

GOLDBLOCKS PLANET PROJECT



Investigating Water on Planet Earth through Visual Art



PROJECT OVERVIEW:

NASA scientists often call our home world the “Goldilocks Planet” – not too hot, not too cold, but just right for the presence of liquid surface water. Water is actually quite common in the solar system, but it is mainly in the form of ice locked underground, shadowed in craters or lurking in the cold, dark reaches of the outer solar system. Only Earth has perpetual liquid water on its surface and this fact has huge implications - Earth is also the only world known to sustain life. Our planet is indeed a water world, but only a tiny fraction of Earth’s water is in the form of fresh water.

Water is simply our most precious resource and it has sculpted Earth’s landscape for millennium. As humans, harnessing, collecting and diverting water has shaped our societies and relationship with our home world.

How has the presence of water sculpted the landscape? And how have humans managed water to shape our own environment? These questions and more fuel the fun learning embodied in the Goldilocks Planet Project. This STEAM program fuses hydrology, geography and environmental topics with visual art as learners unlock the water mysteries of our planet. Students learn to analyze NASA remote sensing satellite images, becoming “water detectives,” as they locate the presence of water on Earth from the vantage point of space. Learners use the Elements of Art (*line, shape, color, value, texture*) as “clues” to recognize water in its many phases and forms - rivers, lakes, oceans, erosion, underground water, frozen water and atmospheric moisture.

Students also use their geometry skills investigating both organic shapes and geometric shapes as it relates to human impact and dynamic change in our hydrosphere. They then synthesize their learning and hone observational skills while engaging in an exciting art activity. They also work together to tell their unique story of the Goldilocks Planet through a collaborative digital work.

HIGHLIGHTS:

- Investigate hydrology through visual art.
- Become a “water detective” while learning to “read” remote sensing data.
- Foster critical thinking skills while introducing key water topics.
- Hone observational skills while identifying water in various states and forms.
- Analyze organic and geometric shapes as signposts for water and societal connections.
- Synthesize learning through engaging art projects.
- Work collaboratively to tell a digital narrated story about your Goldilocks Planet.

PROJECT PHASES:

- 1) **Goldilocks Planet PwPt Presentation:** Conncts Hydrology with the Elements of Art via NASA Images
- 2) **Art Activity:** Pastel or Collage Art Project
- 3) **Literacy Extension:** Narrated Digital Story as a Collaborative Art Piece

PHASE IMPLEMENTATION:



NASA Remote Sensing
Image



Student Pastel Inspired by
NASA Remote Sensing
Image

1. GOLDILOCKS PLANET PRESENTATION

- Read and deliver the PowerPoint STEAM lesson and discussion with learners. Remember, STEAM is about leading the process so enjoy discovering with your students. (You don't need to know a thing about hydrology or art to lead this project!)
- Your PowerPoint discussion will connect the Elements of Arts – line, shape, color, value, texture – with concepts in hydrology. There is a Water Clue Key on Page 6 that outlines key art/science connections.
- Encourage students to become “water detectives” to find the presence of water on planet Earth as seen in NASA satellite images with many slide examples.
- Encourage students to look for both existing water and evidence that water might have existed in the past (dried lake beds, dried rivers, diverted rivers, etc.)
- Learners will use art “clues” to detect water in the form of rivers, lakes, reservoirs, oceans, aquifers, erosion, frozen water and atmospheric moisture.
- The PowerPoint discussion notes includes a “script” and question prompts to guide deeper critical thinking about water science, environmental issues and resource management. Key concepts are also outlined on page 5.
- Students will investigate organic shapes as relates to water in the environment. They will also investigate geometric shapes as it relates to human societies and connections to the hydrosphere.
- Discussion notes will also guide conversations regarding environmental issues, human impact and dynamic change on Earth.
- Both an extensive and condensed version of the PowerPoint has been provided and can be scaled for various age and/or experience levels.



Students working on Pastel Art Activity



Students working on Collage Art Activity

2. GOLDILOCKS PLANET PASTEL OR COLLAGE PROJECT

- Engage in an arts-integrated STEM activity to synthesize concepts and hone observational skills.
- Print the PDF of NASA Remote Sensing Images provided and laminate them for re-use.
- Alternatively, students can research and print their own images from NASA Earth Observatory by picking a “place” that is meaningful to them.
- Have each student use their image to inspire their art piece. Their goals are to:
 - Conduct a close “read” of their image identifying the presence of water using their art clues – the Elements of Art.
 - Make a representational or abstract piece of art inspired by their NASA image.
 - Be able to cite “evidence” of water in their inspirational NASA image based on their art clues.
 - Show, share and discuss work.
- The art project can be done as a pastel drawing or collage project. *Note: A recommended list of materials and time requirements follow on page 5. The collage takes additional time and materials. However, because the collage emphasizes layering, students can also investigate the stratigraphy and layers of the landscape. The collage activity introduces the concept of strata and time and is a deeper learning experience for middle and high-school students.*
- As students work on their art project, the leader should go around the room and visit with learners about their NASA image and art piece. Ask questions such as the following to reinforce concepts and hone deeper observational skills:
 - What geographic region does your NASA image show?
 - Does your remote sensing image indicate the presence of water? What clues or evidence can you cite? (Remember the Elements of Art are the clues!)
 - What do the lines and shapes tell you?
 - Do the colors, textures or values give you any additional information?
 - Does your image show fresh water or salt water?
 - Do you see the presence of human impact in your image? What geometric shapes (evidence) do you see that might be clues for human presence?
 - Do you see evidence of erosion or environmental change in your image? If so, cite your clues.
 - Why did you pick your image? What do you find inspiring?
- When learners are done with their art pieces, make sure to take the time to show and share their work! You can hang-up artworks for gallery showing or simply have students do a tour around the classroom. Make sure to encourage questions, comments, key vocabulary and connections as the group discusses their work.



