

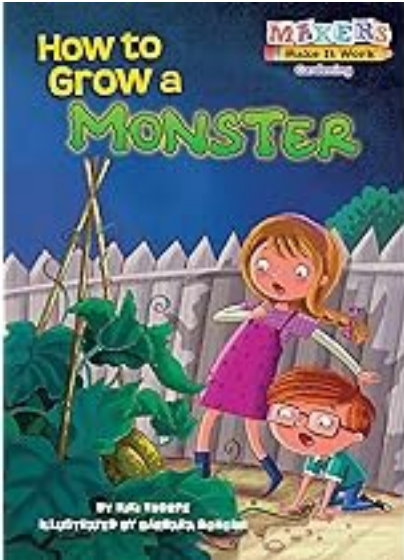


# The Book Planter



## Ag in the Classroom

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*How to Grow a Monster*

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Last year, Gabe's mom grew way too many zucchinis. This year, Gabe and his sister have a secret plan to take control of the garden. They have to stop the zucchini madness! This is a great book about gardening and all of the rewards that come along with it. Students will learn where food comes from and even how to grow some of it themselves.

### Before Reading

1. Show the students the cover of the book.
2. Ask, "What do you think this book is about?" Ask them what they see on the cover that explains their answers.
3. Explain that this is a story about gardening.

### After Reading Discussion Questions

1. How did Gabe know it was time to plant the garden?
2. What kinds of tools and/or materials do you need to plant a garden?
3. Why did Gabe dread finding the zucchini seeds?
4. How do you tell what kinds of plants need sun or shade?
5. Reread page 9. Do you think the plan to plant the zucchini in the shade would have worked? Why or why not?
6. How many pounds of zucchini can one plant produce?
7. What does harvest mean?
8. How did Gabe and Kara try to sabotage the zucchini harvest?
9. On page 12, Kara says, "No flowers, no pollination. No pollination, no zucchini!" What is pollination, and why was it important to the zucchini the garden in *How to Grow a Monster*?
10. What part of the plant did Gabe and Kara use to make new recipes with?
11. What caused the giant zucchini to grow in the garden?
12. How did the family use their giant zucchini?

### Activity 1: I Need My Space!<sup>1</sup>

#### Materials:

- *I Need My Space Worksheet* (attached)
- Writing/coloring utensils
- Variety of seed packets (optional)

- Glue (optional, only if using seed packets)
- Desk or small table for demonstration
- Cup of water
- Small snack for demonstration (Ex: apple, granola bar, bag of chips, etc.)

Procedures:

1. Prior to the lesson, set the cup of water and snack onto a small table or desk at the front of the classroom.
2. Read the book *How to Grow a Monster*. Once finished, return to pages 9-11. Review the pages and pictures with the students specific to what seeds and plants need, including soil, sun, water, and spacing.
3. To demonstrate the need for appropriate spacing for plants, tell 4-10 students that they are small plants called **seedlings**. Tell 4-10 additional students that they are **weeds**. Explain that weeds are plants that grow in places they're not wanted. (Note: Numbers can be adjusted for class size.) Explain that the desk/table is the soil or garden space and that the water and snack must be shared by any seedlings growing in that space.
4. Call up 1 seedling and have them sit or stand around the desk or small table. Draw attention to the fact that the student has plenty of personal space, and wouldn't have to share the cup of water or snack. Invite the rest of the seedlings up to the desk/table individually or in small groups and point out how the desk/table space gets more crowded and that they would have to share the water and the snack.
  - Explain that spacing with seeds, seedlings and plants is the same. Ask students to explain what they watched with the demonstration. Answer: *The more plants in a space, the less room they have to grow and the less water and nutrition they get overall. Even if all of the plants are the ones you want to grow, they will still compete for their basic plant needs.*
5. Allow most of the seedling volunteers return to their seats. Have 1-2 seedlings remain at the desk/table. Invite 1 weed to join them at the desk/table. Have students explain what happens with the additional person at the desk/table (*they have less space, water and nutrition*). Invite the rest of the weeds up to the desk/table individually or in small groups until they are all around the desk/table.
  - Ask students, "Is this scenario the same or different than before?" Answer: *Whether wanted or unwanted plants, this concept is still the same. Too many plants in one space will reduce growth due to competition for space, water and nutrition from the soil.*
6. Have students go back to their seats. Show students the *I Need My Space Worksheet* (attached) and explain that each student will plan a garden. On the board, draw a grid that is 7" x 7" with 7 squares that each represent 1 square foot. Remind them of the demonstration and what plants need (soil, sun, water, space). For younger grades, encourage seeds that are spaced out. For older grades, see the Extensions below.
7. Using writing/drawing utensils OR actual seeds and glue, have students plan their garden on the worksheet grid.
8. **Extension:**
  - Have students draw a tree on the outside of the grid of the worksheet. Then have them analyze their garden with this new addition and explain whether their garden would still grow well with the shady spot, or if they would need to redo their garden plan.
  - Look at the individual seed packets and identify the specific spacing needs for each plant in the garden. Have students plan their garden with these spacing needs in mind.

