

Manchester College
Education Department
Science Lesson by Mary Jane Dickey

Lesson: Dichotomous Key Introduction—Classifying the Class (part 1 and 2)

Length: 2 Science class periods, 45 minutes (1:00pm-1:45pm)

Age or Grade Level Intended: 5th grade/Science

Source: Inspiration from Enchantedlearning.com

Academic Standard(s): Science—5.2.6 Write instructions that others can follow in carrying out a procedure.

Science—5.2.7 Read and follow step-by-step instructions when learning new procedures.

Performance Objective(s): When asked to write a dichotomous key, the students will write the instructions to identify an item with 100% accuracy.

When presented a dichotomous key, the students will read and follow the instructions to identify an item with 100% accuracy.

Assessment: During the closure the teacher will ask the students review questions. Each group's dichotomous key will be slightly different, so the teacher will ask the students to double check and test their keys before turning them in, after the students have tested their keys they will turn them in.

Advance Preparation by Teacher:

- Access to a Smartboard
- Five Ziploc bags filled with one pencil, one ink pen, one shell, one marble, one “sticky clip,” one paper clip, and one inch worth of staples, each.
- Dichotomous key worksheet
- Print off the dichotomous key that was created by the class (one for each student).

Procedure:

Introduction/Motivation: (Engage)

Ask the students what the term “classifying” means. **(Putting things into groups, based off of similar characteristics)** When you classify objects into groups you compare and contrast their properties. Now, ask students how they might use the scientific processes of observing and classifying to group the students in the class. Explain that today we are going to look at characteristics of the individuals in the class using a chart that scientists call a dichotomous key.

Step-by-Step Plan:

1. (Explore) Today we are going to construct a class wide dichotomous key to identify and classify the students in the classroom. Explain that we are going to separate into our groups until everyone has a clue question that identifies each individual student. We will create our dichotomous key chart on a blank Smartboard document.
2. After each question the students will separate into their “classifications.”
Question 1: Is the person male or female?
Question 2: Does the person wear glasses or not?
Question 3: Is the person wearing blue jeans or not?
Continue creating questions with the class as appropriate for the group. The end of each branch of the key should be a person’s name. After the entire key is created explain that a dichotomous key will have enough questions to identify each member of the group. To test it, identify a few students by going through the key and seeing if the right name comes up. The students may come up to the board and go through the dichotomous key with the class.
3. (Explain) A **dichotomous key** is a method of determining the identity of something, like a butterfly, a plant, or a rock, by going through a series of choices that leads the user to the correct name of the item. Explain that a dichotomous key is a series of questions which leads to the identification of an item. So, for example a question in a dichotomous key for trees might be something like, “are the leaves flat or needle-like?” If the answer was “needle-like,” then the next question might be something like, “are the needles in a bunch or are they spread along the branch?” Eventually, when enough questions have been answered the identity of the tree is revealed and classified. Dichotomous means “divided in two part,” so we will ask questions that can be answered with a “yes” option, and a “no” option. Each step of the process of using the key provides two choices for the user to decide between. It’s kind of like playing 20 questions.
4. (Expand) To use as a reference pass out the printed off Smartboard document that was made by the class. The students will be able to use this sheet as a guide while they create their own dichotomous keys.
5. Choose 5 students to be the Team Captains for the day. These students will choose 4 more students to be in a group with. The students are going to construct their own dichotomous keys, to identify and classify office supplies. The teacher will hand out the dichotomous key worksheet and a Ziploc bag filled with supplies to each table group.
6. Start the class off by providing the first question:
 - i. Is the item an office supply? Yes or No...From there the students will continue creating questions in their groups until all of the items have been identified. The end of each final branch of the key should be the name of an item. The teacher will walk around to each group to answer questions and provide feedback to the students. As the students work through the dichotomous keys they should practice following the directions to identifying the objects.

7. When the students have tested their dichotomous keys they will turn them in, and begin reading the students will be given pages 6 through 9 to read in the textbook. If there is time after the dichotomous key exercise, the book can be read to them through the Smartboard audio text.

Closure (Evaluate):

What does classifying mean? (**Putting things into groups, based off of similar characteristics**) When you classify objects into groups you compare and contrast their properties.

We made a chart on Tuesday that helped us classify the identity of something. What was that chart called? (**Dichotomous key**)

How do we use a dichotomous key? (**We ask a series of questions until we find what we are looking for**)

How does asking questions help identify objects?

How do scientists use observation/classification to identify the properties and characteristics of items?

Explain that during the rest of this trimester the students will be talking about why scientists classify organisms in the natural world, and how they use dichotomous keys and other tools to help them.

Accommodations/Enrichments:

Student with Autism: The student with Autism works extensively down in the resource room with the special education teacher. The work will be sent to the resource room ahead of time for the student to work on while he is down in that room.

High Ability Student: During the small group activity the Team Captains will be a high ability student. The Team Captains will be in charge of keeping his/her group on task, and for providing help before the teacher is asked for assistance.

Self-Reflection: Because of time restraints, and the days that the classes switch for science, this lesson ended up spanning two days during my week experience in my student teaching placement. The students that I am teaching for science this trimester are another class of 5th graders. This was my introductory lesson to this class, and I found it was very difficult at times, because I did not know any of their names. The students were very cooperative and understanding, however, which made me feel much more at ease when I would accidentally call on the wrong person. Overall, this lesson went really well. The break up between the two days seemed to work for the students, and the introductory activity and explanation on the first day allowed the students time to absorb and take in the information that we talked about. The second part of the lesson involved the students creating dichotomous keys in small groups. The team

captains were the high ability students in this class, and my cooperating teacher suggested that we divide the “teams” with a high ability student as the leader. That really seemed to work out and she and I discovered that one of the male students, in particular, was a very good group leader and kept his group on task. When I am there in the spring I will have to keep this in mind, when I am creating groups, he may be a student I place with the “talkers,” but I feel that I must get to know this new group of students a little better before I determine who the “talkers” really are. The students really gave me some great answers to my evaluation questions, which let me know that they were listening and that they seemed to understand what we were covering. This lesson was an introduction to the classifying unit that my cooperating teacher will be conducting this semester, so I am glad that I was able to create a lesson that could be the precursor to her unit.