

Pea Trellis STEM Design Challenge (Grades K-2)

OVERVIEW: Students will work in small groups to design a trellis to support a pea vine that is beginning to grow indoors in a plant pot. This lesson can be paired with the book *First Peas to the Table*, by Susan Grigsby. In this story, a class of students copy the annual contest Thomas Jefferson had with his neighbors to see who could grow the first bowl of peas.

GRADES: K-2

OBJECTIVES: The student will be able to:

- Design a trellis for pea plants based on criteria provided.
- Compare multiple trellis designs and with a group design a trellis based on criteria provided.
- Build the trellis with a group based on the design selected.
- Evaluate the group's trellis based on the criteria provided.



BACKGROUND:

Plants grow in many different ways. Some plants can grow a sturdy stem that will hold them upright. Some plants are what we call vines. These plants have a very thin stem and need support from something strong and tall. In nature, vines often grow up trees. In a field, farmer's will use a man-made structure called a trellis to support the growing vine. The vine will grow up the trellis, often twisting around the trellis as it grows.

PROCEDURE:

Divide the students into small groups of four. Place materials on a table for each group. Write the criteria for the trellis on the board and explain the rules. At the end of the challenge, give each student a *How Did We Do?* challenge sheet. Read the sentences to younger students and ask them to circle the answers "yes" or "no."

CRITERIA:

- Your trellis must be at least 6 inches tall.
- Your trellis must stand upright to support the pea vine, and not fall over.
- You must decorate your trellis.

MATERIALS:

Straws	Tape	Glue
Craft sticks	Yarn	String
Paper plates	Cardboard	Crayons
Markers	Potting soil	Seeds

Plant pots or recycled containers such as milk cartons with holes poked in the bottom.

CHALLENGE RULES:

- Listen carefully to ideas from everyone on your team. Decide on the best design before you begin to build.
- You may only use the materials provided. You do not have to use all the materials provided.
- You must build your trellis in the time provided.
- You may use additional tools such as scissors and rulers.

TIME SCHEDULE:

Teacher will set a timer and notify students when to move on to the next step.

- 5 minutes for each student to sketch his/her own design.
- 5 minutes to brainstorm ideas as a group.
- 10 minutes to plan out the design.
- 20 minutes to create the product (the trellis).
- 10 minutes to reflect. How can we improve the design? What worked well? What did not work well?

EXTENSIONS:

Show students pictures of trellises used in farms and gardens today. If you are pairing the lesson with the book *First Peas to the Table*, show the students pictures of trellises from Thomas Jefferson's garden.

What other vegetables grow on vines and need trellises? Discuss with the class or have them research how their favorite vegetables and fruits grow.

New Jersey Learning Standards:

Science: K-2: ETS1.A,B,C

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NAME _____

PEA TRELLIS DESIGN CHALLENGE

How Did We Do?

Our trellis is at least 6 inches tall.	YES	NO
Our trellis stands upright to support the pea vine. It does not fall over.	YES	NO
We decorated our trellis.	YES	NO
We only used the materials on the table.	YES	NO
We worked together and listened to each other.	YES	NO
We are proud of our trellis design.	YES	We can do better next time.