Improving Teacher Quality
Arts and Science Integration

Visual Art and Earth Science

Grade 5
Edited Version Fall 2012
ITQ ARTS AND SCIENCE INTEGRATION
GRADE 5
VISUAL ART AND EARTH SCIENCE

Independent and Dependent Variables
Lesson # 1

FOSS Kit Grade 5, Earth Science: Water Planet, Investigation 2

Note: This is not a controlled experiment activity. It works to illustrate a cause/effect relationship between independent and dependent variables. In a controlled experiment the results would be consistent from student to student. In art, happily, they are not!

CONTENT STANDARDS
Visual Art Grade Five
1.3 Use their knowledge of all the elements of art to describe similarities and differences in works of art and the environment.

Earth Science Grade Five
I&E6d Identify the dependent and controlled variables in an investigation.

ESSENTIAL QUESTIONS (Questions students might ask about the topic)
• How do I describe a work of art using the vocabulary of visual art?
• What are independent and dependent variables?
• How can I recreate a masterwork of art by changing one variable?

OBJECTIVES & STUDENT OUTCOMES (Students will be able to.....)
• Describe a famous portrait using the vocabulary of visual art.
• describe the affects of changing one variable in a work of art.
• recreate a famous portrait illustrating the change of one variable.

ASSESSMENT (Various strategies to evaluate effectiveness of instruction and student learning)
• Feedback for Teacher
  o Informal observation of student artists during guided practice
  o Informal conferencing with groups and individuals
• Feedback for Student
  o Verbal feedback from teacher
  o Critique of completed artwork

WORDS TO KNOW
Visual Art
• Elements of art: sensory components used to create works of art (e.g., line, color, shape or form, texture, value, and space)
• Sketch: a drawing without much detail, usually completed in a short time; sometimes used as a rough draft for a later work of art.

Earth Science
• Control: the portion of an experiment that you are not performing experiments on; it is just there to serve as the original state that subsequent experiments are compared to.
• Independent variable: something that is changed on purpose
• Dependent variable: the result of the independent variable
• Variable: an element, feature, or factor that is liable to vary or change

Visual Art and Earth Science Grade 5, Lesson 1
MATERIALS
- reproduction of the Mona Lisa (or any famous portrait, such as, American Gothic by Grant Wood, or Frieda by Diego Rivera)
- Elements of Art Handout (included at the end of this lesson), one per student
- Variables Chart (included at the end of this lesson)
- 9” x 12” white construction paper or copy paper, one per student
- graphite pencil, one per student
- Colored pencils, one 8 color set per student
- Science notebook, 1 per student

RESOURCES
- FOSS Kit Grade 5, Earth Science: Water Planet, Investigation 2 “Swingers”
- Portfolios Grade 5, Robyn Montana Turner, Barrett Kendall Publishing
  - Elements of Art: page 1
  - Portraits: pages 26, 27
- Elements of Art (included in lesson)
- Internet
- Instructional Media Center (IMC)
  2442 Cardinal Lane, San Diego, CA 92123
To order instructional materials on line: http://destiny.sandi.net

PREPARATION
- All students should understand the science vocabulary from FOSS Kit Grade 5, Investigation 2 “Swingers”.
- Give students the Elements of Art handouts to take home as homework. Affix the handout to their Science Notebook.
- Warning: do not show students the “modern Mona Lisa” examples from the website until the students have finished the lesson. Examples are not exactly indicative of dependent and independent variables, they are simply creative and a lot of fun.

WARM UP (Engage students, access prior learning, review, hook or activity to focus the student for learning) (5 minutes)
- Ask:
  - How are artists and scientists alike?
  - How are they different?
- Project a reproduction of the Mona Lisa by Leonard da Vinci.
- Ask students to describe what they see (e.g., the woman, her clothing, location, time of day, weather, etc.)
- Have students take out the Elements of Art handouts from their Science Notebook or post the Elements of Art for students to see.
- Ask the students to locate and describe the elements of art in the portrait (e.g., line, shape/form, color, texture, space, and value).

