

ACTIVITY GUIDE AT-A-GLANCE

*Take an adventure-filled
journey to learn about science!*

1. & 2. SCHEDULING OPTIONS

Choose from a grid-style schedule (1) or a list-style schedule (2). Either way, these scheduling options will make planning your weekly science adventure a snap! These schedule sheets include a summary of the chapter in case your students are reading the novel or listening to the audiobook on their own.

READ

3. READING ASSIGNMENTS

Know what to read each week in the corresponding Sassafras Science novel. Plus, get options for additional encyclopedia pages to read and for books to check out from the library. The novel contains the essential information for each week, but if you want to dig deeper, we've got you covered!

WRITE

4. SCIDAT LOGBOOK INFO

Have confidence that your students are grasping the key points from the reading with the information in the notebooking section. Here, you will find the scientific details that were shared in the chapter, which could be included in your students' narrations or list of facts.

5. RELEVANT VOCABULARY

Build your students' science vocabulary with words relevant to the topics the students are studying.

6. COPYWORK

Use these selections as memory work, copywork, or dictation—it's up to you!

CHAPTER 2: GRID SCHEDULE

| Saplings Needed | | | | |
|--|--|---|---|---|
| Demo | • Fern Friend, Magnifying Glass | | | |
| Projects | • Organza fabric, Green and gold wire, Microscope slides, Fern spores | | | |
| <p>The chapter opens with Blaine and Tracy leading to the treveps of the Amazon jungle. As they race to the forest floor, Blaine gets stuck in a vine. Their old friend, Arto, from their zoology leg-again outfit of the forest just in time to help the wits. He and Blaine dance as he shares about the orchids that can be found in the rainforest. On the way back, to the village, he teaches the Sasafra twins about ferns. Once they arrive, the Treveps often have Blaine and Tracy. In Amazon the camp that evening Arto tells them a few of the book legends, including the one about the Liana Snake temple. The chapter ends with a finding out that the Man with No Eyebrows has also arrived in the Amazon.</p> | | | | |
| Weekly Schedule | | | | |
| | Day 1 | Day 2 | Day 3 | Day 4 |
| Read | <input type="checkbox"/> Read the section entitled "Palling for Orchids" in <i>SSA Volume 3: Botany</i> . | <input type="checkbox"/> Read the section entitled "Palling for Ferns" in <i>SSA Volume 3: Botany</i> . | <input type="checkbox"/> (Optional) Read one or all of the assigned pages from the encyclopedia of your library. | <input type="checkbox"/> (Optional) Read one of the additional books from the library. |
| Write | <input type="checkbox"/> Fill out a Botany Record Sheet on SL p. 16 for the orchid. <input type="checkbox"/> Add facts to the Botany Sheet on SL p. 13. <input type="checkbox"/> (Optional) Add facts to the Flowering Plant Information Sheet on SL p. 5. | <input type="checkbox"/> Fill out a Botany Record Sheet on SL p. 15 for the fern. <input type="checkbox"/> (Optional) Add facts to the Non-Fiction Information Sheet on SL p. 8. <input type="checkbox"/> (Optional) Learn about the Fern Life Cycle. | <input type="checkbox"/> Go over the vocabulary words and enter them into the Botany Glossary on SL p. 89. <input type="checkbox"/> (Optional) Write a narrative on the Botany News Sheet on SL p. 18. | <input type="checkbox"/> (Optional) Complete the copywork or dictation assignment and add it to the Botany News sheet on SL p. 18. <input type="checkbox"/> (Optional) Work on the Botany Posters. |
| Do | <input type="checkbox"/> (Optional) Make Your Own Orchid. | | <input type="checkbox"/> Do the demonstration entitled "Fern Observation." | <input type="checkbox"/> (Optional) Work on the Microscope work. |

24

THE SASAFRA GUIDE TO BOTANY – CHAPTER 2

APR 2: LIST SCHEDULE

CHAPTER SUMMARY

After and Thayer landing in the interior of the Amazon jungle. As they race to the river. Their old friend, Arto, from their academy leg appears one of the forest just in time down to see them about the orchid that can be found in the rainforest. On the the Sasarua river about ferns. Once they arrive, the Yora tribesmen welcome Blaine that evening. Arto tells them of the lost of the legends, including the one about the orchid with its finding out that the Man with No Eyebrows has also arrived in the

ESSENTIALS

“Bling Orchid” of Chapter 2 in *SSA Volume 3: Botany*
 “Bling Fern” of Chapter 2 in *SSA Volume 3: Botany*

on SL p. 16 for the orchid.
 on SL p. 13.
 on SL p. 15 for the fern.
 and over them into the Botany Glossary on SL p. 89.
 on the demonstration on SL p. 18.

1) “Fern Observation.”

(OPTIONAL) EXTRAS

of pages from the encyclopedia of your choice.
 books from the library.

ing Plans Information Sheet on SL p. 5.
 growing Plants Information on SL p. 8.
 Botany Notes Sheet on SL p. 18.

or decision assignment and add it to the Botany Notes sheet on SL p. 18.

2

| Surprising Notes! | |
|-------------------|--|
| Demo | <ul style="list-style-type: none"> • Fern Fossil, Magnifying Glass |
| Projects | <ul style="list-style-type: none"> • Organza fabric, Green and gold wire, Microscope slide, Fern spores |

YANRY – CHAPTER 2

25

CHAPTER 2: RETURN TO THE JUNGLE

READ: GATHERING INFORMATION


LIV 3 *Life Science Adventure Volume 3:*

(OPTIONAL) ADDITIONAL CLOPIEDIA READINGS

- ☞ *DK First Nature Encyclopedia* pp. 32-33 (In the Trees)
- ☞ *Likable Internet-linked Science Encyclopedia* p. 283 (Flowering Plants)
- ☞ *Kingfisher Science Encyclopedia* pp. 438-439 (Saving the Rainforest)
- ☞ *DK Encyclopedia of Nature* pp. 82-83 (Tropical Rainforests)
- ☞ pp. 122-123 (Ferns and Horsetails)

(OPTIONAL) ADDITIONAL LIBRARY BOOKS

- ☞ *Orbivla (Let's Investigate: Plants)* by Derek Fell
- ☞ *The Great Kapok Tree: A Tale of the Amazon Rainforest* by Lynne Cherry
- ☞ *Life Science Habbits (Introducing Habitats)* by Molly Aloian and Bobby Kalman



WRITE: KEEPING A NOTEBOOK

SCIDAT LOGBOOK SHEETS

This week, you can have the students begin to fill out the Information Sheets for flowering plants and non-flowering plants. They can also fill out the Information Sheet for the rainforest and the logbook sheets for the orchid and the ferns. The students could use the logbook sheets for the rainforest.

Information Sheet - Flowering Plants

EXAMPLES: The students can add the following to their logbook sheets:

CHARACTERISTICS

- These plants use flowers in reproduction.

Information Sheet - Non-flowering Plants

EXAMPLES: The students can add the following to their logbook sheets:

CHARACTERISTICS

- These plants use spores in reproduction.

Biomse Sheet - Rainforest

BIOME IMAGE: Have the students color the rainforest image. Have them also label the layers of the rainforest biome—the forest floor, the shrub layer, the understory, the canopy, and the emergent levels.

26 THE SASSAFRAS GUIDE TO BOTANY • CHAPTER 2

[illegible]

ACTIVITY GUIDE AT-A-GLANCE

DO

7. RELATED SCIENTIFIC DEMONSTRATIONS

Know what materials you will need to do a weekly hands-on science activity that coordinates with the topic. This section lists the supplies you will need, provides easy-to-follow steps, and explanations to make it a snap to complete the scientific demonstration.

8. COORDINATING STEAM* ACTIVITIES

Add in a bit of STEAM with these optional activity ideas. You will find ideas for projects that last throughout the novel and ones specific to the chapter (week) you are on.

9. TEMPLATES AND MORE

In the guide's appendix, you will find templates for the projects, a full glossary, and a set of quizzes to use along the journey.

*STEAM: Science, Technology, Engineering, Art, and Math

THE SCIDAT* LOGBOOK

Don't forget the SCIDAT Logbook for your students!!

The SCIDAT logbook will serve as a record of your students' journey! It contains all the pages the students will need as they follow like Blaine and Tracey. Each page has been attractively illustrated for you so you don't have to track down pictures for the students to use! Get it all at:

<https://elementalscience.com/collections/sassafras-science>



*SCIDAT: Scientific Data

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THE SASSAFRAS GUIDE TO BOTANY

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QUICK START GUIDE

Welcome to your super, scientific journey with the Sassafras Twins!! The information and activities in this guide will help you turn a simple adventure novel into a complete science program for your elementary students. Let's start by answering three pressing questions!

WHAT WILL WE LEARN?





Students will learn about botany, which is the study of plants. See p. 11 for a list of the topics explored in this program.

WHAT DO I NEED?

