Biology for the Grammar Stage Teacher Guide

Updated Edition
Copyright @ Elemental Science, Inc.
Email: info@elementalscience.com

ISBN # 978-1-935614-30-2

Printed in the USA for worldwide distribution
Pictures by Paige Hudson and Erin Simons (One Line Design)

For more copies write to:
Elemental Science
175 W Monroe St #131
Wytheville VA 24382
info@elementalscience.com

Copyright Policy

All contents copyright © 2014, 2016 by Elemental Science. All rights reserved.

No part of this document or the related files may be reproduced or transmitted in any form, by any means (electronic, photocopying, recording, or otherwise) without the prior written permission of the author. The author does give permission to the original purchaser to photocopy the quizzes and appendix materials for use within their immediate family only.

Limit of Liability and Disclaimer of Warranty: The publisher has used its best efforts in preparing this book, and the information provided herein is provided “as is.” Elemental Science makes no representation or warranties with respect to the accuracy or completeness of the contents of this book and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose and shall in no event be liable for any loss of profit or any other commercial damage, including but not limited to special, incidental, consequential, or other damages.

Trademarks: This book identifies product names and services known to be trademarks, registered trademarks, or service marks of their respective holders. They are used throughout this book in an editorial fashion only. In addition, terms suspected of being trademarks, registered trademarks, or service marks have been appropriately capitalized, although Elemental Science cannot attest to the accuracy of this information. Use of a term in this book should not be regarded as affecting the validity of any trademark, registered trademark, or service mark. Elemental Science is not associated with any product or vendor mentioned in this book.
# Biology for the Grammar Stage Teacher Guide Table of Contents

## Introduction to the Updated Edition

- Required Book List
- Additional Books Listed by Week
- Supplies Needed by Week

## Animals Unit

- Animals Unit Overview
- Week 1: Habitats and Animal Behavior, Part 1 Lesson Plans
- Week 2: Habitats & Animal Behavior, Part 2 Lesson Plans
- Week 3: Mammals, Part 1 Lesson Plans
- Week 4: Mammals, Part 2 Lesson Plans
- Week 5: Mammals, Part 3 Lesson Plans
- Week 6: Mammals, Part 4 Lesson Plans
- Week 7: Mammals, Part 5 Lesson Plans
- Week 8: Mammals, Part 6 Lesson Plans
- Week 9: Mammals, Part 7 Lesson Plans
- Week 10: Mammals, Part 8 Lesson Plans
- Week 11: Birds, Part 1 Lesson Plans
- Week 12: Birds, Part 2 Lesson Plans
- Week 13: Birds, Part 3 Lesson Plans
- Week 14: Birds, Part 4 Lesson Plans
- Week 15: Reptiles and Amphibians, Part 1 Lesson Plans
- Week 16: Reptiles and Amphibians, Part 2 Lesson Plans
- Week 17: Fish Lesson Plans
- Week 18: Invertebrates, part 1 Lesson Plans
- Week 19: Invertebrates, part 2 Lesson Plans
- Week 20: Invertebrates, part 3 Lesson Plans

## Human Body Unit

- Human Body Unit Overview
- Week 1: Basic Building Blocks Lesson Plans
- Week 2: Skeletal System Lesson Plans
- Week 3: Muscular System Lesson Plans
- Week 4: Nervous System Lesson Plans
Week 5: The Five Senses Lesson Plans 124
Week 6: The Circulatory System Lesson Plans 128
Week 7: The Respiratory System Lesson Plans 132
Week 8: The Digestive System Lesson Plans 136
Week 9: The Urinary System (plus Genes) Lesson Plans 140
Week 10: The Immune System Lesson Plans 144

Plants Unit ......................................................................................................................... 149

Week 1: Leaves Lesson Plans 152
Week 2: Flowers Lesson Plans 156
Week 3: Fruits and Seeds Lesson Plans 160
Week 4: Non-flowering Plants Lesson Plans 164
Week 5: Stems Lesson Plans 168
Week 6: Roots Lesson Plans 172

Appendix ............................................................................................................................ 177

Animal Diet Chart Placement Guide 178
Habitat Posters Placement Guide 179
Habitat Posters Templates 180
Animal Observation Sheet 187
My Bird Feeder Book 188
Chameleon 190
Butterfly Life Cycle Cards 191
Microscope Worksheet 192
Body Organization Cards 193
Joints Project Directions 194
Pathways of Blood Worksheet 195
Inhalation vs. Exhalation Worksheet 196
The Small Intestines vs. The Large Intestines 197
Nature Walk Sheet 198
Types of Roots 199

