



# Growing Peas: How do we help our pea plants grow?

# LESSON OVERVIEW



We revisit the Driving Question Board (DQB) to focus on what pea plants need to grow and be healthy. We gather information about how to grow healthy pea plants from a Readers Theatre reading of an interview with expert gardeners. We gather additional information from reading a seed packet. We record what we figured out about how to grow pea plants. Then we plant individual pea seeds in containers so we can watch them grow over time. We realize that pea plants can get tall and heavy, which makes us wonder how we can design a stable trellis that will support our pea plants as they grow.

# NESSON LEARNING GOALS

NGSS Connections	What students will do

Working towards NGSS performance expectations:

3-PS2-1, 3-5-ETS1-2, 3-5-FTS1-3 Obtain information from a seed packet and gardener interviews about what pea plants need to grow and how to design trellises (structure) to support a pea plant growing off the ground (function).

#### What students will figure out

Ideas about planting and growing pea plants

- Peas grow best when it is cool and wet.
- Plant pea seeds 1 inch deep.
- Plant pea seeds in full sun.
- Space seeds 3–4 inches apart.
- Give ample water.
- Mature plants are 3–6 feet tall.
- Protect pea plants from pests with row cover.
- Pea plants on a trellis can weigh 6–10 pounds.

#### Ideas about building trellises

- Trellises can come in different shapes.
- Pea tendrils latch onto material that is about the same thickness as the tendril.

#### **Common Core Literacy and Math Connections**

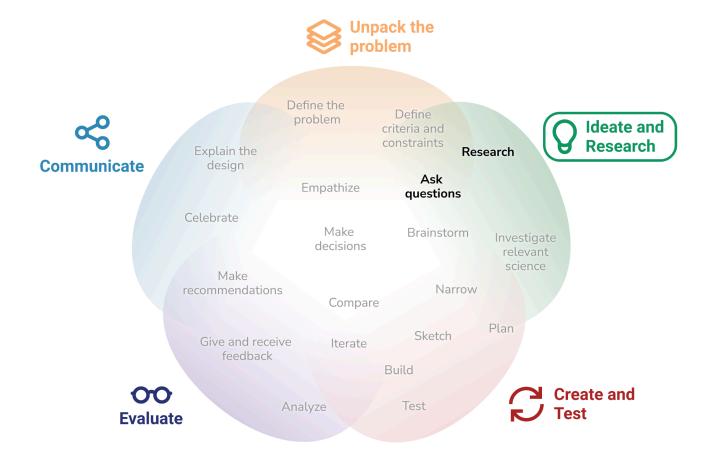
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# **LESSON SNAPSHOT**

Step Description	Time	Slide
1 Revisit questions on the Driving Question Board (DQB).	5 min	А
2 Research information from expert interviews and a seed packet. ✓	30 min	В-С
3 Plant individual pea seeds.	15 min	D–E







## MATERIALS AND PREPARATION

# Materials

	Per student
	<u>Lesson 2: Gardener Interviews</u> , pages 2–3 of the Designing Trellises: Design Notebook
	Lesson 2: Pea Plant Seed Packet, page 4 of the Designing Trellises: Design Notebook (optional; you can use
	slide C and/or the handout)
	1 paper to-go or other container with dimensions of $\sim$ 6" $\times$ 8" $\times$ 2"
	1–2 pea seeds
	access to water for watering peas
	1 cafeteria tray for holding container (optional)
	Per class
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- ☐ 1 sentence strip with lesson question written on it
- ☐ "A Successful Trellis Will ..." chart
- 1 bag of organic seed starting mix if you plan to have students take home their pea plants in containers, otherwise any soil will work.

#### Preparation

Prepare an individual paper container for each student to plant a pea seed by filling each container with potting soil. Place each container on a cafeteria tray to reduce mess or, if possible, complete this step outdoors.

# BACKGROUND INFORMATION

#### Where we're going in this lesson

In this lesson, students focus on what they can do as gardeners to help the pea plants grow by gathering information from a seed packet and a collection of expert gardener interviews. The focus is on understanding the needs of the pea plants such as spacing, amount of sunlight, amount of water, and ideal times for planting based on information from those reliable sources. Students use this information in this lesson when they plant pea seeds in individual containers at the end of this lesson as well as while they care for these seedlings. Students record this information to use when they install full-size trellises and plant peas in Lesson 8. Students also learn about potential shapes for our trellises, recommended materials, and how to protect the pea plants from pests. If you have access to community members with gardening expertise, you can include an in-person expert interview in addition to or instead of the Readers Theatre reading.

#### Where we're not going in this lesson

Students do not focus on designing experiments about pea plants' needs to obtain this information, rather, they obtain this information from reliable sources, such as a seed packet and gardener interviews.

