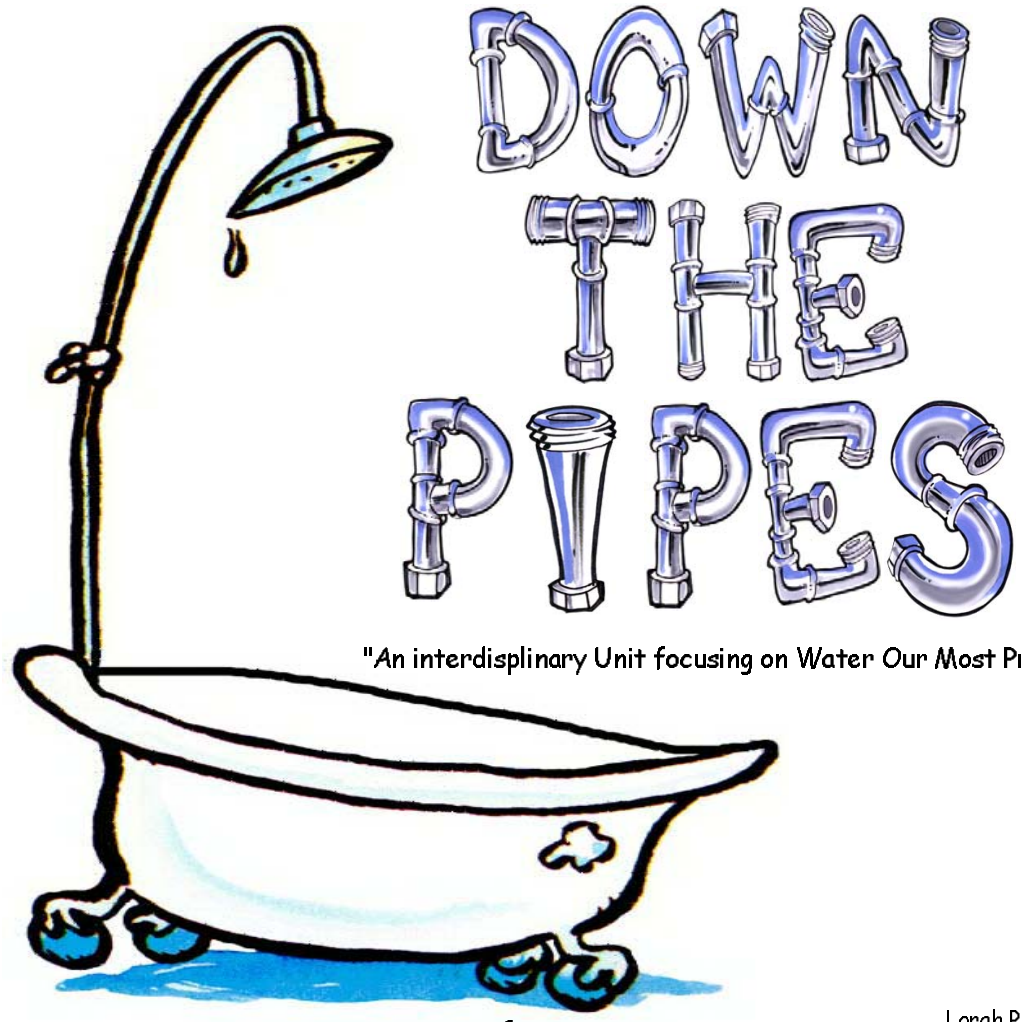
Be Water Smart Don't let it go.....



"An interdisplinary Unit focusing on Water Our Most Precious Resource."

Contact Information:
Carmen Ramos: cramos@dadeschools.net
Miriam Gomez: MGomez2@dadeschools.net
Rosa Sampedro: rsampedro@dadeschools.net

Lorah Park Elementary School
5160 N.W. 31 Avenue
Miami, FL 33142
305-633-1424
Mailcode: 3041

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SUMMARY OF PROJECT:

Water is essential to life. All living things require water for survival. Since water is one of the most precious resources, we must recognize its importance in our lives and throughout the world. Therefore, the practice of water conservation is an important concept to teach young children. The first step in teaching young children how to conserve water is helping them become aware of how much water is used in daily living, the source of their water and the causes of water pollution.

