and animal growth rate.

Learning objective/s:

- Build a hydroponic seed chamber for the experiment that will begin in 5 days.
- Conduct simple experiments to observe how changes affect growth.

Materials needed:

- Chick and Tree Visual
- Hydroponic Seed Chamber Directions (1 per Group)
- 100 Pinto Beans
- 1 Styrofoam egg carton (or large food container) 1 for every 6 students
- 4 paper towels per group
- 1 Large wide-mouth (quart size) jar or cup per group

Materials Needed (Continued)

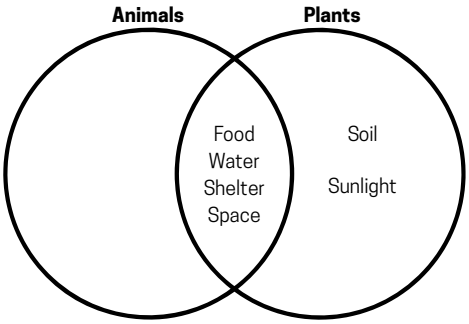
- Scissors
- Water
- Large Zip Locked Bag

Key Vocabulary:
Growth
Hydroponic Seed Chamber

Hook/Intro: (10 min)

Show “Chick and Tree” visual.
Ask: “Who grows faster? What do baby animals need to grow?”
List on the board: Animals: food, water, shelter, space.

Lead Into:
Use the list and ask the students whether plants need food, water, shelter, and space. Draw a Venn diagram on the board and label one circle 'animals' and the other 'plants.' Place and discuss where food, water, shelter, and space belong on the diagram. Ask, “Does a plant need anything else to grow?” (Sunlight and soil) Put those on the diagram.



ACES WILDLIFE RESCUE
AMBERGRIS CAYE, BELIZE

LESSON plan

Grade: Standard 3	Subject: Science
Cycle 3 Duration: 60 Minutes	Week 1 of 3
Lesson #5 Page #2	

Direct Instruction:

"Today, we're going to create a hydroponic seed chamber. Do you know what a hydroponic seed chamber is? The term "hydro" refers to water, while "ponic" pertains to growing systems that do not require soil. Although the seeds will eventually need soil to thrive, we will begin their growth using only water.

Group Setup

- Organize students into small groups of six.
- Provide each group with:
  - One egg carton
  - A copy of the "Hydroponic Seed Chamber Directions"
  - One pair of scissors

Instructions

1. Demonstrate how to complete step #1. This seed chamber will serve as a "class hydroponic seed chamber" for lesson #2 and for additional seedlings for any students who may need a plant in later lessons. If the paper towels are too wet the seeds may mold.
2. Hand out two paper towels to each group and show them how to fold the towels properly.

Continue to guide students through steps #2 and #3, and distribute materials as necessary.

- Don't forget to label the egg cartons with the group's names to avoid any mix-ups.
- Remind students not to open their seed chambers until instructed.

Daily Check
Each day, students should monitor the water level in their jars and refill as needed.

Preparation for Lesson #6: The day before teaching the lesson#6. This does not need to be done during the lesson with students.
Prepare a "Germinated Seed Bag," dampen two paper towels and layer enough beans for every two students in the class. Then, dampen two additional paper towels and cover the first layer. Slide into a large ziplock bag without sealing it.

ACES WILDLIFE RESCUE
AMBERGRIS CAYE, BELIZE

LESSON plan

Grade: Standard 3

Subject: Science

Cycle 3
Duration: 60 Minutes

Week 3 of 3

Lesson #5
Page #3

(Optional)
Conduct an additional class demonstration to allow students to observe the development of a planted seed underground.

Materials:

- Beans
- Paper Towels
- Small jar with a lid

Directions:
1. Moisten enough paper towels to fill the jar halfway, pack them in tightly.
2. Place the beans in the jar, pressing them against the glass for visibility.
3. Fill the rest of the jar with damp paper towels, making sure they are packed snugly. It's important that the towels are not too wet, just slightly moist.
4. Cut a piece of black paper to fit the size of the jar and cover it to create a dark environment, simulating being underground or keep it in a dark cupboard.

During each of your bean seed lessons, reveal and observe the seedling's appearance as it would look underground. Once the root and stem have grown enough, invert the jar and watch the seedling's root and stem change their growth direction.

Closure:
The hydroponic seed chambers will remain closed for five days. What do you think the seeds will look like once we open them?