Ideas with IMPACT

Idea Packet
Sponsored by:

ECO Inks: Botanical Colors
ECO Inks: Botanical Colors
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#1371

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GOALS

- To raise awareness of global issues
- To think like an artist/scientist
- To experiment as citizen scientist
- To examine the impact of color practices on the environment
- To use natural sustainable materials
- To assess art making skills
- To explore ideas for drawing
OBJECTIVES

- Participants will examine sustainable color practices
- Participants will identify a variety of color producing plants and minerals
- Participants will experiment with ink making processes
- Participants will create a botanical color chart
- Participants will develop formulas to make color inks
- Participants will make mark making tools
- Participants will explore mark making techniques
- Participants will produce a limited edition of drawings
FLORIDA STATE STANDARDS

Science Standards:
Nature of Science
SC. 5. N.11/ SC.68. N.11/ SC.912. N.11
The Practice of Science
Define problems, use appropriate reference materials to support scientific understanding.

Technology
Color production and sustainable practices.

Engineering
Phases of production include formulating, mixing, filtration, and testing.

Visual Arts Standards:
Skills, Techniques, and Processes
VA.5. S.1 / VA.68. S.1 / VA.912. S.1
The arts are inherently experiential and actively engage learners in the processes of creating, interpreting, and responding to art.
Organizational Structure
VA.5. O.1 / VA.68. O.1 / VA.912. O.1
Understanding the organizational structure of an art form provides a foundation for appreciation of artistic works and respect for the creative process.
Historical and Global Connections
Connections among the arts and other disciplines strengthen learning and the ability to transfer knowledge and skills to and from other fields.
Innovation, Technology, and the Future
VA.5. F.1.1/ VA.68. F.1.1/ VA.912. F.1.1
Use divergent thinking, abstract reasoning, and various processes to demonstrate imaginative or innovative solutions for art problems.

Math
Cluster 2: Represent and interpret data.
COURSE OUTLINE

I. ECO Inks: Botanical Colors
   A. Forage for Natural Materials
   B. Practice Dye/Pigment Extraction Processes

II. Botanical Color Chart
    A. Identify Plants and Natural Materials
    B. Categorize Color

III. ECO Ink Formulas
    A. Prepare Color Ink
    B. Make Color Test Strips

IV. Tool Making
    A. Gather Natural Materials
    B. Construct Tools/Brushes

IV. Mark Making Techniques
    A. Create a Grid
    B. Practice Mark Making

VI. Limited Edition Drawing
    A. Draw Enso Circular Form
    B. Explore Abstract Style
OVERVIEW

Calling all Artists Scientists!
In this workshop you will think like a scientist and practice like an artist as you discover nature’s palette, create botanical inks, and examine color processes that are natural, sustainable, and renewable.

You will increase your observational skills as you forage through the urban environment around the school or even in your own backyard to find colorful plants, flowers, leaves, seeds, berries, lichen, or moss. You can even make botanical inks from fruits, vegetables, or spices from your own kitchen.

ECO Inks: Botanical Colors has two distinct features: the color process of extracting pigment and the product, botanical ink. You will use scientific inquiry and artistic practice to identify a variety of color producing plants and minerals, make a plant-based color charts, document formulas for color palettes, explore marks making tools and techniques, and produce a limited edition of drawings.
Annatto Seeds yield Red-Orange Ink

INQUIRY QUESTIONS

1. What do artists/scientists make?
2. Why is observation essential?
3. How does science and art connect?
4. Why is it important to think like an artist?
5. How would you define sustainability?
6. Why are ECO friendly products critical to the environment?
7. If you could create a new color, what color would it be?
8. What are ways this project explores citizen science ideas?
Black Berries become Violet Ink

VISUAL ART RUBRIC

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<th>Category</th>
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<th>3 good</th>
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<td>Elements of Art</td>
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<tr>
<td>Creativity</td>
<td>How is it innovative or new?</td>
<td>Unique</td>
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<td>Innovative</td>
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<td>Craftsmanship</td>
<td>How is it made?</td>
<td>Presentation</td>
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EDUCATIONAL RESOURCES

