





SPROUTS' MONTHLY BOOK



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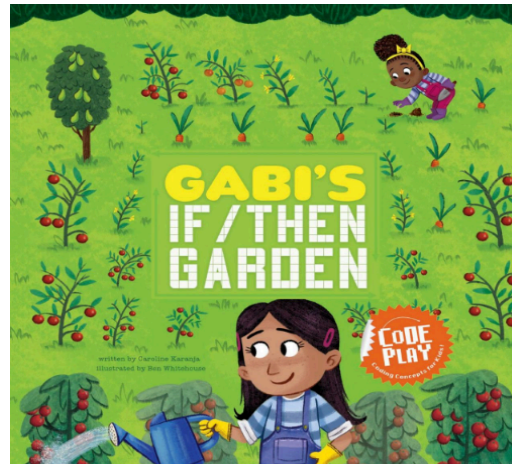
Gabi's If/Then Garden

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Grade Levels Suggested: K-2

Lesson by: Heather Reit



"Gabi's If/Then Garden" is a delightful and colorful story that follows a young girl named Gabi, her friend Adi, and dog Charlie as they discover the joys of gardening. Through fun and easy-to-understand conditional statements, they learn how to take care of her garden. This book not only teaches you about gardening but also introduces you to basic computer science concepts in a fun way. With vibrant illustrations and engaging storytelling, "Gabi's If/Then Garden" takes you into the world of agriculture through the eyes of two curious young girls and an adorable dog.

Scan here for Lesson Slides:



Grade Levels K-3

Time length of lesson - 1 hour

Standards addressed

The lesson activities encourage students to think critically and logically about cause and effect relationships (science standards), understand and participate in discussions about text details (ELA standards), and use basic programming concepts to solve problems (technology standards). By reading "Gabi's If/Then Garden" and participating in related activities, students engage in hands-on learning that meets multiple standards in a fun and meaningful way.

- **K:** Identify and explain how human behaviors (e.g., watering, weeding) affect the growth of plants.
- **1:** Analyze and interpret data from observations and measurements to describe different ways that plants grow and survive.
- **2:** Use evidence to communicate information about how plants depend on their surroundings to meet their needs.
- **3:** Develop and refine simple algorithms (e.g., if/then statements) to solve problems.

Objective of the lesson

- By the end of the lesson, K-3 students will demonstrate an understanding of if/then statements and their application in gardening and problem-solving contexts through interactive activities, including story comprehension, hands-on gardening, and basic coding with Bee-Bots. They will also develop critical thinking skills as they analyze cause-and-effect relationships in "Gabi's If/Then Garden" and apply these concepts to real-world scenarios.

National Agricultural Literacy Outcomes:

- **Early Elementary (Kindergarten - Grade 2) T4**
 - Identify the people and careers involved from production to consumption of agricultural products
- **Upper Elementary (Grades 3-5) T4**
 - Provide examples of science being applied in farming for food, clothing, and shelter products.
 - Describe how technology helps farmers/ranchers increase their outputs (crop and livestock yields) with fewer inputs (less water, fertilizer, and land) while using the same amount of space
 - Explain the value of agriculture and how it is important in daily life

Vocabulary:

Word	Definition
Agriculture	The science and practice of farming.
Bug	A mistake or problem in a computer program that makes it not work right.
Code	Instructions that tell a computer what to do.
Command	An order given to a computer to make it do something.
Computer	A machine that can follow instructions to solve problems and do tasks.
Condition	Something that must be true for something else to happen.
Conditional Statement	A rule that says if one thing happens, then another thing will happen.
Debug	To find and fix mistakes in a computer program.
outcome	What happens at the end; the result of an action.
Programmer	person who writes code to make computers do things.

Materials list:

- Computer
- Projecting screen
- copy of Gabi's I/T Garden
- Vocabulary list (printed)
- Seeds and a peat pot for each student or small group.
- Watering containers and sunny area for seeds

Instructor Procedure:

Briefly introduce the lesson and the concept of if/then statements.

Have any of you ever planted a garden or helped someone with gardening?

What steps did you follow to make sure the plants grew well?

Can you think of any other areas in our lives where we follow a series of steps to complete a task? How does it help us to have a plan?

Storytime (8 mins)

Read "Gabi's If/Then Garden" aloud to the class, emphasizing the if/then statements Gabi uses in her garden.

Discussion (5 mins): Engage students in a discussion about the story. Ask questions like:

"What is an if/then statement?"

"Can you give an example from the book?"

(10 mins): Students pair up and take turns sharing their own if/then statements related to gardening. For example, one student might say, "If we water the plants, then they will grow," and the next student might say, "If we put the plants in the sun, then they will get sunlight."

Bring students back together. Play a quick round of the If/Then game from the book.