In addition to this activity guide, you will need the following materials:

1. **Novel** – *The Sassafras Science Adventures Volume 3: Botany* - All the main reading assignments are from this book. You can get the paperback novel, the Kindle version, or the audiobook.
2. **Student Materials** – You can have your students use a blank notebook or you can purchase a copy of *The Official Sassafras SCIDAT Logbook: Botany Edition* for each student. Get a glimpse of this option on p. 7. (SCIDAT stands for scientific data and it comes from the Sassafras Twins' journey.)
3. **Demonstration Supplies** – See p. 12 for a full list, or save yourself time and get the *Sassafras Science Year 2 Experiment Kit*, which includes the materials for both volume 3 and volume 4.

If you want more information than what is already in the novel, the following encyclopedias are scheduled in this guide:




-  *DK First Nature Encyclopedia* (best for 1st through 4th grades)
-  *Usborne Internet-linked Science Encyclopedia* (best for grades 3rd through 5th grades)
-  *Kingfisher Science Encyclopedia* (best for 4th through 7th grades)
-  *DK Encyclopedia of Nature* (best for 5th through 7th grades)

If you want to add more fun with optional STEAM* projects, you can find a list of the project supplies on p. 13.

*STEAM: Science, Technology, Engineering, Art, and Math

WHAT WILL A WEEK LOOK LIKE?

Each week you and your students will:

-  **Read** scientific information from an adventure-filled novel, also known as a living book, and discuss what you read.
-  **Write** down what the students have learned and seen in a way that is appropriate for their skills by keeping a notebook, or rather a SCIDAT Logbook.
-  **Do** hands-on science through demonstrations using the directions found in this guide.

You can also add in the optional copywork, library books, and STEAM activities if you want to dig deeper into a topic. For a more detailed explanation of the components in each lesson, we highly recommend checking out the peek inside this guide on pp. 6-7 and reading the introduction on pp. 8-10. The chapter lessons begin on p. 17.



THE SASSAFRAS GUIDE TO BOTANY

TABLE OF CONTENTS

| | |
|--|----|
| FRONT MATTER..... | 3 |
| Quick Start Guide | 3 |
| Activity Guide At-a-Glance | 6 |
| The SCIDAT Logbook At-a-Glance | 7 |
| Introduction | 8 |
| Topical List | 11 |
| Demonstration Supplies Listed By Chapter | 12 |
| STEAM Project Supplies Listed By Chapter | 13 |
| Microscope Information | 14 |
| The SassafRAS Guide to the Characters | 15 |
| CHAPTER LESSONS..... | 17 |
| Chapter 1: Schedules | 18 |
| Chapter 1: The Basics of Botany | 20 |
| Chapter 2: Schedules | 24 |
| Chapter 2: Return to the Jungle | 26 |
| Chapter 3: Schedules | 30 |
| Chapter 3: Kidnapped | 32 |
| Chapter 4: Schedules | 36 |
| Chapter 4: Lost in a Scottish Castle Maze | 38 |
| Chapter 5: Schedules | 42 |
| Chapter 5: The Mystery of the Stolen Roses | 44 |
| Chapter 6: Schedules | 50 |
| Chapter 6: The Gaucho with Ten Names | 52 |
| Chapter 7: Schedules | 56 |
| Chapter 7: Who Killed the Gray Fox? | 58 |
| Chapter 8: Schedules | 62 |
| Chapter 8: Pirates in Borneo! | 64 |
| Chapter 9: Schedules | 68 |
| Chapter 9: Escape into the Jungle | 70 |
| Chapter 10: Schedules | 74 |
| Chapter 10: The Secret Siberian Railway | 76 |
| Chapter 11: Schedules | 80 |
| Chapter 11: The End of the Line | 82 |
| Chapter 12: Schedules | 86 |
| Chapter 12: The Mysterious Miss Été | 88 |
| Chapter 13: Schedules | 92 |
| Chapter 13: A Tour of Versailles | 94 |

| | |
|---|------------|
| Chapter 14: Schedules | 98 |
| Chapter 14: California Creatures of Mystery | 100 |
| Chapter 15: Schedules | 104 |
| Chapter 15: Sasquatch Sighting! | 106 |
| Chapter 16: Schedules | 110 |
| Chapter 16: The Glitch is Gone | 112 |
| Chapter 17: Schedules | 116 |
| Chapter 17: Solving the Mystery of... | 118 |
| Chapter 18: Schedules | 122 |
| Chapter 18: Back to the Basement | 124 |
| APPENDIX..... | 127 |
| Lab Report Sheet | 129 |
| Microscope Worksheets | 131 |
| Biome Poster Templates | 133 |
| Small Plant Pictures for Biome Sheets | 140 |
| Life Cycle of a Fern Worksheets | 143 |
| Drawing a Fungus Worksheet | 145 |
| Taiga Versus Tundra Worksheet | 146 |
| Leaf Rubbing Template | 147 |
| Bark Rubbing Template | 148 |
| Cone Journal Sheet | 149 |
| Gymnosperm versus Angiosperm Worksheet | 150 |
| Pollination Comparison Workshett | 151 |
| GLOSSARY..... | 153 |
| BOOK LIST..... | 159 |
| QUIZZES..... | 165 |
| Botany Quiz #1 | 167 |
| Botany Quiz #2 | 169 |
| Botany Quiz #3 | 171 |
| Botany Quiz #4 | 173 |
| Botany Quiz #5 | 175 |
| Botany Quiz #6 | 177 |
| Botany Quiz #7 | 179 |
| Botany Quiz #8 | 181 |

THE SASSAFRAS GUIDE TO BOTANY

INTRODUCTION

Our living books method of science instruction was first proposed in *Success in Science: A Manual for Excellence in Science Education*. This approach is centered on living books that are augmented by notebooking and scientific demonstrations. The students read (or are read to) from a science-oriented living book, such as *The Sassafras Science Adventures Volume 3: Botany*. Then, they write about what they have learned and complete a related scientific demonstration or hands-on project. If time and interest allow, the teacher can add in non-fiction books that coordinate with the topic, do an additional activity, or memorize related information. If you want to learn more about how this works, you can listen to this free conference session on using living books for science:

🎧 Inspiring your students to love science through living books: <https://youtu.be/Dvk1LfYGONw>

The books in *The Sassafras Science Adventures* series are designed to give you the tools you need to employ the living books method of science instruction with your elementary students. For this reason, we have written an activity guide and a logbook that corresponds to each novel. This particular activity guide contains 18 chapters of activities, reading assignments, scientific demonstrations, and so much more for studying botany.

Each of the chapters in this guide corresponds directly to the chapters in *The Sassafras Science Adventures Volume 3: Botany*. They were written to give you the information you need to turn the adventure novel into a full science course for your elementary students. They will provide you with a buffet of options you can use to teach the students about plants. So pick and choose what you know you and your students will enjoy!

WHAT EACH CHAPTER CONTAINS

Each chapter begins with your two scheduling options—a grid schedule and a list schedule. These contain a summary of the corresponding chapter in *The Sassafras Science Adventures Volume 3: Botany* and the same weekly assignments, but in a different format. These schedules are included to give you an idea of how your week could be organized, so please feel free to alter them to suit your needs. Following the scheduling options, you will find the details for reading, writing, and doing science for the particular chapter. This information is divided into the following sections:

READ: GATHERING INFORMATION

- ① **LIVING BOOK SPINE** – This section contains the corresponding chapter in *The Sassafras Science Adventures Volume 3: Botany*.
- 📖 **(OPTIONAL) ENCYCLOPEDIA READINGS** – This section contains possible reading assignments from:
 - *DK First Nature Encyclopedia* (best for 1st through 4th grades)
 - *Usborne Internet-linked Science Encyclopedia* (best for grades 3rd through 5th grades)
 - *Kingfisher Science Encyclopedia* (best for 4th through 7th grades)
 - *DK Encyclopedia of Nature* (best for 5th through 7th grades)

You can choose to read them to the students or have the students read them on their own.

- 📖 **(OPTIONAL) ADDITIONAL LIBRARY BOOKS** – This section contains a list of books that coordinate with what is being studied in the chapter. You can check these books out of your local library.

WRITE: KEEPING A NOTEBOOK

- ☐ **SCIDAT LOGBOOK INFORMATION** – This section has the information that the students could have included in their SCIDAT logbooks. (SCIDAT stands for scientific data and it comes from the Sassafras Twins’ journey.) The students may or may not have the same information on their notebooking sheets, which is fine. You want their SCIDAT logbooks to be a record of what they have learned. The logbook information is included as a guide for you to use as you check their work. For more information about notebooking, please read the following article:

- 🔗 What is notebooking? – <https://elementalscience.com/blogs/news/what-is-notebooking>
- 🔗 How to use notebooking with different ages – <https://elementalscience.com/blogs/news/notebooking-with-different-ages>

- 📖 **VOCABULARY** – This section includes vocabulary words that coordinate with each chapter. If the students are older, we recommend that you have them create a glossary of terms using a blank sheet of lined paper or the glossary sheets provided in *The Official Sassafras Student SCIDAT Logbook: Botany Edition*. You can also have them memorize these words and their definitions.
- 📄 **(OPTIONAL) COPYWORK** – This section contains a short copywork passage and a longer dictation passage for you to use. Some students may use the shorter passages for dictation or the longer passages for copywork. Feel free to tailor the selections to your students’ abilities. You can also use the selections as memory work assignments for the students.
- 🕒 **(OPTIONAL) QUIZ** – This section contains the answers for the quizzes included in the appendix. These simple, short quizzes are optional. You can use them as graded quizzes or as review sheets.

