

# **Designing a Classification Tool Using SCRATCH Programming and Dichotomous Keys**

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## **Students will be designing...**

Classification is important in understanding the natural world. Dichotomous keys help guide scientists toward identification so classifications can be shared and used mutually. A dichotomous key is a guide for classification and identification, somewhat like a map through a classification system that was developed previously. Many parts of the natural world that have been classified, categorized, and grouped can be identified using a dichotomous key. Dichotomous keys can be developed to identify anything in any sort of classification. In these lessons, student will learn to develop their own dichotomous key in SCRATCH programming in order to enrich their experience of a local community resource.

## **Through engaging in this challenge, students will learn...**

- To use SCRATCH programming
- To create a dichotomous key
- To understand how and why scientists classify
- To engage with a community resource
- Next Generation Science Standards: MS-LS1D Information Processing, MS-LS3B Variation of Traits, MS-LS4D Biodiversity and Humans

## **Lesson 1**

Through a brief background presentation on Classification in Life Science, then hands-on practice using and creating dichotomous classification keys, students will be introduced to the concept of biological classification. In addition, they will understand that dichotomous keys are one way scientists identify living things and will practice observation and recording skills. (115-130 minutes)

## **Lesson 2**

Students will be introduced to SCRATCH programming as a way to formalize the “dichotomous keys” method of object classification. Students will have created dichotomous keys to classify footwear in the previous lesson. A sample SCRATCH project will exemplify one approach to translate the classification process into digital programming. Students will

then learn the tools necessary to design and create their own SCRATCH classification program. (150 minutes)

### **Lesson 3**

Students will visit a local, community nature area to understand what they (the “users”) might need when visiting to help them to identify the living things present. Upon returning, they will interview each other to begin the Design Thinking process in order to design a SCRATCH program with a dichotomous key for one specific community locale of their choice. Finally, students will field test their prototypes before returning to class to redesign their programs. (230-270 minutes)