



Connecting FOSS to Northern Arizona

References:

Leslie, C. W. (1995). The art of field sketching.

Dubuque, IA:

Kendall/Hunt

Publishing Company.

Pp. 15-20

Call Number:

NAEERC: NAT 014

ISBN: 0-7872-0579-6

Leslie, C. W. (1995).

Nature Drawing.

Dubuque, IA:

Kendall/Hunt

Publishing Company.

FUSD: 1= FHS, SHS

Call Number:

FUSD: 743 LES

ISBN: 0-7872-0580-X

Materials Needed:

Pencils

Paper

Rulers

Stopwatch or watch

Hard surfaces to draw on

"New Plants" Overview Page 1:

Extension 1: "Field Sketching"

TEACHER PREPARATION: Introduce field sketching as part of both science and art. Many students even at grade 2 will be apprehensive about drawing, and claim that they "can't." This is just not true. The importance of field sketching is in conveying information, and allowing the sketcher an in-depth understanding of the object sketched. Sketching can improve observation, patience, and hand-eye coordination, as well as increase knowledge of how things are put together, how they function, and where they live. The following activities are used by all professional field sketchers to warm-up, understand the basic sense of a subject, or work out the movement or flow of a drawing.

PLACE-BASED ACTIVITIES:

• **Art/Science:** Observing and drawing plant species: 5 different ways to see and draw

Always allow students to choose what they draw: drawing what doesn't interest them will result in a negative experience with sketching. Make students spend at least 2 minutes just observing their subject before they may begin drawing, have them turn it around, feel it, decide where it is growing and why, and get a good feeling for it.

1. Drawing by memory: Observe the object, then try and draw it from memory. This is a skill that all sketchers would like to perfect because they could then be formulating drawings in their heads all the time. Have students try a few of these before they look at their subjects again.

2. Contour drawings: This time, have students look only at their subject, and NOT at the paper. Have students place their pencils on the paper and NOT lift them up until they feel they are finished. Draw all the ins and outs, not just the outline. These drawings may be really funny looking, but for new students of sketching, these drawings will often show some of the best observing and line use. Also a good tool for sketching fast-moving animals.



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"New Plants" Overview Page 1:

Extension 1 cont'd:

3. Quick gesture sketch: This is a quick sketch drawn by looking at both the subject and your paper simultaneously. No erasing allowed!! This type of sketching was common for artists like Michelangelo, Picasso and Van Gogh. Gesture sketches should loosen up hands and fingers. Keep these sketches under 10 seconds.

4. Diagrammatic sketches: Basically a line drawing like those seen in field guides. Have students write details next to the drawing, like "hairy stem," "pinkish petals," "found near a stream in Flagstaff, AZ" and the date. Spend about 5 minutes on this drawing.

5. Study drawing: A complete drawing. Spend about 15 minutes to 45 minutes. Include shading.



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References:

Old Caves Crater Botany
Cards and Information
RCEE 520-779-1745

Epple, Anne Orth. (1997).
Plants of Arizona.
Helena, MT: Falcon
Press. FUSD: 5=
Marsh, 1= Cromer.
Call Number:
FUSD: A 581.9791 EPP

"New Plants" Overview Page 1:

Extension 2: "Native Plant of the Week"

Use the book now located in this kit!

TEACHER PREPARATION: Prepare a few weeks worth of interesting native plants to discuss each week. Examples are: ponderosa pine, silvery lupine, maiden hair fern, prickly pear cactus, cliff rose, blue gramma grass, paintbrush, sego lily, Arizona wild rose, and Gambel oak. Students might bring up other species. Discuss the difference between native and introduced: Native plants evolved here, Introduced plants were brought here by settlers from Europe. Most likely, flowers found in parks, yards and school grounds are introduced. Some introduced flowers escape from people's yards and become dangerous weeds in the wild. Introduced species can out-compete native species for water, nutrients or space. Some common introduced species in northern Arizona are "Butter and eggs," "Russian thistle," "Dandelions," "Daisies," and "Common lawn grass" (Kentucky blue-grass). Most people do not understand how dangerous these species can be. Once established, many of these species are very difficult to remove, and they can disrupt the natural systems they invade.



