Activity: "Kaluapuhi Biodiversity Survey"

Key Concepts: Trail guides are useful tools because they allow people to identify plants along the trail.
Transects and quadrants are useful techniques for collecting data.
Accuracy and precision are important when recording and reporting your observations.
Random sampling is, more often than not, *essential* when collecting data

Lesson Objectives: Students will be able to:

- Understand the purpose of a trail guide
- Understand the purpose of their respective tasks
- Perform their "expert" tasks without the help of others
- Teach their group members about the significance of their respective tasks

Time Required: ½ day Fieldtrip

Materials Needed: Each group: GPS unit
Compass
3 Clipboards with pencil & paper (one for photographers, one for data collectors, one for quadrant experts)
Quadrant (square meter of PVC pipe)
Transect (30m rope, 1m incremental markings)
Digital Camera
Sample trail guides or plant ID books
Plastic bags for collecting leaf samples

Standards Addressed: Domain I: 1. Doing Scientific Inquiry
2. Living the Values, Attitudes, and Commitments of the Inquiring Mind
3. Doing Safety

Introduction: Begin by reminding the students that last week they became experts in one of five different techniques. Now, there will be four groups of five students. Each group will have one student representative from each expert group.

The purpose of having the students create a trail guide is so that the students can create a product that:

- Communicates student ability to collect and present data in a written format
- Is useful for other users of the trail in plant identification
- Helps to teach student creators how to conduct a biodiversity survey

And show future users of the guide to an example of a particular trail's trend in biodiversity Divide students into 4 groups, making sure that each group has at least 1 expert from each expert group.

GPS EXPERT: Take GPS readings of the beginning and the end of your group's transect.
Take GPS readings of all of the quadrants from which data will be recorded

TRANSECT EXPERT: RANDOMLY determine where the quadrants shall be placed on the transect.
Make sure to line up your transect with the one before it (The beginning of your rope should be at the very end of the other rope).
Determine direction of transect (with a compass)
Do a general survey of the whole transect (canopy cover, dominant plant species, soil moisture, any animals, and whatever else you think is important. Make sure to ask your data collector to record your findings.

QUADRAT EXPERT: Collect all of the information required in your data table.
Give all of the information to the layout expert/data collectors
Collect leaf samples if possible (**REMEMBER: do not take more than you need**)

LAYOUT EXPERT: For this fieldtrip you will be the official data recorder. You must take all of the important data that your group gives you and record it. Remember to include all of the information that you wanted when you created the layout. Your group members may not provide all of the information that you wanted, BUT they may provide more than you think you need. Please record ALL of it.

PHOTORAPHY EXPERT: Take photos of all of the plants (include close-ups of leaves, fruits and flowers when possible) that your group has chosen from the transect.
Keep an accurate photo log of your pictures on the paper on your clipboard

ALL GROUP MEMBERS: You are responsible for making sure that the data collector has recorded all of your necessary information. Do not rely on the data collector to do all of the work. Please assist your other group members whenever possible. Always act responsibly and safely!!!! Good luck!

Quadrant Survey Data Table

Remember the data table we practiced at school? We included information from our **observations** like % plant cover, # species, canopy cover (sunny or shady), soil moisture, amount of leaf litter (dead leaves on the ground) animals…..and anything else that you find in the quadrant that you think is important. Please write all of your observations for each quadrant in the correct column.

Observations	Quadrant 1	Quadrant 2	Quadrant 3

Plant Photo Log

Remember the techniques that you learned about photography on campus? Make sure to keep a good log of your pictures. If you do, we will be able to know exactly **which plant** you were photographing, **what plant part** (fruit, flower, leaf, whole plant, etc.), and **what quadrant** the plant was located in. Include any else that will help us describe and identify the plant (ex. flower color, leaf size, fruit sizes. Please limit your photographs to the plants, and be very careful with the camera.

Photo number AND Quadrant (1, 2, OR 3)	**Description of Photograph**

Photo number AND Quadrant (1, 2, OR 3)	Description of Photograph

Data Collector Information Sheet

Remember the layout design that you created in school? You decided on information that you wanted to include in your field guide. Make sure that you record all of the information that you can get to help with your field guide. Also, you are the official data collector. All of your group members are responsible for giving you their data. You are responsible for writing down **GPS readings**, **compass directions**, **locations of quadrants** on the transect, and **anything else** that your group thinks will be useful to know. Please collect the data sheet from the quadrant person and the photolog from the photographer. They need to fill it out (not you), **BUT** all of you should be helping each other!

GPS Coordinates:

Compass direction of the transect:

Where (in between what meter markings) are the quadrants on the transect?

Quadrant 1:

Quadrant 2:

Quadrant 3:

What plant species are you focusing on (if you know)?

Other information: