



UTAH Nature Explorers

Time:

35 minute classroom lesson
45 minute field experience
(plus travel time)
(4) additional 30-60 minute
field visits

Level:

Grades 4-6
Standards selected for grade 4

Goals:

Students will identify plants and animals native to Utah, and foster a sense of environmental stewardship through interaction with nature.

Objectives:

1. After spending one hour at a nearby wetland, river, or lake, students will be able to identify at least one plant and one bird native to Utah with 100% accuracy.
2. After spending 4 periods of time at the wetlands, students will be able to identify one reason they enjoy being in nature with 100% accuracy.

Materials listed with each individual lesson plan.

A kit is available for this lesson plan. Visit www.utahnatureexplorers.org for details.

A Walk in the Park

By Christina Cotter, Neicca Butts, and Mark Larese-Casanova

This lesson plan teaches skills related to developing and using dichotomous keys, and observing nature throughout the year.

Correlations to Core Curriculum:

4th grade science

- Standard 5: Students will understand the physical characteristics of Utah's wetlands, forests, and deserts and identify common organisms for each environment.
 - Objective 3: Use a simple scheme to classify Utah plants and animals.
 - Indicator b: Use a simple classification system to classify unfamiliar Utah plants or animals (e.g. ,fish/amphibians/ reptile/ bird/mammal/invertebrate/ vertebrate, tree/shrub/grass, deciduous/ conifers).

Background Information:Biological Classification

Utah's Native Trees (not all inclusive) –

- Ashes
- Douglas Fir
- Junipers
- Maples
- Oaks
- Pines
- Poplars and Aspens
- Spruces
- True Firs
- Willows

(<http://forestry.usu.edu/hm/treeid>)

Utah's Birds (not all inclusive) –

- Canada Goose
- Mallard
- Ring-necked Pheasant
- Quail
- Ruddy Duck

(<http://www.utahbirds.org>)

Did you know?

Utah is known more for its red rock than for its forests, but trees cover about one third of the state. This is equal to 15 million acres of forest.

<http://forestry.usu.edu/files/uploads/Utah%20Forest%20Types-Youth%20Edition.pdf>

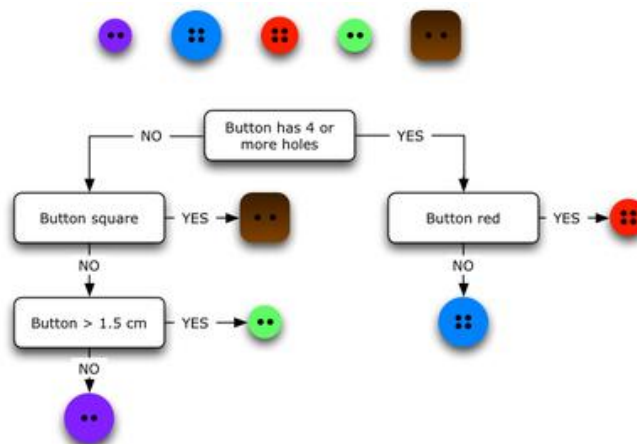
How to Use a Dichotomous Key

A dichotomous key is a tool that allows the user to determine the identity of items in the natural world, such as trees, wildflowers, mammals, reptiles, rocks, and fish. Keys consist of a series of choices that lead the user to the correct name of a given item.

"Dichotomous" means "divided into two parts". Therefore, dichotomous keys always give two choices in each step.

http://oregonstate.edu/trees/dichotomous_key.html

A dichotomous key created for identifying buttons:



Lessons and Activities:

Day 1 (Classroom) --

Materials:

Supplies –

- Chart paper (1-2 pieces)
- Pencils (enough for entire class)
- Science journals (one for each student)
- Game instructions (attached at the end of the lesson plan)
- Buttons, small household items, or snacks to create a dichotomous key with

Equipment:

- Photos of Utah Trees

Engage (15 minutes) – Tell students that an important part of being a good scientist is noticing and observing the things around you. In Utah, we are surrounded by many beautiful plants and animals, but sometimes we forget to take time to study them. Explain that, for the next few days, and continuing throughout the year, we are going to dedicate more time to noticing the plants and animals around us. For this specific lesson, we will be discussing and making observations about trees and birds that live in Utah.

