

ARTS ENVIROCHALLENGER

EnviroFlower Mandalas: Turning Trash into Treasure

Teaching Environmental Sustainability, Visual Arts, and Science

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Grade Level: First



Enduring Understanding

“Trash” can be sorted, selected, and reused in art based on its physical properties. Observation of the natural world can inspire artistic compositions.

“Trash” paper materials are analyzed and sorted by properties of texture, color, and translucency. Students study Mandalas created out of reused materials, then draw shapes organized in radial balance. Next students study, as artists and scientists, the shapes and patterns of plant parts with focus on radial balance seen in flowers. Students then cut materials, arrange and glue shapes in a collage inspired by their observation of radial balance in flowers. Last, student experiment with reusing caps, lids, and small boxes as drawing templates to draw shapes in radial balance for EnviroFlowers in oil pastel.

Learning Targets and Assessment Criteria

Target: Understands the EnviroChallenger message.

Criteria: Shares examples of ways to reduce, recycle, and reuse trash and show respect and responsibility for our environment.

Target: Sorts trash materials according to their properties.

Criteria: Describes and groups paper and plastic based on texture, transparency, and translucency.

Target: Observes and identifies plant parts and characteristics.

Criteria: Describes shapes and patterns in leaves, stems, seeds, and flowers.

Target: Draws shapes and arranges materials for a collage in radial balance.

Criteria: Organizes shapes in circular patterns like flowers.

Target: Uses craftsmanship in collage.

Criteria: Applies enough glue to adhere surface to surface securely.

Vocabulary	Materials	Learning Standards
<u>Arts</u> Collage Composition Craftsmanship Mandala Radial balance Refine Template <u>Arts Infused:</u> Metallic, Reflect Opaque Pattern Paper, Plastic Shape, Texture Translucent Transparent <u>Science</u> Flower Parts Properties Recycle	Artworks: Mandalas by Virginia Fleck Art Materials: Pencils; 9x12” recycled white drawing paper; Found papers cut into strips in different colors, textures, and translucencies: (one for each student) for sorting activity; 4-8” strips ½-2” wide; Trays/containers for paper table group papers; Repurposed 9x12” cardstock; File folders or light, smooth cardboard or mat board for background paper; Scissors; Glue sticks; Real plants with flowers; Oil pastels; Caps, lids, and tiny boxes for drawing templates; Photos from natural and constructed world illustrating radial symmetry; Photos of flowers	State Visual Art Learning Standards 1.1.2 Elements: Shape/Form 1.1.7 Principles of Design: Balance, Repetition 1.2.1 Skills and Techniques: Drawing, Collage 2.1.1 Creative Process 2.3.1 Responding Process 4.2.1 Connection between Visual Arts, Science, Math Next Generation Science Standards http://www.nextgenscience.org/next-generation-science-standards Topic: Waves: Light and Sound Structure, Function and Information Processing Disciplinary Core Ideas: PS4.B: Electromagnetic Radiation LS1.A: Structure and Function Performance Expectations: 1-PS4-3. Plan and conduct an investigation to determine the effect of placing objects made of different materials in the path of a beam of light. Crosscutting Concepts: Patterns Cause and Effect Structure and Function Science and Engineering Practices: 2. Developing and Using Models 8. Obtaining, evaluating, and communicating information

ICON KEY:

- 📖 = Indicates note or reminder for teacher
- ✂ = Indicates materials preparation suggestions
- ☑ = Embedded assessment points in the lesson

Residency Steps Outline

Day One

TALK ABOUT THE ENVIROCHALLENGER MESSAGE

1. Introduce the 5 R's through class discussion. Reduce, Recycle, Reuse, Respect, and Responsibility.

2. Discuss what trash is composed of and where it goes.

☑ Criteria-based checklist: Student shares examples of ways to reduce, recycle, and reuse trash.

SORT TRASH MATERIALS

3. Demonstrate and guide using our senses as scientists and artists to analyze different properties of materials and sort them into groups.

☑ Criteria-based checklist: Student peer-checks for similar materials, colors, transparencies, and textures grouped together.

LOOK AT ART IN RADIAL BALANCE MADE FROM REUSED MATERIALS

4. Share images of Mandala artworks in radial balance composed of reused materials.

DRAW SHAPES IN RADIAL BALANCE

5. Guide practicing drawing and organizing shapes in radial balance.

☑ Criteria-based checklist: Student organizes drawn shapes in circular patterns like flowers (radial balance)

Day Two

STUDY PLANT PARTS AND FLOWERS, REVIEW RADIAL BALANCE

1. Introduce idea of scientific/artistic observation process inspiring artistic compositions. Demonstrate and guide scientific observation of a plant.

