Investing in Nature

A Partnership for Plants in Canada
Un partenariat canadien pour les plantes

DISCOVERING DICHOTOMOUS KEYS

Basic description:

Through a series of activities, students become familiar with the structure and use of dichotomous keys.

Curriculum connections:

Environmental Science

Specific Expectations:

Understanding Basic Concepts

- Demonstrate an understanding of the fundamental principles of taxonomy by classifying organisms from a local ecosystem.

Preparation time:

- Part One: none
- Part Two: 10 minutes
- Part Three: 10-30 minutes

Duration:

- Part One: 20 minutes
- Part Two: 30 minutes
- Part Three: 45-60 minutes

Materials:

- Part One – none
- Part Two: A variety of small objects (buttons, office supplies (erasers, pencils, pens, paperclips, staples), or hardware (nails, screws, nuts, bolts,)
- Part Three:
  - A variety of tree leaves
  - Dichotomous keys for identify trees by their leaves – enough copies for one per group/student

Preparation: Gather all necessary materials.

Procedure:

Part One

1. Introduce the term *dichotomous key*. Explain how dichotomous keys are structured and what they are used for.
2. As an example, ask your students to help you create a dichotomous key for classifying all the students in your class (or, if you have a large class, you may choose to only use half the class). You can record this key on the board or overhead as the activity progresses.
3. To begin, ask your students to decide on a way to divide the class into two groups (e.g. is the student male or female?). Once the decision has been made, instruct your students to organize themselves into these two groups.
4. Inform your students that each group will now have to be divided into two more groups. Continue dividing each group until each student is in a group onto their own.
5. To test your key, choose a student to identify using the key. When you work through the key, do you end up at the correct name?

Part Two

This lesson works best as a small group activity.

1. Provide each group with a variety of buttons, office supplies or hardware.

2. Instruct your students to create a dichotomous key for classifying the objects that they have been given. Remind your class that in order for their key to be complete, each object must fit into a group onto its own.
3. When the groups have completed their keys, choose an object with which to test the key.

Part Three

1. This lesson also works best as a small group activity.
2. Introduce terms used for classifying leaves (e.g. simple/compound, oblong, lancelot, serrated, toothed).
3. Provide each group with a variety of leaves and a dichotomous key for classifying leaves.
4. Instruct your students to work through the key to identify the leaves that they have been given.
5. Once each group has classified each leaf, ask them to share their findings with the rest of the class. Where the students able to classify each leaf? You may choose to work through some of the harder ones as a group.

Follow-up and Discussion:

Lead a discussion on the uses and structure of dichotomous keys. Possible questions may include:

- Is it possible to create more than one dichotomous key for classifying the same group of objects?
- If two people use the same dichotomous key to identify the same object, is it possible for them to have different final results?
- Why is classification important?

Extensions:

Provide each group with a dichotomous key for tree identification and take your students on a hike through the local neighbourhood to practice identifying trees.

Resources:

- Focus on Forests: An Activity Guide for Intermediate Teachers on Forests and Forest Management, Ministry of Supply and Services and the Queen's Printer for Ontario, 1989.
- Science Is… by Susan V. Bosak, Scholastic Canada Ltd. and The Communication Project, 2000.
- Project WILD: Activity Guide, The Council for Environmental Education, 1999.