Be Water Smart! Don't let it go… DOWN THE PIPES! will help children become aware of the many different ways we use water in our daily lives and give students a strong understanding of the nature and importance of water. This unit incorporates the properties of water, the aquifer, the earth's limited fresh water supply, water conservation, water usage and the water cycle.

Teaching children to value and protect their drinking water is an important investment in the future. As children grow to adulthood the lessons learned will hopefully result in responsible decisions that yield a sustainable water supply for the future. Students can also become excellent advocates conveying an important message home to parents: Conservation is everybody's responsibility.

PROJECT GOALS AND OBJECTIVES:

As a result of this unit students will be able to:

- Identify facts about water
- Write or tell ways people use water
- Understand the definition of dissolve
- Describe a liquid, solid, vapor, water
- Use scientific method to conduct experiments
- Classify substances that dissolve, and will not dissolve in water
- Understand the effects of fresh and salt water buoyancy
- Understand the evaporation process
- Use technology to draw the water cycle
- Create a big book of water conservation
- Use KidPix to create a water conservation slide show
- Showcase work in the Media Center
- Take virtual fieldtrips on the topic of water

PROJECT EVALUATION:

Students will be evaluated on an on-going process. Each project will be evaluated using a rubric. The rubrics are included in this packet. Using these assessments, 80% of all students will be able to master the project's objectives. At the end of each lesson, students will be assessed informally from their class participation (recalling previous knowledge, brainstorming ideas, and asking and answering questions related to the lesson). Anecdotal records will be collected on individual student participation.

SUNSHINE STATE STANDARDS:

This project addresses the following Sunshine State Standards:

Science:
The students will use the scientific methods to conduct experiments, realize the need for water as a natural resource and the consequences of using limited natural resources. Understand the stages of the water cycle. Describe liquids, solid, vapor. Recognizing that the same material can exist in different stages of matter; the student will use scientific processes and habits of mind to solve problems by using senses, tools, and instruments to obtain information form his or her surroundings. The student understands the importance of using water for personal hygiene and agriculture.

Art:
The student understands that works of art can communicate an idea and elicit a variety of responses through the use of selected media, techniques, and processes. Student use the elements of art and the principles of design to effectively communicate ideas.

Technology:
Students will follow the National Educational Technology Standards. These are using basic operation and concepts of hardware and software, engaging in ethical behavior while using information, manipulating technology tools to communicate with others, collaborate to problem solve and select appropriate tools for specific tasks. Evaluate information and create products throughout the unit of study.

COURSE OUTLINE:

Be Water Smart! Don't let it go… DOWN THE PIPES! unit is designed for teachers to implement the entire program or selected lessons from this IMPACT II resource packet. From this unit, students will learn about all aspects of water from protection to conservation. In one of the activities the students will travel in time to research ways people have depended on water during different periods of history.

Students will also conduct experiments, taking surveys and collecting data. They will form predictions, hypothesis and conclusions from experiments conducted in class.

Students will make "Big Books", construct posters on how to save water, create the water cycle using software and, as a culminating activity, develop a **Down the Pipes!** Web page using FrontPage software. The classes participating create a display of their work in the Media Center to inform the school community about water conservation.

Topics addressed in K-2nd grade include:

Water's can change shapes!
Water makes things float and disappear
Plants drink water too
Aquifer – Underground resources
The water cycle at it's best!
Every Drop Counts!

Topics addressed in 3rd – 5th grade include:

Lots of water, little to drink
The water cycle: Using water over and over again
Florida floats on water
Protecting our water supply
Wastewater treatment

WATER CAN CHANGE SHAPES!

Lesson 1

Background: Water has no shape. In its liquid form it borrows the shape of the container it occupies. Water is found most often in its liquid form; it becomes solid when the temperature drops below freezing 32°F or 0° C. Water becomes vapor when it escapes into the air, the more heat it is applied the faster it evaporates. Water is in a constant cycle of changing from a liquid to a vapor.

Objective: Students will identify a liquid or a solid
Demonstrate orally the difference in liquids and solids
Illustrate the definition to the terms: liquid, solid, vapor

Materials: Several containers in various shapes
Water, milk, syrup, oil, popcorn, pennies, beans

Procedure: Ask students "What shape is water?"

A. Pour water, milk, syrup and beans, pennies and popcorn into different clear plastic containers to demonstrate the difference between a solid and a liquid.

B. Introduce the term "liquid". Discuss other substances that are liquid such as milk, oil and syrup. In small groups allow students to see that liquids can have different density/thickness as well as solids can have different textures and weight.