Glossary.............................................................................................................................. 201

General Templates........................................................................................................... 205

Project Record Sheet 206
Two Days a Week Schedule Template 207
Five Days a Week Schedule Template 208
Biology for the Grammar Stage
Introduction to the Updated Edition

Since writing the first edition of Biology for the Grammar Stage, I have co-authored Success in Science: A Manual for Excellence in Science Education with Bradley Hudson. The purpose of this updated edition was to re-align this program with our research. It now reflects the components of the Classic Method of elementary science instruction suggested in the book. This method is loosely based on the ideas for classical science education that are laid out in The Well-trained Mind: A Guide to Classical Education at Home by Jessie Wise and Susan Wise Bauer.

In Success in Science, we compare the elementary student to an empty bucket that is waiting to be filled with meaningful information. My goal in writing this curriculum was to provide you with tools to give your elementary student exposure to the topics of animals, the human body and plants, thus building a knowledge base for future studies. For this reason, I have included weekly scientific demonstrations, reading suggestions, notebooking assignments, and additional activities.

This program is designed to be used during the elementary years, specifically 1st through 4th grade. It includes a buffet of options that can be completed in either two days or five days each. Alternatively, if you desire, you could set aside an hour a week to be your science day in which you do all the readings, narrations, and activities planned for the week. Please feel free to act as the student’s scribe as you complete the narration pages and lab reports.

Student Workbook (SW)

This teacher’s guide is designed to work in conjunction with the Biology for the Grammar Stage Student Workbook. This workbook is sold separately, but it is critical to the success of this program. It contains all the pages you will need to complete the narrations, lab reports, and multi-week projects. The student workbook gives the students the ability to create a lasting memory of their first journey through biology.

Scientific Demonstrations

The scientific demonstrations scheduled in the guide generally use easy to find materials and tie into what is being studied. Each one has a corresponding lab report in the student workbook. At this age, you will be the driving force behind these demonstrations, meaning that you will be the one in control and the student will be watching and participating when necessary. These demonstrations are designed to give them a beginners’ look at the scientific method and how scientific tests work. It is not necessary to ask them to predict the outcome of the demonstration as they have no knowledge base to determine what the answer should be. However, if the students enjoy predicting or they are able to tell you what will happen, please feel free to let them do so.

Each lab report includes four sections:

1. The “Our Tools” section is for the materials that were used during the demonstration.
2. The “Our Method” section is for a brief description of what was done during the scientific demonstration. This should be in the students words.

3. The “Our Outcome” section is for what the students observed during the demonstration.

4. The “Our Insight” section is for what the students learned from the scientific demonstration.

Any time you see a box for a picture on the lab report you can have the students draw what happened or you can take a picture of the demonstration and glue it in the box. For younger students, I recommend that you do most (if not all) the writing for them on the lab reports.

**Science-oriented Books**

The science-oriented books section includes reading assignments from encyclopedias, discussion questions, and additional books for every lesson. Each of the reading assignments should be read with the students or, if they are capable, have them read the assignments on their own. After the reading assignment is completed, discuss the topic with the students using the provided discussion questions. These questions are meant to help them begin to gather their thoughts in preparation for giving a narration.

In this edition of *Biology for the Grammar Stage*, I have also included a list of additional books for you to choose from each week. These are meant to be checked out from the library, and are not necessary to the success of this program. It is there in case you decide that you would like to dig a little deeper into the topics. I have done my best to choose in-print, widely available books, but since every library is different, the books listed may not be available in your area. If that is the case, simply look up the topic in your local card catalog.

**Notebooking**

For the notebooking component, you will ask the students to narrate what they have learned from the science-oriented books. They should add their narration to their student workbook. For younger students I recommend that you have them dictate what they have learned to you and then you write this into their student workbook. You can also have the students copy their narration into the workbook. You only need to expect one to two sentences from a first or second grade student.

Next, have the students color the provided picture on the narration page. All the pages and pictures you need are included in the student workbook. I suggest that you read over these pages monthly so that the students get a review of what they have been learning. I have also included optional lapbook assignments in the case that your students prefer to use lapbooks over notebooking.

Finally, go over the vocabulary with the students and enter it into their glossary at the rear of the student workbook. You can write this for them, have them copy the definition, or dictate the definition to the students. If you choose to have the students look up the definitions, I have included a glossary of the terms in this program in the Appendix on pp. 200-202.
Multi-week Projects and Activities

This guide includes ideas for multi-week projects and additional activities that coordinate with each lesson. The pages and pictures needed for the multi-week projects are included in the student workbook, while the directions for creating them are found in this guide. The additional activities include crafts and other activities that can enhance the students’ learning time. There are no sheets to record these additional activities in the student workbook. However, I have included a project record sheet template on pg. 204 of the Appendix of this guide.