MODELING (Presentation of new material, demonstration of the process, direct instruction) (15 minutes)
- Distribute a 9” x 12” piece of white construction paper and a pencil to each student.
- Demonstrate how and instruct students to sketch the basic shapes and lines in the Mona Lisa as true to the original as they can, using graphite pencil only.
Turn the paper to portrait orientation.
Trace your finger around the shape of Mona's face several times on the projected image.
Determine that the shape is a "rectangular oval".
Measure the size of the face using your hands and then show the students how many heads would fit in the length of the frame. (3 heads)
Show the children that the oval of Mona's face is in the upper 1/3 of the work of art.
Lightly sketch a "rectangular oval" in the upper 1/3 of your demonstration drawing.
Notice that Mona's shoulders are about in the middle of the work of art.
Place dots on the demonstration drawing where her left and right shoulders will be.
Trace the line of Mona's neck and left shoulder on the projected image.
Sketch the line representing Mona's neck and shoulder. Stop at the left dot.
Trace Mona's hands with your finger on the projected image.
Notice that the hands are toward the bottom and slightly to the left of center in the portrait.
Sketch the hands on the demonstration drawing.
Do not sketch the whole image.
- Ask students to recall what **variables** are and the difference between **independent** and **dependent variables**.
- Explain that the students are going to change one and only one **variable** in their reproduction of the portrait.
- Explain to students that Leonardo da Vinci's original Mona Lisa is the portrait that would be called the control. In science it is important to make careful observations of the original condition(s) of the painting in order to know what has changed.

**GUIDED PRACTICE** *(Application of knowledge, problem solving, corrective feedback)*
(20 minutes)
- **Ask:**
  - *What would the portrait look like if the weather were changed?*
  - *What would Mona Lisa look like on a windy day? [hair is blowing, trees swaying, holding a hat on her head, surprised expression, etc.]*
- Have students discuss what Mona Lisa would look like in various situations:
  - "What would Mona Lisa look like in a rainstorm, or on a hot, muggy day?"
  - "What would she be wearing?"
  - "What would the background look like?"
  - "What other details would help show the affects of the new independent variable?"
- Have students select one **variable** from the **Independent Variables Chart**.
- Instruct students to draw Mona Lisa the way she would look if that single independent **variable** was changed using graphite pencil and colored pencils.
- Circulate throughout the room encouraging students as they work.

**DEBRIEF & REFLECT** *(Identify problems encountered, ask and answer questions, discuss solutions and learning that took place. Did students meet outcomes?)*
(10 minutes)
- Allow all students to stand around the perimeter of the classroom and hold their "Experimental Mona Lisa" for all to see.
- Allow each student to tell about their independent variable while showing their work.
- **Science Notebook Prompt:** Use the vocabulary of visual art and earth science to answer this question: *How did changing one variable affect the portrait of the Mona Lisa?*

**EXTENSION** *(Expectations created by the teacher that encourage students to participate in further research, make connections, and apply understanding and skills previously learned to personal experiences.)*
- Visual art: After discussing how students could improve the quality of their drawings, students can spend more time editing their works of art to a level of exhibition quality.
- After reading a story, students can change just one variable in the story and create a new
ending. (e.g., "What if the character didn’t win?" "What would happen if the story took place in a different location?")

- Display the works of art with written explanation by each artist describing their independent variable.
Portrait of Mona Lisa (1479-1528), also known as La Gioconda, the wife of Francesco dei Giocondo; 1503-06 (150 Kb); Oil on wood, 77 x 53 cm (30 x 20 7/8 in); Musee du Louvre, Paris
Independent Variables
Chart
Select ONLY one variable from this chart!

breeze       blizzard       lightning
chilly       cloudy sky    drizzle
drought      haze          fog
hail shower   hurricane     heat wave
humid        rainstorm     lightning and thunder
snow flurries flood        sandstorm
tornado       smog

- **controlled experiment:** an experiment in which one (1), and only one (1), variable is changed in order to find out how it affects the outcome of the experiment; all other variables are kept the same, or controlled
- **independent variable:** something that is change on purpose
- **dependent variable:** the result of the independent variable
Elements of Visual Art

#1. **LINE:** a point moving through space

Two types of line: **CURVED** (suggests movement)  
**STRAIGHT** (suggests rigidity)

Three general **DIRECTIONS** a line can travel:

**HORIZONTAL** (suggests stability and rest)

**VERTICAL** (suggests strength)

**DIAGONAL** (suggests opposition)

Line creates edges and suggests space

#2. **SHAPE/FORM:** SHAPE is a 2-dimensional area or plane; FORM is a 3-dimensional volume or space

Three types of shapes/forms:

**GEOMETRIC** △ □ ○ □□

**NATURAL** ★

**FREE**

Shapes/forms can range from representational to abstract
#3. **COLOR:** the visual sensation dependent on the reflection or absorption of light hitting a given surface

*Hue:* refers to the name of a given color (red, orange, yellow, etc.)

