Do Plants Need Sunlight and Water?

Teacher		**Class**	Grade 2
Subject	Science	**Topic**	What plants need to grow
Date		**Room**	
Lesson length	60 minutes	**Country**	United States

Students learn plants need sunlight and water to grow strong. They plant eight bean seeds and start a fair test.

Curriculum links

- Plan and conduct an investigation to determine if plants need sunlight and water to grow.

Learning objectives

- Students will plan a fair test to see if plants need sunlight and water.
- Students will set up cups, predict results, and explain what stayed same.

Success criteria

- I can keep everything the same except one thing.
- I can predict and explain if a plant will grow well.

What students already know

Hold up a green plant picture and a yellow droopy one. Ask: What did each one get? What do you think plants need?

Key words

sunlight	light and warmth that comes from the Sun [10]
water	clear liquid that falls as rain and that roots soak up from soil [10]
fair test	a try where everything stays the same except one thing you change
predict	to say what you think will happen before you see it
wilt	to droop down and go soft and pale when missing what is needed [10]

Materials

- bean seeds
- 4 clear plastic cups per group
- potting soil
- water and small measuring cup for 1/4 cup
- labels A, B, C, D
- sunny windowsill and dark box or closet
- rulers marked in inches
- crayons and pencils
- Slides 1-4, 6-7, 9, 12
- Video clip 1 Do plants need water and sunlight? (0:00-5:00)
- Worksheet Task A and Task F

Before the lesson

- Print Worksheet Task A and Task F for each student and pre-written labels A-D
- Test Video clip 1 (0:00-5:00) on Slide 6 with sound and full screen
- Fill bins with potting soil, bean seeds, 1/4 cup measures, and set up sunny windowsill and dark box
- Draw 4 cup shapes on observation sheet for groups that need it

Lesson outline

0–10 min **Starter** 10 min · Whole class

Spark curiosity and share what students think plants need.

YOU DO

1. Show Slide 1 What Plants Need to Grow? Let's test sunlight and water.
2. Say the hook and let pairs whisper ideas for 1 minute.
3. Show Slide 2 objectives and read them in student words.
4. Explain that most plants grow in soil and get the water and nutrients they need from the soil [12], and that plants need water and light to live and grow [3].

STUDENTS DO

1. Look at Slide 1 and listen to the hook.
2. Turn to a partner and say what they think seeds need.
3. Share one idea with the class.

Say: We have four little seeds. How can we prove what they really need? Today we will plan a fair test about sunlight and water. We will start our test and watch plants grow.

Ask: What do you think plants need to grow? (Sunlight and water, plus soil and air to help make food [3][9].) · How could we prove sunlight and water matter? (Grow some with them and some without and compare what happens.)

Check understanding: Thumbs up if you can name sunlight and water. If not, repeat with picture signs for sun and watering can.

Support: Show sun and watering can pictures while asking so students can point. **Stretch:** Ask what else must stay the same if we want a fair answer.

Use: Slides 1–2

10–22 min **Teaching** 12 min · Whole class

Explain how water and light help and what makes a test fair.

YOU DO

1. Show Slide 3 chain and read each step with actions for roots, stem, leaves.
2. Explain that water is taken up through the roots and travels up through the stem to the leaves [10], and leaves use sunlight to make food to grow [14].
3. Show Slide 4 steps and model 4 cups: A light + water, B light + no water, C no light + water, D no light + no water.
4. Think aloud about keeping same seeds because most plants grow from either a seed or a bulb [11], same soil, same cups, same start day.

STUDENTS DO

1. Repeat the 4-step chain with hand moves from roots to leaves.
2. Help teacher sort what to keep same and what to change.
3. Answer if examples are fair or not fair with thumbs up or down.

Say: Roots soak up water from the soil. Water moves up the stem to leaves. Leaves use sunlight to make food. Food helps the plant grow strong.

Worked example: Cup A gets light and water. Cup B gets light and no water. Both have 2 bean seeds, same soil, same cups. Only water changed, so it is fair. If Cup B also went in the closet, two things changed, so it is not fair and we would not know why it changed.

