



PLANTS

NGS
MAGNIF/ED

| Table of Contents: Plants | |
|-----------------------------------------------------|--------|
| Description | Page # |
| Introduction | 3 |
| Section 1: The Plant Kingdom | 4 |
| In the Land of Fairies and Elves Directions | 5 |
| Fairy and Elf Evidence Printable | 6 |
| Teacher Copy - Fairy and Elf Evidence | 7 |
| Quiz: The Plant Kingdom | 8 |
| Section 2: Plants Without Seeds | 9 |
| Fern Rubbing | 10 |
| Quiz: Plants Without Seeds | 11 |
| Section 3: Seed Plants | 12 |
| Germination Dial - Page A | 13 |
| Germination Dial - Page B | 14-15 |
| Germination Dial - Photo Instructions - Master copy | 16-17 |
| Quiz: Seed Plants | 18 |
| Section 4: Flowering Plants | 19 |
| Pop-Up Flowering Card - Photo Instructions | 20 |
| Flower Templates | 21 |
| Quiz: Flowering Plants | 22 |
| Section 5: Roots, Stems and Leaves | 23 |
| Roots, Stems and Leaves Printable | 24-25 |
| Cross-section Cut-outs | 26-27 |
| Answer Key - Roots, Stems and Leaves | 28 |
| Quiz: Roots, Stems and Leaves | 29 |
| Section 6: Plant Responses and Growth | 30 |
| Tropism Concept Map | 31 |
| Tropism Concept Map Toppers | 32-33 |
| Quiz: Plant Responses and Growth | 34 |
| Answer Keys (Quizzes) | 35 |
| Copyright and Contact Information | 36 |
| Student Cover - Blackline | 37 |
| Appendix: Teacher Notes - LARGE print | 38-43 |

Introduction

If you are new to the idea of using a Science Interactive Notebook in your classroom, stop by my Nitty Gritty Science shop and download my Intro to Science Interactive Notebooks tutorial for FREE! In there you will find tips on how to begin with your students, what materials to have on hand and, most importantly, how it will enhance your students learning through reflection and creativity.

Focused Lessons with Differentiated Instruction

The lessons shared on the following pages cover National Science Standards and meet students' needs. I have given you the notes that I would give my students (Right Side - Input Side of Notebook) so you can understand what I'm having the students focus on when working on their creative assignments (Left Side - Output Side of Notebook). Each lesson focuses on a Question of the Day (QOD) represented in red in the top margin of each "Input" page with the student giving an answer in red on "Output" page.

Left Side - Output

Instructions for each Output Side are included. This includes cut-outs, foldables or master copies where applicable. You may find that students work slowly at first, but once groups are organized and students know what is expected from them, not only will you see more energy focused on the final product, but also you will be shocked at the level of creativity certain students have in certain areas.

Mini-Assessments

Mini quizzes will be given for each section so you may monitor student's level of understanding. For reproduction purposes, there are two quizzes to a page so you can cut in half and save on paper.

Section 1: The Plant Kingdom

Answer: multicellular eukaryotes, cell wall, develop from embryos, carry out photosynthesis.

IN THE LAND OF FAIRIES AND ELVES

Question: What are the characteristics of the plant kingdom?

THE PLANT KINGDOM

Plants are multicellular autotrophs that are mostly found on land and are very different from their algae ancestors.

There are four major challenges to plants living on land:

1. Obtaining water and other nutrients - most plants have shoots and roots - roots absorb water and essential minerals from soil; shoots bear leaves. Roots and shoots are made of vascular tissue, a system of tube-shaped cells that branches throughout plant.
2. Supporting their bodies - plants can only stand upright because of the production of lignin, a chemical that hardens the plants' cell walls.
3. Maintaining moisture - plants cellular processes must take place in an aqueous environment, therefore they have adapted a waxy cuticle which acts as a waterproof layer coating the leaves and other above ground parts. Stomata, or microscopic pores in leaf's surface also prevent water loss by evaporation.
4. Reproduction - plants had to adapt to protect the gametes (eggs/sperm) from drying out and had to have some means for dispersal such as pollen grains carried by wind or animals.

CLASSIFYING PLANTS

NON-VASCULAR - plants that lack a well-developed system for transporting water and materials

VASCULAR - plants with true vascular tissue

Plants have complex life cycles that include two different stages:

sporophyte stage - plant produces spores, tiny cells that can grow into new organisms; develops into plants other phase, called the gametophyte

gametophyte stage - plant produces two kinds of sex cells: sperm cells and egg cells

Instructions: **MULTIPLE LEARNING STYLES ADDRESSED WITH ORIGINAL ACTIVITIES – NO REPEATS!**

This activity is a great way to start off plants - it gets your nature lovers out there doing what they do best, and it pushes those nature-deficit kiddos to maybe get into some "green" stuff. Hey, even if it's in their own backyard - what a great excuse to be outside...finding evidence of fairies and elves 😊

An activity description and mini-quiz are included, and I made a fun printable that the kids may enjoy to showcase their "findings." I also completed one for your Master Notebook just in case. Note: I got so carried away with finding neat pictures that I forgot to look at JUST PLANTS, so my example in my Science Interactive Notebook is incorrect...oops.