Memorization

The elementary student is very capable of receiving and memorizing information. With this in mind, I recommend that you capitalize on this fact by having your students memorize the included vocabulary and basic facts related to biology. A list of simple poems that you can use to help them memorize the characteristics of animals, plants, and the body systems is included on the unit overview sheet of each unit. Remember that these poems are included as a resource for you to augment students’ learning experience and they are not required to use this program successfully.

Possible Schedules

I have written this updated edition to contain a buffet of activities that you can choose from when guiding the students through their first look at biology. This gives you, the teacher, complete freedom in what you would like to utilize to present and explore the concepts each week. However, I have also included two potential schedules for you to give an idea of how you could schedule each week. You can choose to use these as your guide or create your own. I have included two schedule templates on pp. 205-206 of the Appendix of this guide for you to use.

Coordinating Products

The following products by Elemental Science coordinate with this program. These two eBooks are available separately through our website.

- Biology for the Grammar Stage Lapbooking Templates — We have created templates for four lapbooks to coordinate with Biology for the Grammar Stage. You can use these lapbooks as a means of review or in place of the student workbook. The directions for using these templates are found in this guide under the notebooking section.

- Biology for the Grammar Stage Quizzes — We have also created a set of weekly quizzes to use with this program. Although they are not essential, they are helpful in assessing how much the students are retaining. You can also use these as a review of what they have studied. You can choose to give these orally or have the students fill each one out. The correct answers for the quizzes are included on each week in this guide.

Helpful Articles

Our goal as a company is to provide you with the information you need to be successful in

Biology for the Grammar Stage Teacher Guide ~ Introduction
your quest to educate your student in the sciences at home. This is the main reason we share tips and tools for homeschool science education at Elemental Blogging. As you prepare to guide your students through this program, you may find the following articles helpful:

- **Classical Science Curriculum for the Grammar Stage Student** — This article explains the goals of grammar stage science and demonstrates how the classical educator can utilize the tools they have at their disposal to reach these goals.

- **Scientific Demonstrations vs. Experiments** — This article shares about these two types of scientific tests and points out how to employ scientific demonstrations or experiments in your homeschool.

- **The Basics of Notebooking** — This article clarifies what notebooking is and describes how this method can be a beneficial addition to your homeschool.

**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 *Biology for the Grammar Stage* at info@elementalscience.com. I will be more than happy to answer them as soon as I am able. You may also get additional help at our yahoo group (http://groups.yahoo.com/group/elemental_science/). I hope that you will enjoy *Biology for the Grammar Stage*!
Required Book List

The following books are scheduled for use in this guide. You will need to purchase them or find a suitable substitute to complete this program.

Encyclopedias

Animals Unit (Choose one age-appropriate option.)
- Kingfisher First Encyclopedia of Animals (best for K through 2nd grade) OR
- DK Encyclopedia of Animals (best for 2nd through 4th grade)

Human Body Unit (Choose one age-appropriate option.)
- DK First Human Body Encyclopedia (best for 1st through 3rd grade) OR
- Kingfisher Science Encyclopedia (best for 4th through 6th grade)

Plants Unit (Choose one age-appropriate option.)
- Plant Parts (Life of Plant Series) (best for 1st through 4th grade) OR
- Usborne Science Encyclopedia (best for 3rd through 5th grade)

Scientific Demonstration Books

You will need both of these books to complete the scientific demonstrations in this program.
- Janice VanCleave's Biology for Every Kid AND
- Janice VanCleave's Science Around the World

Additional Books Listed by Week

The books listed below are completely optional! They are not required to complete this program. Instead, this list is merely a suggestion of the additional books that are available to enhance your studies. This list is by no means exhaustive.

Animals Unit

Animals Week 1
- A Desert Habitat (Introducing Habitats) by Kelley Macaulay and Bobbie Kalman
- About Habitats: Deserts by Cathryn P. Sill
- Life in the Desert (Pebble Plus: Habitats Around the World) by Alison Auch
- A Grassland Habitat (Introducing Habitats) by Kelley Macaulay and Bobbie Kalman
- Grasslands (About Habitats) by Cathryn P. Sill
- A Savanna Habitat (Introducing Habitats) by Bobbie Kalman
- A Rainforest Habitat (Introducing Habitats) by Molly Aloian

