



GCPS C&I AgStem Lesson Plan

2nd Grade Science/Life Cycle of a Plant/AKS 7b

AKS:

Science 7b: plan and carry out an investigation of the life cycle of a plant by growing a plant from a seed and by recording changes over a period of time.

Math 16.MD.1: measure length by determining, selecting and using an appropriate tool (rulers, yardsticks, meter sticks, measuring tapes) and unit (in., ft., yd., cm, m).

ELA 2LA.E.29: participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.

Target Science & Engineering Practice: Plan and carry out an investigation, obtain, evaluate and communicate information.

QPTS: Questioning, Problem Solving, Collaborating, Modeling and Practice.

Learning Targets:

Knowledge: I can... explain the stages in the life cycle of a plant.

Reasoning: I can... record changes over a period of time to describe the life cycle of a plant.

Performance: I can... plan and carry out an investigation to demonstrate the life cycle of a plant.

Materials

- Sticky Notes
- Anchor Chart Paper
- Markers
- Pencils
- Phenomenon Video (Click [here.](#))
- Investigation graphic organizer and question stems
- rulers
- FAPT (Formative Assessment Performance Task)
- seeds
- soil/hydroton clay pebbles
- aquaponics lab system
- student STEM journals
- growing cups
- climatetag and moisture probe

Activating Strategy

*How can we access students' prior knowledge and **ENGAGE** their interest in the phenomenon?*

1. Display/show the phenomenon on overhead projector. (Click [here.](#)) Allow students to individually observe it. Students should be encouraged to hold their discussion for a few minutes. This will give all students a chance to think about the phenomenon presented.

2. Ask students: **What do you notice? What do you wonder?** Allow students to turn and talk with a neighbor or write their thoughts down on a sticky note.



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3. Students should share their noticings and wonders (observations) with elbow partners.
4. Once students have shared with their elbow partner, the teacher will use the anchor chart (like the one below) to post different sticky notes on the anchor chart, listing both notices and wonders.

What I Notice	What I Wonder

Differentiated Small Groups

*How can we have students collaboratively participate in an activity that facilitates conceptual change as they **EXPLORE** the phenomenon?*

Modeling with... the teacher will model by writing down his/her notice and wonder on two different sticky notes and posting to the classroom anchor chart.

Technology..... the teacher will use the ECOMM phenomenon picture/video 7b by displaying it on the overhead projector.

Small group collaboration... students will turn and talk with elbow partner(s) to share their notices and wonders on the phenomenon. Students can compare and discuss their own sticky notes.

Teacher-led small group.... The teacher will have each student take the FAPT (Formative Assessment Performance Task) to determine how much of AKS 7b the students know. Based on the findings of the AKS, students that are performing at the beginning or developing level will be placed into small groups by the teacher. Students will then receive remediation on the life cycle of a plant by providing pictures and descriptions of each stage of the life cycle. The teacher will then provide students with sentence strips that students can arrange into an accurate paragraph.

Architecture of a Mini-Lesson

*How can we have students **EXPLAIN** the phenomenon?*



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Background/Prior Knowledge: We have learned that the life cycle of a plant starts as a seed.

Teaching Point/Purpose: This week we are going to be asking questions and using some of your questions to plan and carry out investigations about the different phases in the life cycle of a plant. We will be using our aquaponics system to help us with our investigations. We will be planting seeds and growing them so that we can transfer them into our aquaponics system. It will be our job to investigate the best way to get our plants through the plant life cycle.

Teaching:

The teacher will **think aloud** ... by modeling how to create an investigation of the plant life cycle. Teacher will use question stems to model the development of the investigation plan. Example questions: How much sunlight will it need? Where will you place your seed/sprout in the cup of soil/hydroton clay pellets? How long do you think it will take for the plants to start growing? What temperature is best for our plants to grow? How big do the plants need to be before we transfer them into the aquaponics system?

Active Engagement:

Students will be asked to turn and talk with a partner to share their thinking on what their investigation setup will be.

Link:

You will now start planning your investigation of the plant life cycle using the questions that we have discussed. We will record and analyze our data to determine how well our plants are growing. We will also be looking for ways that we can improve our investigation to help our plants grow better.

Differentiated Small Groups

*How can we challenge and/or deepen students' understanding of the phenomenon through new experiences? How can students **ELABORATE** on this phenomenon?*

Modeling with... Students will design graphic organizers in STEAM journals and also provide answers to questioning and reflections in journals.

Technology..... Students will use our aquaponics lab, rulers and climate tag and moisture probes for data collection and investigations throughout the lesson.

Small group collaboration... Students will be planning and carrying out investigation in small groups. They will begin growing the plants in the classroom in soil. Then they will wash and transfer them to the aquaponics system once they have sprouted. Students will continue taking measurement data and life cycle data on plants that have been placed into the aquaponics system.

Teacher-led small group....Teacher will be working with each small group as needed to facilitate investigative planning and plan follow through. Teacher will also be assisting the washing of the plants to place them in the aquaponics system when ready.



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Summarizing

*How can we assess, or **EVALUATE**, student understanding of the phenomenon, including both content and the science & engineering practice embedded in the AKS?*

Students can demonstrate their mastery of the content and science and engineering practices by recording data from their investigations of the plant life cycle frequently. They will be able to incorporate data from the climatetag and moisture probe into their data collection. Teachers can assess whether students have sufficiently planned and carried out their investigation by using the data that the students have recorded along with the progress of their plant's growth from seed to full grown in the aquaponics system.

Teachers can also evaluate the students by using the FAPT (Formative Assessment Performance Task) to determine how much of AKS 7b the students understood.



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Part 2 (Complete this after you build your design and plant your seed.)

Draw a diagram of the design you built. Label it.

Is your design the exact same as the one you planned or did you have to make some changes?

What challenges did you face?



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Reflection: What would you do differently next time?

Part 3: Plan for the investigation

How much sunlight does your plant need?

Where will you place your plant so that it can receive the correct amount of sunlight?

How often will you water your plant?



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How much water will you give it each time you water it?

How often will you observe it and record it in your journal?

How long do you think it will take before you see any growth?