Criteria-based checklist: Student describes shapes and patterns in leaves, stems, seeds, and flowers.

2. Review concept of radial balance seen in the shapes and patterns of growth in flowers. Distribute large photos of flowers to table groups for artistic inspiration.

SELECT, CUT, ARRANGE, AND GLUE COLLAGE MATERIALS

3. Introduce "collage." Demonstrate and guide selecting materials to cut up and arrange in radial balance collage.

4. Demonstrate and guide cutting materials.

5. Demonstrate arranging materials in radial balance.

Criteria-based checklist: Student organizes paper shapes in circular patterns like flowers.

6. Demonstrate gluing EnviroFlower collage in radial balance using craftsmanship.

Criteria-based checklist: Student applies enough glue to adhere surface to surface securely.

Day Three

REFLECT, REFINE AND COMPLETE COLLAGE COMPOSITION

1. Demonstrate refining collage by adding leaves, stems, and additional details using green and sparkly/metallic papers.

Criteria-based self-reflection: Students check for radial balance and craftsmanship.

Day Four

REUSE CAPS, LIDS AND BOXES AS DRAWING TEMPLATES FOR AN ENVIROFLOWER DRAWING

- 1.** Introduce idea of reusing objects as tools. Demonstrate techniques for tracing around caps, lids, and small boxes to create geometric shapes using oil pastels.
- 2.** Demonstrate tracing shapes to create a color drawing in radial balance using oil pastels.

REFLECT ON STUDENT ART, SCIENCE, AND ENVIROCHALLENGER MESSAGE

- 3.** Reflect on artistic process through a full class critique.
- 4.** Reflect on looking at flowers as scientists and artists.
- 5.** Close with affirmation of the EnviroChallenger message.

Group reflection

LESSON STEPS

Day One

TALK ABOUT THE ENVIROCHALLENGER MESSAGE

1. Introduce the 5 Rs through class discussion. Reduce, Recycle, Reuse, Respect, and Responsibility.

We are learning about art, science, and ways that we can help take care of our planet earth through our choices and actions. Who can name the 5 Rs: lets talk about each of them!

Reduce means make smaller: "make less trash by using less" how can we make less trash?

Reuse means "use again" what can we reuse to make less trash?

Recycle means to us change the material through some sort of proces (heat, water, mechanical) then form into into something usable again. What are some things we can recycle?

Respect means to value, admire and take care of our environment and living things. How can we show respect for our environment?

Responsibility means a sense of doing your part in daily actions, or a job that needs to be done to help take care of our environment. Who is responsible? YOU!

2. Discuss what trash is composed of and where it goes.

- *Where does trash go after we put it in the garbage can? Why would we want to reduce the amount of trash we create?*

Criteria-based checklist: Student shares examples of ways to reduce, recycle, and reuse trash.

SORT TRASH MATERIALS

3. Demonstrate and guide using our senses as scientists and artists to analyze different properties of materials and sort them into groups.

▣ Have students sit in a circle, then analyze, share about and add each material to a category in the center (paper, plastic; translucent, opaque, metallic etc).

- *We are looking at flat materials that we will use in our art later on: different papers and plastics.*
- *Each person has a different kind of material to look at. What happens when you hold it up to the light?*
- *If you can see through it, it is transparent. If only some light comes through, it is translucent. If no light comes through, it is opaque.*
- *What texture—what does it feel like? Is it thick or heavy or light and thin? Is it paper or plastic?*
- *Is it transparent, translucent, opaque or sparkly/metallic? Can we describe it in more than one way? Which pile do we sort it into?*



Criteria-based checklist: Student peer-checks for similar materials, colors, transparencies and textures grouped together.