C. Have students discuss the definitions of a liquid and a solid, and how liquids take the shape of the container where they are stored at. Write their responses on the board.

D. Introduce the term "evaporation" Discuss how water evaporates when it boils.

E. Introduce the term "freeze" Discuss how water that is placed in the refrigerator or in cold weather converts from a liquid to a solid (ice, ice cubes, snow).

F. Have students draw a solid and a liquid and describe each one.

Assessment: Teacher observation, class discussion and solid/liquid student work.

WATER CAN CHANGE SHAPES!

Name:_____ Date:_____

Students please fill in the blank and draw an illustration of the substance you are describing.

"_____" IS A LIQUID. "_____ IS NOT A LIQUID.

LIQUID	SOLID

EVERY DROP COUNTS!

Lesson 2

Background: If we practice water-saving habits now, we can make sure that we have enough clean, safe water in our future. As students become aware of the importance of water conservation they in turn encourage family members to save water at home.

Objective: Students learn how much water can be wasted from a leaky faucet
Students brainstorm ideas on how to conserve water
Students describe how water is used at home and how it can be saved

Materials: Bucket, cups, faucet and sink, tape, newspaper, makers, poster board glue, crayons, markers and pencils.

Procedure: Each student fills his/her cup of water and empties into the bucket. Students use tape to mark on the outside of the bucket the level of water every time a cup of water is added to the bucket. Once the bucket is full they will be able to see how many cups it took to fill the bucket with water. The water is emptied from the bucket and the bucket is placed underneath the faucet. The faucet is opened just a bit; enough to have a drip of water constantly fall into the empty bucket. Students are asked to predict how many cups of water will be wasted until the next school day. Students predictions are recorded on chart paper or on the board. The next morning the teacher and students determine how many cups of water the leaky faucet actually wasted. Just by one small drip at a time.

Assessment: Each student will create a poster titled “Save Our Water”. Students brainstorm ideas on how to conserve water. Students work in groups to create posters to post around the school on ways we can help conserve water. A rubric will be used as the assessment tool for this assignment.

Making A Poster:

SAVE OUR WATER POSTER

Teacher Name: _____

Student Name: _____

CATEGORY	4	3	2	1
Graphics/Originality	Several of the graphics used on the poster reflect a exceptional degree of student creativity in the creation and/or display.	One or two of the graphics used on the poster reflect student creativity in the creation and/or display.	The graphics are made by the student, but are based on the designs or ideas of others.	No graphics made by the student are included.
Required Elements	The poster includes all required elements as well as additional information.	All required elements are included in the poster.	All but 1 of the required elements are included in the poster.	Several required elements were missing.
Titled	At least 5 accurate facts are displayed on the poster.	title can be read and describes content well.	Title can be read but its too small. It does not describe content well.	Title is very small and does not describe the content on the poster well.
Content / Accuracy	At least 5 Accurate facts are described on the poster.	3-4 Accurate facts are displayed on the poster.	2 Accurate facts are displayed on the poster.	Less than 2 accurate facts are displayed on the poster.
Use of Class Time	Used time well, focused on project.	Usually focused on getting the project done.	Used some of the time well, occasionally distracted others	Did not use class time to focus on project or often distracted others.

WATER CYCLE AT IT'S BEST!

Lesson 3

Background: Water never stops moving. Snow and rain fall to the earth form clouds. The rain and melted snow run downhill into rivers and lakes, sometimes crashing over waterfalls. Eventually the water flows into the ocean. During evaporation, the water turns from liquid into gas, and moves from oceans and lakes into the atmosphere where it form clouds and fall down to earth as snow and rail all over again.

Objective: Student will understand Water vapor moves between the earth's surface and its atmosphere in a continuous cycle

Student will depict and clearly describe the stages of the water cycle in a creative format. Student will communicate his knowledge of the water cycle to class.

Student will create a water cycle using KidPix software.