Animals Week 2
- A Forest Habitat (Introducing Habitats) by Bobbie Kalman
- Northern Refuge: A Story of a Canadian Boreal Forest by Audrey Fraggalosch
- The Arctic Habitat (Introducing Habitats) by Molly Aloian and Bobbie Kalman
# Supplies Needed by Week

## Animals Unit

<table>
<thead>
<tr>
<th>Week</th>
<th>Supplies needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shoe-box, Construction paper, Glue, Markers</td>
</tr>
<tr>
<td>2</td>
<td>Newspaper, Plain paper, Black and green construction paper</td>
</tr>
<tr>
<td>3</td>
<td>2 Toilet paper tubes, Piece of foil, Piece of black construction paper, 2 Rubber bands, Flashlight</td>
</tr>
<tr>
<td>4</td>
<td>A pack of colored pipe cleaners, 4 Wooden stakes (or pencils), String (about 80 ft.), Ruler</td>
</tr>
<tr>
<td>5</td>
<td>4x4 Piece of cardboard, 1 Cup sand or salt, Dime, Large jar lid</td>
</tr>
<tr>
<td>6</td>
<td>2 Small cans, Washcloth, Rubber band</td>
</tr>
<tr>
<td>7</td>
<td>Paper cups, Ticking watch, Ruler</td>
</tr>
<tr>
<td>8</td>
<td>Two thermometers, 2 Glasses, One large bowl</td>
</tr>
<tr>
<td>9</td>
<td>Rubber bands</td>
</tr>
<tr>
<td>10</td>
<td>2 Glass jars, Box at least 2 inches wider and taller than the jars, Cotton balls, 2 Thermometers</td>
</tr>
<tr>
<td>11</td>
<td>Plastic soda bottle, Wood dowel, Seeds</td>
</tr>
<tr>
<td>12</td>
<td>1 Clear glass bowl, Measuring cup, Liquid oil, Powdered detergent, Measuring spoon</td>
</tr>
<tr>
<td>13</td>
<td>Scissors, Notebook paper, Ruler</td>
</tr>
<tr>
<td>14</td>
<td>1 Raw egg, 1 Jar with lid, White vinegar, Measuring tape</td>
</tr>
<tr>
<td>15</td>
<td>2 Thermometers, Trowel, White towel</td>
</tr>
<tr>
<td>16</td>
<td>No supplies needed.</td>
</tr>
<tr>
<td>17</td>
<td>Salt, Measuring spoon, 2 Shallow bowls, 1 Small cucumber, Masking tape, Marker</td>
</tr>
<tr>
<td>18</td>
<td>Suction cup, Rock</td>
</tr>
<tr>
<td>19</td>
<td>String</td>
</tr>
<tr>
<td>20</td>
<td>Paper clip, Printout from Science Around the World, Paint for butterfly, Construction paper</td>
</tr>
</tbody>
</table>

## Human Body Unit

<table>
<thead>
<tr>
<th>Week</th>
<th>Supplies needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Typing paper, Pencil, Clear tape, Magnifying glass</td>
</tr>
<tr>
<td>Week</td>
<td>Supplies needed</td>
</tr>
<tr>
<td>------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>2</td>
<td>1 Raw chicken bone, 1 Jar with lid, White vinegar</td>
</tr>
<tr>
<td>3</td>
<td>Items of various weights, such as a paper clip, toothbrush, glass, a can, a book</td>
</tr>
<tr>
<td>4</td>
<td>A large book or something else that will make a loud noise, Cotton balls (or rolled-up paper towels), See-through barrier (a wire screen, plastic or glass window)</td>
</tr>
<tr>
<td>5</td>
<td>Mirror, Toothpicks, Blindfold, Clothespin, Apple, Onion, Pencils, Masking tape</td>
</tr>
<tr>
<td>6</td>
<td>Modeling clay, Paper, Match</td>
</tr>
<tr>
<td>7</td>
<td>Plastic dishpan, 2 Feet of aquarium tubing, 1 Gallon milk jug, Masking tape, Pens</td>
</tr>
<tr>
<td>8</td>
<td>Paper towels, Slender glass jar, Masking tape, Marking pen</td>
</tr>
<tr>
<td>9</td>
<td>Family pictures</td>
</tr>
<tr>
<td>10</td>
<td>Milk, Measuring cup, 2 Pint Jars</td>
</tr>
</tbody>
</table>