In the Land of Fairies and Elves

Directions: You will need to go on a nature hunt in search for something special – evidence that fairies and elves exist. This is a tricky task since fairies and elves are very good at hiding their existence from the human eye.

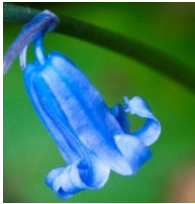

For this assignment you will need to take pictures or sketch a minimum of NINE things found in the PLANT kingdom that are used by fairies and elves. You will need to identify the item/structure by its common name as well as the fairy/elf use. Remember, fairies and elves live all over the world – for example, there are river fairies, meadow elves, tree fairies, desert elves, etc. So be sure to look high and low and be careful not to step on fairy/elf structures. The following examples are well known items of the fairy/elf world:

| Fairy/Elf Use | Transportation | Hat | Wheels | Steps and Shingles |
|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Common Name | Lily pad | Blue bell | Fern frond (young) | Succulents |
| Item or Structure |  |  |  |  |

In the Land of Fairies and Elves

Directions: You will need to go on a nature hunt in search for something special – evidence that fairies and elves exist. This is a tricky task since fairies and elves are very good at hiding their existence from the human eye.

For this assignment you will need to take pictures or sketch a minimum of NINE things found in the PLANT kingdom that are used by fairies and elves. You will need to identify the item/structure by its common name as well as the fairy/elf use. Remember, fairies and elves live all over the world – for example, there are river fairies, meadow elves, tree fairies, desert elves, etc. So be sure to look high and low and be careful not to step on fairy/elf structures. The following examples are well known items of the fairy/elf world:

| Fairy/Elf Use | Transportation | Hat | Wheels | Steps and Shingles |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Common Name | Lily pad | Blue bell | Fern frond (young) | Succulents |
| Item or Structure |  |  |  |  |

Name _____ Date _____

Quiz: The Plant Kingdom

Draw a line from the statement on the left that matches with the description on the right.

| | |
|-----------------------------------------------------|----------------------------------------------------------|
| 1. Plants need to obtain water and other nutrients. | A. Plants have adapted a waxy cuticle and stomata. |
| 2. Plants need to support their bodies. | B. Plants have roots and shoots made of vascular tissue. |
| 3. Plants need to maintain moisture. | C. Plants protect their gametes from drying out. |
| 4. Plants need to reproduce. | D. Plants produce lignin. |

----- **MINI QUIZZES INCLUDED FOR EACH SECTION** -----

Name _____ Date _____

Quiz: The Plant Kingdom

Draw a line from the statement on the left that matches with the description on the right.

| | |
|-----------------------------------------------------|----------------------------------------------------------|
| 1. Plants need to obtain water and other nutrients. | A. Plants have adapted a waxy cuticle and stomata. |
| 2. Plants need to support their bodies. | B. Plants have roots and shoots made of vascular tissue. |
| 3. Plants need to maintain moisture. | C. Plants protect their gametes from drying out. |
| 4. Plants need to reproduce. | D. Plants produce lignin. |



PLANTS

INCLUDES STUDENT SECTION COVERS

NGSO
MAGNIF/ED

Question: What are the characteristics of the plant kingdom?

THE PLANT KINGDOM

Plants – multicellular autotrophs that are mostly found on land and are very different from their algae ancestors

There are four major challenges to plants living on land:

1. Obtaining water and other nutrients – most plants have shoots and roots; **roots** absorb water and essential minerals from soil; **shoots** bear leaves.

Roots and shoots are made of vascular tissue, a system of tube-shaped cells that branches throughout plant.

2. Supporting their bodies – plants can only stand upright because of the production of **lignin**, a chemical that hardens the plants' cell walls.

3. Maintaining moisture – plants' cellular processes must take place in an aqueous environment; therefore, they have adapted a waxy **cuticle** which acts as a waterproof layer coating the leaves and other above ground parts. **Stomata**, or microscopic pores in the leaf's surface also prevent water loss by evaporation.

4. Reproduction – plants had to adapt to protect the **gametes** (eggs/sperm) from drying out and had to have some means for dispersal such as pollen grains carried by wind or animals.

CLASSIFYING PLANTS

non-vascular – plants that lack a well-developed system for transporting water and materials.

vascular – plants with true vascular tissue

Plants have complex life cycles that include two different stages:

Sporophyte stage – plant produces spores, tiny cells that can grow into new organisms; develops into a plants other phase, called the gametophyte

Gametophyte stage – plant produces two kinds of sex cells: sperm cells and egg cells



Thank you for sharing NGS Magnified with your students!

Terms of Use

Copyright © NGS Magnified, LLC (formerly Nitty Gritty Science, LLC.) All rights reserved by author Dr. Erica Colón. This product is to be used by the original downloader only. Copying for more than one teacher, classroom, department, school, or school system is prohibited. This product may not be distributed or displayed digitally for public view. Failure to comply is a copyright infringement and a violation of the Digital Millennium Copyright Act (DMCA). Clipart and elements found in this PDF are copyrighted and cannot be extracted and used outside of this file without permission or license. Intended for classroom and personal use ONLY.

Contact Information:

Email: admin@nittygritty.com

Website: www.NGSmagnified.com

TPT: <https://www.teacherspayteachers.com/Store/Nitty-Gritty-Science>