LOOK AT ART IN RADIAL BALANCE MADE FROM REUSED MATERIALS

4. Share images of Mandala artworks in radial balance composed of reused materials.

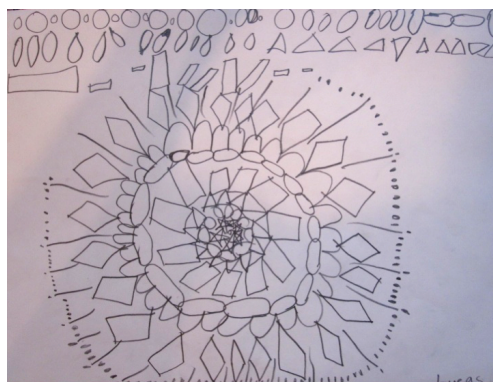
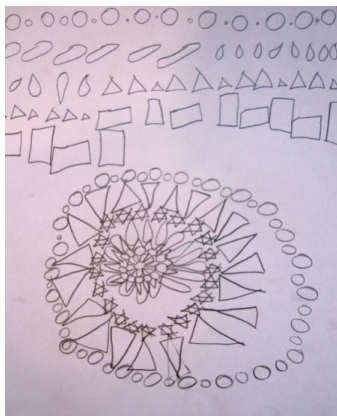
- *We are thinking about all of the reasons why artists reuse materials in art instead of buying new materials to make art out of.*
- *Do you recognize any of the materials the artist used?*
- *Why do you think the artist chose them?*
- *When you sorted materials did you notice some interesting textures or beautiful colors?*
- *How can reusing materials help artists and the environment?*
- *How did the artist organize or place shapes and colors? Follow the direction of shapes or colors you see using and imaginary crayon. What direction do the shapes move in? (A circle). Do they also move out from the center like the rays of the sun? This is **radial balance**.*
- *Mandalas are ancient art forms with special meaning seen all over the world: they are often organized in radial balance.*

DRAW SHAPES IN RADIAL BALANCE

5. Guide practicing drawing and organizing shapes in radial balance.

▣ Have students practice drawing shapes, then combine them to create designs in radial balance along with you, but then cover your example to encourage students to generate original designs.

- *Sign your name in the lower right hand corner where artists traditionally sign their names first.*
- *Practice drawing shapes: ovals, triangles, rain-drop shapes, circles, squares, rectangles across the top of your paper. Practice pointing them in different directions.*
- *Make a dot in the center of your paper. Repeat a shape all the way around the center like petals of a flower. Now add another shape or line moving in a circular pattern. Keep adding shapes until your flower gets bigger and bigger.*



☑ Criteria-based checklist: Student organizes drawn shapes in circular patterns like flowers (radial balance).

Day Two

STUDY PLANT PARTS AND FLOWERS, REVIEW RADIAL BALANCE

1. Introduce idea of scientific/artistic observation process inspiring artistic compositions. Demonstrate and guide scientific observation of a plant.

- *Artists also look at nature in the same ways that scientists do: they observe and study to learn more. What artists see and learn from nature gives them artistic ideas.*
- *Where do you see leaves, stems, seeds, and flowers?*
- *What are the shapes of these parts—how are they different, how are they alike?*
- *What do you notice about flower shapes and how they fit together?*

Criteria-based checklist: Student describes shapes and patterns in leaves, stems, seeds and flowers.

2. Review concept of radial balance seen in the shapes and patterns of growth in flowers. Distribute large photos of flowers to table groups for artistic inspiration.

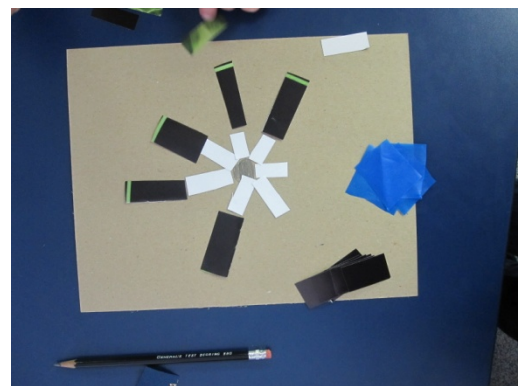
- *Notice how flowers tend to have a center point right in the middle—this is often where the stem connects.*
- *Are the shapes connected or repeated around the center point?*
- *Follow the repeating shapes—do they move in a circle?*
- *Do you think the art we studied yesterday is inspired by flowers?*

SELECT, CUT, ARRANGE, AND GLUE COLLAGE MATERIALS

3. Introduce “collage.” Demonstrate and guide selecting materials to cut up and arrange in radial balance collage.

✂ Have strips of many kinds of paper and plastic available in clear boxes at each table group: they can be easily cut into smaller shapes with a single cut. Withhold some of the flashy metallic/sparkly and green materials until the following day when they can be added to further “refine” collage.