DO: PLAYING WITH SCIENCE

- ☑ **SCIENTIFIC DEMONSTRATION** – This section includes a list of materials, the instructions, and an explanation for a scientific demonstration that coordinates with the chapter. There is a blank lab report sheet provided for you in the appendix on pp. 129-130 if you would like the students to do a write-up of the demonstration. If the students are in grade 4 or higher, we recommend that they complete at least one of these activities for this course.
- ✂ **(OPTIONAL) STEAM* PROJECTS** – These sections contain additional STEAM projects and activities that correspond to the topics in the chapter. There are multi-chapter activities that students can do over the course of several chapters or over the full novel. Plus, there are activities that coordinate with each specific chapter. Pick and choose the activities that interest you and your students.

*STEAM: Science, Technology, Engineering, Art, and Math

ADDITIONAL MATERIALS

We have provided a few additional materials in the back of this guide for your convenience. First, you will find the templates you need for the projects suggested in this guide. Next, you will find a glossary of terms, which you can use with the students as they define the words for each chapter. And finally, you will find a set of eight simple quizzes you can use with the students to verify they are retaining the material.

QUICK LINKS

View all the links mentioned in this guide in one place and get a digital copy of the templates, glossary, and quizzes by visiting the following page:

🔗 <https://elementalscience.com/blogs/resources/volume-3-links>

FOR THE STUDENTS

The SCIDAT logbook is meant to be a record of the students' journey through their study of botany. It is explained in more detail in Chapter 1 of this guide. You can choose to make your own or purchase a premade logbook from Elemental Science. *The Official Sassafras SCIDAT Logbook: Botany Edition* has all the pages the students will need to create their own logbook. Each page has been attractively illustrated for you so you don't have to track down pictures for the students to use. This way they can focus on the information they are learning.

FINAL THOUGHTS

As the author and publisher of this curriculum I encourage you to contact me with any questions or problems that you might have concerning *The Sassafras Guide to Botany* at support@elementalscience.com. I will be more than happy to answer them as soon as I am able. I hope that you and your students enjoy your journey through the world of plants with the Sassafras twins.

~ Paige Hudson

TOPICAL LIST

The Sassafras Science Adventures Volume 3: Botany covers a variety of aspects of botany, such as:

- Biomes
- Habitats
- Types of Plants
- Basic Mapping Skills

In the process, you will learn about the following specific topics:

- Orchid
- Fern
- Peace Lily
- Shelf Fungus
- Rose
- Boxwood
- Moss
- Grass
- Wildflower
- Ombú Tree
- Palm Tree
- Pitcher Plant
- Mold
- Giant Rafflesia
- Dwarf Birch Shrub
- Crocus
- Lichen
- Algae
- Plant Cell
- Photosynthesis
- Chestnut Tree
- Apple Tree
- Sitka Tree
- Cones
- Redwood Tree
- Fly Agaric Mushroom
- Joshua Tree
- Barrel Cactus
- Creosote Bush
- Paddle Cactus



DEMONSTRATION SUPPLIES LISTED BY CHAPTER

| CHAPTER | SUPPLIES NEEDED |
|------------------------------|---|
| 1: Find Your Habitat | No supplies needed |
| 2: Fern Observation | Fern Frond, Magnifying Glass |
| 3: Fungus Walk | Magnifying Glass, Gloves |
| 4: Rose Dissection | Rose, Magnifying glass, Knife |
| 5: Moss Hunt | Magnifying glass, Putty knife |
| 6: Erosion Prevention | Dirt, A 2" by 2" square of sod, 2 Aluminum pans, Water |
| 7: Seed Investigation | Several pieces of fruit, Knife, Magnifying glass |
| 8: Insect Trap | Cup, Apple cider vinegar, Liquid dish soap |
| 9: Growing Mold | Ripe piece of fruit, Plastic container with a lid |
| 10: Bulb Dissection | Bulb, Knife, Magnifying glass |
| 11: Lichen Hunt | Magnifying glass, Putty knife |
| 12: Model Plant Cell | Jell-O, Green jelly beans, Grapes, A banana slice, A small ziploc bag, A small square plastic container |
| 13: Leaf Change | Paper clips, Foil, Small house plant |
| 14: Inside the Cone | Pine cone (tightly closed), Magnifying glass |
| 15: Mushroom Hunt | Magnifying glass, Plastic spoon |
| 16: Cactus Shadow | Sponge, Flashlight, 10 Toothpicks, Shallow dish |
| 17: Waxy Leaves | Construction paper, Crayon, 2 Straws, 2 Coffee stirrers, Tape, Shallow dish, Modeling clay, Board, Permanent marker |
| 18: Plant Quest | Plant Quest Cards (Download for free from Elemental Science) |

STEAM PROJECT SUPPLIES LISTED BY CHAPTER

The multi-chapter and specific chapter STEAM projects listed in this guide are optional, so you may not need all of these supplies. However, this list has been provided for your convenience. If you do decide to do these projects, in addition to the items listed each week you will need glue, scissors, a variety of paint colors, and a set of markers.

| CHAPTER | SUPPLIES NEEDED |
|---------|--|
| 1 | No supplies needed |
| 2 | Organza fabric, Green and gold wire, Microscope slide, Fern spores |
| 3 | Peace lily, Microscope slide, Mushroom or other type of fungus |
| 4 | Tissue paper, Green pipe cleaners, Double-sided tape, Cardboard boxes, Green spray paint, Microscope slide, Pollen |
| 5 | Moss, Yogurt, Water, Sugar, Brick, Paintbrush, Microscope slide |
| 6 | Grass seed, Dirt, Pantyhose, Googly eyes, Felt, Small pot, Microscope slide, Blade of grass |
| 7 | Paper, Pair of Tube-socks, Herb-growing kit or herb cutting, Microscope slide, Several seeds |
| 8 | Green pipe cleaner, Green construction paper, Brown beads, Thin dowel rod |
| 9 | Slice of bread, Plastic baggie, Air-dry clay |
| 10 | Garlic clove, Plastic baggie, Microscope slide, Bulb skin |
| 11 | Microscope slide, Pond water |
| 12 | Baking soda, Water, Cup, Test Tube, Elodea, Leaves, Paper, Crayons |
| 13 | Nuts with shells, Paper, Crayons, Microscope slide, Apple slice |
| 14 | String, Peanut butter, Bird seed, Microscope slide, Pine needle |
| 15 | Microscope slide, Mushroom |
| 16 | Microscope slide, Cactus skin or spine |
| 17 | Shallow dish, Sand, Rocks, Succulent plants, Air-dry clay, Toothpicks, Canned cactus |
| 18 | Small aluminum pan, 1 Brick of floral foam, 2 Pencils, Spoon, Soil, dirt, or sand, Cup, Water |

MICROSCOPE INFORMATION

In this activity guide I have suggested several dissection and microscope activities. These are optional and they are best utilized with older students. For the microscope work, I have included links to view the slides online, so purchasing a microscope is not absolutely necessary for this course. I have shared the information below about purchasing these supplies for your convenience.

MICROSCOPE INFORMATION

If you do not already own a microscope and you have the funds to get one, I suggest purchasing one for this course. You can purchase a good quality microscope at:

- Lab Essentials, Inc (www.labessentials.com)
- Children's microscopes (www.childrensmicroscopes.com/022a000m.html)
- Home School Science Tools (www.hometrainingtools.com)

When purchasing a microscope, you are looking for the following things:

- ☒ A compound monocular microscope
- ☒ A microscope with 4x, 10x, and 40x objective lenses at a minimum (NOTE—The eyepiece should also give 10x magnification, which then will allow you to look at an object at 40x, 100x, and 400x magnification.)
- ☒ A microscope with separate coarse and fine adjustment knobs
- ☒ A good light source (NOTE—The best light source is a fluorescent bulb. Do not get one with mirror illumination.)

When choosing a slide set for this course, I recommend the Botany slide set from Home Science Tools as it contains all the slides suggested in this activity guide.