Ask: What will happen if a plant does not have any sunlight? (It will lose its color and eventually die because it cannot make food [14].) · What will happen if a plant does not have enough water? (Its leaves and stem may start to wilt and it cannot make enough food [10].) · What must we keep the same to make it fair? (Same seeds, same amount of soil, same cups, same depth and start day.)

Check understanding: Hold up 1 finger for fair, 2 for not fair for two quick cases. Reteach same-versus-changed if split.

Support: Use sentence frame: We will keep ___ the same so we know ___ caused it. **Stretch:** Ask what to do if someone gave one plant extra water by mistake and why that breaks fairness.

Use: Slides 3–4

22–47 min **Main activity** 25 min · Groups

Set up the four-cup test and record starting predictions.

YOU DO

1. Show Slide 9 task and Slide 7 growing week: Day 1 morning plant, Day 3 look and measure in inches, Day 5 water A and C, Day 7 compare.
2. Demo: plant 2 bean seeds at same depth in same soil, label A-D, add 1/4 cup water only to A and C, put A and B on sunny windowsill and C and D in dark box.
3. Hand out Worksheet Task F table and show how to draw all 4 cups and write what each gets.
4. Circulate, check measurements to nearest inch and predictions show green strong or yellow weak stems.

STUDENTS DO

1. In groups plant same seeds at same depth in same soil and label 4 cups.
2. Give 1/4 cup water to A and C, place A and B in light and C and D in dark.
3. Draw all 4 cups on Task F, write what each gets, mark start height in inches and predict.

Say: Label cups A, B, C, D and plant your seeds the same way. Add 1/4 cup of water to A and C only. Put A and B in light, C and D in the dark. Draw, predict, and measure start height.

Worked example: Cup A: light + water. Drawing shows moist soil, sun arrow. Prediction: green stem, 3 inches in a week. Cup B: light + no water. Drawing shows dry soil, sun arrow. Prediction: short, droopy, yellow leaves because without enough water leaves and stem wilt [10].

Ask: What did you keep the same and why? (Seeds, soil, cups, depth, so only sunlight and water cause any difference.) · If one plant gets water but no light, what will it look like in a week? (Pale, tall and weak or droopy because without light it cannot make food [10].)

Check understanding: Check each group table has 4 cups with light/no light and water/no water marked. Fix missing labels before placing cups.

Support: Give pre-written labels and a sheet with 4 cup shapes to fill in with color word bank. **Stretch:** Ask students to explain what they kept the same and why that makes the test fair in one sentence.

Use: Slides 7, 9; Worksheet Task F

47–60 min **Plenary** 13 min · Whole class

Confirm the conclusion that plants need the right sunlight and water.

YOU DO

1. Play Video clip 1 Do plants need water and sunlight? (0:00-5:00) on Slide 6 and pause to name what each plant got.
2. Do Worksheet Task A tick true or false about sunlight and water with voting cards.
3. Show Slide 12 True or false? Plants grow best with the right water and sunlight, and explain both help make food for growth.
4. State conclusion together: Plants need sunlight and water to grow.

STUDENTS DO

1. Watch the video and call out what each plant gets and how it changes.
2. Tick true or false on Task A and hold up vote.
3. Say the conclusion sentence with a partner.

Say: Watch what each plant gets. Watch how each plant changes. Too little is bad and too much is bad. Plants need just the right amount of water and light to grow into a healthy plant [10].

Worked example: False: A plant with no water will grow tall and strong. It is false because without enough water stems wilt and it cannot make enough food to stay alive [10]. True: Plants grow best with the right water and sunlight.

Ask: This plant got water every day but lived in a dark closet. Why is it pale and droopy? (No sunlight, so it could not make food and grew weak [10][14].) · What if roots sit in water every day? (They will begin to rot and cannot take up water anymore [10].)

Check understanding: Quick show of hands on 3 true-false items. Reteach any red votes with picture clues for dark, sunny, dry and soggy.

Support: Read one card at a time and show picture clue for dark, sunny, dry and soggy. **Stretch:** Ask students to rewrite a will-not-grow setup so it would grow well.