- *We are using what we know about flowers and properties of materials to create an artistic composition: a collage in radial balance. Collage means “to paste”.*
- *Choose 5 strips of paper to start, and a background paper. We will be cutting our strips up, arranging them in radial balance and gluing them down in circular flower patterns.*
- *Think about colors and textures: What are some of your favorite materials that you sorted?*
- *Think about opaque, translucent, and transparent—how could using those materials make your collage interesting?*



4. Demonstrate and guide cutting materials.

- *You will repeat shapes—strips and squares of paper—all the way around the center of your composition, so make sure to cut 4-6 strips or squares of each color or kind of material.*
- *Cutting across a strip of paper can be an easy way to make a square or rectangle. Cutting of a corner is an easy way to make a triangle.*

5. Demonstrate arranging materials in radial balance.

- *We are going to arrange and re-arrange our compositions on top of our background paper*
- *Collage allows us to change our compositions until we have the arrangement we want before gluing.*
- *Have you repeated your shapes in a circle around the center?*
- *Have you filled your paper with shapes in radial balance?*
- *Have you used interesting colors, textures, and translucent or transparent papers.*



Criteria-based checklist: Student organizes paper shapes in circular patterns like flowers.

6. Demonstrate gluing EnviroFlower collage in radial balance using craftsmanship.

- *Each short collage shape needs glue stick on the back, or glue stick on the background. Rub the shape down so it really sticks.*
- *The EnviroFlower needs to be sturdy and not fall apart: this is called craftsmanship in art.*
- *Once you have arranged your collage in radial balance, raise your hand, and you can have a glue stick.*
- *Glue each piece down one at a time, slowly, and carefully.*



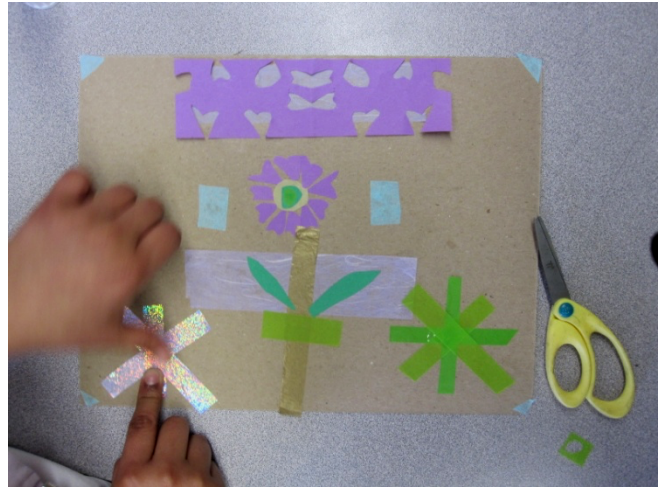
Criteria-based checklist: Student applies enough glue to adhere surface to surface securely.

Day Three

REFLECT, REFINE AND COMPLETE COLLAGE COMPOSITION

1. Demonstrate refining collage by adding leaves, stems, and additional details using green and sparkly/metallic papers.

- *Notice if you have additional space in your composition. Where can you add more shapes that really show radial balance in your art?*
- *Can you add transparent or translucent shapes on top of shapes that show radial balance?*
- *How could adding sparkly metallic paper shapes draw attention to important parts of your composition?*
- *If you do not have radial balance yet, how can you add shapes to create a circular pattern by adding to the shapes you already have?*
- *Check for craftsmanship: make sure all shapes are securely glued.*



Criteria-based self-reflection: Students check for radial balance and craftsmanship.

Day Four

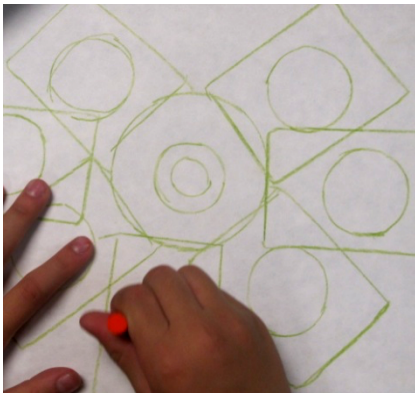
REUSE CAPS, LIDS, AND BOXES AS DRAWING TEMPLATES FOR AN ENVIROFLOWER DRAWING

1. Introduce idea of reusing objects as tools. Demonstrate techniques for tracing around caps, lids, and small boxes to create geometric shapes using oil pastels.