**Color Wheel**

**PRIMARY Colors:** red, blue and yellow

**SECONDARY Colors:** color created by mixing two primary colors together (orange, green and violet or purple)

**TERTIARY or Intermediate Colors:** colors produced by adding a primary to the neighboring secondary or two part of one primary and one part of another. (red-orange, blue-green, etc.)

**NEUTRAL Colors:** black, white, gray, and variations of brown, earth colors

**WARM Colors:** Colors suggesting warmth: red, orange and yellow

**COOL Colors:** Colors suggesting coolness: blue, green and purple

**COMPLEMENTARY Colors:** Colors opposite each other on the color wheel: Red/green; blue/orange; yellow/violet

**TINTS:** Colors created by adding white to a color or hue

**SHADES:** Colors created by adding black to a color or hue
#4. **TEXTURE**: surface quality of materials

**ACTUAL**: Tactile texture

**IMPLIED**: Visual texture

Texture can be unique to the medium (clay, paint, pencil, etc.)

Texture can be suggested through shading, pattern and relationship

#5. **SPACE**: the emptiness or area between, around, above, below or contained within objects.

**POSITIVE Space**: The area occupied by objects

![Positive Space Diagram]

**NEGATIVE Space**: The area unoccupied by objects

#6. **VALUE**: the lightness or darkness of a hue or neutral color

A VALUE SCALE shows the ranges of values from light to dark or black to white.

![Value Scale Diagram]
Severe Weather in Fine Art  
Lesson #2

*FOSS Kit Grade 5, Water Planet: Investigation 5, Part 2*

### CONTENT STANDARDS

**Visual Art Grade Five**

1.3 Use their knowledge of all the elements of art to describe similarities and differences in works of art and in the environment.

4.1 Construct and describe plausible interpretations of what they perceive in works of art.

**Earth Science Grade Five**

ES4c Students know the causes and effects of different types of severe weather.

### ESSENTIAL QUESTIONS (Questions students might ask about the topic)

- Can I interpret what I see in the environment to understand weather?
- How do I paint a landscape depicting severe weather?
- What causes severe weather?

### OBJECTIVES & STUDENT OUTCOMES (Students will be able to.....)

- Use the vocabulary of art to describe works of art and the environment.
- Practice interpreting and predicting weather based on visual cues from the environment.
- Draw and paint a severe weather landscape.
- Describe the three necessary conditions for severe weather.

### ASSESSMENT (Various strategies to evaluate effectiveness of instruction and student learning)

- **Feedback for Teacher**
  - Informal observation
  - Finished works of art depicting severe weather
  - Comments made by each student during reflection about weather variables

- **Feedback for Student**
  - Comments from the teacher during discussion, instruction and individual conferencing

### WORDS TO KNOW

**Visual Art**

- **Color:** The visual sensation dependent on the reflection or absorption of light from a given surface. The three characteristics of color are hue, value and intensity.
- **Elements of Art:** Line, Shape/Form, Color, Texture, Space and Value.
- **Form:** A three-dimensional volume or the illusion of three dimensions (related to shape, which if two-dimensional); the particular characteristics of the visual elements of a work of art (as distinguished from its subject matter or content).
- **Line:** A point moving in space. Line can vary in width, length, curvature, color or direction.
- **Shape:** A two-dimensional area or plane that may be open or closed, free-form or geometric. It can be found in nature or is made by humans.
- **Space:** The emptiness or area between, around, above, or contained within objects. Shapes and forms are defined by the space around and within them, just as spaces are defined by the shapes and forms around and within them.
- **Texture:** The surface quality of materials, either actual (tactile) or implied (visual).
- **Value:** Lightness or darkness of a hue or neutral color. A value scale shows the range of values from black to white.
Earth Science
- **Heat**: Temperature, especially weather conditions.
- **Hurricane**: A severe tropical storm or moving wind system that rotates around an eye, or center of low atmospheric pressure.
- **Moisture**: Water or other liquid diffused in a small quantity as vapor, within a solid, or condensed on a surface.
- **Movement**: An act of changing physical location or position or of having this changed.
- **Severe Weather**: Out-of-the-ordinary and extreme weather conditions.
- **Tornado**: A rapidly rotating column of air that extends from a thunderstorm to the ground. Wind speeds can reach more than 400 kilometers per hour (250 mph) in a tornado.
- **Weather**: The condition of the atmosphere around us. Heat, moisture, and movement are the three important variables that describe weather.
- **Weather variables**: Data that meteorologists measure. These include temperature, wind speed and direction, air pressure, cloud cover and precipitation.