**Plants Unit**

<table>
<thead>
<tr>
<th>Week</th>
<th>Supplies needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alcohol, Green leaf, Coffee filter, Pencil, Baby food jar, Ruler</td>
</tr>
<tr>
<td>2</td>
<td>Measuring cup, 2 Glasses, 1 White carnation with long stem, Red and blue food coloring</td>
</tr>
<tr>
<td>3</td>
<td>10 or 12 Dry pinto beans, Jar, Paper towels</td>
</tr>
<tr>
<td>4</td>
<td>Pine cone (tightly closed), Magnifying glass</td>
</tr>
<tr>
<td>5</td>
<td>1 Glass, A piece of wilted celery, Blue food coloring</td>
</tr>
<tr>
<td>6</td>
<td>Paper towels, 4 Pinto beans, Masking tape, Drinking glass, Marking pen</td>
</tr>
</tbody>
</table>
Plants Unit Overview
(6 weeks)

Books Scheduled
Encyclopedias
- Plant Parts (Life of Plant Series)
- Usborne Science Encyclopedia
- Scientific Demonstration Book
- Janice VanCleave’s Biology for Every Kid

Sequence for Study
- Week 1: Leaves
- Week 2: Flowers
- Week 3: Fruits and Seeds
- Week 4: Nuts, Cones, and Spores
- Week 5: Stems
- Week 6: Roots

Plant Poems to Memorize

**Parts of a Flower**
The bud becomes a flower
It’s happening this very hour
The flower has petals so bright
It attracts the insect in flight
The stamen provides the pollen it needs
To join with the pistil and make a seed

**Parts of a Plant**
The plant stem holds it up high
The leaves reach way up to the sky
It has roots that go into the ground
Gathering nutrients and keeping balance sound

Supplies Needed for the Unit

<table>
<thead>
<tr>
<th>Week</th>
<th>Supplies needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alcohol, Green leaf, Coffee filter, Pencil, Baby food jar, Ruler</td>
</tr>
<tr>
<td>Week</td>
<td>Supplies needed</td>
</tr>
<tr>
<td>------</td>
<td>----------------</td>
</tr>
<tr>
<td>2</td>
<td>Measuring cup, 2 Glasses, 1 White carnation with long stem, Red and blue food coloring</td>
</tr>
<tr>
<td>3</td>
<td>10 or 12 Dry pinto beans, Jar, Paper towels</td>
</tr>
<tr>
<td>4</td>
<td>Pine cone (tightly closed), Magnifying glass</td>
</tr>
<tr>
<td>5</td>
<td>1 Glass, A piece of wilted celery, Blue food coloring</td>
</tr>
<tr>
<td>6</td>
<td>Paper towels, 4 Pinto beans, Masking tape, Drinking glass, Marking pen</td>
</tr>
</tbody>
</table>

**Unit Vocabulary**

1. **Leaf** - The part of the plant that makes the food for the plant.
2. **Bud** - A swelling on a plant stem containing tiny flower parts ready to burst into a bloom.
3. **Flower** - The reproductive parts of a plant.
4. **Seed** - The part of the plant that contains the beginnings of a new plant.
5. **Cone** - A type of dry fruit produced by a conifer.
6. **Stem** - The part of the plant that holds it upright and supports the leaves and flowers.
7. **Roots** - The part of the plant that anchors the plant firmly to the ground and absorbs water and nutrients.
Week 1: Leaves Lesson Plans

Scientific Demonstration: Leaf Colors

Supplies Needed
✓ Alcohol
✓ Green leaf
✓ Coffee filter
✓ Pencil
✓ Baby food jar
✓ Ruler

Purpose
This demonstration is meant to help the students to see the different colors in a leaf.

Instructions and Explanation
The instructions and explanation for this scientific demonstration are found on pp. 38-39 of Janice VanCleave's Biology for Every Kid. Have the students complete the Lab Report on SW pg. 77.

Take it Further
Repeat the demonstration with different colored leaves to see if you get a different result. (The students should see different colors. For example, if the leaf is orange, they will see red and yellow.)

Science-Oriented Books

Reading Assignments
✓ Basher Biology pg. 114 (Leaves), pg. 112 (Chlorophyll)
✓ Usborne Science Encyclopedia pp. 258-259 (Leaves), pp. 264 (Plant Food)

(Optional) Additional topic to explore this week: Leaf Structure (USE pp. 260-261)

Discussion Questions
After reading the selected pages from the encyclopedias, ask the following questions in your discussion time:

Leaves
? What does the leaf do for a plant?
? Are all leaves the same color, size, and shape?

Photosynthesis
? What does chlorophyll do?
? What is photosynthesis?