🔗 <https://www.homesciencetools.com/product/botany-slide-set/>

If you don't know how to use a microscope, see this website for directions:

🔗 <http://www.microscope-microscope.org/basic/how-to-use-a-microscope.htm>

A PALM-SIZED OPTION

Many of the microscope assignments in this guide could also been done with a palm-sized microscope. You won't see quite as much as you can with a full-sized microscope, but this a much less expensive option! Here's a look at what a palm-sized microscope can do:

🔗 <https://elementalscience.com/blogs/news/palm-sized-microscope-review>

If you are not sure which option will work for you, check out the following article for a comparison of the options:

🔗 <https://elementalscience.com/blogs/news/which-type-of-microscope-for-homeschool>

THE SASSAFRAS GUIDE TO THE CHARACTERS FOUND IN VOLUME 3: BOTANY

THROUGHOUT THE BOOK*

- ★ **Blaine Sassafras** – The male Sassafras twin, also known as Train. He started the summer hating science, but thanks to the zip lines, he is enjoying experiencing science face-to-face.
- ★ **Tracey Sassafras** – The female Sassafras twin, also known as Blaisey. She started the summer hating science, but thanks to the zip lines, she is also enjoying experiencing science face-to-face.
- ★ **Uncle Cecil** – The Sassafras twins' crazy, forgetful, and messy uncle. He is the scientist behind the invisible zip lines.
- ★ **President Lincoln** – Uncle Cecil's lab assistant, who also happens to be a prairie dog. He is also the co-inventor of the zip lines.
- ★ **The Man With No Eyebrows** – He has no eyebrows and an extreme dislike of Uncle Cecil. Not only is he spying on the red-haired scientist, but he is also trying to sabotage the twins at every stop.

(*Note—These characters also appeared in *The Sassafras Science Adventures Volume 1: Zoology* and *The Sassafras Science Adventures Volume 2: Anatomy*.)

CECIL'S NEIGHBORHOOD (CHAPTER 1)

- ★ **Mrs. Pascapli (paz-kah-pah-LEE)** – She lives at 1106 North Pecan Street, next door to Uncle Cecil.

PERU (CHAPTERS 2-3)

- ★ **Arrio** – The native Peruvian who serves as the local expert for the twins in the Amazon Rainforest. He is a full-fledged Yora tribesman and friend of Alvaro. He also appeared in *The Sassafras Science Adventures Volume 1: Zoology*.
- ★ **Itotia** – The leader of the Matsigenka tribe, who are the enemies of the Yora.
- ★ **Tenyoa** – A tracker with the Yora tribe.
- ★ **Alvaro Manihuari** – The owner of the Out-on-a-Limb guesthouse. He is a friend of Arrio and the Yora tribesman. He also appeared in *The Sassafras Science Adventures Volume 1: Zoology*.
- ★ **Ernesto Perez** – The president of the ProLog operations in Peru. He also appeared in *The Sassafras Science Adventures Volume 1: Zoology*.

SCOTLAND (CHAPTERS 4-5)

- ★ **Fiona McRay** – The resident botanist at Dockerty Castle. She is also the twins' local expert as they explore the Scottish castle's gardens and nearby peat bog.
- ★ **Dunmore** – The butler at Dockerty Castle.
- ★ **Osla** – The maid at Dockerty Castle.
- ★ **Rona** – The baker at Dockerty Castle.
- ★ **Angus** – The gardener at Dockerty Castle.
- ★ **Lief** – The piper at Dockerty Castle.
- ★ **Lady Dockerty** – The mistress of Dockerty Castle.
- ★ **Sir Kentalot** – Lady Dockerty's brother.
- ★ **Miles Dockerty** – Lady Dockerty's son and judge of the Take Our Breath Away singing competition. He also appeared in *The Sassafras Science Adventures Volume 2: Anatomy*.

ARGENTINA (CHAPTERS 6-7)

- ★ **Felipe Moreno** – The entertainer and pianist at the Cantina de Pampas. He is the local expert as the twins explore the Argentinian pampas.
- ★ **Emilio** – The bartender at the Cantina de Pampas.
- ★ **Raul Juan Pablo Eduardo Santiago Mateo De La Casillas . . . the third** – The gaucho with ten names who is on a quest to discover who killed his gray fox.
- ★ **Darts Domingo** – The rough darts player who challenges the gaucho with ten names on his quest.
- ★ **Jorge Alfonso** – A trapper on the pampas who confronts the gaucho with ten names on his quest.
- ★ **Franco Lorenzo** – An Argentinian cattle wrangler who tests the gaucho with ten names on his quest.
- ★ **Manuel Hernandez** – The owner of the Hacienda de Hernandez, a white mansion in the middle of the Argentinian pampas.
- ★ **Nicolette Hernandez** – The wife of Manuel Hernandez.

BORNEO (CHAPTERS 8-9)

- ★ **Trisno Kanang** – The twins' local expert in Borneo. He works at Pitchers Beachside Resort.
- ★ **Novi Anita** – The hotel manager at Pitchers Beachside Resort.
- ★ **Rover and Zaza Ridgeburn** – A couple who have come to celebrate their fiftieth anniversary at the Pitchers Beachside Resort.
- ★ **Rama** – The leader of the pirates who attack the Pitchers Beachside Resort.

SIBERIA (CHAPTERS 10-11)

- ★ **Pavel Markoff** – The engineer of the secret Siberian Railway train. He is the twins' local expert as they journey through the Siberian tundra.
- ★ **Yuri Checkoff** – The conductor of the secret Siberian Railway train.
- ★ **Yuroslav Bogdanovich** – The Aggrandizer inventor and crazed Siberian scientist.
- ★ **Sveta Corvette** – The neon green punk-rocker who travels the trains as a stowaway.

FRANCE (CHAPTERS 12-13)

- ★ **Été Plage** – The mysterious local expert during the twins' visit to France. They have met her multiple times in their adventures, but they usually find her in a much colder place.

NORTHERN CALIFORNIA (CHAPTERS 14-15)

- ★ **Brock Hoverbreck** – The twins' local expert as they explore the redwoods of Northern California. He is a park ranger and expert of the flora there.
- ★ **Melody Albermully** – The leader of the C.O.M. Crew.
- ★ **Harmony Albermully** – Melody's sister and the C.O.M. Crew historian.
- ★ **Rip** – The tracker for the C.O.M. Crew.
- ★ **Sam** – The tech specialist for the C.O.M. Crew.
- ★ **Chorus (a.k.a. Cory) Albermully** – The technical assistant to Sam, and brother of Melody and Harmony.
- ★ **Ned** – The driver for the C.O.M. Crew.

SOUTHERN CALIFORNIA (CHAPTERS 16-17)

- ★ **Symphony Douglas** – The twins' local expert as they explore the Mojave Desert of Southern California. She is a park ranger at Joshua Tree National Park and cousin of Brock Hoverbreck.

CHAPTER LESSONS

CHAPTER 1: GRID SCHEDULE

| Supplies Needed | | | | |
|--|---|--|--|--|
| Demo | • No Supplies Needed | | | |
| Projects | • No Additional Supplies Needed | | | |
| Chapter Summary | | | | |
| The chapter opens with Tracey recalling snippets of their zoology and anatomy legs. She then joins Blaine and heads inside to watch President Lincoln’s anatomy review video. Uncle Cecil suggests a walk through the neighborhood to introduce botany. The twins learn more about the plant kingdom and the Sassafras tree before they are chased by a dog back to Cecil’s house. They open up their LINLOC app and zip to their first botany location at the end of the chapter. We also learn that the Man With No Eyebrows has indeed stolen Phil Earp’s Dark Cape suit and he intends to use it to stop the twins on their journey. | | | | |
| Weekly Schedule | | | | |
| | Day 1 | Day 2 | Day 3 | Day 4 |
| Read | <input type="checkbox"/> Read the section entitled “Memories on the Horse Swing” of Chapter 1 in <i>SSA* Volume 3: Botany</i> . | <input type="checkbox"/> Read the section entitled “Next Up—The Study of Plants” of Chapter 1 in <i>SSA Volume 3: Botany</i> . | <input type="checkbox"/> (<i>Optional</i>) Read one or all of the assigned pages from the encyclopedia of your choice. | <input type="checkbox"/> (<i>Optional</i>) Read one of the additional books from the library. |
| Write | <input type="checkbox"/> Set up the students’ SCIDAT logbooks. | <input type="checkbox"/> Go over the vocabulary word and enter it into the Botany Glossary on SL** p. 87. | <input type="checkbox"/> Write observations learned from the demonstration on SL p. 11. <input type="checkbox"/> (<i>Optional</i>) Write a narration on the Botany Notes Sheet on SL** p. 12. | <input type="checkbox"/> (<i>Optional</i>) Complete the copywork or dictation assignment and add it to the Botany Notes sheet on SL p. 12. |
| Do | | | <input type="checkbox"/> Do the demonstration entitled “Find your Habitat.” | <input type="checkbox"/> (<i>Optional</i>) Play a game of “I Spy.” |

*SSA = *The Sassafras Science Adventures*

**SL = *The Official Sassafras SCIDAT Logbook: Botany Edition*

CHAPTER 1: LIST SCHEDULE

CHAPTER SUMMARY

The chapter opens with Tracey recalling snippets of their zoology and anatomy legs. She then joins Blaine and heads inside to watch President Lincoln’s anatomy review video. Uncle Cecil suggests a walk through the neighborhood to introduce botany. The twins learn more about the plant kingdom and the Sassafras tree before they are chased by a dog back to Cecil’s house. They open up their LINLOC app and zip to their first botany location at the end of the chapter. We also learn that the Man With No Eyebrows has indeed stolen Phil Earp’s Dark Cape suit and he intends to use it to stop the twins on their journey.