**MATERIALS**
- Elements of Art handout from Lesson #1 in the student Science Notebook
- Work of art depicting severe weather: tornado
- Work of art depicting severe weather: hurricane
- 9" x 12" white construction paper, one per student
- pencil and eraser, one per student
- watercolor pencil set of 8 colors, one packet per student
- water containers
- watercolor paint brush, one per student

**RESOURCES**
- **FOSS Kit Grade 5, The Water Planet, Investigation 5 "Weather", Part 2 "Severe Weather"**
- Portfolios, Grade: Five, Robyn Montana Turner, Barret Kendall Publishing
  - "Views of the Environment" pages 6, 7, 8, 9, 11
  - "Works of Art with sky" pages 37, 38, 46, 54, 56, 8388, 89, 90, 91, 92, 94, 98, 99, 100, 104, 112, 113
- Internet Websites:
  - Paintings of Tornadoes
  - Paintings of Hurricanes
    - *Hurricane, Bahamas* by Winslow Homer, 1898-99: [http://www.the-athenaeum.org](http://www.the-athenaeum.org)
  - Paintings of Thunderstorms
    - Severe Weather Power Point: [http://www.slideshare.net/Teach5ch/storms-andie?src=related_normal&rel=3043163](http://www.slideshare.net/Teach5ch/storms-andie?src=related_normal&rel=3043163)
PREPARATION
- This lesson should be presented in conjunction with the FOSS Kit Grade 5, the Water Planet Investigation 5 “Weather”, Part 2 “Severe Weather”
- Review how tornadoes and hurricanes form. (see Power Points found in Resource Section of this lesson)
- Review the Elements of Art (line, shape/form, color, texture, space and value).
- Post the Elements of Art in an area easily visible by all students
- Collect photos of severe weather, specifically tornadoes and hurricanes from magazines, newspapers and websites. Make them available for students to access for this lesson.

WARM UP (Engage students, access prior learning, review, hook or activity to focus the student for learning) (10 minutes)
- Display two works of art, one depicting a tornado and one depicting a hurricane in an area easily seen by all students. (See suggested works of art in the “Resources” section of this lesson.)
- Say:
  - Silently examine these two works of art for one minute. While you are looking, think about how you might describe what you see.
- Ask:
  - What is the same about these two paintings? [line, shape, color, texture, space, severe weather, landscape, sky, etc.]
  - What is different about these two paintings? [one is about severe weather on land, the other about severe weather near or over water]
  - What kind of severe weather do you think is depicted in the first painting? Why?
- Say:
  - We know that there are three important weather variables: moisture, heat and movement.
- Ask:
  - How does the artist show moisture? [lines of rain]
  - How does the artists show heat? [palm trees grow in tropical climates]
  - How does the artist show movement? [indication of wind: blowing flags]
  - What kind of severe weather is depicted in the second painting? Why do you say that?
  - Why would artists create paintings of severe weather like hurricanes and tornadoes?

MODELING (Presentation of new material, demonstration of the process, direct instruction) (15 minutes)
- Allow students to locate their copy of the Elements of Art handout in their science notebook to use as a reference for the rest of the discussion.
- Say:
  - Now that we have looked at these two painting scientifically, let’s look at them using the Elements of Art.
  - The first Element of Art is line.
  - Who can point out straight and curved lines in these works of art?
  - Which directions are the lines traveling? [horizontal, vertical and diagonal]
  - What shapes do we see? [geometric, natural and free]
  - Where did the artists use primary colors in these paintings? [red, yellow, blue]
  - Where did the artists use secondary colors? [green, orange and violet or purple]
  - Usually there are lots of neutral colors in landscapes. Where do we see neutral colors? [black, white, brown]
  - There are lots of tints and shades in these paintings too. Tints are colors that have white added to it, like light blue. Where do you see tints?
  - Shades are colors that have black added to it like navy. Where do you see shades?
  - How does the artist make the painting look like it has textures?
- Distribute one 9" x 12" white construction paper and a pencil with an eraser to each student.
- Demonstrate how and instruct students to sketch a work of art depicting one type of severe weather.
  - Identify the largest shape in the image.
  - Determine how big it is and where it is placed within the frame.
- Sketch the shape in about the same place and the same size as in the original image on the demonstration drawing.
- Choose the next important shape in the work of art.
- Determine its shape size and placement within the frame.
- Sketch this shape in about the same place and the same size as in the original image on the demonstration drawing.
- Continue this process until the scene is mapped.