**bookstores**
- books and books: booksandbooks.com
- amazon: amazon.com

**visuals**
- davis publications: davis.org
- scholastic arts: scholastic arts.org

**supplies**
- the toronto ink company: jasonslogan.com/the-toronto-ink-company
- jerry’s art-a-rama: jerrysartarama.com
- blick art materials: blick.com
- jo-ann fabric and craft stores: joann.com

**materials**
- ocean bank warehouse: educationfund.org

**museums**
- museum of contemporary art: mocanomi.org
- frost art museum: frost.fiu.edu
- the met: met.org
- museum of modern art: moma.org
- oolite arts: oolite.org

**fieldtrips**
- fairchild tropical botanic garden: fairchildgarden.org
- miami beach botanic gardens: mbgarden.org

**organizations**
- national art education association: naea.org
- florida art education association: faea.org
- dade art educators association: daea.org

**videos**
- Art21: art21.org
- metkids: metkids.org
- tatekids: tatekids.org
- ted ed visual art videos: teded.org
## SELF ASSESSMENT

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<table>
<thead>
<tr>
<th>Question</th>
<th>Answer</th>
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<tbody>
<tr>
<td>1. Describe three things you enjoyed about this learning activity?</td>
<td></td>
</tr>
<tr>
<td>2. Explain what part of this activity you would like to learn to do better?</td>
<td></td>
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<tr>
<td>3. Discuss what part of this learning activity was the most difficult?</td>
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<td>4. Identify three innovative ideas, skills, or information you learned?</td>
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<tr>
<td>5. State what you would do differently if you could do this project again? Why?</td>
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</table>
GLOSSARY OF TERMS

- **Assessment** • to evaluate an outcome
- **Binder** • allows pigments to attach to the surface of the paper
- **Botanical** • made from parts of a plant
- **Botany** • the scientific study of plants
- **Citizen Scientist** • conduct experiments, collect data, results, and solve problems
- **Color** • the hue, value, and intensity
- **Color Chart** • an organized arrangement of pigments and plants
- **Drawing** • creating a picture using lines and other marks
- **Dye** • a natural substance used to add or change color
- **Eco** • not harming the environment
- **Extract** • a substance in a concentrated form
- **Formulas** • procedures written in a mathematical equation
- **Funnel** • a narrow tube with a wide top used to guide liquid into a small opening
- **Gum Arabic** • plant-based gum from the acacia tree used to thicken ink
- **H**
- **Ink Making** • Plant Material/Color + Water/Alcohol + Heat/Pressure + Preservative + Binder/Gum = Natural Ink
- **J**
- **K**
- **Limited Edition** • small number of copies of a print or drawing
- **Mark Making** • various kinds of lines, patterns, and textures used to make art
- **Mordant** • forms a bond between the paper and dye/pigment/ink
- **Mortar** • a sturdy bowl made of stone, ceramic, or wood
- **Natural Materials** • plants, animals, stones, minerals, or metals
- **O**
- **Pestle** • a rounded grinding tool
- **Pigment** • a substance that gives color to something
- **Plant Based** • fruits, vegetables, grains, beans, nuts, seeds, herbs, or spices
- **Q**
- **Recycle** • transform into a reusable material
- **Reuse** • use more than once
- **Reduce** • less in amount
- **Stainless Steel** • metal that does not stain or rust
- **Sustainability** • to maintain a balance
- **Techniques** • the way to perform a task
- **Tool** • an instrument or device used by the hand
- **U**
- **Value** • the lights and darks of a color
- **W**
- **X**
- **Y**
- **Z**
## MATERIALS LIST