## Activity 2: Another Name for Dirt<sup>1</sup>

### Materials:

- *Soil Layers Worksheet* (attached), preferably printed on thick card stock
- Writing utensils
- Double-sided tape
- Access to outside and soil available to dig in
- Shovel(s)

### Procedures:

1. Prior to the lesson, preview the video and links to understand their content and approve them for students.
2. Read the book *How to Grow a Monster* with the students.
3. Ask students to name and call out things that plants need to grow (sun, soil, water). If a student calls out “dirt,” ask the students what another name for dirt is (**soil**).
4. But what is soil? Watch the 5-minute [SciShow video “Where Does Soil Come From?”](#) (see **Links** section for full url)
5. Explain that each country around the world and even regions in the United States have different **compositions**, simply what the soil is made up of. The layers of the soil may look or feel different, or be different depths, all due to the history of the area.
6. Check out the [soil for your state](#) (see **Links** section for full url) as a group. Ask students, “What do you notice about our state soil?”
7. Divide students into small groups of 2-4 and give each a *Soil Layers Worksheet* printed on card stock. Depending on the age of the group, you may or may not choose to prepare the cards with double-sided tape prior to traveling outside. Travel outside to the area preapproved for digging with shovels.
8. Demonstrate how to dig a deep hole straight down in order to see some layers within the soil. Starting at the deepest part of the hole, take a sample of soil and stick it to the bottom of the double-sided tape. Take additional soil samples as you move closer and closer to the top of the hole, putting a sample on the tape each time. Model how to complete the soil profile from the soil in the hole prior to allowing students to complete the activity.
9. Transition back into the classroom and wrap up the lesson with discussion around the soil profiles in small groups and what the students learned from the lesson.
10. **Extension:**
  - With permission, prior to the lesson dig a 48” to 72” hole on the school campus. Use this hole to complete a soil profile at a deeper level.
  - Partner with your local USDA NRCS office, or Soil and Water Conservation District to explore more about soil and the lesson options available. (Note: Sometimes, these organizations have soil samples that show the layers).

## Activity 3: Pack Your Bags!<sup>1</sup>

### Materials:

- *Pack Your Bags Worksheet* (attached)
- Writing/drawing utensils
- Scissors

### Procedures:

1. Prior to the lesson, preview the video and links to understand their content and approve them for the students. Also, cut the Pack Your Bags Worksheet into individual squares for the students. (Note: this can be done by the students, just allow time for that.)
2. Draw a large Venn diagram on the board or shared screen space with the title, “How They Travel.” On one side, write “Humans” and on the other side write “Seeds.” Ask students, with guided discussion, to complete the Venn diagram.
  - Humans travel by: walking, car, train, etc.
  - Seeds travel by: animals, fire, etc.
  - Both travel by: wind (airplane), water (boat), etc.
3. Watch the 5-minute [SciShow Kids video on “How Do Plant Seeds Travel.”](#) (full url in **Links** section).
4. Review the Venn diagram and make any edits based on student learning from the video content. Highlight the neat ways seeds travel.
5. Give each student a seed graphic from the *Pack Your Bags Worksheet*. Have them color, cut and write their name on it. While they are engaged with those tasks, draw a simple bar graph on the whiteboard with ways seeds travel (wind, water, animals, fire) on the X-axis.
6. Have students use their graphic to “vote” for the way they would like to travel if they were a seed. Interpret, analyze and discuss the class results to conclude the lesson.
7. **Extension:**
  - Divide the class into four groups and assign each a way seeds travel to research further. Have student groups design a multi-media (skit, poster, song, etc.) presentation for the class or special guests.