- Students may use one of the paintings or a magazine, newspaper or website photograph as inspiration.

**GUIDED PRACTICE** *(Application of knowledge, problem solving, corrective feedback)*

*(20 minutes)*

- Remind students to begin by sketching important lines and shapes using pencil and using the entire space on the paper.
- Next the students should draw in details, also using pencil.
- Distribute colored pencil sets to students when significant details have been added to the severe weather work of art.
- Circulate throughout the classroom as students are working encouraging them and conferencing with individuals as needed.

**DEBRIEF & REFLECT** *(Identify problems encountered, ask and answer questions, discuss solutions and learning that took place. Did students meet outcomes?)*

*(5 minutes)*

- Instruct all students to stand around the peripheral of the classroom holding their work in font of themselves at chest level.
- Ask each student to talk briefly about his or her work of art.
- Ask them to quickly identify how they depicted moisture, heat or movement in their work of art.
- Allow students to attach the Severe Weather work of art to their Science notebook.
- Science Notebook Prompt; Describe how you represented moisture, heat and movement in your work of art.

**EXTENSION** *(Expectations created by the teacher that encourage students to participate in further research, make connections, and apply understanding and skills previously learned to personal experiences.)*

- Ask students to locate additional photographs and illustrations of current severe weather from anywhere in the world. Place these on a bulletin board or area of the classroom to share.
- Use watercolor paints to all additional color to the works of art.
Hurricane, Bahamas 1898 by Winslow Homer (watercolor)
http://www.the-athenaeum.org
Tornado by John Brosio
http://www.johnbrosio.com/tornadoes_one.html
Hiroshige, Sudden shower over Shin-Ōhashi bridge and Atake
http://www.brooklynmuseum.org/opencollection/objects/121666/Sudden_Shower_Over_Shin-
Ōhashi_Bridge_and_Atake_Ohashi_Atake_no_Yudachi_No_58_from_One_Hundred_Famous_V
iews_of_Edo
## Water Conservation Poster Ideas

**Lesson # 3**

FOSS Kit Grade 5, Earth Science: Water Planet, Investigation 5, Part 4

### CONTENT STANDARDS

**Visual Art Grade Five**

2.7 Communicate values, opinions, or personal insights through an original work of art.

**Earth Science Grade Five**

ES3d Students know that the amount of fresh water located in rivers, lakes, underground sources, and glaciers is limited and that its availability can be extended by recycling and decreasing use of water.

ES3e Students know the origin of the water used by their local communities.

### ESSENTIAL QUESTIONS *(Questions students might ask about the topic)*

- Where does the water I use come from?
- What can I do to conserve water in my community?
- How do I create a poster that communicates my ideas effectively to others?

### OBJECTIVES & STUDENT OUTCOMES *(Students will be able to…)*

- explain the importance and source of fresh water for San Diego.
- develop ideas on how to conserve the use of fresh water.
- design and create effective poster ideas communicating water conservation.

### ASSESSMENT *(Various strategies to evaluate effectiveness of instruction and student learning)*

- Feedback for Teacher
  - Informal observation
  - Thumbnail sketches of water conservation posters
- Feedback for Student
  - Comments from the teacher during discussion, instruction and individual conferencing

### WORDS TO KNOW

**Visual Art**

- Focal Point: The center of interest or activity
- Image: A visible representation, a visible impression
- Poster: A large printed picture, notice, or advertisement displayed in a public place
- Thumbnail Sketch: A concise, miniature version of a larger, completed work of art

