



Save the Plants

Developed by Rachel Greenberg, PCM Play Intensive 2021
(*FOCUS: Language and Literacy, Science, Technology, Arts, Engineering and Mathematics (STEAM)*)

Living things need water. Humans need it, animals need it, plants need it! Our plants need water every few days. What happens when we are at home? How will our plants get water? How can we make sure our plants get watered during the weekends and vacations?

This is a good STEAM/literacy connection. First grade students are studying plants in the fourth-quarter reading unit. They will be researching various plants, writing opinions about human interactions with plants, and creating digital books to present their research.

Combining STEAM thematic curriculum standards with the fourth-quarter literacy standards will bring a hands-on learning approach to the otherwise abstract concept of plant propagation and growth. Students will be invested in their plants living, so they can include them in their research.

MATERIALS

- Plants (to be grown in small pots with soil and donated seeds)
- Pots (suggested: egg cartons, biodegradable pots, plantable pots)
- Seeds (to be in place and established before lesson; suggested seeds: beans, peas, summer squash, cucumbers, winter squash)
- Straws
- Plastic bags
- Various building materials (paper, plastic pieces, etc.)
- Adhesive (glue, tape, etc.)

Set Up: The amount of materials depends on classroom size. The demo classroom has 22 first-grade students. All materials will be organized in bins on a communal table/counter. Students will be able to 'shop' in the materials section before and during the construction phase. Set up materials on tables before school. Each table already has adhesive.

STUDENT'S JOB

Students will invent a machine to deliver water to the plants over vacation.

Prompt or Challenge: Every living thing needs water. Humans need it, animals need it, plants need it! Our plants need water every few days. What happens when we are at home? How will our plants get water? **How can we make sure our plants get watered during the weekends and vacations?**



Design Phase:

1. You can use any items on your table.
2. You can work together (we suggest it!).
3. You will have three minutes to draw/think on your own.
4. Now switch with your table partner! What do you see in your partner's drawing? What questions do you have? (Suggested sentence stem: I wonder how...)
5. Decide which invention and/or parts of your invention you will include in your combined contraption. Draw a final mock-up of what your contraption should look like.
6. Make a plan for what materials you think would work.
7. Collect the materials.

Construction Phase:

8. As a team, start construction your contraption.
9. Test it out!
10. You know you are done when your contraption works!

Further Challenges:

- How can we make more contraptions to water all the plants?
- What happens when it's not sunny? How could we get plants sunlight?

TEACHER'S JOB

Standards Alignment:

CCSS.MATH.PRACTICE.MP1

Make sense of problems and persevere in solving them.

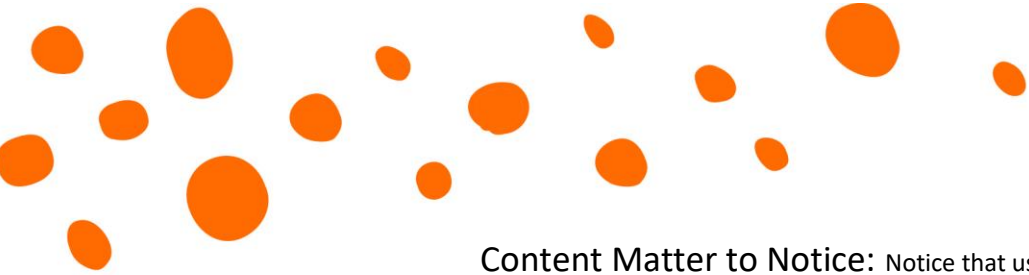
CCSS.MATH.PRACTICE.MP3

Construct viable arguments and critique the reasoning of others.

Connect to Previous Work: We are learning all about plants. We already know what plants need to survive and water is one of these things. We also know that we are not here on the weekends but are still responsible for these living things.

Facilitation Strategies: Walk around and ask questions to prompt exploration and communication.

- What makes you think that?
- How could you solve that?
- What does your partner think?
- Check out ____'s idea. That might help you.
- Could you combine your ideas? What would that look like?



Content Matter to Notice: Notice that using a straw with a baggie of water could be a helpful idea.

Maybe think about how plants work together? (Not sure if they'll get there on their own, but this can be a wondering during our share time.)

Prior front-loading: plant book-o-rama where students read all about plants and together the class charts the combined basic understanding of plant structures and needs. Students have already done a plant unit in kindergarten, so this information should be review. First graders are deepening the knowledge of how humans interact with plants.

SEL to Notice: Notice that working together is better than working alone; using sentence stems to talk to each other during work time, and sharing the responsibility and not allowing just one person to do all the work.