(Optional) Additional Books
✓ Why Do Leaves Change Color? (Let’s-Read-and-Find... Science, Stage 2) by Betsy Maestro
✓ Leaves (Designs for Coloring) by Ruth Heller
Writing Assignments

- **Narration Page** – Have the students dictate, copy, or write one to four sentences on what they have learned about leaves and photosynthesis on SW pg. 76. For example, this week, the student could dictate, copy, or write the following for leaves:

  - *They are different from each other.*
  - *They change color to brown when they die.*
  - *The leaves make the plant’s food.*

- **(Optional) Lapbook** – Throughout this unit, the students can complete a Parts of a Plant Tab-book. For this week, have the students cut out and color the cover and leaves page on pg. 51 from *Biology for the Grammar Stage Lapbooking Templates*. Ask the students what they have learned about leaves this week and then add their narration to that page of the tab-book. Have them color the pictures on the two sheets and save them until they assemble the booklet in the last week of the unit.

Vocabulary

- The following definition is a guide. The students’ definitions do not need to match word for word.

  - **Leaf** – The part of the plant that makes the food for the plant. (SW pg. 94)

Multi-week Projects and Activities

**Unit Project**

- **Plant Growth Project** – During this unit, the students will record the growth of a bean plant. This week, have the students begin this project by planting their seeds. They will need dirt, a small pot, water, and a pinto bean seed. Have them fill the pot with dirt and gently press the bean seed just under the surface of the dirt. Have them water the pot well before placing it on a windowsill that receives direct sunlight. Over the week, have them check their pots and water the plant when the soil is dry. On Friday, have them measure and record how much it has grown on the Plant Growth Record Chart on SW pg. 75.

- **(Optional) Nature Walk Sheets** – Each week, take a nature walk to look for flowers and unique leaves. If possible, have the students collect the leaves to take them home and press; if not, take a picture of the samples. Once you are back at home, have the students identify the flowers and leaves they found using a field guide book from the library or the Internet. Have them record their findings on a Nature Walk Sheet found in the Appendix of this guide on pg. 198.
Projects for this Week

» Coloring Pages – You can have the students color the following pages from *Biology for the Grammar Stage Coloring Pages*: Leaves pg. 92, Photosynthesis pg. 93.

» Leaves – Have the students make a leaf rubbing booklet. Go on a nature walk and collect several different kinds of leaves—try to include pine needles in the collection. Once at home, have the students use the samples to make a booklet of leaf rubbings. Have them begin this process by identifying the leaves they have collected. Then, have them place each leaf under a piece of paper and rub on the top of the same paper with a crayon until the shape of the leaf appears. Have them label the page with the type of leaf and set it aside. Once they have created a page for each of the leaves, have them bind the book together and create a cover.

» Photosynthesis – Have the students test to see if light is really necessary for photosynthesis. They will need a live plant and a dark room, like a closet, for this activity. Have the students place the plant in the dark room where it will not receive any light for three days. Have them check the plant every day and observe what happens. After three days, have them place the plant back in the full sun and observe what happens over the next few days. Be sure to have the students water the plant as needed throughout the week.

Memorization

*This week, begin working on memorizing the *Parts of a Flower* poem. (SW pg. 103)*

**Parts of a Flower**
The bud becomes a flower
It’s happening this very hour
The flower has petals so bright
It attracts the insect in flight
The stamen provides the pollen it needs
To join with the pistil and make a seed

Quiz

Weekly Quiz

“Plants Unit Week 1 Quiz” on pg. 35.

Quiz Answers

1. Leaf
2. Photosynthesis
3. True
4. Answers will vary
### Possible Schedules for Week 1

#### Two Days a Week Schedule

- Read about Leaves
- Add information on leaves to the Narration Page
- Do the Scientific Demonstration: Leaf Color
- Begin the Plant Growth Project
- Define leaf

- Read about Chlorophyll (or Plant Food)
- Add information on photosynthesis to the weekly Narration Page
- Measure and record the growth of your plant for the Plant Growth Project
- Work on memorizing the *Parts of a Flower* poem
- Take the Plants Week 1 quiz

#### Five Days a Week Schedule

- Begin the Plant Growth Project
- Define leaf
- Read about Leaves
- Add information on leaves to the Narration Page
- Do the Leaves Project

- Do the Scientific Demonstration: Leaf Color
- Read about Chlorophyll (or Plant Food)
- Add information on photosynthesis to the Narration Page
- Do the Photosynthesis Project
- Take the Plants Week 1 quiz
- Measure and record the growth of your plant for the Plant Growth Project

#### All Week Long

- Work on memorizing the *Parts of a Flower* poem

### Notes
Week 2: Flowers Lesson Plans

Scientific Demonstration: Water Flow

Supplies Needed
✓ Measuring cup
✓ 2 Glasses
✓ 1 White carnation with a long stem
✓ Red and blue food coloring

Purpose
This demonstration is meant to help the students to see how water is transported through plant stems.