Use: Video clip 1 (0:00–5:00); Slides 6, 12; Worksheet Task A

Common mistakes

Mistake	How to spot it	How to fix it
Changing both light and water at once and still claiming to know which caused it	Table shows two differences between cups being compared	Change only one thing at a time so you can tell. In order for a seed to survive and grow it needs water, light, suitable temperature, air and time [9].
Thinking a plant with no water will still grow tall and strong	Prediction draws all cups green and tall	Show droop: if the plant does not have enough water then its leaves and stem may start to wilt [10].
Thinking more water or more light is always better	Prediction says soggy dark cup will be best	Teach just right amount: if a plant has too much water then the roots will begin to rot [10], and plants need just the right amount of light [10].

Support

- Give students pre-written labels and a sheet with 4 cup shapes to fill in.

Stretch

- Ask students to explain what they kept the same and why that makes the test fair.

For the LSE or teaching assistant

Stay with target groups during planting to help measure 1/4 cup, label A-D, and complete Task F drawings with color bank.

Safety

- Do not taste seeds or soil.
- Wash hands after touching soil and plants.

Check for understanding

Question	Answer
Do plants need sunlight and water to grow?	Yes, both help the plant make food to grow strong.
What happens to a plant with sunlight but no water for a week?	It wilts, turns yellow or brown, and does not grow well.
What did you keep the same to keep the test fair?	Same seeds, soil, cups, depth, and start day; only light or water changed.

Homework

Look at a plant at home and draw where it gets sunlight and water.

Sources

1. Download the Lesson List · science.edu · https://www.science.edu/Acellus/curriculum/science/lesson-lists/Grade%202%20Science.pdf
2. Social Science · cps.edu · https://www.cps.edu/sites/skyline/curriculum/social-science/
3. What Plants Need to Grow - Division of Agriculture and ... · ucanr.edu · https://ucanr.edu/sites/default/files/2025-04/SCGarden_Lesson_K_Needed%20to%20Grow_2021.02.18.pdf
4. Vegetable Gardening - National Agricultural Library · nal.usda.gov · https://www.nal.usda.gov/plant-production-gardening/vegetable-gardening
5. What do plants need to grow? - Division of Agriculture and ... · ucanr.edu · https://ucanr.edu/media/245958
6. Starting Plants From Seed [fact sheet] | Extension · extension.unh.edu · https://extension.unh.edu/resource/starting-plants-seed-fact-sheet
7. A Guide to Growing Herbs | Home Garden Education Office ... · homegarden.cahnr.uconn.edu · https://homegarden.cahnr.uconn.edu/factsheets/a-guide-to-growing-herbs/
8. Tomato growing guide | Cornell Garden-Based Learning · gardening.cals.cornell.edu · https://gardening.cals.cornell.edu/garden-guidance/foodgarden/vegetable-growing-guides/tomato-growing-guide/
9. What does a plant need to grow? - BBC Bitesize · bbc.co.uk · https://www.bbc.co.uk/bitesize/articles/zxxsyrd
10. What does a plant need to grow? - KS1 Science curriculum - BBC · bbc.co.uk · https://www.bbc.co.uk/bitesize/articles/zkp2jsg
11. What do plants need to grow? - BBC Teach · bbc.co.uk · https://www.bbc.co.uk/teach/class-clips-video/articles/z69ddp3
12. plant - Kids | Britannica Kids | Homework Help · kids.britannica.com · https://kids.britannica.com/kids/article/plant/353639
13. What Do Plants Need to Grow? A Simple Guide for Kids · biologyinsights.com · https://biologyinsights.com/what-do-plants-need-to-grow-a-simple-guide-for-kids/
14. What Do Plants Need to Grow? | Science Video For Kids ... · generationgenius.com · https://www.generationgenius.com/videolessons/plant-growth-conditions-video-for-kids/
15. Biology for Kids: Plants - Ducksters · ducksters.com · https://www.ducksters.com/science/biology/plants.php
16. Planting and Growing a Home Garden | Penn State Extension · extension.psu.edu · https://extension.psu.edu/trees-lawns-and-landscaping/home-gardening/planting-and-growing