



WISCONSIN 4-H YOUTH DEVELOPMENT TECHNOLOGY

DOTS Wi-Fi Microscope

Activity Plan

Project Skills or Goals or Objectives:
Learn how to use the Wi-Fi Microscope.
Understand that living things are made of cells.

Life Skills:
Digital Literacy, STEM,
Environmental Awareness

Grade Levels:
4th – 12th grade

Time:
2-3 hours

Supplies Needed:
Aven Mighty Scope or
Celestron Digital
Microscope
Tablet or smart phone
Blank paper, leaves,
pencil, coloring utensils

Sources:
Photo: DOTS
participant

Developed by: Justin
Hougham and research
naturalists
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BACKGROUND

Technology has been integrated into virtually every facet of education. Through Digital Observation Technology Skills (DOTS) youth are able to experience and identify various aspects of nature through technology. One of the tools used to make these connections is the handheld microscope. It uses the tablet as a screen for the whole group to see at the same time.

USING THE WI-FI MICROSCOPE

1. Turn on the microscope by sliding the switch to the 'on' position.
2. Turn on the tablet.
3. Open settings and click on the Wi-Fi.
4. When it appears, select the Wi-Fi named microscope and a number.
5. If prompted for a password enter '12345678'
6. Go back to the main screen of the tablet by pressing the circle button on the bottom of the tablet.
7. Open the app on the tablet named Celestron.
8. Press the 'On' button in the lower left of the tablet

9. Point the microscope towards an object and the image will appear on the tablet.
10. If the image is blurry, adjust the magnification by turning the yellow dial on the front of the microscope.
11. If it is too dark, adjust the light by turning the dial on the handle of the microscope.
12. To take a picture, either press the camera button on the front of the microscope or on the tablet.
13. Keep microscope steady then adjust the magnification for the best pictures.
14. When done, turn off the microscope and tablet.

LEARNING ACTIVITY

For this activity, students will learn how to use the handheld microscope to explore leaves and organisms. Have all students begin with 1-2 pieces of blank paper, leaves, a pencil, and coloring utensils. Ask students to discuss anything and everything they notice about the leaf in front of them. (Color, structure, type, where it came from, if they have seen it before and where, is there anything on it, etc.) Ask them if they think there is more to the leaf that they cannot see, and why.

Show students how to connect the microscope or already have it connected and talk about what microscopes do. Then have a student or the instructor focus the microscope on the top of the leaf until the image is clear. Freeze the image on the tablet. Have students or the instructor hold up the tablet.

Ask them to write top on one side of their paper and then draw what they are seeing. You can have them map the whole top of the leaf or a section. Then have them write down observations on their paper next to their drawing.

Next, flip the leaf over and have yourself or a student focus the microscope until they have obtained a new clear image. Freeze the image on the tablet. Have students or the instructor hold up the tablet.

Ask them to write bottom on one side of their paper that is still blank. Then draw what they are seeing. You can have them map the whole bottom of the leaf or a section. Have them write out their observations about the bottom side of the leaf next to the image they drew.

Lastly, break them into small groups of 3-6 students and as a group compare and contrast the tops of their leaf drawings to the drawings of the bottom.

REFLECT AND APPLY

Questions to ask include:

1. What do you/did you notice or wonder about during the activity?
2. How could you use this tool in your life?
3. What questions could you answer by using this tool?
4. Can you think of any scientific studies that you could conduct by using the digital microscope?
5. What jobs would benefit from having this tool?