Post the question: “What types of trees do we have in Utah?” Give students one minute to silently consider the question, prompting them to think of at least 2 different trees they’ve seen at their house, at school, etc. Although they might not know the names of the trees, they should be able to describe them. Provide time for a partner share, then share as a class, recording student responses on chart paper. Repeat this process with the question “What types of birds do we have in Utah?” Again, remind students that if they don’t

and Birds (download PDF file at

www.utahnatureexplorers.org)

- Dichotomous key for Utah's native trees (Trees of Logan Canyon, download at www.utahnatureexplorers.org)
- Utah Bird guide
- Dichotomous key and bird guide for each student

Did you know?

On

<http://utahbirds.org/counties/index.html> you can find popular birding locations, local bird sightings, and bird-related educational institutions in your own county!

know the names of specific birds or trees, they simply need to clearly describe them. If possible, you can help them identify the names of these birds and trees.

Once a discussion has taken place on what types of trees and birds are commonly found in Utah, explain to students that, in order to better classify these plants and animals, they will get to use a special tool called a dichotomous key. Explain that a dichotomous key provides a series of steps that you can go through in order to identify what plant or animal you are studying. Each step always has two choices, and the students should pick the choice that most closely identifies with what they can see.

Practice developing a dichotomous key as a class, using the key to identify buttons, snacks, or other household items. This key should be simple and on the students' level. *(If time is not available to create a key as a class, you may choose to practice with the dichotomous key for identifying buttons found in the background information section.)*

Introduce students to a bird guide, and explain that this guide will help students identify Utah birds. Practice using it to identify birds in various photos as a class. Practice these skills with 2-4 pictures, so that students clearly understand what they will be doing when they start working on their own.

Explore (20 minutes) – Each student should be given a dichotomous key and a bird guide. The teacher can choose to put pictures on the board and have everyone identify the same bird or tree, or may choose to have students do it on an individual basis with small pictures at their desk. Allow them to practice this skill for 5-7 minutes. After practicing, work as a class to increase the number of tree and bird names recorded on the chart paper list.

If time is still available, practice identifying native tree and bird species with a bodily-kinesthetic classroom game. The teacher should call out the name of a tree or bird species. If the species is native to Utah, students should stand up by their desks and raise their hands straight up in the air to create a “U” for Utah. If the species is not found in Utah, students should cross their arms to make a large “X” to show that this is not found in Utah. Play this game for 5-10 minutes, or as desired. Further instructions and materials for this game can be found at the end of the lesson plan.

Explain (10 minutes) – Ask students why it is important to know what species are native and which are invasive? Discuss why a dichotomous key can be helpful in identifying various species of

trees, as well as other plants. Talk about how to properly use a bird guide, and ask the students to explain why a bird guide can be so helpful. Remind the students that they will soon be doing fieldwork studying the native trees and birds of Utah. Answer any questions, and remind students of protocol for the upcoming trip.

Day 2 (Field Work Experience) –

Materials:

Supplies –

- Science journals (1 per student)
- Pencils

Equipment--

- Dichotomous key and bird guide for each student
- Nearby park
- Transportation
- Parent volunteers (if available)

Before leaving for the field experience, briefly discuss with students what they talked about the previous day. Remind them of the importance of studying the plants and animals around them, and allow students to give input on why they think this is important.

Provide each student with a dichotomous key and a bird guide to identify common tree and bird species found at a local park. Walk or drive to the park and give students 30-45 minutes to work in pairs as they identify at least 3-5 trees and 3-5 birds that they see. *(This is a fantastic time for the students to use their science journals. Ask students to make detailed scientific drawings and written descriptions to describe what they are seeing. If time permits, students may be able to share their findings with classmates before returning to the classroom.)*

Before leaving the park, gather as a class and have a brief class discussion on what was seen and observed. Ask students what questions they have, and have all the students record these questions in their nature journals. Remind the students that on their return visits to the park/pond they should be looking for and recording the answers to these questions.

