

Arts Integration Lesson: Graphing Garbage

Teaching Artist: Suzanne Joyal

Grade: K-5

PROJECT OVERVIEW:

Students will be exploring ways to use their art to illustrate their knowledge in Earth Science and Math. Students have collected garbage on their campus, documented it through keeping a tally and graphing. Now they want to use art to show who (or what) is impacted by the garbage that is washed downstream and into the ocean. They want to SHOW and SHARE a message with the public: Don't Pollute. Through the art process, students were able to SHOW people what they now know.

WHAT IS THE BIG IDEA? What is a GRAPH? What did I DISCOVER? What do I want people to KNOW? How do I want to SHOW it?

ESSENTIAL QUESTION: Integrating Earth Science, Math, and Art: How can we use GRAPHS to help others understand our story?

CONTENT AND SKILLS STANDARDS:

Visual Arts:

Students apply what they learn in the visual arts across subject areas. They develop competencies and creative skills in problem solving, communication, and management of time and resources that contribute to lifelong learning and career skills.

4.2 Identify successful and less successful compositional and expressive qualities of their works of art and describe what might be done to improve them.

Science:

3. Adaptations in physical structure or behavior may improve an organism's chance for survival. As a basis for understanding this concept:

- a. *Students know* plants and animals have structures that serve different functions in growth, survival, and reproduction.
- b. *Students know* examples of diverse life forms in different environments, such as oceans, deserts, tundra, forests, grasslands, and wetlands.
- c. *Students know* living things cause changes in the environment in which they live: some of these changes are detrimental to the organism or other organisms, and some are beneficial.

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- d. *Students know* when the environment changes, some plants and animals survive and reproduce; others die or move to new locations.
 - e. *Students know* that some kinds of organisms that once lived on Earth have completely disappeared and that some of those resembled others that are alive today.
5. Scientific progress is made by asking meaningful questions and conducting careful investigations. As a basis for understanding this concept and addressing the content in the other three strands, students should develop their own questions and perform investigations. Students will:
- a. Repeat observations to improve accuracy and know that the results of similar scientific investigations seldom turn out exactly the same because of differences in the things being investigated, methods being used, or uncertainty in the observation.
 - b. Differentiate evidence from opinion and know that scientists do not rely on claims or conclusions unless they are backed by observations that can be confirmed.
 - c. Use numerical data in describing and comparing objects, events, and measurements.
 - d. Predict the outcome of a simple investigation and compare the result with the prediction.
 - e. Collect data

Mathematics

3. Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.
- a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line. Recognize that equivalencies are only valid when the two fractions refer to the same whole.
3. Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories.
- Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.

Language Arts

Comprehension and Collaboration

1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others’ ideas and expressing their own clearly.
- a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.
 - b. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).
 - c. Ask questions to check understanding of information presented, stay on topic,

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GOALS: (What do you want students to know, understand, and be able to do when they have completed this unit?)

Artistic Goals:

1. Students will understand that any material can be used to create art.
2. Students will learn techniques for successful use of plastic, paper, recycled materials in art-making.
3. Students will learn about composition: how to design a cohesive, interesting piece of art.
4. Students will learn the value of texture in design: how to use different materials and finishes in a single work of art.

Curricular Goals:

Science:

1. Students will understand “watershed”.
2. Students will understand cause and effect: how littering on campus could eventually harm animals living downstream.
3. Students will learn to collect and tally data.

Math:

1. Students will create and understand a bar graph based on data collected in science.
2. Students will understand proportions: which is more/less, and why.

Language Arts:

1. Students will practice listening and speaking in a respectful way.
2. Students will practice collaboration and reaching consensus to arrive at one design representing the opinions and input of every student.
3. Students will brainstorm to decide what is the most important idea to share from data collected.

ASSESSMENTS: (What will you look for in student art, classroom conversations, written reflections, that will show you that you have achieved your goals?)