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References:

Leake, D. V., Leake, J. B.,
& Roeder, M. L.
(1993). Desert and
mountain plants of the
southwest. Norman,
OK: University of
Oklahoma Press. P. 52
Call Number:
NAEERC: PL 004
ISBN: 0-8061-2489-X

Kite, P. L. (1995).
Gardening wizardry for
kids. Hauppauge, NY:
Barron's Educational
Series, Inc. pp. 170-171
Call Number:
NAEERC: PL 018
ISBN: 0-8120-1317-4

"New Plants" Activity 1 page 2:

Supplement 1: "Mustard History"

Mustard seeds were used by Europeans as charms in necklaces, as flavoring and as a medicine. Roman armies brought mustard seeds to England, way back before refrigerators were invented. Back then, mustard seeds were preserved in honey and vinegar, then dried in the sun to keep them from rotting. In 1720, an English woman invented mustard as we know it by grinding up mustard seeds to produce a powder, then adding water to make a paste. Try this yourself, and you will notice that the true mustard smell doesn't begin for about 15 minutes!

Some groups of Native Americans used mustard seeds to cure nervousness. The spiciness of the seeds were thought to help cure colds and congestion. Ask your grandmother if she ever had a mustard plaster!

PLACE-BASED ACTIVITIES:

•**Science:** Go out into the field and look for native mustard plants. Using the skills you gain in understanding this type of Brassica, see if you can figure out which plants are in the mustard family.



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References:

Diehn, G., & Krautwurst, T. (1992). Nature crafts for kids: New York, NY: Sterling Publishing Co., Inc. Pp. 40-43, 86.

Call Number:

NAEERC: NAT 011

ISBN: 0-8069-8372-8

Materials Needed:

Paraffin
Old paint brushes
Small, fat white candles
Pressed flowers/leaves
An old tin can
(remove label)
A pot of boiling water
Newspaper to cover tables

Materials Needed:

Pressed flowers/leaves
Construction paper
Rulers
Pencils
Small paintbrushes (opt.)
Glue (optional)
Crayons, paint, colored pencils or markers
Clear Contact® Paper

"New Plants" Activity 1 page 4:

Extension 3: "Pressed Flower Art"

TEACHER PREPARATION:

This project is two-fold: First, students need to find and press flowers and leaves. The best times to find flowers in northern Arizona are August, September, and then again in April and May. This would be a good beginning or end of the year activity. Have students collect wildflowers from the forest, meadows, and yards (probably not native flowers here). These flowers need to be pressed under big books, between two sheets of paper towels. They should stay there for a few weeks. After flowers and leaves have been pressed, many art projects can be made from them.

Could also use leaves during fall!

PLACE-BASED ACTIVITIES:

●**Science:** Have students try and identify the flowers and leaves either before or after they have been pressed. Use a field guide like "Plants of Arizona" (see Book List). Or have students make up names for the different plants depending on their appearance, or where they were found.

●**Art:** Make **wildflower candles**:

Students will design their own candles using pressed flowers and leaves. The plant parts are laid across the sides of the candles and glued into place with paraffin-dipped paintbrushes. Tell students to use only a little paraffin, and if the paintbrushes get hard, dip them in wax again.

●**Art:** Make **wildflower cards**, bookmarks and gift tags:

Have students design note cards, bookmarks or gift tags using paper, pressed plants, crayons, paint, pencils or markers. Plant pieces may be glued down using a small paintbrush and a very small amount of glue. Using a ruler and pencil, draw out the outline of the project. Cut out a piece of Contact® paper slightly larger than the intended project. Place the contact paper over the project and then cut around the project.



