

## Photosynthesis Lesson



**MĀLAMA 'ĀINA**  
FOUNDATION

**Grades:** K-5

**Materials**

Lettuce Plant (2 per group)  
Popsicle Sticks (1 per group)  
Sharpie  
Planter Plate (1 per group)  
Ruler  
[Data Collection Worksheet](#)

**Introductory Lessons:**

[Mauka Presentation](#)  
[Kula Presentation](#)  
[Helu Pō Mahina Activity](#)  
Nā Anakahi Hawai'i Activity ([K-2/3-5](#))

**Group Size:**

Small groups (4-6)

**NGSS:** [\(K-2\): 2-LS1-1](#): Plan and conduct an investigation to determine if plants need sunlight and water to grow.  
[\(3-5\): 5-LS1-1](#): Support an argument that plants get the materials they need for growth chiefly from air and water. [Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.]

**Mea Waiwai ('Ike Hawai'i, Trauma-Informed Care, NGSS)** - We mālama plants so they can grow and thrive, we mālama ourselves and others with the same intentions.

### Introduction Discussion

**Kumu (Teacher)**

- Pose the question: What do plants need to survive?
  - ◆ Have haumāna point out if they see examples of these components in or around the planter box
- Pose the question: How are these things connected?
  - ◆ Photosynthesis
- Pose the question: Are any of these components more important to photosynthesis than others? For example, would a plant still grow successfully if it didn't have clean air and sunlight, but had water and healthy soil?

**Haumāna (Students)**

- Identify Air, Water, Soil, Sunlight
  - ◆ Point out examples of these components in or around the planter box
- Explain how air, water, soil, and sunlight are connected through photosynthesis
- Explain reasoning as to which components are more important

### Planting Activity

**Kumu (Teacher)**

- Put haumāna in groups of 4-6 and explain that we will experiment and see what happens when we attempt to grow lettuce in the planter box and outside the planter box.
  - ◆ Explain that the lettuce grown outside of the box should be placed in a safe spot indoors where it will be watered, but won't have access to constant sunlight or constant air like the lettuce grown outside.
- You may choose to plant on a day that is good for planting based on the moon phase (this can be discussed with haumāna prior to the doing this lesson)
  - ◆ [Helu Pō Mahina](#)
- Supervise and facilitate as haumāna plan out their experiments
- \*Students in grades K-2 will require additional support

**Haumāna (Students)\***

- Determine as a group a safe place to grow their second plant that doesn't have access to sunlight or constant air
  - ◆ Ex. closet, under a box
- Dig a hole deep enough for the roots of the plant to fit, and add Plant A.
  - ◆ Haumāna measure their lettuce using Nā Anakahi Hawai'i and in inches.
  - ◆ Write their group name on a popsicle stick using the sharpie and include both measurements. Place in front of Plant A.
  - ◆ The plant will stay in the planter box for a period of 21 days
- Remove potting soil from Plant B's planter
  - ◆ Add soil from the planter box.
  - ◆ Add lettuce plant back in
  - ◆ Haumāna measure their lettuce using Nā Anakahi Hawai'i and in inches.
  - ◆ Write their group name on a popsicle stick using the sharpie. Place in Plant B's planter along with measurement in Nā Anakahi Hawai'i
  - ◆ Take the lettuce inside and place it in the designated spot on a planter plate
  - ◆ The plant will need to be watered daily and will remain in the indoor spot for period of 21 days

**Formative Assessments**

- Haumāna can take daily measurements using Nā Anakahi Hawai'i or traditional measurements (inches, centimeters, etc)
  - ◆ This can be a part of the morning routine or done weekly depending on the schedule
  - ◆ You may also choose to have haumāna graph their data throughout
  - ◆ Haumāna can also practice converting their measurements as their plants grow (ex. Inches to Feet)
  - ◆ Taking measurements can be used as opportunities for discussion

- Comparison of the growth of the indoor plant vs outdoor plant
- Environmental factors that could impact growth
- Predictions of what the plants will look like at the end of the 21 day period

**Conclusion**

- At the end of the 21 days, haumāna will discuss the results. Most likely, the lettuce grown in the planter box will be more successful than those grown indoors.
- Discuss with haumāna why they think it grew better, even though the same soil was used
  - ◆ Discuss the importance of air, water, and sunlight in helping plants grow successfully
- To conclude, discuss with haumāna what they would like to do with the lettuce they grew.