<table>
<thead>
<tr>
<th>NATURAL MATERIALS</th>
<th>SUPPLIES</th>
<th>TOOLS</th>
<th>EQUIPMENT</th>
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<tr>
<td>Fruits</td>
<td>Rubber</td>
<td>Mortar and Pestle</td>
<td>Portable Burners</td>
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<tr>
<td>Vegetables</td>
<td>Gloves</td>
<td>Paint Brushes</td>
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<tr>
<td>Flowers</td>
<td>Coffee Filters</td>
<td>2-3 Stainless-Steel Pots with lids</td>
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<tr>
<td>Beans</td>
<td>Paper Strips</td>
<td>Glass Jars with lids</td>
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<tr>
<td>Leaves</td>
<td>Sticks</td>
<td>Measuring Cups</td>
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<tr>
<td>Berries</td>
<td>Watercolor</td>
<td>Fine Wire-Mesh Strainers</td>
<td></td>
</tr>
<tr>
<td>Seeds</td>
<td>Paper</td>
<td>Funnels</td>
<td></td>
</tr>
<tr>
<td>Herbs</td>
<td>Newsprint</td>
<td>Teaspoons</td>
<td></td>
</tr>
<tr>
<td>Roots</td>
<td>Apron</td>
<td>Kitchen Scissors</td>
<td></td>
</tr>
<tr>
<td>Spices</td>
<td>Cotton Twine</td>
<td>Wooden Spoons</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>Cloth</td>
<td>Tongs</td>
<td></td>
</tr>
<tr>
<td>Salt</td>
<td>Rubber Bands</td>
<td>Fork or Masher</td>
<td></td>
</tr>
<tr>
<td>White Vinegar</td>
<td>Paper Towels</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gum Arabic</td>
<td>Rags</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whole Clove</td>
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<td></td>
<td></td>
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Plant Based materials fruits, vegetables, leaves, flowers, beans, seeds, herbs, or spices

**BOTANICAL COLOR CHART**

<table>
<thead>
<tr>
<th>DYE COLOR</th>
<th>NATURAL PLANTS</th>
<th>DYE COLOR</th>
<th>NATURAL PLANTS</th>
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<tbody>
<tr>
<td>Red Orange</td>
<td>Annatto Seeds</td>
<td>Deep Green</td>
<td>Parsley</td>
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<tr>
<td>Red</td>
<td>Strawberries</td>
<td>Medium Green</td>
<td>Grass</td>
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<td>Dark Red</td>
<td>Cherries</td>
<td>Light Green</td>
<td>Laurel Leaves</td>
</tr>
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<td>Pink</td>
<td>Red Onion Skins</td>
<td>Dark Green</td>
<td>Spinach Leaves</td>
</tr>
<tr>
<td>Light Pink</td>
<td>Avocado Stones</td>
<td>Blue Violet</td>
<td>Red Cabbage</td>
</tr>
<tr>
<td>Red Violet</td>
<td>Beets</td>
<td>Violet</td>
<td>Blackberries</td>
</tr>
<tr>
<td>Bright Orange</td>
<td>Carrots</td>
<td>Medium Violet</td>
<td>Black Beans</td>
</tr>
<tr>
<td>Orange</td>
<td>Eucalyptus Leaves</td>
<td>Light Violet</td>
<td>Grapes</td>
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<td>Peachy Yellow</td>
<td>Pomegranate</td>
<td>Light Brown</td>
<td>Mushrooms</td>
</tr>
<tr>
<td>Yellow Orange</td>
<td>Saffron Flowers</td>
<td>Medium Brown</td>
<td>Bark</td>
</tr>
<tr>
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<td>Chamomile</td>
<td>Dark Brown</td>
<td>Coffee</td>
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<td>Dark Yellow</td>
<td>Turmeric</td>
<td>Brown</td>
<td>Cinnamon</td>
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<td>Light Yellow</td>
<td>Lemon Peels</td>
<td>Grey</td>
<td>Black Tea</td>
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<td>Green</td>
<td>Green Tea</td>
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<td>Charcoal</td>
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ECO INK FORMULAS