- *Name an example of a tool: Hammer, can opener, saw....*
- *Lids, caps, and boxes can be tools! They can be templates to help us draw beautiful shapes.*
- *Use the hand you do not draw with to anchor down a cap, lid (top/flat side down works best), or box. Now slowly trace around it.*

2. Demonstrate tracing shapes to create a color drawing in radial balance using oil pastels.

- *Make a dot in the center of your paper. Trace around shapes starting in the center (like our pencil drawings and collages). Make sure they repeat in a circular pattern.*
- *Add shapes until reaching the edge of the paper. Add the same color to each shape that you repeat to show radial symmetry.*
- *Experiment with overlapping and blending pastels.*



REFLECT ON STUDENT ART, SCIENCE AND ENVIROCHALLENGER MESSAGE

3. Reflect on artistic process through a full class critique.

▣ Have students sit in a circle with their art in front of them on the floor, or display all artworks as a group and gather around them for critique.

- *Follow the repeating shapes in another artist's collage or drawing with your eyes: do you see radial balance?*
- *Describe what captures your eyes in another artist's collage or drawing.*
- *Do you see an interesting material in a collage? Describe why—color, texture, translucency?*
- *Can you point to a collage that looks sturdy that won't fall apart?*
- *Describe your process in arranging your shapes. Did you move them around a lot before deciding on how you wanted to glue them?*

4. Reflect on looking at flowers as scientists and artists.

- *Did looking at flowers help you understand how to make shapes in radial balance?*
 - *Did looking at flowers help you make a more interesting collage? Why or why not?*
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5. Close with affirmation of the EnviroChallenger message.

- *What are the EnviroChallenger 5 R's?*
- *Name one way you can protect our environment using the 5 R's?*
- *What did you discover about reusing materials in art?*
- *Will you use trash materials to make something else out of in the future?*
- *Why do artists choose to reuse materials in art?*

Group reflection



ARTS ENVIROCHALLENGER

EnviroFlower Mandalas: Turning Trash into Treasure

Assessment Checklist

Disciplines	ENVIRONMENTAL SUSTAINABILITY	SCIENCE		ART		Total
Concept	Awareness/Action	Properties	Systems/Parts	Radial Balance	Craftsmanship	5
Criteria	Shares examples of ways to reduce, recycle, and reuse trash and show respect and responsibility for our environment.	Describes and groups paper and plastic based on texture, transparency and translucency.	Describes shapes and patterns in leaves, stems, seeds and flowers.	Organizes shapes in circular patterns like flowers.	Applies enough glue to adhere surface to surface securely.	
Student						



ARTS ENVIROCHALLENGER

EnviroFlower Mandalas: Turning Trash into Treasure Teaching Environmental Sustainability, Visual Arts, and Science

- We worked with a **teaching artist** and learned about art, science, and ways that we can help take care of our planet earth through our choices and actions. We learned about the **5 R's** of the **EnviroChallenger message**:
 - **Reduce** means make smaller: "make less trash by using less".
 - **Reuse** means "use again" instead of throwing away.
 - **Recycle** means to us change the material through some sort of process (heat, water, mechanical) then form it into something usable again.
 - **Respect** means to value, admire, and take care of our environment and living things.
 - **Responsibility** means a sense of doing your part in daily actions, or a job that needs to be done to help take care of our environment. Who is responsible? YOU!
- We talked about what trash is composed of, where it goes, and why it is a threat to our planet.
- We used our senses as scientists and artists to analyze different **properties** of "trash" materials and sorted them according to **color, texture**, and whether they were **translucent, opaque, or metallic**.
- We looked at artwork in **radial balance** made from **reused materials**. In this artwork, shapes were organized in **circular patterns** and **radiated** from a **center point**. We practiced drawing shapes and organizing them in radial balance.
- We talked about how scientists and artists **observe** nature to learn more. We observed **plants**, identified their **different parts**, and studied their **shapes**. We noticed how **flowers** often have shapes that are in a **circular pattern** around a **center point**.
- We selected materials for creating an EnviroFlower **collage**, then cut shapes and arranged them in radial balance on a background. We used **craftsmanship** in gluing by using the right amount of glue and securely attaching our shapes.
- We also explored using caps, lids, and small boxes as template tools to help us draw shapes for colorful EnviroFlowers in radial balance using oil pastels.

Enduring Understanding

"Trash" materials can be sorted, selected and reused in art based on its physical properties.
Observation of the natural world can inspire artistic compositions.