Days 3-7 (Stewardship Experiences, to be done throughout the year) –

Materials:

Supplies –

- Science journals (1 per student)
- Pencils

Equipment--

- Dichotomous key and bird guide for each student
- Nearby park
- Transportation

Students will visit the same park or pond 4 more times throughout the school year to observe and study the trees and birds of Utah further. At the beginning of each visit, students should be given 10-15 minutes to spread out, sit silently, and observe their surroundings. They should use their science notebook to record sights, smells, sounds and any other observations. The remainder of the time can be spent identifying trees and birds, looking for answers to questions, or in class discussions about their observations. If desired, you could give students the option to take pictures with a classroom camera to print and include in their science journal.

- Parent volunteers (if available)

Did you know?

The quaking aspen (*Populus tremuloides*) was chosen by the Utah State Legislature in 2014 to be the state tree. The quaking aspen replaced the Colorado blue spruce, which had held the honor of state tree since 1933. The quaking aspen, which is also known as trembling aspen, makes up about 10% of the forest cover in the State of Utah and can be found in all of Utah's 29 counties.

http://pioneer.utah.gov/research/utah_symbols/tree.html

Always make sure to gather the class together to discuss their observations and questions before leaving the park. Even if the discussion is short, it is very important that students have the opportunity to share and to ask questions. Make sure that you allow other students to answer student questions, based on the observations that they have made, rather than jumping in and answering the question right away. If no one is able to give an answer, you may choose to suggest it as a research subject for the future.

At the end of the year, after 5 total visits to the park or pond (1 initial and 4 subsequent visits), students will review what they have learned by reading through their nature journal. Students will be asked to give a 4-6 minute presentation on what they have learned, including what questions they initially had (at least 3), and their respective answers (at least 3, if found), scientific pictures that they drew to solidify understanding, and 2 elements of nature that they have learned to better appreciate. If students were not able to find answers to their questions, they should explain how they tried to find an answer. Each of these elements is on the rubric, and students should be informed that these are the grading requirements. This presentation can be given to small groups, or to the whole class, as determined by the teacher. If given to small groups, students should turn in their final presentations to be further assessed by the teacher after presenting to their group.

Assessment:

The end of the year presentation creates an obvious formal assessment opportunity. The rubric below is created for that experience. However, there are many opportunities for informal assessment as well. Playing the game 'Native to Utah' gives teachers a chance to observe who understands the difference between 'native' and 'invasive' species, as well as who knows which plants and animals belong in which category. The students' nature journals could also be collected after each field experience to make sure that progress is being made, and that students are using their time productively. As the teacher reads through the nature journals, this will likely help the teacher to see where misunderstandings still lie. These two informal assessment opportunities should be used by the teacher to inform their instruction accordingly.

Extensions:

- Art: Students can transfer their drawings and observations

to a poster entitled 'My Sense of Nature,' to be displayed in the classroom or the hallway.

- Social Studies/Language Arts: Students can study why and how invasive species of trees have made their way to Utah. If desired, students could pick a particular tree (either native or invasive) and examine its history, and how it came to Utah. This could be presented to the class or turned in as a written presentation.

Resources:

Books

- *Guide to the Trees of Utah* by Michael Kuhns
- *Birds of Utah Field Guide* by Stan Tekiela
- *Birds of Utah (Common and Notable Species)* by Greg R. Homel

Websites

- USU Forestry Website -- <http://forestry.usu.edu/>
- Utah Birds Website -- <http://www.utahbirds.org/>
- Common Trees of the Pacific Northwest -- <http://oregonstate.edu/trees/index.html>