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<tr>
<td>Red Orange</td>
<td>Annatto Seeds + Water + HEAT + Salt + Vinegar + Gum Arabic</td>
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<td>Light Pink</td>
<td>Avocado Stones + Water + HEAT + Salt + Vinegar + Gum Arabic</td>
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<tr>
<td>Red Violet</td>
<td>Beet + JUICE + Salt + Vinegar + Gum Arabic</td>
</tr>
<tr>
<td>Yellow Orange</td>
<td>Saffron Flowers + Alcohol + Gum Arabic</td>
</tr>
<tr>
<td>Yellow</td>
<td>Chamomile Flowers+ Water + HEAT + Salt + Vinegar + Gum Arabic</td>
</tr>
<tr>
<td>Dark Yellow</td>
<td>Turmeric + Water + HEAT + Salt + Vinegar + Gum Arabic</td>
</tr>
<tr>
<td>Light Yellow</td>
<td>Lemon Peels + Water + HEAT + Salt + Gum Arabic</td>
</tr>
<tr>
<td>Green</td>
<td>Green Tea + Water + HEAT + Salt + Gum Arabic</td>
</tr>
<tr>
<td>Light Green</td>
<td>Laurel Leaves + Water + HEAT + Salt + Vinegar + Gum Arabic</td>
</tr>
<tr>
<td>Dark Green</td>
<td>Spinach Leaves + Water + HEAT + Salt + Vinegar + Gum Arabic</td>
</tr>
<tr>
<td>Violet</td>
<td>Black Berries + Water + MASH + Salt + Vinegar + Gum Arabic</td>
</tr>
<tr>
<td>Medium Violet</td>
<td>Black Beans + Water + HEAT + Salt + Vinegar + Gum Arabic</td>
</tr>
<tr>
<td>Dark Brown</td>
<td>Coffee + Water + HEAT + Salt + Vinegar + Gum Arabic</td>
</tr>
</tbody>
</table>

**LEGEND**

Salt = Preservative  
Vinegar = Mordant  
Gum Arabic = Binder  
Water/Alcohol = Vehicle  
Plant Materials = Pigment  
Heat/Juice/Mash = Release Color  
Clove = Additive

**RATIO**

Vinegar 1 tablespoon: 1 cup Water  
Salt 1 tablespoon: 1 cup Water  
Plant material 1 cup: 2 cups Water
**Title:** ECO INK MAKING

**Contributor:** Susan Feliciano  
**Email:** susanfeliciano@dadeschools.net

**School:** Marjory Stoneman Douglas EL  
**County:** Miami-Dade

**Level of Lesson:** Elementary/Middle/High/Museum  
**Lesson Length:** 60 minutes

**Essential Questions**
1. What do artists/scientists make?
2. How do science and art connect?
3. If you could create a new color, what color would it be?

**Objective**
Participants will engage in a sustainable ink making project ECO Ink: Botanical Colors, examine sustainable color practices, identify a variety of color producing plants and minerals, experiment with ink making processes, develop formulas to make color inks, and create a botanical color chart.

**Procedures**
1. Wear apron.
2. Cover workspace with newsprint.
3. Gather/orage plants, flowers, leaves, vegetables, and fruits.
5. Peel, Chop, Juice or Smash fruits, vegetables, or berries.
6. Measure 1 cup of plant-based material.
7. Check ECO Ink Formulas for steps #8-9.
8. Add 2 cups of water. Or add alcohol. Or juice or mash plant-based materials.
9. Add a tablespoon of salt and 2 tablespoons of vinegar to the liquid.
10. Heat plant-based material in large metal pot over simmering water for 20 minutes.
11. Dip test strip into colored water to identify color intensity. Label strips by color.
13. Use tongs/wooden spoons to remove large chucks of floral and vegetal material.
14. Utilize wire mesh strainer to remove smaller bits of plant-based materials.
15. Pour liquid into glass jars using coffee filter and funnel.
16. Include a teaspoon of gum Arabic and a whole clove in the jar.
17. Create your own botanical chart using selected floral and vegetal materials.

