



Learning How to Use a Dichotomous Key

Objective – To teach students and adults how to make and use a simple Dichotomous Key. **Materials** – Large flip chart stand, paper and colored markers.

1. Set up the flip chart and get markers ready. Ask the participants if they know what dichotomous means? Ask them if they know what “di” stands for? It means “two.” Dichotomous means branching...so two-branches. The choices can be as simple as “yes” or “no.” (At this point, I usually draw a road on the first paper and draw it splitting into an upside down Y. Think of it as a road, which way will we go, left or right – yes or no – just two choices!)
2. Tell them when looking at anything...it’s sometimes easier to **look at the differences rather than the similarities**. To see the differences, we need to observe closely. We usually start picking things out in a logical manner – those that are larger/smaller, lighter/heavier, smoother/rougher, different colored, or what they are used for, etc. We then take one group at a time and break it down to the next level. **However, we need to keep some things in mind...we need to be scientific in our thoughts**. You can’t just say the “big leaf,” you must say “the leaf that is longer than four inches” or the leaf that is shorter than three inches. (That’s because you don’t want someone saying...pick the fat leaf...or pick the little leaf – it’s too vague.)
3. Next, ask for six volunteers to stand in a row beside the chart. Try to get a mixture of male and female, if possible. Have them line up all together on one side of the flip chart and you stand on the other.
4. Ask the participants, “If we were going to divide these six people into two different groups – what is the most obvious thing you see that could help us put them into two separate categories?” We’re looking for boys and girls or male and female. Then, ask the girls to stand together on one side of the flip chart and the boys to stand together on the other side of the flip chart. At the top of the flip chart paper write down male or boy with arrows and a yes or no below it (see the diagram on the back side of this sheet) and put the number of people/children – 3 yes and 3 no. (I just put the kids as A, B, C, etc. instead of names so you can see where everyone fits.)
5. Now, we have separated the students into two branches or categories. Let’s look at the boys first. What makes one boy different from the other boys? Look for shorts or jeans, cap or no cap, glasses or no glasses, sandals or shoes. Put the selected item on your chart with a yes or no below it. Then pick the next category until you have all the boys “classified.” Next, use the same criteria to separate the girls until you have them identified just like the boys.
6. Now, test the key. Ask for two more volunteers and select one boy and one girl. Start with the boy and have him come and stand near the flip chart. Start with the questions at the top – is this a boy or girl? Yes or no? Does this boy have shorts or jeans on? Does he have glasses or not? Once you determine where he goes...have him go stand with the similar boy. Then, have the girl stand next to the chart and do the same thing.
7. Now ask them, “Why is it important to recognize things that are alike and different?” “Where do we use these skills?” Give them some time to think about this. Then, ask them to raise their hands if they have ever been in a grocery store? Ask them if their mom has ever sent them in to buy milk? Where do they go once inside the store – to the cold section where the dairy products are or do they go to the canned goods or to the bakery? Hopefully, most will say they go to the cold dairy section! Then ask them to raise their hands if they have ever been to the library. Ask them how the books are sorted at the library? They should get the idea that we logically sort things into like categories so we can find and identify them. If a truck just backed up to the door and dumped all the groceries or books off and they were put up at random, how would we find anything?

8. Before you do the **Simple Leaf Key**, you must cover some basics about “Looking at Leaves” from the PLT book. Are they smooth, sticky, colored on both sides? Are the long or heart-shaped or triangular? Are they single or compound? Are they alternate or opposite or whorled on the branch.

9. Now, you are ready to take the **Simple Leaf Key** and try to identify some trees by their leaves. Start with a green ash leaf or a Russian olive leaf, then a ponderosa pine and a spruce. Take them through two trees step by step. The next two trees, have them try on their own and without speaking to a friend, come and point to the tree they think it is. You can shake your head yes or no. After most of them are getting it right...go through it all together out loud so those who still didn’t get it might catch on. Give individual help to any who still don’t understand.

10. Now, you can break them up into teams by similar age or grade. Give each team about 10 mixed leaves (real or laminated) and a piece of paper and pencil. Ask them to **create their own dichotomous key chart** for the 10 leaves. They can be sorted MANY different ways by the students using the color, the edges, veining etc. Have each team share how they did their chart – there will be no right or wrong answers – each is different. IF, you do this with teachers, make sure you divide the teachers by elementary, middle school and high school. The elementary teachers may do it very simply by colors, shapes, etc. The high school can be very strict and even require a genus and species name!

Once you know how to use the Simple Leaf Dichotomous Key Chart...you can use the *Key to Common North Dakota Trees and Shrubs* on the **ND Tree Information Center** at www.ag.ndsu.edu/trees/handbook.htm or go to the **North Dakota Forest Service** web site at www.ndsu.edu/ndfs, click on Information and Education and find the same Key. Now that you understand how this key works, you can use this knowledge with other dichotomous keys for plants, animals, macroinvertebrates, etc.!



Boy A

Boy B

Girl C

Boy D

Boy E

Girl F

