WISCONSIN 4-H YOUTH DEVELOPMENT

TECHNOLOGY

DOTS Infrared Thermometer

Activity Plan

University of Wisconsin-Extension

Project Skills or Goals or Objectives:
Learn how to use a thermal imager. Compare photographs with and without thermal overlays to make temperature observations.

Life Skills:
Digital Literacy, STEM, Environmental Awareness

Grade Levels or Audiences:
4th – 12th grade

Time or Length of Experience:
20-30 minutes

Supplies Needed:
IR Thermometer
Blank paper
Pencils

Sources:
Photo: DOTS participant

Developed by: Justin Hougham and research naturalists

BACKGROUND

Technology has been integrated into education in a variety of ways to deepen learners' educational experiences. Through the Digital Observation Technology Skills (DOTS) program, learners use technology to experience the outdoors and identify elements and processes of the natural world. One of the tools used to make these connections with nature is the Kintrex Infrared (IR) Thermometer. This purpose of this hand held tool is to show the surface temperature of any object it is pointed toward.

USING THE INFRARED THERMOMETER

1. Turn on the Infrared Thermometer by pressing the center button labeled '°C/°F'. Make sure the display is showing you the units you'd like to work with: Celsius or Fahrenheit. If you need to change your unit, press the center button to toggle between the units.
2. Aim the thermometer at an object and hold down the button on the back, underneath your index finger.
3. NEVER point the red light at anyone's head.
4. A red light will appear on the object you are measuring.
5. Note the temperature which appears on the screen.
6. When recording findings, record the object and the unit it was measured in.
7. When not in use, the tool will automatically turn off.

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DOTS Digital Observation Technology Skills

LEARNING EXPERIENCE

For this activity, students will take turns using the Infrared Thermometer to find the hottest and coldest objects in the surrounding area. Students will record their findings and compare. Instruct students on how to properly and safely use the Infrared Thermometer.

Begin this activity by having all students make a hypothesis, collectively or individually, of what the coldest and hottest abiotic (non-living) object is and record it. Students can take turns testing their hypotheses and reporting their findings to the rest of the students to be recorded by all. Test multiple objects until they find the coldest and hottest abiotic object. Then have students find the difference between the hottest and coldest objects temperature (hottest - coldest = difference). Have the students make a new hypothesis of what objects in their surroundings will be the hottest and coldest biotic (living) objects. REMINDER: NEVER point the red light at anyone's head.

Repeat the testing and recording process but with only biotic objects. Students should test multiple objects until they find the coldest and hottest biotic object. Then find the difference in temperature in the biotic objects (hottest – coldest = difference). Once finished, have students get into small groups of 3-4 people to discuss what they observed.

REFLECT AND APPLY

Questions to ask include:

1. Which objects (living or nonliving) have a larger temperature difference?
2. Why do you think this is?
3. How do these ideas compare to your original hypotheses?
4. What is something you wonder the surface temperature of and why?

ENHANCE AND SIMPLIFY

This program can focus on different aspect of the environment, such as plants, animals, geology, climate change, human intervention, etc., to suit the needs of a particular event.

Observation skills can be enhanced by including activities that involve inquiry. This includes having students sit in a certain spot for several minutes and make a sound map of everything they hear, or asking them to observe an object at 5 inches away for 5 minutes and recording what they notice.