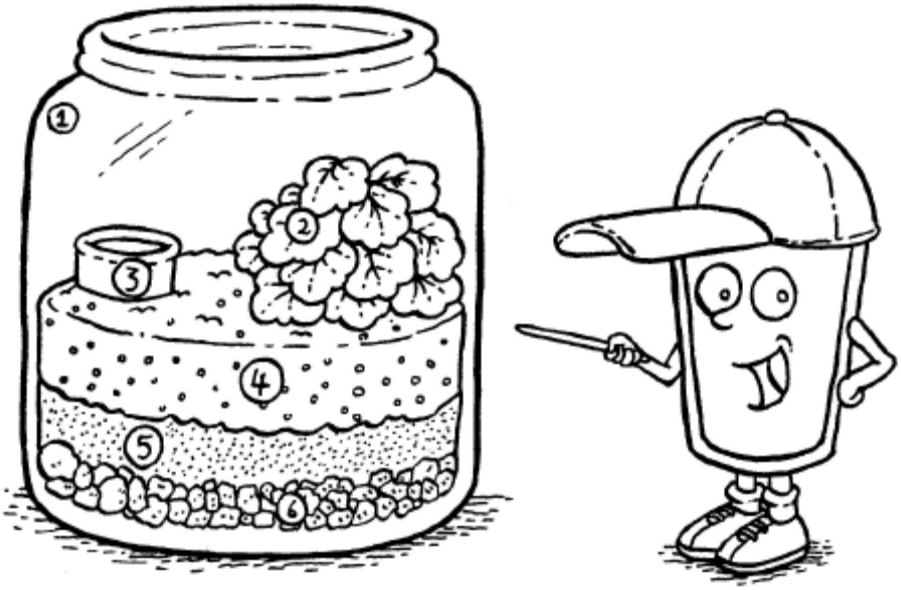
Materials: Large bowl, pitcher, water, clear plastic wrap, mug, string, KidPix software.

Procedure: After reviewing the water cycle and its stages the class will proceed to go outside. Place the bowl in full sunlight, fill bowl with water about ¼ full, place empty mug in center of bowl, cover bowl with plastic wrap, tie string around top of bowl and let the bowl sit in the full sun.

Return in one hour and the students will be able to observe that the sun has caused the water in the bowl to evaporate. This water has turned into vapor and risen to the top of the bowl. The condensation is now on the plastic wrap. The droplets will gather and become heavy and then fall as rain into the bowl and the mug.

Assessment: Students will record their observations and from this data create their own pictures of the water cycle using KidPix software. A rubric will be used to assess their work.

WATER CYCLE ACTIVITY



You will need:

1. jar
2. plants
3. bottle cap or shell of water
4. soil
5. sand
6. small rocks

Directions:

1. Fill jar as in the picture and put the lid on.
2. Put the jar in a sunny place and see how the water cycle works.

Water Cycle Kid Pix Rubric

1) Demonstrates understanding of the 3 stages of water and the conditions under which they exist.
20 points _____

2) Demonstrates understanding of the water cycle.
20 points _____

3) Demonstrates understanding of the paths water can follow as it seeks to return to sea level.
20 points _____

4) Uses the appropriate vocabulary to explain each step in the cycle.
20 points _____

5) Organization, Content and Ideas

20 points _____

Total possible points 100 Student earned _____

Comments:
_____
_____
_____
_____
_____

REFERENCE / WEB SOURCES

PROJECT WET

http://www.projectwet.org/

AIMS EDUCATION ACTIVITIES
http://www.aimsedu.org/

US ENVIROMENTAL PROTECTION AGENCY
http://www.epa.gov/OGWDW/kids/

FLORIDA SPLASH WATER EDUCATION
http://www.swfwmd.state.fl.us/education/kids/

SOUTHWEST FLORIDA WATER CONSERVATION "WATER DROPS"
http://www.swfwmd.state.fl.us/publications/files/waterdrops_conservation.pdf

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The Magic School Bus at the Waterworks-Joanna Cole

Waters-Edith Newlin Chase and Ron Broda

Water Water Everywhere-Joanne Baarkan

Water -Rae Bains

Three Days on A River in A Red Canoe--Vera Williams

Little Toot-Hardie Gramatky

The Watersnake-Berneice Freschet

Talk About Water-Angela Webb

Let's Read and Find Out Science Books: Water For Dinosaurs and You-Dr. Roma Gans and Dr. Franklyn Branley

Dibble and Dabble-Dave and Julie Saunders

Where Will You Swim Tonigh?-Milly Jane Limmer

By the Sea-Michelle Koch

Under the Water-Harriet Ziefert

Water's Way-Lisa Westberg Peters

Weather

Rain Where Do you Come From?-Francesea Grazzini

Cloudy with a Chance of Meatballs-

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What will the Weather Be Like Today-Paul Rogers