



## A Plant of All Sorts

*Rapunzel's mother fell under the spell of the greens from the witch's garden.  
How could she have known what they were?*

### Introduction

#### Objective:

Students will use characteristics and structures to classify plants and share their findings in a dichotomous key.

#### Academic Content Standards:

- ❖ National Science Education Standards: Life Sciences
  - *Characteristics of organisms*
  - *Structure and function in living systems*
  - *Reproduction and heredity*
- ❖ National Science Education Standards: Science as Inquiry (Scientific Ways of Knowing)
  - *Abilities necessary to do scientific inquiry.*
  - *Identify questions and concepts that guide scientific investigations.*
  - *Design and conduct scientific investigations.*
  - *Use technology and mathematics to improve investigations and communication.*
  - *Communicate and defend a scientific argument.*
  - *Understanding about scientific inquiry.*
- ❖ Ohio Academic Content Standards for Science: Life Sciences
  - *Students demonstrate and understanding of how living systems function and how they interact with the physical environment.*
    - *Benchmarks: B (4<sup>th</sup> Grade)*
    - *Benchmarks: No direct benchmark correlation for 5<sup>th</sup> Grade. Extend classification to address plant characteristics present for survival in various ecosystems.*
    - *Benchmarks: No direct benchmark correlation for 6<sup>th</sup> grade. Extend classification to address plant characteristics found in inherited traits for reproduction.*
- ❖ Ohio Academic Content Standards for Science: Science inquiry
  - *Students develop scientific habits of mind as they use the processes of scientific inquiry to ask valid questions and to gather and analyze information.*
  - *Students learn how to develop hypotheses and make predictions.*
  - *Students reflect on scientific practices as they develop plans of action to create and evaluate a variety of conclusions.*
  - *Students demonstrate the ability to communicate their findings to others.*
    - *Benchmarks: A, B and C (4<sup>th</sup> and 5<sup>th</sup> Grades)*
    - *Benchmarks: A and B (6<sup>th</sup> Grade)*
- ❖ Ohio Academic Content Standards for Science: Scientific Ways of Knowing
  - *Students realize that the current body of scientific knowledge must be based on evidence, be predictive, logical, subject to modification and limited to the natural world. This includes demonstrating an understanding that scientific knowledge grows and advances as new evidence is discovered to support or modify existing theories, as well as to encourage the development of new theories.*
  - *Students are able to reflect on ethical scientific practices and demonstrate an understanding of how the current body of scientific knowledge reflects the historical and cultural contributions of women and men who provide us with a more reliable and comprehensive understanding of the natural world.*
    - *Benchmark: A, B and C (4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> Grades)*

### Getting Started

#### Materials:

- Variety of plant leaves for small groups. The leaves could be different types of lettuce or different types of leaves from a variety of plants--vegetables, trees, scrubs, flowers, etc. If plants not available, use detailed pictures.
- Chart paper for each group
- Markers

- Labeling arrows if available

### Vocabulary:

- Dichotomous Key
- Classification
- Characteristic

### Technology:

- A drawing or presentation software program, and/or a word processing program for the creation of a visual dichotomous key.
- Digital pictures or scanned pictures of the plants.

## **Lesson**

### Orientation Activity:

The opening activity is a class review of the concept and purpose of object classification. Students will review the process for developing a dichotomous key. (Make use of examples from previous activities if necessary.) The class will review the structure of plants and their functions. If students do not have prior knowledge of this information, the teacher will conduct lessons to provide the students with the concepts and skill before completing this activity.

### Learning Activity:

The teacher will select or assign small student groups. Each group receives samples of a variety of plant leaves and organizes them by on chart paper. Each classification is labeled: e.g., smooth edges, not smooth edges, etc., and each plant is illustrated on the chart with a drawing or digital image of the plant. Once the chart is completed and the plants are all individually classified, the students will use labeling arrows or will draw arrows to highlight the location of the characteristic used for each classification step. Each group presents their chart to the class. All members of a small group will have an active role in the presentation. Charts are displayed on the board for further review and comparisons.

The class will discuss the differences and similarities in the charts using question prompts such as, What plants were individually classified quickly in each chart? What does this tell you about these plants? Which plants had the most characteristics similar to each other? What does this tell you about these plants? What observations and inferences can you make from the data collected and illustrated by each group? Would you consider this data to be fact or opinion, and why?

The class will compile on chart paper a list of the characteristics used to classify the plants and further organize the characteristics into subgroups.

## **Evaluation and Follow-Up**

### Assessment Tools and Methods:

Each student selects one of the plants from the chart. Individually, he or she creates a diagram of the plant and labels the structures and functions of that plant. The diagram will also include the classification characteristics that make the plant unique.

### Interdisciplinary Connections:

**Math:** Measure the structures of the plants for classification purposes. Make comparisons in length and over size.

**Language Arts:** A presentation will reinforce oral speaking skills. Require each student to participate in a presentation on plants that includes diagrams, nonfiction information and research data.