Students will each get a vocabulary word and definition. They will put their hands up to find a partner. They will ask their partner to define the vocabulary word. They will praise or coach the student and then the other student will ask their partner their vocabulary word followed by praise or coaching to correct the definition. They then trade cards and put their hand up to find a new partner.

Sequencing Steps in Gardening

Objective: Learn to sequence steps in a process, specifically planting a seed.

Activities:

1. **Story Recap:** Briefly revisit "Gabi's If/Then Garden" and highlight the sequence of activities Gabi follows.
2. **Sequencing Game:** Students work in pairs. One student starts by naming the first step in planting a seed, then the next student adds the second step, and so on until all steps are sequenced.
3. **Hands-On Planting:** Students plant their own seeds in peat pots, following the correct sequence of steps.
4. **Drawing Sequence:** Draw the sequence of planting and label each step with numbers.

Planting Seeds (10 mins):

Whole group discussion of the steps that we will use to plant our sunflower seeds. Create a whole class algorithm for planting a seed in a peat pot.

- **Demonstration (3 mins):** Demonstrate how to plant seeds in a pot. Use an if/then statement during the demo (e.g., "If we put the seed in the soil, then it will grow with water and sunlight").
 - **Student Planting (7 mins):** Distribute small pots, soil, and seeds to the students. Assist them in planting their seeds.

Watering and Care (5 mins):

- **Watering (2 mins):** Show how to water the seeds. Use another if/then statement (e.g., "If we water the seeds, then they will start to sprout").
- **Care Instructions (3 mins):** Explain how students should take care of their plants and observe them over the next few weeks.
- **Bee Debugging Puzzles Activity (15 mins):**
 - **Setup (2 mins):** Ensure each student has access to a computer or tablet with internet access. Students DO NOT have to sign in to play.

[Bee Sequence](#) (k4- 1st)

[Bee Sequence](#) (loop functions)

[Bee "Debugging"](#)

- **Demonstration (3 mins):** Show the students how to navigate to the Bee Debugging Puzzles on Code.org and how to start the first puzzle.
- Your students do not need to sign in to use Code.org. Recommended to complete the first puzzle together and orient students to the work areas. Students can also use [PAIR PROGRAMMING](#) to complete the puzzles.
- **Student Activity (10 mins):** Let the students work on the puzzles, encouraging them to use if/then logic to debug the code. Assist as needed.
- **Sharing Solutions (2 mins):** Have a few students share their favorite puzzles and explain how they debugged them using if/then statements.

Reflection and Conclusion (5 mins): Ask students to reflect on what they learned about growing conditions and conditions in CS. Use prompts like:

- "What did you learn about the relationship of pollinators and plants?"
- "How did you use if/then statements with the Bee Debugging Puzzles?"

Bee-Bot option

Introduction to Bee-Bots (3 mins): Explain how Bee-Bots work and how they can be programmed to follow a path.

Pattern Recognition Activity (12 mins):

- Setup (2 mins): Lay out the Bee-Bot mats with garden-themed paths (e.g., paths with flowers, vegetables, and garden tools).
- Demonstration (2 mins): Show how to program the Bee-Bot to follow a simple pattern (e.g., "If the Bee-Bot sees a flower, then it turns right").
- Student Activity (8 mins): Divide students into small groups and give each group a Bee-Bot. Provide index cards with simple if/then patterns for the Bee-Bots to follow. Assist as needed.

Sharing Patterns (5 mins): Have each group demonstrate their Bee-Bot's path and explain the if/then pattern they used.

. Reflection (3 mins) Ask students to reflect on what they learned about if/then statements and patterns. Use prompts like:

- "What did you learn about taking care of plants?"
- "How did you use if/then statements with the Bee-Bots?"

2. Conclusion (2 mins) Summarize the lesson and encourage students to continue observing and caring for their plants. Remind them of the importance of patterns and conditional statements in everyday life.

Assessment:

○ Informal:

- observations during activities
- Student self reflection in journals
- Teachers have the option of creating free accounts with Code.org to track student progress in classes.

Additional Activities:

Introduction: Briefly discuss what plants need to grow, referencing "Gabi's If/Then Garden".

RoundRobin Sharing (10 m: In small groups, students take turns naming one thing plants need to grow.

Hands-On Activity (20 mins): Provide materials for students to create a mini poster or diagram showing the needs of a plant. They can draw and label each element.

Group Presentation (10 mins): Each group presents their poster/diagram to the class.

If/Then statements for South Carolina school gardening:

1. If we plant okra in late spring, then it will thrive in South Carolina's warm climate.
2. If we amend clay soil with organic matter, then it will improve drainage and fertility.
3. If we grow collard greens in a sunny spot, then they will develop rich flavor.
4. If we attract bees to the garden with native flowers, then they will pollinate our crops.