**Self-Assessment/Rubric:**
Self-Assessment/ Visual Arts Rubric

**Sketchbook/Journal:**
Note Taking/ Formulas / Record Experiments / Sketches

**ESOL Strategies:**
Visual Clues / Model Task / Hands-on Activities / Cooperative Learning / Use Graphs
# LESSON PLAN: TOOL MAKING TECHNIQUES

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<th><strong>Title:</strong> Tool Making Techniques</th>
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<td><strong>Email:</strong> <a href="mailto:susanfeliciano@dadeschools.net">susanfeliciano@dadeschools.net</a></td>
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<td><strong>School:</strong> Marjory Stoneman Douglas EL</td>
<td><strong>County:</strong> Miami-Dade</td>
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<tr>
<td><strong>Level of Lesson:</strong> Elementary/Middle/High/Museum</td>
<td><strong>Lesson Length:</strong> 60 minutes</td>
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### Essential Questions
1. How do artists determine goals for designing objects, places, or systems?
2. Why are ECO friendly products critical to the environment?

### Objective
Participants will engage in a sustainable tool making project, explore natural materials, experiment with tool making techniques, and examine sustainable practices.

### Procedures
1. Wear apron.
2. Cover workspace with newsprint.
3. Gather/forage flowers, branches, stems, sticks, twigs, and leaves.
5. Select small branches and long sticks for handles.
6. Bundle twigs, flowers, leaves, stems in plant groups.
7. Gather bundles of plant groups around different branches or sticks.
8. Use cotton twine to tie and secure bundles.
9. Create your own set of mark making tools using selected plant materials.

### Self-Assessment/Rubric:
Self-Assessment/ Visual Arts Rubric

### Sketchbook/Journal:
Note taking/ Tool Ideas /Sketches

### ESOL Strategies:
Visual Clues / Model Task / Hands-on Activities / Cooperative Learning / Use Graphs
# LESSON PLAN: MARK MAKING TECHNIQUES

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<thead>
<tr>
<th><strong>Title:</strong></th>
<th>MARK MAKING TECHNIQUES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contributor:</strong></td>
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<tr>
<td><strong>School:</strong></td>
<td>Marjory Stoneman Douglas EL</td>
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<td><strong>County:</strong></td>
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<td><strong>Level of Lesson:</strong></td>
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<td><strong>Lesson Length:</strong></td>
<td>60 minutes</td>
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## Essential Questions
1. Why is it important to think like an artist?
2. How do artists and designers create works of art or design that effectively communicate?

## Objective
Participants will engage in a sustainable mark making project using ECO Inks: Botanical Colors explore mark making techniques

## Procedures
1. Create an 8" x 8" grid on paper.
2. Measure 2" squares with a ruler.
3. Use mark making tools.
4. Apply ECO Inks.
5. Experiment with various kinds of lines, patterns, and textures.
6. Label all 16 different marks.

## Self-Assessment/Rubric:
Self-Assessment/ Visual Arts Rubric

## Sketchbook/Journal:
Note taking/ Mark Making /Sketches

## ESOL Strategies:
Visual Clues / Model Task / Hands-on Activities / Cooperative Learning / Use Graphs
### LESSON PLAN: DRAWING

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#### Essential Questions
1. How do artists and designers create works of art or design that effectively communicate?

#### Objective
Participants will engage in a sustainable drawing project using ECO Inks: Botanical Colors, apply various botanical colors, experiment with mark making techniques, execute Enso circular form, explore abstract styles, and produce a limited-edition drawing series.

#### Procedures
1. Wear an apron optional.
2. Cover workspace with newsprint.
3. Distribute mark-making tools and paper.
4. Place ink in wide mouth glass jars.
5. Use mark making tools.
6. Apply ECO Inks.
7. Execute with Enso, circular form.
8. Explore abstract styles.

#### Self-Assessment/Rubric:
Self-Assessment/ Visual Arts Rubric

#### Sketchbook/Journal:
Note taking/ Practice Enso /Sketches

#### ESOL Strategies:
Visual Clues / Model Task / Hands-on Activities / Cooperative Learning / Use Graphs
BIBLIOGRAPHY

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Desnos, Rebecca, Botanical Colour at Your Fingertips.

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GALLERY OF IMAGES

ECO Ink Making

Mark Making Technique

Tool Making

Drawing