ESSENTIALS

Read

- ☐ Read the section entitled “Memories on the Horse Swing” of Chapter 1 in *SSA* Volume 3: Botany*.
- ☐ Read the section entitled “Next Up—The Study of Plants” of Chapter 1 in *SSA Volume 3: Botany*.

Write

- ☐ Set up the students’ SCIDAT logbooks.
- ☐ Go over the vocabulary word and enter it into the Botany Glossary on SL** p. 87.
- ☐ Write observations learned from the demonstration on SL p. 11.

Do

- ☐ Do the demonstration entitled “Find your Habitat.”

(OPTIONAL) EXTRAS

Read

- ☐ Read one of the additional books from the library.

Write

- ☐ Write a narration on the Botany Notes Sheet on SL p. 12.
- ☐ Complete the copywork or dictation assignment and add it to the Botany Notes sheet on SL p. 12.

Do

- ☐ Play a game of “I Spy.”

*SSA = *The Sassafras Science Adventures*

**SL = *The Official Sassafras SCIDAT Logbook: Botany Edition*

| Supplies Needed | |
|-----------------|---------------------------------|
| Demo | • No Supplies Needed |
| Projects | • No Additional Supplies Needed |

CHAPTER 1: THE BASICS OF BOTANY

READ: GATHERING INFORMATION

LIVING BOOK SPINE

- 📖 Chapter 1 of *The Sassafras Science Adventures Volume 3: Botany*

(OPTIONAL) ENCYCLOPEDIA READINGS

- 🔍 *DK First Nature Encyclopedia* pp. 6-7 (World Habitats)
- 🔍 *Usborne Internet-linked Science Encyclopedia* pp. 330-331 (Ecology)
- 🔍 *Kingfisher Science Encyclopedia* pp. 68-69 (Biomes and Habitats)
- 🔍 *DK Encyclopedia of Nature* pp. 62-63 (Ecology)



(OPTIONAL) ADDITIONAL LIBRARY BOOKS

- 📖 *Many Biomes, One Earth* by Sneed B. Collard III
- 📖 *What Is a Biome? (Science of Living Things)* by Bobbie Kalman
- 📖 *Earth's Biomes (Sci-Hi: Life Science)* by Donna Latham and Adam Miller
- 📖 *Green Genius Guide: What are Ecosystems, Biomes, Ecotones, and more...* by Richa Sharma

WRITE: KEEPING A NOTEBOOK

SCIDAT LOGBOOK SHEETS

This week, you will set up the students' SCIDAT logbook. You can use blank sheets of copy paper with dividers for each section or purchase *The Official Sassafras SCIDAT Logbook: Botany Edition* with all the pictures from Elemental Science. For each of these sheets you can have the students enter information only from *The Sassafras Science Adventures Volume 3: Botany*, or you can have them do additional research to gather more facts. The following video shares a peek inside a 2nd-grader's SCIDAT Logbook:

🔗 <https://www.youtube.com/watch?v=0m4nj-K7s58>

What you choose to do will depend upon the ages and abilities of your students. Below is an explanation of each of the student sheets.

Information Sheets

The purpose of these sheets is for the students to record what they have learned about the various divisions of the plant kingdom studied in *The Sassafras Science Adventures Volume 3: Botany*. These sheets will be added to throughout the book.

EXAMPLES: The students will enter the names of different plants (or fungi) they encounter that fall into that division.

CHARACTERISTICS: The students should record the characteristics of the plants (or fungi) that they have learned about in the division.

Biome Sheets

The purpose of these sheets is to give the students an opportunity to work on their mapping skills as they study the different biomes around the world.

BIOME: The students will color and label the biome that the twins visited.

MAP: The students will color the areas of the map where the particular biome can be found.

FACTS ABOUT: Have the students enter any interesting information they have learned about the area, such as the typical weather and any animals or plants that are found there.

Botany Record Sheets

The purpose of these sheets is for the students to record what they have learned about the various plants that are introduced in *The Sassafras Science Adventures Volume 3: Botany*.

DIVISION: The students should enter the division into which the plant is classified. They can also enter the plant name on the overview sheet at the same time.

PREFERRED HABITAT: The students should describe the habitat preferred by that particular plant.

DISTRIBUTION: The students should write where the plant can be found.

INFORMATION LEARNED: The students should enter any information that they have learned about the particular plant.

Botany Notes Sheets

The purpose of these sheets is for the students to record any additional information that they have learned during their study of botany. You can use these sheets to record additional narrations, copywork, or dictation assignments.

Project Record Sheets


The purpose of these sheets is for the students to record the STEAM projects they have done through the course of their study of botany.

Botany Glossary

The purpose of the glossary is for the students to create a dictionary of terms that they have encountered while reading *The Sassafras Science Adventures Volume 3: Botany*. They can look up each term in a science encyclopedia or in the glossary included on pp. 155-157 of this guide. Then, have the students copy each definition onto a blank index card or into their SCIDAT logbook. They should also illustrate each of the vocabulary words. (NOTE—In *The Official Sassafras Student SCIDAT Logbook: Botany Edition* these pictures are already provided.)

VOCABULARY

Have the older students look up the following terms in the glossary in the appendix on pp. 155-157 or in a science encyclopedia. Then, have them copy the definition onto a blank index card or into their SCIDAT logbook.

 **BIOME** – A community of living things, both plants and animals, which are affected by the climatic conditions of the region in which they are found.

(OPTIONAL) COPYWORK

Copywork Selection

A habitat is the local surroundings. A biome is a larger global ecosystem.

Dictation Passage (*Major Biomes Poem*)

Deserts are dry and dusty places,
Hot all day, so water is scarce in these spaces.
The grassland is a prairie or pasture,
There are few trees, and much grass for the horse and rancher.
The forest is full of different trees,
It has distinct layers that let plants grow with ease.
The arctic is a cold and icy land,
The ground is forever frozen and the landscape is bland.

DO: PLAYING WITH SCIENCE

SCIENTIFIC DEMONSTRATION: FIND YOUR HABITAT

Begin by taking a moment to discuss the difference between a habitat and a biome. This was covered in zoology, but here is a blog post to reference for more information on the subject:

🔗 <https://elementalscience.com/blogs/science-activities/biome-ecosystem-habitat>

You can also discuss how important observation skills are for the scientist who is studying a particular biome. Then, explain that today you are going to practice your observation skills while finding out what type of habitat you live in. Then, take a walk in your neighborhood or on a nearby nature trail. Allow the students to make observations and ask questions. Ask the students:

- ? What kinds of plants do you see?
- ? What kinds of animals do you see?
- ? What is the weather like today?
- ? What is the weather usually like in the different seasons?

Allow the students to observe the environment, find clues from there, and then use those clues to determine the habitat they are in. You can record their answers on the sheet provided in the SCIDAT Logbook.

(OPTIONAL) STEAM PROJECTS

Multi-chapter Activities

- ✂ BIOME POSTERS – Over the coming weeks, you can have the students create a poster for each of the biomes they study. Each will include a picture of the biome and a few facts about it. This week, have the students decide if they want to make these posters on their own, create a picture collage, or use the biome posters found in the appendix on pp. 133-139 as templates. You will begin actually making the posters next week.

Activities For This Chapter

✂ I SPY – Play a game of “I Spy” to help the students work on their observation skills.