## Links

### Activity 2:

- SciShow video “Where Does Soil Come From?”  
<https://www.youtube.com/watch?v=5b9o7yM7YGE>
- State Soils <https://www.nrcs.usda.gov/resources/education-and-teaching-materials/state-soils>

### Activity 3:

- SciShow Kids video “How Do Plant Seeds Travel”  
<https://www.youtube.com/watch?v=WqgVks9NViQ>

## Sources

1. American Farm Bureau Foundation for Agriculture. *How to Grow a Monster Educator’s Guide*; 2021.

## K-5 Subject Areas: English Language Arts, Math, and Science

### English Language Arts (Reading and Writing)

- RI.K.1 With prompting and support, ask and answer questions about key details in a text.
- RI.K.2 With prompting and support, identify the main topic and retell key details of a text.
- RI.K.3 With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.

- W.K.2 Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic. a. With guidance and support from adults, respond to questions and suggestions from adults and/or peers and add details to strengthen writing as needed.
- RI.1.1 Ask and answer questions about key details in a text.
- RI.1.2 Identify the main topic and retell key details of a text.
- RI.1.3 Describe the connection between two individuals, events, ideas, or pieces of information in a text.
- RI.1.4 Ask and answer questions to help determine or clarify the meaning of words and phrases in a text.
- RI.1.5 Know and use various text features to locate key facts or information in a text.
- RI.1.6 Distinguish between information provided by pictures or other illustrations and information provided by the words in a text.
- RI.1.7 Use the illustrations and details in a text to describe its key ideas.
- W.1.2 Write informative/explanatory texts in which they name a topic, supply some facts about the topic, and provide closure. a. With guidance and support from adults, organize information and ideas around a topic to plan and prepare to write. b. With guidance and support from adults, focus on a topic, respond to questions and suggestions from peers, and add details to strengthen writing as needed.
- W.1.5 Participate in shared research and writing projects.
- RI.2.4 Determine the meaning of words and phrases in a text relevant to a grade 2 topic or subject area.
- RI.2.5 Know and use various text features to locate key facts or information in a text efficiently.
- RI.2.7 Explain how specific images contribute to and clarify a text.
- W.2.2 Write informative /explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section. a. With guidance and support from adults, organize information and ideas around a topic to plan and prepare to write. b. With guidance and support from adults and peers, focus on a topic and strengthen writing as needed by revising and editing.
- W.2.5 Participate in shared research and writing projects.
- W.2.6 Recall information from experiences or gather information from provided sources to answer a question.
- RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.
- RI.3.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 3 topic or subject area.
- RI.3.5 Use text features and search tools to locate information relevant to a given topic efficiently.
- RI.3.7 Use information gained from illustrations and the words in a text to demonstrate understanding of the text.
- W.3.5 Conduct short research projects that build knowledge about a topic.
- RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
- RI.4.2 Determine the main idea of a text and explain how it is supported by key details; summarize the text.
- RI.4.4 Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.
- RI.4.5 Describe the overall structure of events, ideas, concepts, or information in a text or part of a text.
- RI.4.7 Interpret information presented visually, orally, or quantitatively and explain how the information contributes to an understanding of the text in which it appears.
- W.4.5 Conduct short research projects that build knowledge through investigation of different aspects of a topic.
- RI.5.1 Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text.
- RI.5.4 Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.
- RI.5.7 Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question or to solve a problem efficiently.
- W.5.2 Write informative /explanatory texts to examine a topic and convey ideas and information clearly.
- W.5.3 Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.
- W.5.5 Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.