Instructions and Explanation
The instructions and explanation for this scientific demonstration are found on pp. 18-19 of Janice VanCleave’s Biology for Every Kid. Have the students complete the Lab Report on SW pg. 79.

Take it Further
Repeat the demonstration with different colors of food coloring or with different kinds of flowers, such as a daisy, to see if you get a different result.

Science-Oriented Books

Reading Assignments
- Basher Biology pg. 34 (Flowering Plants), pg. 118 (Flower), pg. 120 (Pollen)
- Usborne Science Encyclopedia pp. 270-271 (Flowering Plants, part 1)

(Optional) Additional topic to explore this week: Pollination (USE pp. 272-273)

Discussion Questions
After reading the selected pages from the encyclopedias, ask the following questions in your discussion time:

Flowering Plants
? What is common to all flowering plants?
? What types of plants are flowering plants?

Flowers
? Why do flowers have bright colors?
? What can flowers produce?

Pollen
? What is pollen?
? Where is the pollen produced in the flower?

(Optional) Additional Books
- The Reason for a Flower (World of Nature) by Ruth Heller

Biology for the Grammar Stage Teacher’s Guide ~ Plants Week 2 Flowers
Notebooking

Writing Assignments

☐ **Narration Page** — Have the students dictate, copy, or write one to four sentences on what they have learned for flowering plants, flowers, and pollen on SW pg. 78. They can include information that they find interesting on each topic or material that you would like them to remember. *(See Plants Week 1 for a sample.)*

☐ **(Optional) Lapbook** — Have the students work on their Parts of a Plant Tab-book. For this week, have the students cut out and color the cover and flowers page on pg. 52 from Biology for the Grammar Stage Lapbooking Templates. Ask the students what they have learned about leaves this week and then add their narration to that page of the tab-book. Have them color the pictures on the sheet and save it until they assemble the booklet in the last week of the unit.

☐ **(Optional) Lapbook** — Have the students complete the Pollen Mini-book on pg. 54 from Biology for the Grammar Stage Lapbooking Templates. Have them cut out and color the mini-book. Ask them what they have learned about pollen. Write their narration sentences on the inside of the book. Finally, glue the mini-book into the lapbook.

☐ **(Optional) Lapbook** — Have the students complete the Parts of a Flower Mini Tab-book on pg. 55 from Biology for the Grammar Stage Lapbooking Templates. Have them cut out and color the pages of the mini tab-book. Then, have them label the bud page with bud and stem, and the flower page with pistil, stamen, and petals. Finally, have the students staple the pages together and glue the mini tab-book into the lapbooks.

☐ **(Optional) Lapbook** — Have the students add the Parts of a Flower Poem on pg. 54 from Biology for the Grammar Stage Lapbooking Templates to their lapbook. Have them cut out and color the poem sheet. Once they are finished, have the students glue the poem into the lapbook.

Vocabulary

The following definitions are a guide. The students’ definitions do not need to match word for word.

- **Bud** — A swelling on a plant stem containing tiny flower parts ready to burst into a bloom. *(SW pg. 91)*
- **Flower** — The reproductive parts of a plant. *(SW pg. 93)*

Multi-week Projects and Activities

**Unit Project**

- **Plant Growth Project** — During this unit, the students will record the growth of a bean plant. This week, have them water the plant as necessary. On Friday, have them measure and record how much it has grown on the Plant Growth Record Chart on SW...
(Optional) Nature Walk Sheets — Each week, take a nature walk to look for flowers and unique leaves. If possible, have the students collect the leaves to take them home and press; if not, take a picture of the samples. Once you are back at home, have the students identify the flowers and leaves they found using a field guide book from the library or the Internet. Have them record their findings on a Nature Walk Sheet found in the Appendix of this guide on pg. 198.

Projects for this Week

Coloring Pages — You can have the students color the following pages from Biology for the Grammar Stage Coloring Pages: Flowering Plants pg. 94, Flowers pg. 95, Pollen pg. 96.

Flowering Plants — Plant a flower box with different types of flowers with the students. As you plant the flowers, talk about the similarities and differences between the plants. Also take some time to point out the various parts you have studied so far.