CHAPTER 2: GRID SCHEDULE

| Supplies Needed | | | | |
|--|---|---|---|--|
| Demo | • Fern Frond, Magnifying Glass | | | |
| Projects | • Organza fabric, Green and gold wire, Microscope slide, Fern spores | | | |
| Chapter Summary | | | | |
| The chapter opens with Blaine and Tracey landing in the treetops of the Amazon jungle. As they race to the forest floor, Blaine gets stuck in a vine. Their old friend, Arrio, from their zoology leg appears out of the forest just in time to help the twins. He cuts Blaine down as he shares about the orchids that can be found in the rainforest. On the way back to his village, he teaches the Sassafras twins about ferns. Once they arrive, the Yora tribesmen welcome Blaine and Tracey in. Around the camp-fire that evening, Arrio tells them a few of the Yora legends, including the one about the Huaca Sun temple. The chapter ends with us finding out that the Man With No Eyebrows has also arrived in the Amazon. | | | | |
| Weekly Schedule | | | | |
| | Day 1 | Day 2 | Day 3 | Day 4 |
| Read | <input type="checkbox"/> Read the section entitled “Falling Orchids” of Chapter 2 in <i>SSA Volume 3: Botany</i> . | <input type="checkbox"/> Read the section entitled “Fishing for Ferns” of Chapter 2 in <i>SSA Volume 3: Botany</i> . | <input type="checkbox"/> (<i>Optional</i>) Read one or all of the assigned pages from the encyclopedia of your choice. | <input type="checkbox"/> (<i>Optional</i>) Read one of the additional books from the library. |
| Write | <input type="checkbox"/> Fill out a Botany Record Sheet on SL p. 14 for the orchid. <input type="checkbox"/> Add facts to the Biome Sheet on SL p. 13. <input type="checkbox"/> (<i>Optional</i>) Add facts to the Flowering Plants Information Sheet on SL p. 5. | <input type="checkbox"/> Fill out a Botany Record Sheet on SL p. 15 for the fern. <input type="checkbox"/> (<i>Optional</i>) Add facts to the Non-flowering Plants Information on SL p. 8. | <input type="checkbox"/> Write information learned from the demonstration on SL p. 18. <input type="checkbox"/> (<i>Optional</i>) Write a narration on the Botany Notes Sheet on SL p. 18. | <input type="checkbox"/> Go over the vocabulary words and enter them into the Botany Glossary on SL p. 89. <input type="checkbox"/> (<i>Optional</i>) Complete the copywork or dictation assignment and add it to the Botany Notes sheet on SL p. 18. |
| Do | <input type="checkbox"/> (<i>Optional</i>) Make Your Own Orchid. | <input type="checkbox"/> (<i>Optional</i>) Learn about the Fern Life Cycle. | <input type="checkbox"/> Do the demonstration entitled “Fern Observation.” | <input type="checkbox"/> (<i>Optional</i>) Work on the Biome Posters. <input type="checkbox"/> (<i>Optional</i>) Do the Microscope work. |

CHAPTER 2: LIST SCHEDULE

CHAPTER SUMMARY

The chapter opens with Blaine and Tracey landing in the treetops of the Amazon jungle. As they race to the forest floor, Blaine gets stuck in a vine. Their old friend, Arrio, from their zoology leg appears out of the forest just in time to help the twins. He cuts Blaine down as he shares about the orchids that can be found in the rainforest. On the way back to his village, he teaches the Sassafras twins about ferns. Once they arrive, the Yora tribesmen welcome Blaine and Tracey in. Around the camp-fire that evening, Arrio tells them a few of the Yora legends, including the one about the Huaca Sun temple. The chapter ends with us finding out that the Man With No Eyebrows has also arrived in the Amazon.

ESSENTIALS

Read

- ☐ Read the section entitled “Falling Orchids” of Chapter 2 in *SSA Volume 3: Botany*.
- ☐ Read the section entitled “Fishing for Ferns” of Chapter 2 in *SSA Volume 3: Botany*.

Write

- ☐ Fill out a Botany Record Sheet on SL p. 14 for the orchid.
- ☐ Add facts to the Biome Sheet on SL p. 13.
- ☐ Fill out a Botany Record Sheet on SL p. 15 for the fern.
- ☐ Go over the vocabulary words and enter them into the Botany Glossary on SL p. 89.
- ☐ Write information learned from the demonstration on SL p. 18.

Do

- ☐ Do the demonstration entitled “Fern Observation.”

(OPTIONAL) EXTRAS

Read

- ☐ Read one or all of the assigned pages from the encyclopedia of your choice.
- ☐ Read one of the additional books from the library.

Write

- ☐ Add facts to the Flowering Plants Information Sheet on SL p. 5.
- ☐ Add facts to the Non-flowering Plants Information on SL p. 8.
- ☐ Write a narration on the Botany Notes Sheet on SL p. 18.
- ☐ Complete the copywork or dictation assignment and add it to the Botany Notes sheet on SL p. 18.

Do

- ☐ Make Your Own Orchid.
- ☐ Learn about the Fern Life Cycle.
- ☐ Do the Microscope Work.
- ☐ Work on the Biome Posters.

| Supplies Needed | |
|-----------------|--|
| Demo | • Fern Frond, Magnifying Glass |
| Projects | • Organza fabric, Green and gold wire, Microscope slide, Fern spores |

CHAPTER 2: RETURN TO THE JUNGLE

READ: GATHERING INFORMATION

LIVING BOOK SPINE

- 📖 Chapter 2 of *The Sassafras Science Adventures Volume 3: Botany*

(OPTIONAL) ENCYCLOPEDIA READINGS

- 📖 *DK First Nature Encyclopedia* pp. 32-33 (In the Treetops)
- 📖 *Usborne Internet-linked Science Encyclopedia* p. 283 (Flowerless Plants)
- 📖 *Kingfisher Science Encyclopedia* pp. 438-439 (Saving the Rainforest)
- 📖 *DK Encyclopedia of Nature* pp. 82-83 (Tropical Rainforests), pp. 122-123 (Ferns and Horsetails)



(OPTIONAL) ADDITIONAL LIBRARY BOOKS

- 📖 *Orchids (Let's Investigate. Plants)* by Derek Fell
- 📖 *The Great Kapok Tree: A Tale of the Amazon Rainforest* by Lynne Cherry
- 📖 *A Rainforest Habitat (Introducing Habitats)* by Molly Aloian and Bobby Kalman

WRITE: KEEPING A NOTEBOOK

SCIDAT LOGBOOK SHEETS

This week, you can have the students begin to fill out the Information Sheets for flowering plants and non-flowering plants. They can also fill out the biome sheet for the rainforest and the logbook sheets for the orchid and the fern. The students could include the following information:

Information Sheet - Flowering Plants

EXAMPLES: The students can add the fern.

CHARACTERISTICS

- These plants use flowers in reproduction.

Information Sheet - Non-flowering Plants

EXAMPLES: The students can add the orchid.

CHARACTERISTICS

- These plants use spores in reproduction.

Biome Sheet - Rainforest

BIOME IMAGE: Have the students color the rainforest image. Have them also label the layers of the rainforest biome—the forest floor, the shrub layer, the understory, the canopy, and the emergent leaves.

FACTS

- Rainforests are found all over the world, but the largest one is in the Amazon.

Botany Record Sheet - Orchid

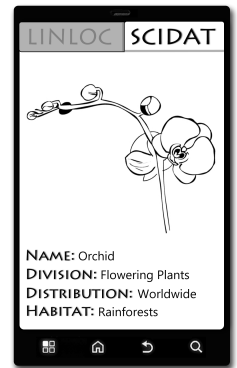
DIVISION: Flowering Plants

PREFERRED HABITAT: Rainforest

DISTRIBUTION: Worldwide

INFORMATION LEARNED

- Orchids are epiphytes that sprout and grow on the branches of trees.
- They receive more light on the branch than they would on the forest floor.
- They get the water and nutrients they need from the air and rain that comes down through the canopy.
- Generally, they do not harm the plant that they are attached to.
- There are over twenty thousand orchid species in the Amazon Rainforest and they are known for their fragrance and beauty.
- Orchids can survive with little water and their seeds are carried throughout the rainforest by the wind.
- In the rainforest, orchids typically attach themselves to trees and their roots remain exposed to collect as much water and nutrients as they can.
- The Cattleya orchid has a thickened bulb at the base of the stem and wide fleshy leaves; both store food and water.



Botany Record Sheet - Fern

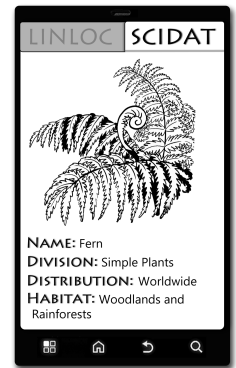
DIVISION: Simple Plants

PREFERRED HABITAT: Woodlands and rainforests

DISTRIBUTION: Worldwide

INFORMATION LEARNED

- Ferns are non-flowering plants that grow in damp or shady places, like humid forests or river banks.
- Their roots are typically small and do not go deep into the soil.
- They have delicate, tapered leaves, called fronds, which unfurl as they grow.
- They have rigid stalks that transport nutrients, but they do not flower; instead, they release spores.
- Spores are microscopic particles of living material encased in a tough coating; they can reproduce a plant. They develop in sacs, called sori, on the underside of the fern fronds. When the spores mature, they are released by the thousands into the air.
- In the Amazon Rainforest, ferns can grow on the forest floor or in trees.
- Epiphytic ferns, such as the filmy fern, can take root in the boughs or trunks of a tree. They can absorb nutrients from dead insects, leaves, and droppings that accumulate around their roots.



VOCABULARY

Have the older students look up the following terms in the glossary in the appendix on pp. 155-157 or in a science encyclopedia. Then, have them copy each definition onto a blank index card or into their SCIDAT logbook.