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Materials Needed:

Pressed flowers/leaves
Wax paper
Iron
Newspapers to cover tables

Materials Needed:

Pressed wildflowers and
leaves
A wooden 8 x 10 picture
frame (w/o glass)
A rolling pin
Metal shears to cut the
screen
A large square bucket or
dishpan
Clean fabric rags 15 x 15
inches square
A blender
A piece of screen 12 x 14
A staple gun
Paper scraps
Water

"New Plants" Activity 1 page 4:
Extension 3 Cont'd:

•Art: Make **wildflower stained "glass"**:

Cut out two pieces of waxed paper that are a little larger than the final project will be. Lay one of the pieces of waxed paper on a large piece of newspaper. Lay out the design of pressed plant pieces that is desired. Place the other piece of waxed paper over the first one. Lay another piece of newspaper over the waxed paper sandwich and iron on low. Lift up the newspaper occasionally to make sure you are sealing the waxed paper together. Hang your stained glass pieces in the window with cellophane tape.

•Art: Make **Homemade recycled paper with wildflowers**:

Blend paper and water. Pour into dishpan. Staple screen over picture frame. Dip frame into paper pulp and pull out flat with pulp covering evenly. Drain water, then press flower parts into pulp, bury them just a little. Place a rag over the screen and push down gently. Carefully turn the rag and screen over and remove the screen. Use the other rag to press more water out. Roll with the rolling pin. Remove top rag. Carefully turn over onto newspaper. Remove second rag and let dry all night. For smooth paper, spray dry paper with spray laundry starch, cover with a clean rag and iron with a warm iron until the starch dries. This will make nicer writing paper, but will remove the nice consistency of homemade paper.



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References:

Bethmann, L. D. (1996). Nature printing with herbs, fruits and flowers. Pownal, VT: Storey Publishing. Call Number: NAEERC: NAT 013 ISBN: 0-88266-929-X

Materials Needed:

Fresh, young leaves
Fabric (squares for flags or t-shirts, white fabric is best)
A flat-nosed hammer
Wax paper
Iron
Water
Clear plastic tape
Newspapers
Salt
Wooden boards for pounding on

"New Plants" Activity 1 page 4:

Extension 4: "Printing with Nature"

TEACHER PREPARATION: Plants can be used in many different ways for printing. Nature prints are very beautiful. Some methods use watercolor paints painted on the back of plant parts, others use nothing but plants. This is a great way to begin to talk about the pigments found in plants to help them capture the sun's energy. Chlorophyll is a green pigment that allows plants to absorb every color of light except for green (which is reflected back from the plant, and why it looks green!), and other pigments that pick up other colors and make the plants appear red, brown, orange and other colors. These pigments are very important for the process of photosynthesis. The pigments in plants are released when they are smashed. Students can see this by taking leaves and smearing them across paper...they will leave green stains (grass stains). You can also smash pigments onto fabric to make beautiful designs.

PLACE-BASED ACTIVITIES:

•**Art/Science:** Make plant pigment flags or t-shirts: Lay out a wooden board, place newspaper, then wax paper over it. Lay out your fabric (if you use a t-shirt, be sure to place a piece of wax paper between the front and back to keep the pigments from bleeding). Lay out your leaves on the fabric and tape them in place with clear tape. Place another piece of wax paper over the top. Hammer all of the leaves for several minutes. Replace the wax paper cover if you need to. Some leaves will work better than others. To set the pigments on the fabric when you are finished, soak the pieces in a solution of ½ cup salt in 2 gallons of lukewarm water. Rinse and dry in dryer or on a line. Iron if necessary.



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References:

Carlson, Laurie. (1995).
Green Thumbs.
Chicago, IL: Chicago
Review Press. Call
Number:

NAEERC: PL 027

ISBN: 1-55652-238-X

Materials Needed:

Recycled paper (copier,
newspaper, etc)

Tape

Scissors

Potting soil and seeds

Marker to label plants

"New Plants" Activity 1 Page 9:

Supplement 2: "Recycled Potting Ideas"

TEACHER PREPARATION:

Pots for starting seeds can be made from many different materials, paper cups, muffin tins, egg cartons or recycled paper. If the pots you plan to use will not be reusable when your class is finished, think about substituting for non-consumable cups.

