ECOS
Ecologists Educators and Schools: Partners in GK-12 Education

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2. NAME OF INQUIRY: ECOLOGISTS MAKE CAREFUL OBSERVATIONS! A COLOR- WISE SCAVENGER HUNT.

3. GOALS AND OBJECTIVES:

a. Inquiry Questions: How many natural objects can students find in a given series of colors? How closely can the students match the objects to the colors? What is the most interesting object that the students can find? What is the most surprising color that the students can find in a natural object?

b. Ecological Theme(s): The first and most important step in any ecological inquiry is making very careful observations. You can find an amazing diversity of natural objects, often in surprising colors, almost anywhere outdoors; you just have to look! Bits of eggshell, a feather, the exoskeleton of a beetle, tiny pebbles, seedpods, and flower petals are just a few objects you might find in a rainbow of colors. The skill of observation is fundamental for any ecologist, young or old!

c. General Goal: To provide students with a directed opportunity to develop and practice the fundamental skill of observation.

d. Specific Objectives:

- Students are given a set of color cards (aka "paint chips") that are available for free at any paint store or in the home painting section of a hardware store or shopping center.
- Students participate in a loosely structured "scavenger hunt" for small natural objects that match the colors they are given.
- In groups, students search for and collect natural objects in their schoolyard (eg. leaves, pebbles, feathers, seeds, petals, etc.). Students have to search very carefully to match the colors as closely as possible.
- Student groups create posters from the objects they have collected, present their posters to the rest of the class, and participate in a reflective discussion. (Potential discussion questions are suggested below).
- Hopefully, students will be surprised and excited about the diversity of surprising natural objects in their own schoolyard! This inquiry will serve as an introduction to the skill of making careful observations.

e. Grade Level: K-6 (activity may be scaled up or down) f. Duration/Time Required:

→ Prep time: 1 hour (getting paint chips at the store and cutting them up, etc.)

→ Implementing Exercise During Class: 20-40+ minutes (very flexible!)

→ Assessment: 20 minutes for presentations and reflective discussion

4. ECOLOGICAL AND SCIENCE CONTEXT:

a. Background (for Teachers): The most important skill for any ecologist to have is the ability to make careful observations. By looking very closely at the natural world, and studying even the smallest details, one can begin to ask

scientific questions and formulate good hypotheses. There is amazing diversity of beautiful and interesting natural objects to be discovered almost anywhere outdoors, you just have to look! Also, if you are using your skills of observation, you will begin to find a surprising array of vivid colors. For example, you might find the iridescent blue wing of a fly, or a pebble speckled with bright orange. You might find a bright white snail shell or a deep purple flower. No matter how unlikely the color, you will probably find it if you look close enough!

b. Background (to present to Students): The same thing, scaled up or down to the appropriate grade level.

5. MOTIVATION AND INCENTIVE FOR LEARNING: Students get to participate in a fun scavenger hunt, with a set of colorful cards to help inspire and guide their exploration of the outdoors. It is very likely that students will find bits and pieces of all sorts of surprising natural objects, and will be excited to further explore their schoolyard.

6. VOCABULARY:
making an observation: watching or looking at something very carefully!

7. SAFETY INFORMATION: STUDENTS SHOULD BE ADVISED TO COLLECT OBJECTS SPARINGLY, IE. TO TAKE A SINGLE PETAL RATHER THAN AN ENTIRE FLOWER, IF POSSIBLE. STUDENTS SHOULD BE INFORMED IF THERE ARE ANY PLANTS OR FLOWERS IN THE SCHOOLYARD THAT SHOULD NOT BE PICKED.

8. MATERIALS LIST (including any handouts or transparency masters):
- COLOR CARDS/PAINT CHIPS FROM PAINT STORE OR HARDWARE STORE
- POSTERBOARD SHEETS FOR POSTERS
- ZIPLOC BAGS FOR STUDENTS TO COLLECT OBJECTS
- GLUE STICKS/PASTE FOR STUDENTS TO MOUNT OBJECTS ON POSTERS

9. METHODS/PROCEDURE FOR STUDENTS:

a. Pre-investigation work: Get a wide selection of free paint chip colors from a store. Make sure to get a mixture of bright colors and muted colors, in everything from magenta to turquoise to chartreuse. The vivid, more "unlikely" colors are what make this inquiry fun and challenging for the students! (Of course, don't forget a lot of the "normal" shades of green and gold, too.) Paint chips often come in a series of 3-4 colors on one card, so cut them up into individual colors. There are many potential ways to give them to the students. The way we used, which seems to work best for carrying them around outside, is to glue 5-10 colors, spaced down the side of a piece of posterboard. Give one posterboard to each group. Then they can lay it on the ground near where they are searching, and refer back to it. Alternately, student groups could be given (or pull randomly from a hat) a small stack of the paint chips, but then it is harder for them to refer back to the colors as they are collecting objects.

b. Investigation work:

1) What evidence (data, samples) do students collect? In bags, students collect small natural objects that closely match the colors given to their group.

2) How do students present the evidence (data)? Student groups glue/paste the objects to their tagboards next to the corresponding paint chip colors. They then present the posters to the rest of the class.

3) What conclusions are drawn from the evidence students collect? You can find an amazing diversity of natural objects, often in surprising colors, almost anywhere outdoors; you just have to look! Making careful observations is the most important skill for an ecologist to practice.

4) Include examples of data sheets. N/A

10. ASSESSMENT/DISCUSSION QUESTIONS: Students present their posters to the rest of the class, prompted by a few questions. Here are some suggestions: What is the most interesting object that your group found? What is so interesting or unusual about it? What is the most surprising color that you found outside? Did you expect to find something in every color? What was the easiest color to find? What was the hardest color to find? (And of course, as students describe the objects on their poster, be sure to emphasize: "That's a great OBSERVATION!" repeatedly.)

11. EXTENSION IDEAS: This is a great lead-in to giving students nature journals to begin recording descriptions. it's a good 2-part introduction to being an ecologist. 1. ecologists make careful observations, and 2. ecologists make detailed descriptions! (writing and drawing).

12. SCALABILITY: THIS INQUIRY IS EASILY SCALED UP OR DOWN TO THE APPROPRIATE GRADE LEVEL. WE FOUND THAT 4TH GRADERS ENJOYED MENTORING KINDERGARTENERS IN OUTDOOR INQUIRIES. KINDERGARTENERS MAY JUST EXPLORE AND SEARCH FOR NEAT OBJECTS. ALTERNATELY, THE INQUIRY COULD BE SCALED UP BY GIVING STUDENTS MULTIPLE SHADES OF THE SAME COLOR, TO MAKE IT MORE DIFFICULT. OLDER STUDENTS COULD BE TIMED, OR IT COULD BE MADE INTO A COMPETITION.

13. REFERENCES: N/A

14. LIST OF EXPERTS AND CONSULTANTS: ANYONE CAN BE AN EXPERT AT THIS! IT'S EASY AND FUN.

15. EVALUATION/REFLECTION BY FELLOWS AND TEACHERS OF HOW IT WENT: This was the first inquiry we did at the very beginning of the schoolyear for a 4th-grade class. the students were amazed and excited by the huge variety of natural objects they found in their own schoolyard. they found a very impressive collection of beautiful things, such as bits of eggshell and wasps' nest, brilliantly striped feathers, sparkly pebbles, vivid bits of lichen, tiny flowers, etc.! they were surprised to find vivid colors that they did not expect. IT was a very effective means of getting them excited about ECOS and their schoolyard. They received their nature journals following this activity and were excited to begin writing in them.

Ecologists Make Careful Observations!