- 📖 **EPIPHYTE** – A plant, such as a moss or an orchid, that can sprout and grow on the branches of a tree.
- 📖 **SPORE** – A microscopic package of cells produced by a fungus or plant; it can grow into a new individual.

(OPTIONAL) COPYWORK

Copywork Sentence

Ferns are simple plants.

Dictation Selection

The rainforest has five layers—the forest floor, the shrub layer, the understory, the canopy, and the emergent leaves. Rainforests are found all over the world, but the largest one is in the Amazon. You can find orchids and ferns in the Amazon rainforest.

DO: PLAYING WITH SCIENCE

SCIENTIFIC DEMONSTRATION: FERN OBSERVATION

Materials

- ☒ Fern leaf
- ☒ Magnifying glass

Procedure

1. Have the students observe a fern frond. (**NOTE**—You can purchase one from the local florist or look for a fern plant while on a nature walk.)
2. Have them observe the stalk and fronds with and without a magnifying glass. If you have access to a microscope, have the students look at the leaves up close.
3. Have the students look, feel, and smell the leaf as they make observations. Have them also look for evidence of spores.

Explanation

The students should spend time observing the fern leaf, looking for the different things they learned about in the novel. If they looked at the fern under a microscope, they should have seen layers of plant cells.

Take It Further

Have the students take a walk in your local woods to look for ferns. Once they find some, have them observe the ferns to see how they are alike and how they differ from the ones they observed during the demonstration.

(OPTIONAL) STEAM PROJECTS

Multi-chapter Activities

- ✂ **BIOME POSTERS** – This week, have the students begin their rainforest biome poster. They can color the background, add one interesting fact about the rainforest, and glue the orchid to one of the tree branches and fern pictures to the rainforest floor. (**NOTE**—A template for the poster can be found on appendix p. 133 and the small pictures can be found on appendix p. 140.)

Activities For This Chapter

- ✂ **MAKE YOUR OWN ORCHID** – Have the students make their own bunch of orchid blooms. You will need some light fabric (such as organza) as well as gold and green wire. Visit the following website for directions for this project:
- 🔗 <http://www.pitara.com/activities/craft/online.asp?story=66>
- ✂ **FERN LIFE CYCLE** – Have the students learn more about the fern life cycle. You can have them read from the scheduled pages in the *Encyclopedia of Nature* or from this website:
- 🔗 <http://botany.thismia.com/2009/12/02/fern-life-cycle/>
- Once they are done, they can fill out the blank fern life cycle sheet found in the appendix on p. 143. I have also included a completed version on p. 144 for your younger students.
- ✂ **MICROSCOPE WORK** – Have the students look at the spores under a microscope. They can do this by collecting a few of the spores with a Q-tip from the fern they used for the demonstration. Then, have them wipe those spores on a clean, blank slide and view the slide under the microscope. Have the students complete one of the microscope worksheets found on pp. 131-132 of the appendix. If you do not own a microscope, view the following You Tube video from Martin Microscope about fern spores:
- 🔗 <https://www.youtube.com/watch?v=5hGQcmM6njY>

CHAPTER 3: GRID SCHEDULE

| Supplies Needed | | | | |
|--|---|--|---|---|
| Demo | • Magnifying glass, Gloves | | | |
| Projects | • Peace lily, Microscope slide, Mushroom or other type of fungus | | | |
| Chapter Summary | | | | |
| <p>The chapter opens with Tracey being kidnapped from the Yora hut in the middle of the night by the leader of the Matsigenka, which foils the plans of the Man With No Eyebrows. Arrio wakes up Blaine and they quickly race after her. On the way, Blaine gets caught in a trap. As Arrio works to free the Sassafras boy, he tells Blaine about the peace lilies that are surrounding them. Meanwhile, Tracey and her captors end up at the site of the Huaca Sun temple, where she recognizes Ernesto and Alvaro from her zoology leg. A fight almost ensues between the Matsigenka and Ernesto’s men, but Tracey and Alvaro step in. As part of the solution, the crew of outsiders is tied up while the natives open the temple to find the legendary staff. The Matsigenka succeed and run off. The chapter ends with Arrio, Blaine, and the rest of the Yora rescuing the tied-up adventurers just as Alvaro is telling Tracey about shelf fungus.</p> | | | | |
| Weekly Schedule | | | | |
| | Day 1 | Day 2 | Day 3 | Day 4 |
| Read | <input type="checkbox"/> Read the section entitled “Lilies on the Trail” of Chapter 3 in <i>SSA Volume 3: Botany</i> . | <input type="checkbox"/> Read the section entitled “Fighting Fungi” of Chapter 3 in <i>SSA Volume 3: Botany</i> . | <input type="checkbox"/> (<i>Optional</i>) Read one or all of the assigned pages from the encyclopedia of your choice. | <input type="checkbox"/> (<i>Optional</i>) Read one of the additional books from the library. |
| Write | <input type="checkbox"/> Fill out a Botany Record Sheet on SL p. 16 for the peace lily. <input type="checkbox"/> Add facts to the Biome Sheet on SL p. 13. <input type="checkbox"/> (<i>Optional</i>) Add facts to the Flowering Plants Information Sheet on SL p. 5. | <input type="checkbox"/> Fill out a Botany Record Sheet on SL p. 17 for the fungus. <input type="checkbox"/> (<i>Optional</i>) Add facts to the Fungi and Molds Information on SL p. 9. | <input type="checkbox"/> Write information learned from the demonstration on SL p. 19. <input type="checkbox"/> (<i>Optional</i>) Write a narration on the Botany Notes Sheet on SL p. 19. | <input type="checkbox"/> Go over the vocabulary words and enter them into the Botany Glossary on SL p. 89. <input type="checkbox"/> (<i>Optional</i>) Complete the copywork or dictation assignment and add it to the Botany Notes sheet on SL p. 19. <input type="checkbox"/> (<i>Optional</i>) Take Botany Quiz #1. |
| Do | <input type="checkbox"/> (<i>Optional</i>) Complete the Observe a Peace Lily activity. | <input type="checkbox"/> (<i>Optional</i>) Draw a Fungus. | <input type="checkbox"/> Do the demonstration entitled “Fern Observation.” | <input type="checkbox"/> (<i>Optional</i>) Work on the Biome Posters. <input type="checkbox"/> (<i>Optional</i>) Do the Microscope Work. |

CHAPTER 3: LIST SCHEDULE

CHAPTER SUMMARY

The chapter opens with Tracey being kidnapped from the Yora hut in the middle of the night by the leader of the Matsigenka, which foils the plans of the Man With No Eyebrows. Arrio wakes up Blaine and they quickly race after her. On the way, Blaine gets caught in a trap. As Arrio works to free the Sassafras boy, he tells Blaine about the peace lilies that are surrounding them. Meanwhile, Tracey and her captors end up at the site of the Huaca Sun temple, where she recognizes Ernesto and Alvaro from her zoology leg. A fight almost ensues between the Matsigenka and Ernesto's men, but Tracey and Alvaro step in. As part of the solution, the crew of outsiders is tied up while the natives open the temple to find the legendary staff. The Matsigenka succeed and run off. The chapter ends with Arrio, Blaine, and the rest of the Yora rescuing the tied-up adventurers just as Alvaro is telling Tracey about shelf fungus.

ESSENTIALS

Read

- ☐ Read the section entitled "Lilies on the Trail" of Chapter 3 in *SSA Volume 3: Botany*.
- ☐ Read the section entitled "Fighting Fungi" of Chapter 3 in *SSA Volume 3: Botany*.

Write

- ☐ Fill out a Botany Record Sheet on SL p. 16 for the peace lily.
- ☐ Add facts to the Biome Sheet on SL p. 13.
- ☐ Fill out a Botany Record Sheet on SL p. 17 for the fungus.
- ☐ Go over the vocabulary words and enter them into the Botany Glossary on SL p. 89.
- ☐ Write information learned from the demonstration on SL p. 19.

Do

- ☐ Do the demonstration entitled "Fern Observation."

(OPTIONAL) EXTRAS

Read

- ☐ Read one or all of the assigned pages from the encyclopedia of your choice.
- ☐ Read one of the additional books from the library.

Write

- ☐ Add facts to the Flowering Plants Information Sheet on SL p. 5.
- ☐ Add facts to the Fungi and Molds Information on SL p. 9.
- ☐ Write a narration on the Botany Notes Sheet on SL p. 19.
- ☐ Complete the copywork or dictation assignment and add it to the Botany Notes sheet on SL p. 19.
- ☐ Take Botany Quiz #1.