Pastels inspired by the Mississippi River Delta



Collage inspired by the pivot point irrigation in Saudi Arabia.

3. LITERACY EXTENSION: DIGITAL NARRATED STORY

- Once students have created their artworks, they are often eager to share their discoveries and stories.
- Creating a digital narrated story is a fantastic way for students to synthesize their discoveries, work collaboratively on a group art piece and share with the broader community.
- Once students have finished their art piece, give each student a “Script Builder.” We have included one on page 7, but you can also create your own to address topics that might be important for your class.
- We recommend keeping student scripts 3-4 sentences in length. These will be collected as audio recorded narrations in a PowerPoint - a slide show in the form of a digital gallery.
- Leaders or students should photograph, edit and crop each artwork as needed. This can be done with a digital camera and edited in a program like Photoshop. It can also be done by simply taking photos and editing them on a smart phone or other computer editing software.
- Save all photos as JPEG files and import them into PowerPoint. Create one page for each student’s work through the “Insert Picture” function.
- Have students record their narration in their individual PowerPoint slide. This is done from the “Record Slide Show” function. Be careful to record from “Current Slide” so that you do NOT record over previous narrations. We highly recommend saving a copy of the version with the narrations recorded as a backup BEFORE adjusting the design of your slide show.
- Once narrations are recorded, leaders and learners can edit slide animations and timings to make a dynamic presentation. Remember to add a title slide and production credits to the group piece!
- Save the PowerPoint as a “Macro-enabled Slide Show” and post on a website, Vimeo, YouTube and/or Facebook to have an enduring digital gallery and story to share!

Check out this example of a Digital Narrated Story created by the 3rd Graders at Centennial Elementary: [Colorado River Stories](#)

ART ACTIVITY SUPPLY LISTS:

PASTEL ART ACTIVITY

Recommended Time: 30-60 min

Supplies:

- NASA Earth remote sensing images (printed and laminated)
- Soft or oil pastels (Cray-Pas recommended for K-1)
- Drawing paper (Use smaller sheets for a shorter activity.)
- Q-tips for blending
- Kneaded erasers (for soft pastels)
- Hair spray (optional to fix soft pastels)
- Rubber bands (to roll-up drawings)

COLLAGE ART ACTIVITY

Recommended Time: 60-90 min

Supplies:

- NASA Earth remote sensing images (printed and laminated)
- MDF or wooden panels
- Collection of different papers – construction, scrapbook, old books, magazines, maps, newspapers, etc.
- Collection of fiber materials – felt, fabric, ribbons, buttons, etc.
- Bristle brushes
- Foam brushes
- Acrylic matte gel medium (or Modge Podge)
- Scissors
- Exacto knife (for adults to trim edges when dry)


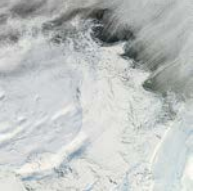

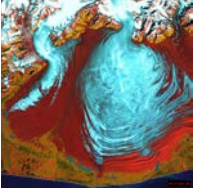

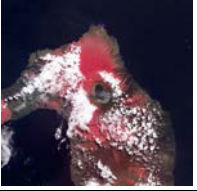

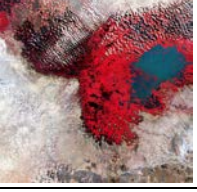


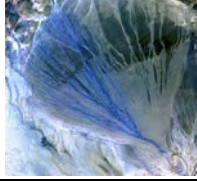
KEY CONCEPTS:

- Elements of Art
- Hydrology
- Hydrosphere
- Water Cycle
- Water Usage
- Remote Sensing
- Enhanced Color
- Organic & Geometric Shapes
- Fresh Water & Salt Water
- States of Water - solid, liquid & gas
- Oceans and Seas
- Lakes & Reservoirs
- Underground Water & Aquifers
- Rivers & Streams
- River Mouth & River Delta
- Wetlands
- Alluvial Fan
- Erosion
- Frozen Water
- Glaciers
- Snow Pack
- Atmosphere



ELEMENTS OF ART – WATER CLUE KEY

Line, shapes, color, value & texture are clues for hydrology concepts

IMAGE	ART CLUE	WATER SIGN	IMAGE	ART CLUE	WATER SIGN
	Large open blobby shapes	Oceans or seas		Bright white value	Frozen water (snow or ice)
	Smaller closed blobby shapes	Lakes or reservoirs		Lobe or tongue shapes (can be white or enhanced color)	Glaciers
	Geometric shapes	Human presence (Irrigation, Farms, towns & cities)		Bright values with fluffy texture	Atmospheric water (clouds)
	Geometric shapes (With no other water indicators)	Possible underground water sources (aquifers & irrigation)		Enhanced color	Used for data analysis and/or show environmental change
	Squiggly lines	Rivers, streams, erosional features			
	Fan shapes - near coastlines	River deltas			
	Fan shapes – on ground	Alluvial fans			

NAME: _____ NASA IMAGE LOCATION _____

Instructions: Write 3-4 sentences about your NASA image and resulting artwork to include in your slide narration. This will be your audio “script” to record in the PowerPoint digital story.

1) What is the geographic location of your image?

2) What evidence do you have that there is water present in your image? (Cite what water forms you see and what art elements were your clues.)

3) How did your image inspire your artwork? (Your inspiration can include meaningful places, cool water features, art elements like color, etc.)