5. If we use row covers to protect plants from pests, then they will grow healthier.
6. If we plant cucumbers near trellises, then they will climb and save space.
7. If we start seedlings indoors, then they will be ready for transplanting in early spring.
8. If we prune tomato plants to one main stem, then they will produce larger fruit.
9. If we use drip irrigation in the garden, then water will be delivered efficiently to plant roots.
10. If we plant sweet potatoes in loose, sandy soil, then they will develop well-formed tubers.
11. If we harvest herbs regularly, then they will continue to produce new growth.
12. If we provide support for pepper plants, then they will bear more fruit without bending.
13. If we plant marigolds among vegetable crops, then they will deter nematodes.
14. If we use compost tea as fertilizer, then plants will receive a nutrient boost.
15. If we mulch around plants with pine straw, then soil moisture will be conserved.
16. If we use raised beds filled with fertile soil, then plants will have ideal growing conditions.
17. If we rotate crops each season, then soil nutrients will be balanced naturally.
18. If we introduce ladybugs to the garden, then they will control aphid populations.
19. If we cover sensitive plants during frost warnings, then they will survive the cold.
20. If we use cover crops like clover, then soil erosion will be prevented.
21. If we plant beans in nitrogen-rich soil, then they will fix nitrogen for other plants.
22. If we water garden beds deeply, then plant roots will grow deeper for drought resistance.
23. If we plant sunflowers to attract birds, then they will help manage insect pests.
24. If we space plants according to their mature size, then overcrowding will be avoided.
25. If we monitor garden pests early, then integrated pest management strategies will be effective.

26. If we prune fruit trees in late winter, then they will produce more fruit in the summer.
27. If we use organic mulch around plants, then weeds will be suppressed naturally.
28. If we companion plant basil near tomatoes, then tomatoes will have improved flavor.
29. If we harvest rainwater in barrels, then we can conserve water during dry spells.
30. If we test garden soil pH, then we can adjust it for optimal plant growth.

- **South Carolina Agricultural Information**

- [State Agricultural Facts](#)
- [TOP COMMODITIES](#)

SC Standards Addressed:

Kindergarten

Science Standards:

- K.L.2A.3: Identify and explain how human behaviors (e.g., watering, weeding) affect the growth of plants.
 - Activity: Discussing and performing gardening tasks using conditional statements ("If we water the plants, then they will grow").

English Language Arts Standards:

- K.RL.1: With prompting and support, ask and answer questions about key details in a text.
 - Activity: Discussing key details of "Gabi's If/Then Garden" and asking questions about the story.

Technology Standards:

- K-2.CT.2.1: Understand and use basic programming concepts.
 - Activity: Introducing basic coding with Bee-Bots and debugging puzzles using if/then statements.

Grade 1

Science Standards:

- 1.S.1A.1: Ask and answer questions to understand the natural world.
- 1.L.5A.1: Use observations and measurements to describe different ways that plants grow and survive.
 - Activity: Analyzing and interpreting data from observations of plants growing under different conditions.

English Language Arts Standards:

- 1.RL.1: Ask and answer questions about key details in a text.
 - Activity: Engaging in discussions about the if/then statements in the story.

Technology Standards:

- K-2.CT.2.1: Understand and use basic programming concepts.
 - Activity: Introducing basic coding with Bee-Bots and debugging puzzles using if/then statements.

Grade 2

Science Standards:

- 2.L.5A.1: Use evidence to communicate information about how plants depend on their surroundings to meet their needs.
 - Activity: Discussing how plants need water, sunlight, and soil to grow, and using conditional statements to explain their care.

English Language Arts Standards:

- 2.RL.1: Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text.
 - Activity: Sharing their own if/then statements related to gardening and discussing their relevance.

Technology Standards:

- K-2.CT.2.1: Understand and use basic programming concepts.
 - Activity: Introducing basic coding with Bee-Bots and debugging puzzles using if/then statements.

Grade 3

Science Standards:

- 3.S.1A.4: Develop and refine simple algorithms (e.g., if/then statements) to solve problems.
 - Activity: Creating and following if/then statements for planting and caring for seeds.

English Language Arts Standards:

- 3.RL.1: Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
 - Activity: Using the story "Gabi's If/Then Garden" to explain and apply conditional statements in real-world scenarios.

Technology Standards:

- 3-5.CT.2.1: Develop and refine simple algorithms (e.g., if/then statements) to solve problems.

- Activity: Creating algorithms for planting seeds and caring for plants using if/then statements, and programming Bee-Bots to follow garden-themed paths.

Grades K-3 (General Standards)

National Agricultural Literacy Outcomes (aligned with South Carolina's agricultural standards):

Kindergarten - Grade 2:

- T4: Identify the people and careers involved from production to consumption of agricultural products.

- Activity: Discussing the roles of gardeners and farmers in food production.

Grade 3 - Grade 5:

- T4: Provide examples of science being applied in farming for food, clothing, and shelter products. Explain the value of agriculture and how it is important in daily life.

- Activity: Explaining how technology helps farmers/ranchers increase their outputs with fewer inputs while using the same amount of space.

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