Do

- ☐ Complete Observe a Peace Lily Activity.
- ☐ Draw a Fungus.
- ☐ Do the Microscope Work.
- ☐ Work on the Biome Posters.

| Supplies Needed | |
|-----------------|--|
| Demo | • Magnifying glass, Gloves |
| Projects | • Peace lily, Microscope slide, Mushroom or other type of fungus |

CHAPTER 3: KIDNAPPED

READ: GATHERING INFORMATION

LIVING BOOK SPINE

- 📖 Chapter 3 of *The Sassafras Science Adventures Volume 3: Botany*

(OPTIONAL) ENCYCLOPEDIA READINGS

- 📖 *DK First Nature Encyclopedia* pp. 30-31 (Rainforests)
- 📖 *Usborne Internet-linked Science Encyclopedia* pp. 284-285 (Fungi – exclude section on molds)
- 📖 *Kingfisher Science Encyclopedia* p. 55 (Fungi and Lichens – introductory section on fungi)
- 📖 *DK Encyclopedia of Nature* pp. 114-115 (Fungi)



(OPTIONAL) ADDITIONAL LIBRARY BOOKS

- 📖 *The Rainforest Grew All Around* by Susan K. Mitchell and Connie McLennan
- 📖 *Nature's Green Umbrella (Mulberry books)* by Gail Gibbons
- 📖 *Fungi (Kid's Guide to the Classification of Living Things)* by Elaine Pascoe, Janet Powell and Dwight Kuhn

WRITE: KEEPING A NOTEBOOK

SCIDAT LOGBOOK SHEETS

This week, you can have the students begin to fill out the Information Sheets for flowering plants and fungi. They can also fill out the biome sheet for the rainforest and the logbook sheets for the peace lily and shelf fungus. The students could include the following information:

Information Sheet - Flowering Plants

EXAMPLES: The students can add the peace lily.

Information Sheet - Fungi and Molds

EXAMPLES: The students can add shelf fungus.

CHARACTERISTICS

- Fungi are neither plants nor animals; they are their own group of living things that includes mushrooms, toadstools, and molds.
- Fungi cannot make their own food because they lack chlorophyll.
- Fungi are decomposers.
- Fungi do not have true roots, stems, or leaves..

Biome Sheet - Rainforest

MAP: The students will color the areas of the map where the rainforest can be found. See attached map for the answer.



FACTS

- The shrub layer of the rainforest does not receive a lot of light and the air is moist, hot, and still.
- The shrub layer has the densest growth.
- Many of the plants in this shrub layer have large leaves so that they can absorb the maximum amount of sunlight.

Botany Record Sheet - Peace Lily

DIVISION: Flowering Plants

PREFERRED HABITAT: Rainforest

DISTRIBUTION: Worldwide

INFORMATION LEARNED

- The Peace Lily is an example of the shrubs found in the shrub layer.
- It has large green leaves and does not need large amounts of light or water to survive.
- It has a white flower with a yellow or green stalk in the center called a spathe.
- The Peace Lily is not a member of the true lily family.
- It contains calcium oxalate crystals, which can cause skin irritation, a burning sensation in the mouth, difficulty swallowing, and nausea.
- It is also a common house plant.



Botany Record Sheet - Shelf Fungus

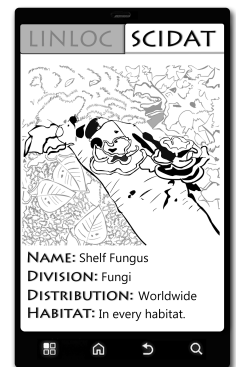
DIVISION: Fungi

PREFERRED HABITAT: All habitats

DISTRIBUTION: Worldwide

INFORMATION LEARNED

- In the Amazon, bracket or shelf fungus is very common.
- It can be red, white, or gray.
- Bracket fungus grows on dead tree stumps or fallen logs.
- It has many branching threads that are hidden within their food, and a fruiting body that we can see.
- Shelf fungus has a tough, woody fruiting body that resembles a shelf or bracket.
- The spores are released from tiny pores on the underside of the fruiting body.
- The spores are typically carried by the wind, rain, or insects to grow a new fungus.



VOCABULARY

Have the older students look up the following term in the glossary in the appendix on pp. 155-157 or in a science encyclopedia. Then, have them copy each definition onto a blank index card or into their SCIDAT logbook.

 **FUNGUS** – A living thing that absorbs food from living or dead matter.

(OPTIONAL) COPYWORK

Copywork Sentence

Fungi are decomposers. They do not have true roots, stems, or leaves.

Dictation Selection

Fungi, like mushrooms, toadstools, and molds, are neither plants nor animals. Fungi cannot make their own food because they lack chlorophyll. They also do not have true roots, stems, or leaves. Fungi are known as nature's decomposers.

(OPTIONAL) QUIZ

This week, you can give the students a quiz based on what they learned in chapters 2 and 3. You can find the quiz in the appendix on p. 167.

Quiz #1 Answers

1. Flowers, spores
2. C
3. B
4. D
5. A
6. C

DO: PLAYING WITH SCIENCE

SCIENTIFIC DEMONSTRATION: FUNGUS WALK

Materials

- ☒ Magnifying glass
- ☒ Gloves

Procedure

1. Have the students take a walk in your local woods to look for examples of fungi. Be sure to check fallen logs for signs of fungi.
2. Have them observe the fruiting body with and without a magnifying glass. If you know that the fungus is non-toxic, have them touch and smell it. NEVER touch a fungus that you are not familiar with.
3. If you find a shelf or bracket fungus, have the students put on their gloves and break off the fruiting body or dig around it to see if they can view any of the threads hidden within the fungus's home.
4. Have the students examine the fruiting body closer to look for the pores through which the spores are released.

Explanation

The students should spend time observing the fungus that they find. Be sure to remind them that what we see of the fungus is only a small portion of the living organism. (NOTE—You will be studying mushrooms as a part of chapter 15.)

Take It Further

Have the students observe another fungus, such as wood ear fungus, which is also known as a jelly mushroom. You can buy the dried version of it at most Asian grocery stores. Simply rehydrate it and let the students observe the similarities and differences between it and the other fruiting bodies they found on their fungus walk.

(OPTIONAL) STEAM PROJECTS

Multi-chapter Activities

- ✂ **BIOME POSTERS** – This week, have the students add the peace lily shrub layer sitting on the forest floor and shelf fungus one of the rotting logs in their rainforest biome sheet. (**NOTE**—The small pictures can be found on appendix p. 140.)

Activities For This Chapter

- ✂ **OBSERVE A PEACE LILY** – Have the students find and observe a peace lily. If you don't live in a tropical area where you can view this flowering plant in nature, head on over to your local garden or home improvement store. Many will have peace lilies in their house plants section. Have the students use the observations skills they have learned in the past few weeks to study this plant.
- ✂ **DRAW A FUNGUS** – Have the students use what they learned in the demonstration to draw the fruiting body of a fungus at the top of a page. Then, have them draw a maze of lines representing the threads and filaments of the fungus. Have the students finish their pictures with the fungus's home—either leaf litter, dirt, or a log. A template for this project has been provided in the appendix on p. 145.
- ✂ **MICROSCOPE WORK** – Have the students look at a sliver of the fungus under the microscope. They can do this by cutting a very thin sliver of the fungus they examined in the demonstration. Then, have them place that sliver on a clean, blank slide and view it under the microscope. Have the students complete one of the microscope worksheets found on pp. 131-132 of the appendix.

BOTANY QUIZ #1

CHAPTERS 2 AND 3

1. Flowering plants use (flowers / spores) to reproduce and non-flowering plants use (flowers / spores) to reproduce.

2. The largest rainforest in the worlds can be found in _____.

A. North America

B. France

C. The Amazon

D. None of the above

3. Orchids grow on tree branches rather than on the ground because _____.

A. They want to stay out of reach

B. They receive more light

C. They are hiding

D. None of the above

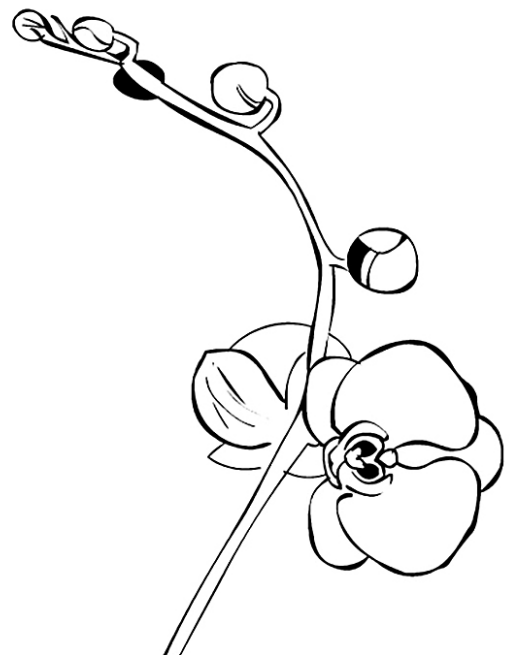
4. Ferns like to grow in _____.

A. Damp places

B. Shady spots

C. River banks

D. All of the above



5. The peace lily is found in the _____ layer of the rainforest.

- A. Shrub
- B. Canopy
- C. Understory
- D. Floor

6. Fungi are classified as _____.

- A. Plants
- B. Animals
- C. Neither