**Earth Science**

- Conserve: To use carefully and protect.
- Fresh Water: Water without salt that is found in lakes, rivers, groundwater, soil and the atmosphere.
- Ice cap: A glacier forming on an extensive area of relatively level land and flowing outward from its center.
- River: A large natural stream of water emptying into an ocean, lake or other body of water.
- Salt Water: Ocean water.
**MATERIALS**
- 8 ½" x 11" copy paper, one per student
- pencil and eraser, one per student
- set of 8 basic colored pencils, one per student
- Science notebook, one per student

**RESOURCES**
- FOSS Kit Grade 5, "Water Planet", Investigation 5 "Weather", Part 4, "Local Water"
  - Portfolios, Grade 5, Robyn Montana Turner, Barrett Kendall Publishing
    - Examples of magazine covers (pages 32 and 33)
    - "Today's Designs" (pages 76 and 77)
- Internet sites:
  - School Zone: [http://20gallonchallenge.com/schoolzone.html](http://20gallonchallenge.com/schoolzone.html)
  - Water for Kids (Environmental Protection Agency) [www.epa.gov/ow/kids.html](http://www.epa.gov/ow/kids.html)
  - EcoKids - Includes water conservation tips you can follow in each room of your house to save water [www.ecokids.ca/pub/eco_info/topics/water/water/index.cfm](http://www.ecokids.ca/pub/eco_info/topics/water/water/index.cfm)
  - Surfrider Foundation: [www.surfrider.org](http://www.surfrider.org)
- Instructional Media Center (IMC)
  2442 Cardinal Lane, San Diego, CA 92123
  To order instructional materials on line: [http://destiny.sandi.net](http://destiny.sandi.net)

**PREPARATION**
- This lesson will be most effective when given after or in conjunction with FOSS Kit Grade 5, "Water Planet", Investigation 5 "Weather", Part 4 "Local Water".

**WARM UP** *(Engage students, access prior learning, review, hook or activity to focus the student for learning) (5 minutes)*
  - Ask:
    - *What is the first thing your eyes see when you look at this poster?* [road in a knot]
  - Say:
    - *Artists, graphic designers and advertisers use lines, shapes, colors and images to get your attention.*
    - *The place where your eyes are drawn to is called the focal point.*
    - *Notice that the poster designer used very few words and that the words are powerful.*
    - *Who would like to come forward and ready the words?* [When you decide to drink and drive.]
    - *The image and the few words the designer used make you think.*
  - Ask:
    - *What is this poster trying to tell the viewer?* [when you drink alcohol and try to drive your vision and reflexes are not correct]
    - *How do you know?* [image is eye catching and meaningful; words are few but powerful]