## Math

- 1.MD.4 Organize, represent, and interpret data with up to three categories. • Ask and answer questions about the total number of data points. • Ask and answer questions about how many in each category. • Ask and answer questions about how many more or less are in one category than in another.
- 2.MD.10 Organize, represent, and interpret data with up to four categories. • Draw a picture graph and a bar graph with a single-unit scale to represent a data set. • Solve simple put-together, take-apart, and compare problems using information presented in a picture and a bar graph.
- 3.MD.3 Represent and interpret scaled picture and bar graphs: • Collect data by asking a question that yields data in up to four categories. • Make a representation of data and interpret data in a frequency table, scaled picture graph, and/or scaled bar graph with axes provided. • Solve one and two-step “how many more” and “how many less” problems using information from these graphs.
- 4.MD.4 Represent and interpret data using whole numbers. • Collect data by asking a question that yields numerical data. • Make a representation of data and interpret data in a frequency table, scaled bar graph, and/or line plot. • Determine whether a survey question will yield categorical or numerical data.

- 5.MD.2 Represent and interpret data. • Collect data by asking a question that yields data that changes over time. • Make and interpret a representation of data using a line graph. • Determine whether a survey question will yield categorical or numerical data, or data that changes over time.

## Science

- 1.L.1 Understand characteristics of various environments and behaviors of humans that enable plants and animals to survive.
- 1.L.2 Summarize the needs of living organisms for energy and growth.
- 4.L.1 Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats.
- 5.L.2 Understand the interdependence of plants and animals with their ecosystem.

# I Need My Space Worksheet

Name: \_\_\_\_\_

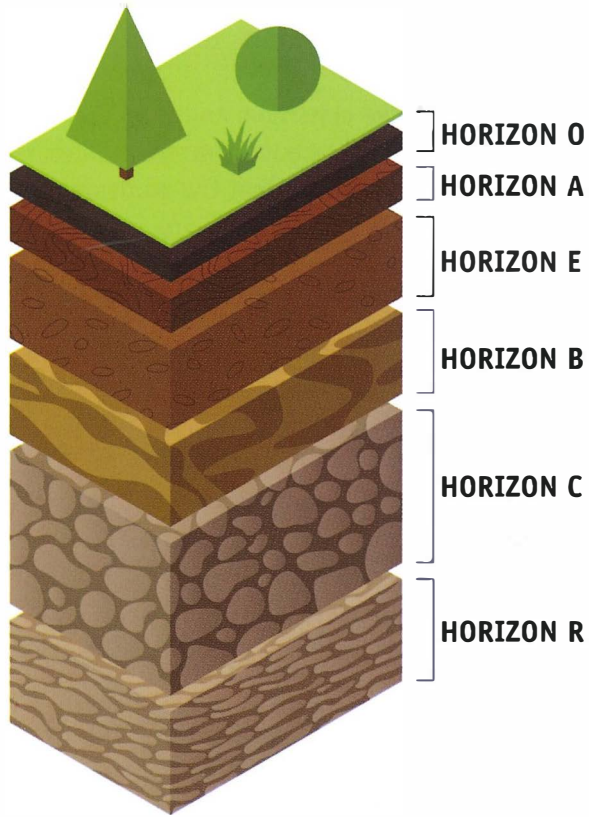
**Directions:** It is time to plan your garden! Think about what you would like to grow. Using your writing utensil or seeds, decide what you should plant and where. Don't forget about what plants need--including space! Each square represents 1 square foot (or 12 inches tall by 12 inches wide), but note each square represents a foot and is not drawn to scale.






Name: \_\_\_\_\_

# Soil Layers Worksheet



NAME OF SOIL: \_\_\_\_\_

HORIZON	DEPTH	DESCRIPTION	
A	0"	[Empty box for drawing]	
	12"		
B	24"		
	36"		
	48"		
	60"		
C	72"		



\*Soil profile graphic adapted from USDA-NRCS Resource.



# Pack Your Bags Worksheet