#### Lesson-specific content

Garden peas are cool-season crops that do not do well in the heat and humidity of summer, but they can withstand frosts and light freezes. For that reason, the seeds can be planted very early in the winter or in spring, as soon as the ground can be worked. In temperate climates, they can also be planted in the late summer or early fall. For a general sense of when to plant peas based on your zip code, check the Almanac's 2022 Vegetable Planting Calendar.





# **LEARNING PLAN**

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Revisit questions on the Driving Question Board (DQB). (5 min)

- Revisit questions from the DQB about pea needs (slide A).
  - Critical questions to surface that are likely on the DQB include the following: How much space do pea plants need? How long do they take to grow? How much water and sunlight is needed? When do you plant or grow in your area?
- **Introduce** the lesson question for today: How do we help our pea plants grow? Write it on a sentence strip and add it to the DQB question cluster around pea plants needs.

Example Driving Question Board

Driving Question Board			What We Figured Out	
Questions	about peas			
How deep should we plant the seeds?	Do peas need sun or shade?	Do peas need a lot of space to grow?	How many times a day should we water them?	
How do w	ve help our pe	ea plants gro	w?	
How long do they take to grow? Trellis mat	How high do they grow? erials and sha	аре		
Will it	How tall	How far	What will	
matter the shape?	should the poles be?	apart should the poles be?	tendrils hold on to?	
Making ou	r trellises stal	ole		
How far do we need to dig to make it sturdy?	How will the trellis stay up?	Will it be strong enough for our peas?		

• **Revisit** students' ideas for how to investigate these questions about pea plants and their needs and surface the idea to ask an expert.





## 2 Research information from expert interviews and a seed packet. (30 min)

- **Set up** and perform the Readers Theatre of an interview with expert gardeners (slide B).
  - Distribute copies of the <u>Gardener Interviews</u>, pages 2–3 of the <u>Designing Trellises</u>: <u>Design Notebook</u>.
  - Assign students or have volunteers to be the 4 performers.
  - Assign the rest of the class to be journalists, listening to the interview and taking notes about important information.
  - Have the performers read through the interview while the journalists take notes.
- Record new information in the What We Figured Out section of the DQB next to the questions about peas.
- Read the <u>Pea Plant Seed Packet</u>, page 4, to obtain additional information about peas (slide C).
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Record new information in the What We Figured Out section of the DQB next to the questions about peas.

Example Driving Question Board with updated What We Figured Out

#### What We Figured Out Driving Question Board Questions about peas Information about planting and growing peas How deep Do peas need How many Peas grow best when it is cool and wet. Do peas need should we a lot of times a day Plant peas 1 inch deep. sun or plant the should we space to Plant peas in full sun. shade? seeds? grow? water them? Space seeds 3-4 inches apart. How do we help our pea plants grow? Give ample water. Mature plants are 3-6 feet tall. How long do How high do Protect peas from pests with row cover. they take to they grow? Pea plants on a trellis can weigh 6-10 pounds. grow? Information about building trellises Trellis materials and shape Trellises can come in different shapes. Pea tendrils latch onto material that is about the same Will it How tall How far What will thickness as the tendril. should the apart should tendrils hold matter the shape? poles be? the poles be? on to? Making our trellises stable How far do Will it be How will the we need to strong trellis stay dig to make enough for ир? it sturdy? our peas?





#### THREE-DIMENSIONAL ASSESSMENT

Obtain information from a seed packet and gardener interviews about what pea plants need to grow and how to design trellises (structure) to support a pea plant growing off the ground (function).

#### What to listen for

• Students connecting information from the seed packet and gardener interviews that answer questions from the Driving Question Board (DQB) about growing pea plants (e.g., "How many times a day should we water them?") and designing pea trellises (e.g., "How far apart should the poles be?")

#### What to do

- Remind students of the guestions from the DQB we are trying to answer.
- Reread gardener interviews text as needed.
- Direct students to areas of the seed packet or text where they can find relevant information. For example, "We
  wanted to know how much sun pea plants need. Let's find on the seed packet where it says how much sun pea
  plants need."
- Model using a think-aloud as you read to help students comprehend the text and make connections to the questions.



#### Plant individual pea seeds. (15 min)

- Plant pea seeds (slide D). Distribute to each student a container with seed starting mix and 1–2 seeds. The purpose for growing individual pea plants is for each student to observe them over time and develop a personal connection to one pea plant as they design their trellises.
- Water peas. Use a watering can or a hose with a nozzle set to a "shower" or "fan" setting to gently water the pea seeds.



- Label the container with students' names and save them for Lesson 3. Students will build prototypes in their individual containers.
- **Discuss** how to make sure the trellis will be stable as the plants get taller and heavier to motivate the next lesson (slide E).