Seed packets almost always give directions for the depth of planting most suitable for each type of seed. Using this information, determine which type of pot would be most useful. If the seed needs to be planted at a depth greater than an egg carton, try a muffin tin or paper cup. If none of these options works, use recycled paper to make planters.

Pots can be made to be any size using recycled paper, but very large paper pots may not be very strong. Take a piece of paper (6" x 11" works well), fold down one long side by about ½ inch. Roll the piece of paper together and tape it. With the fold on top, press the paper tube flat (like stepping on a tin can to flatten it). Make one cut about 2 inches up from the bottom on both the front and the back. Open the tube again, and this time press flat so the taped side is on one side, then make two 2 inch cuts again. Fold the flaps in to make a box and tape the bottom shut.



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Materials Needed:

Old, large socks: ask students to bring in some old holey socks that are now rags
Magnifying lenses, hand lenses or a microscope or two (really cool!)

"New Plants" Activity 2 Page 4:

Extension 5: "Hitchhiking Seeds"

Motivational activity for the RCEE program, "Seeds."

TEACHER PREPARATION: Seeds are dispersed in many different ways: by birds, animals, humans, wind, water, insects, or just by falling. This is a great way to study grass seeds and seeds that are dispersed by animals. As an animal walks through a grassland, they brush up against many plants waiting to have their seeds "hitchhike." The seeds come off easily, and have some kind of attaching mechanism (commonly called burrs!). Find a good place nearby to take a short walk and pick up some hitchhiking seeds! Grassy lots, meadows and non-lawn fields are great.

PLACE-BASED ACTIVITIES:

●**Science:** Picking up hitchhikers!

Have each student pull an old sock over their pants and shoes (just one will be enough). Have them walk through the grassy area brushing their socked leg past different kinds of plants. Pull the socks off and place them in plastic or paper bags for future analysis. Take the seeds back to class to observe.

●**Art:** What do the seeds look like up close? Have students draw pictures, label what they think each part might be for. What kind of animal do you think this would stick to? Why? Maybe draw a new seed, one that is designed by each student. Have them explain why their new seed is better, or different than the seeds they looked at.

●**Writing:** Write about the coolest seeds they found. What makes these seeds so special? What kind of plant do they produce? How does their dispersal mechanism work? Write a story about the seed they created. What animals are going to help disperse it and how?



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References:

Mayes, V. O., & Lacy, B. B. (1989). Nanise' a Navajo herbal: One hundred plants from the Navajo Reservation. Tsaile, AZ: Navajo Community College Press.

FUSD: 1= DeMiguel.
Call Number:
NAEERC: AZ 039 /
FUSD: PROF
ISBN: 0-912586-62-1

Materials Needed:

Onionskins from yellow
or red onions (ask your
grocer for extra skins
from the bag of onions)
A soup pot
White eggs
Leaves or flowers
Old pantyhose or nylons
Twist ties

"New Plants" Activity 4 Page 4:

Extension 6: "Onion Dyeing"

TEACHER PREPARATION: This activity ties in well with your exploration of roots and bulbs. Onions are bulbs belonging to the lily family. Other species of lilies are used as food sources. The sego lily *Calochortus nutallii* is used as a source of food by the Navajo people. Their name for this plant means "children's food"

PLACE-BASED ACTIVITIES:

●**Art:** Make onion-dyed hardboiled eggs:

Hardboil the eggs beforehand. Also prepare the dye beforehand: Fill soup pot with onionskins, and add about 3 inches of water. Bring the water to a boil, reduce heat and simmer for about 5 minutes. Let sit overnight. To prepare eggs, cut old pantyhose about 6 inches square and keep leaves or flowers close to egg with the pieces of hose, twist tie together. Place eggs in dye and separate them from each other with onionskins. Bring eggs and dye almost to a boil and quickly reduce heat and simmer for about 30 minutes. Remove from heat and let them cool. Save dye for future use. Store in the refrigerator until you don't want it, then throw it into a garden to act as mulch.