Flowers — Dissect a flower with the students. Purchase a lily or other flower with clearly visible parts. As you dissect the flower, be sure to point out the various parts to the students. For a more detailed explanation of this project, visit the following website:

http://elementalblogging.com/flower-dissection/

Pollen — Have the students learn about pollination with cheetos. You can find the directions for this project at the following website:


Memorization

Work on memorizing the Parts of a Flower poem. (SW pg. 103)

Parts of a Flower
The bud becomes a flower
It’s happening this very hour
The flower has petals so bright
It attracts the insect in flight
The stamen provides the pollen it needs
To join with the pistil and make a seed

Quiz

Weekly Quiz
“Plants Unit Week 2 Quiz” on pg. 36.

Quiz Answers
1. True
2. All
3. False (Flowers come in many different shapes and sizes.)
4. Answers will vary
### Possible Schedules for Week 2

#### Two Days a Week Schedule

- Read about Flowering Plants (or Flowering Plants, 1st page)
- Add information on flowering plants to the Narration Page
- Do the Scientific Demonstration: Water Flow
- Define bud and flower
- Work on memorizing the *Parts of a Flower* poem

- Read about Flowers and Pollen (or Flowering Plants, 2nd page)
- Add information to the weekly Narration Page
- Measure and record the growth of your plant for the Plant Growth Project
- Take the Plants Week 2 quiz

#### Five Days a Week Schedule

- Read about Flowering Plants (or Flowering Plants, Intro)
- Add information on flowering plants to the Narration Page
- Do the Flowering Plants Project
- Read about Flowers (or Flowering Plants, 1st page)
- Add information on flowers to the Narration Page
- Do the Flowers Project
- Do the Scientific Demonstration: Water Flow
- Define bud and flower
- Read about Pollen (or Flowering Plants, 2nd page)
- Add information on pollen to the Narration Page
- Do the Pollen Project
- Take the Plants Week 2 quiz
- Measure and record the growth of your plant for the Plant Growth Project

#### All Week Long

- Work on memorizing the *Parts of a Flower* poem

### Notes
<table>
<thead>
<tr>
<th>Inches</th>
<th>Week 1</th>
<th>Week 2</th>
<th>Week 3</th>
<th>Week 4</th>
<th>Week 5</th>
<th>Week 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Leaves

Photosynthesis
Leaf Colors

Our Tools

_______________________________________________________________  
_______________________________________________________________  
_______________________________________________________________  
_______________________________________________________________  
_______________________________________________________________  

Our Method

_______________________________________________________________  
_______________________________________________________________  
_______________________________________________________________  
_______________________________________________________________  
_______________________________________________________________  
_______________________________________________________________  

Our Outcome

_______________________________________________________________  
_______________________________________________________________  
_______________________________________________________________  
_______________________________________________________________  
_______________________________________________________________  
_______________________________________________________________  

Our Insight

_______________________________________________________________  
_______________________________________________________________  
_______________________________________________________________  
_______________________________________________________________  
_______________________________________________________________  
_______________________________________________________________  

My Results
Flowering Plants


Flowers


Pollen


Biology for the Grammar Stage Student Workbook ~ Plants Unit Week 2 Flowers
Lab Report: Water Flow

Our Tools

_________________________________
_________________________________
_________________________________
_________________________________
_________________________________
_________________________________

Our Method

What it looked like

_________________________________
_________________________________
_________________________________
_________________________________
_________________________________
_________________________________

Our Outcome

_________________________________
_________________________________
_________________________________
_________________________________
_________________________________
_________________________________

Our Insight

_________________________________
_________________________________
_________________________________
_________________________________
_________________________________
Alveoli —

Amphibian —

Bacteria —

Bird —
Biology for the Grammar Stage

Memory Work
Plants Unit

Parts of a Flower
The bud becomes a flower
It’s happening this very hour
The flower has petals so bright
It attracts the insect in flight
The stamen provides the pollen it needs
To join with the pistil and make a seed

Parts of a Plant
The plant stem holds it up high
The leaves reach way up to the sky
It has roots that go into the ground
Gathering nutrients and keeping balance
sound
Biology for the Grammar Stage

Quizzes
Plants Week 1 Quiz

1. A _____________ is the part of the plant that makes the food.

   leaf      stem      flower

2. Circle the name of the process where light energy is turned into food for a plant.

   respiration   photosynthesis   churning

3. **True or False:** Chlorophyll is able to absorb sunlight.

4. What is the most interesting thing you learned this week?

   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
   _____________________________________________________________
Plants Week 2 Quiz

1. **True or False:** Pollen is made in the male parts of the flower and fertilizes the female parts of the flower.

2. Circle all of the things flowers do for the plant.
   - Produce seeds
   - Attract insects
   - Are the reproductive part of the plant

3. **True or False:** All flowers are the same size.

4. What is the most interesting thing you learned this week?

   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________
   _______________________________________________________________