Formative (during the project):

1. Listening and speaking respectfully
2. Taking turns
3. Thoughtful feedback for peers when developing content
4. Thoughtful responses to 4 questions posed, both verbally and written
5. Honoring strengths of peers

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6. Correct use of materials (brushes, paint, glue, scissors)
7. Following Instructions
8. Appropriate risk-taking, verbally and artistically

Summative (end of project):

1. Cohesive design and execution of final project
2. Thoughtful responses to reflection/gallery walk
3. Refined answer to the question “What is a Graph?” and “Why is it important to pick up garbage?”

OUTLINE:

Anticipated length of arts integrated unit: 2 Sessions. Background work in Science and Math was three weeks.

DAY	ACTIVITY: <i>What will students do to reach objective? What materials will they use?</i>	INQUIRY: <i>What artworks will students be discussing? What questions will you ask?</i>	REFLECTION: <i>How will you conclude the lesson? How will students reflect on what they have done today?</i>
Date	Discussion - what is garbage? What impact does it have on the world around, us, on plants and animals, show PPT on endangered animals, show PPT on Pacific garbage vortex		
Date:	Collecting garbage from school site, sorting, and tallying results. Creating Bar Graph to document findings. Materials: Garbage bags, rubber gloves, paper, pencil. Students sorted the garbage into 7 different categories, based on the quantity of that type of trash found: Plastic, Glass, Metal, Compost, Paper, Glass, “Other”	What do we find in the storm drains and around campus? Who and What is injured by the materials we find? Why is it important to not litter?	Students collected concrete evidence of the garbage they found. When sorted, they were able to clearly see what comprised the most litter, and to deduce where it was coming from (the lunch area!)

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Studio Habits of Mind Emphasized: Engage and Persist, Understand Community, Stretch and Explore, Observe
Artful Thinking Emphasized: Questioning and Investigating, Reasoning, Finding Complexity, Observe & Describe
Follow-Up Extensions: Creating “Artwork for PaperSeed Recycled Art Contest”, writing letters to school newspaper

<p>1 (art) Date:</p>	<p>Students are given a piece of paper and asked to fold it into ¼’s. They then answer each of the following questions in one square (using words and/or pictures):</p> <ol style="list-style-type: none"> 1. What kind of garbage did you find at your school? 2. What do you want other people to know? 3. How do you want to show it? 4. What is a GRAPH? 	<p>Prezi with these artists & Questions: Chris Jordan: What material did Chris use in his artwork? Crayola Colors Timeline: What do you SEE happen through time in this picture? Recycled junk food wrapper dress: What do you notice about this dress? What does it tell you? Graphs: Are graphs straight lines on a flat piece of paper? Can we use other materials to create a graph?</p>	<p>What is a graph? Students will understand that a graph is a way to use math to tell a story. Students use reflection time to collaborate and design the group project. How do we want to SHOW our information?</p>
<p>2 (art) Date:</p>	<p>Students divided into groups based on their interest area to create the one large piece: Drawing Animals, Painting Background, Collaging Animals, Assembling Final Piece. Materials: Garbage, white glue, hot glue gun, paper, scissors, pencils, oil pastels,</p>	<p>Brainstorm on what a collaborative, community graph could look like. Students decided to create a scene of the globe where 7 different animals affected by the trash are illustrated in their relative size based on the type of trash they represent.</p>	<p>Students gather at the end of the day to reflect on the process: What does the piece say to you? What was the most challenging part for you? What did you learn from a friend? What would you like to try in your own project?</p>

Studio Habits of Mind Emphasized: Understand Art World; Stretch & Explore
Artful Thinking Emphasized:
Follow-Up Extensions: Big Garbage Goldfish by Misbah; ongoing campus litter reduction

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ADDITIONAL MATERIALS:

PPT on graphing garbage, impact on animals, professional artists who use recycled materials, youth art pieces
video on Pacific trash vortex

Video on inspirational uses of garbage - Landfill Harmonic

Water Bubble

TED talk kid inventor

ARTWORK: key artworks for discussion

Video by local artists Richard Lang and Judith Selby Lang : <https://vimeo.com/18672227>