Park Exploration Project Rubric

The presentation lasts between 4-8 minutes <i>(10 points)</i>	The presentation lasts between 3-9 minutes <i>(5 points)</i>	The presentation is under 3 minutes or over 9 minutes <i>(3 points)</i>	No presentation is given <i>(0 points)</i>
The student explains 3 of their initial questions <i>(10 points)</i>	The student explains 2 of their initial questions <i>(5 points)</i>	The student explains 1 of their initial questions <i>(3 points)</i>	No initial questions are explained <i>(0 points)</i>
The student gives 3 of their findings to questions, or explains how they tried to find at least 3 answers <i>(10 points)</i>	The student gives 2 of their findings to questions, or explains how they tried to find at least 2 answers <i>(5 points)</i>	The student gives 1 of their findings to questions, or explains how they tried to find at least 1 answer <i>(3 points)</i>	There are no answers or findings given <i>(0 points)</i>
Scientific drawings and pictures are shown and explained <i>(10 points)</i>	Scientific drawings and pictures are shown or explained <i>(5 points)</i>	No scientific drawings pictures are shown or explained, but they are present in their science notebook. <i>(3 points)</i>	No scientific drawings or pictures are presented or visible in their science notebook. <i>(0 points)</i>
2 appreciated elements of nature are described <i>(10 points)</i>	1 appreciated element of nature is described <i>(5 points)</i>	No appreciated elements of nature are given <i>(0 points)</i>	

Student Name:

Points: /50

“Is this found in Utah?” Game Instructions

This game can be played in two different ways – a Jeopardy Game format, or a short movement activity for the entire class. Both sets of directions are given below. You should pick the option that will work best for your students and your time available.

PowerPoint Format Instructions

You will need Internet access in order to download this PowerPoint. The PowerPoint is available for free download at www.utahnatureexplorers.org.

Once you have accessed and downloaded this game, divide your students into groups of 4-6 students each. Each group is a team, and will be responsible to work together to win the game.

Each question will be answered by every team. All teams with the correct answers will get the points, and the teams that answer the question incorrectly will get the points taken away from them. *(If desired, this game can also be played as individuals instead of in teams.)*

With each question, students will see a picture and name of a bird or a tree. Working together, the team should determine whether they think this tree or bird is found in Utah. When the ‘think time’ is up, (you can determine how long they have to decide, you may choose to set a timer or play a short song during ‘think time’), each team should make a symbol showing whether or not they think this bird or tree is found in Utah. If they think it is found in Utah, the entire team (or a representative, if you prefer) will make a large U (for ‘Utah’) with their arms. If the team thinks that the bird or tree is NOT found in Utah, they will cross their arms into an ‘X,’ or they will sit cross-legged on the floor. *(You can choose the action you feel would be easiest for your class.)* If you prefer, you can use different actions.

When each team has made one of the two symbols, the answer will be displayed on the screen. Each team with the correct answer will get the points added to their score, while each incorrect team will get the points taken away from their score.

The length of this game is entirely up to you. You can play the entire game, or only do a few slides. The team with the highest points at the end of the game wins.

Regular Game Format Instructions

You do not need Internet access for this version of the game. Have all students stand up, and make sure students are at least an arms length away from all other students. Ask students the

questions found below. Before giving the answer, each student should answer individually (or in groups, your choice).

When you read the name of the tree or bird, each individual or group should determine whether they think this tree or bird is found in Utah. When the 'think time' is up, each person or team should make a symbol showing whether or not they think this bird or tree is found in Utah. If they think it is found in Utah, they will make a large U (for 'Utah') with their arms. If the team thinks that the bird or tree is NOT found in Utah, they will cross their arms into an 'X.' If you prefer, you can use different actions.

You may choose to give students points if they get it correct, or may simply choose to play this as a review game without any associated points.

If you choose to use a point system, you can use the following instructions. When everyone has made one of the two symbols, the correct answer will be given. Everyone with the correct answer will get the points added to their score, while those with the incorrect answer will get no points, or will get the points taken away from their score (should be decided by the teacher).

The length of this game is entirely up to you. You can play the entire game, or only do a few questions. Those with the highest points at the end of the game win.

Name of Bird or Tree	Native to Utah?
Quaking Aspen Tree	YES
Eurasian Collared Dove	NO
Mallard Duck	YES
Juniper Tree	YES
Tamarisk or Salt Cedar	NO
Bald Eagle	YES
Great Blue Heron	YES
Crack Willow Tree	NO
Colorado Blue Spruce	YES
Lodgepole Pine Tree	YES
House Finch	NO
Mountain Bluebird	YES
Belted Kingfisher	YES
Douglas Fir Tree	YES
Fremont Cottonwood Tree	YES
Red Winged Blackbird	YES
European Starling	NO
Limber Pine Tree	YES