**MODELING** *(Presentation of new material, demonstration of the process, direct instruction) (20 minutes)*

Visual Art and Earth Science Grade 5, Lesson 2
• Explain that during this lesson students will be designing a very important poster. The poster will encourage water conservation.
• Say:
  o Creating an effective poster is not the same as creating a drawing or writing a message.
  o Here are some steps that will help us create successful posters.
  o Step one is RESEARCH your subject or theme.
  o Step two is to PLAN your poster. That means you should make several small sketches illustrating different ideas, different words and different images. Artists call small sketches "thumbnail sketches”.
  o Step three is to EDIT your ideas. You look at your thumbnail sketches and decide which one is your favorite. Take that sketch and re-sketch it until you have the placement of the image and the words just the way you want it.
  o Step four is to CREATE your poster. You create the final poster in the correct size using poster paper or poster board and appropriate medium like markers or poster paints.
• Display the “Water Conservation Data” sheet provided in this lesson in an area easily seen by all students, e.g., under a document camera.
• Say:
  o Remember how I said we were going to be designing an important poster during this lesson?
  o This is step one in creating a poster, RESEARCH.
  o Read and examine these two graphs independently then you will talk with your partner about what you learn.
• After an appropriate amount of time, have students talk to their partner about their responses to the following questions:
  o From the top graph, what percentage of the earth’s water is salt water? [97%]
  o What percentage of the earth’s water is fresh water? [3%]
  o What percentage is frozen in ice caps? [2 %]
  o What percentage of the world’s water is drinkable? [1%]
• Have students list the ways in which they use water everyday in their science notebooks.
• Record a variety of responses from students on a separate piece of paper under a document camera or on a large chart paper.
• Say:
  o Let’s take a look at the graph on the bottom of Water Conservation Data sheet.
  o How is most of the available drinking water in San Diego used? [55% for watering lawns and landscaping]
  o What do I mean when I say available water? [clean, fresh water]
  o What percentage of available water in the City of San Diego is used to flush toilets? [20% flushed down toilets]
  o What percentage of available water is used to do laundry and dishes? [7 % is used to do laundry and dishes]
  o What does it mean when it says 2% is lost to undetectable leaks? [this refers to water lost from leaks in the water delivery system, usually underground and not detected until the leak effects ground stability or becomes visible.]
  o What does it mean to conserve water? [to use carefully and protect]
  o Why is it important to conserve water? Because we have a limited supply]
• Go to www.watereducation.org/watersources/region.asp?rid=10 and display the page for the class to see.
• Investigate this site to discover where the usable water in San Diego comes from. [#1. Colorado River, #2. State Water Project from rivers and dams throughout California, and #3. Local streams and reservoirs]
• Look at the list of how students use water everyday with the class again.
• List ways in which students can conserve water on another sheet of paper under a document camera or on a chart paper.
• Distribute an 8 ½ x 11 piece of copy paper and a pencil to each student.
• Demonstrate how and instruct students to fold the paper in half with the “short sides” together. Repeat that process and unfold the paper revealing 4 rectangular sections.
• Draw lines on the folds using pencil.
• Students may choose portrait or landscape orientation.
• Demonstrate how to transform a water conservation idea into a sketch in one of the rectangular sections.
• Say:
  o I am going to choose an idea from the list of ways to conserve water.
  o I think I will use turning off the water while brushing your teeth.
  o What kind of image could I draw? [someone brushing their teeth, close up of a toothbrush, water running from a faucet]
• Sketch the chosen image in one of the rectangular section.
• Write “Turn it OFF!” using a combination of lower case and upper case letters.
  o I am using only 3 words. Notice how I made the words large and I placed them under the image so the image and the words are easily seen.
  o Who can guess why I made the word “OFF” all in capital letters? [it is the most important word on the sketch, to get the viewer’s attention]

GUIDED PRACTICE (Application of knowledge, problem solving, corrective feedback) (20 minutes)
• Say:
  o Now it is your turn to create at least 4 thumbnail sketches about water conservation.
  o Use the ideas we listed or think of another water saving idea that we missed.
  o Create "mini posters" or thumbnail sketches illustrating your ideas.
  o Use an image that will get the viewer’s attention and powerful focal point.
  o Use 4 words or less.
  o Make the words easily readable or legible and make sure you spell correctly.
  o If you come up with more than 4 ideas, turn the paper over and use the back.
  o Make sure you put your name in one of the rectangles on the back of the paper.
• When students have create at least 4 ideas, suggest they use colored pencils to complete their design ideas.
• Move throughout the classroom as students are working to observe their working process.
• Conference with students as needed.

DEBRIEF & REFLECT (Identify problems encountered, ask and answer questions, discuss solutions and learning that took place. Did students meet outcomes? (5 minutes)
• Ask students to examine their thumbnail sketches carefully.
• Divide the class into partners for a quick “partner share”.
• Allow students a short time to share their designs and ideas with a partner.
• Instruct students to choose the one thumbnail sketch that they believe communicates their water conservation idea most effectively and place a small star in the upper left hand corner of that design.
• Instruct students to attach their thumbnail sketch to their science notebook.

Visual Art and Earth Science Grade 5, Lesson 2
• **Science Notebook Prompt**: Explain why you chose the *thumbnail sketch* and how it tells about water conservation.

**EXTENSION** *(Expectations created by the teacher that encourage students to participate in further research, make connections, and apply understanding and skills previously learned to personal experiences.)*

- Transfer thumbnail sketch ideas to 12” x 18” (or larger) while construction paper or poster board. Use markers, colored pencils, and/or poster paints to create final versions of the water conservation posters.
- Place the water conservation posters around the school site or in the community.
- Ask for community feedback to measure the effect of the student posters.
When You decide to drink and drive.

by pepey
http://thefinishedbox.com/inspiration/print/best-advertisement-posters/
Water Conservation Data

97% of the world's water is salty and undrinkable
2% of the available drinking water is frozen in ice caps and glaciers
1% of the world's water is available to drink

City of San Diego Water Usage

55% used to water lawns
20% flushed down toilets
15% used in showers and baths
7% to do laundry and dishes
2% is lost through undetected leaks
1% is available to drink

The average person uses **88 gallons** of water a day!

List many ways to **YOU** use water everyday...