STEM Learning Module Template

PISA Team: **Bayonne**

Name	Grade	School
Casey		
Kristen		
Vanessa		
Melissa		
Maryanne		

Strand(s): **WATER**

Grade(s): **Grades 3-5**

Key Science Terms: **water pollution, water cycle, water conservation, run-off, , filter, filtration, quality, organisms, people, waste, purification, ponds, environment, chlorine, contaminant, natural, artificial, particle, environmental engineer, absorption, evaporation, perspiration, transpiration, clouds, arsenic**

Key Science Concepts:

- ✓ The stages of the water cycle continue over and over (precipitation, evaporation, condensation)
- ✓ During the water cycle, water moves through air and land.
- ✓ Water pollution is different in different places.
- ✓ Contaminants are found in the environment.
- ✓ Water is present in liquid, gaseous and solid states.
- ✓ People and animals cause pollution.
- ✓ Pollution never disappears, it just changes form.
- ✓ Sewers have an impact on the amount of pollution that goes into our waters.
- ✓ There is a limited amount of fresh water in the world.
- ✓ Some materials absorb water better that others. (Ex: soil is better than concrete)
- ✓ The problem of water pollution can be addressed by a variety of approaches, some of which are designed by environmental engineers.

NJCCC Standards:

5E's	Procedure	Assessment Attach all assessments	Materials / Handouts Attach all handouts
Engage Days/Hours:	**Key Questions**: ▪ Where does water come from? ▪ What is the water cycle? **Key Concepts:** ▪ Water has been around as long as the Earth has. ▪ The Earth has a limited amount of water. ▪ Evaporation is when the sun heats up water in rivers or lakes or the ocean and turns it into vapor or steam. ▪ People perspire and plants transpire. ▪ Condensation is when water vapor in the air gets cold and changes back into liquid and forms clouds. ▪ Precipitation occurs when the clouds become too condensed and cannot hold the water any longer. **Procedure:** ▪ Students complete pre-test. Read aloud "Cloudy With a Chance of Meatballs" by Judi Barrett. Using	**Pre-Test:** Students will complete a pre-test. **Science Journal:** Students will complete for classwork or homework. ▪ What did I learn today? ▪ How did I learn it? ▪ What key vocab did I learn today? Draw own diagram of water cycle. Label using vocab words.	▪ Cup of water ▪ "Cloudy With a Chance of Meatballs" ▪ www.kidzone.ws/water/ ▪ Cotton ball ▪ Sponge ▪ Water cycle worksheets ▪ Water cycle crossword ▪ Water cycle song

	www.kidzone.ws/water/ have students observe a glass of water and ask the students how old is water? Explore the website with the students explaining the age of water and the cycle water follows. Have students develop an understanding of new vocabulary words using a diagram of the water cycle.		
Explore Days/Hours:	**Key Questions:** ▪ What is water pollution? ▪ How does water pollution happen? ▪ How can we prevent water pollution? **Key Concepts:** ▪ People and animals cause water pollution. ▪ Water pollution is a serious problem in the US and Canada. ▪ Polluted water contains chemicals and germs that can kill acquatic ecosystems. ▪ Green water has too many algae plants growing it it. ▪ It is difficult to identify polluted air by appearance.	**Science Journal:** Students will complete for classwork or homework. ▪ What did I learn today? ▪ How did I learn it? ▪ What key vocab did I learn today? Draw own diagram of water cycle. Label using vocab words. ▪ Students will design a poster using their findings in their scavenger hunt.	▪ Disposable Cameras ▪ Scavenger Hunt handout ▪ Pollution Mural ▪ Markers, Crayons ▪ Poster Board

- Pollution never disappears it just changes form.
- Be more aware of what is going down your sewer.

Procedure:

- Complete water pollution prevention mural.
- Take students outside and have them identify water polluting causes.
- Students will complete Scavenger Hunt outside for water pollution causes.
- Students will take pictures of water polluting
- Have students brainstorm a possible form of action to prevent water pollution.

Explain

Days/Hours:

Key Questions:

What are the pollutants in your neighborhood?

Was one area more polluted than another? Why?

Key Concepts:

- People can have a negative impact on water pollution in their neighborhoods.
- High traffic areas are more polluted

Science Journal:

Students will complete for classwork or homework.

- What did I learn today?
- How did I learn it?
- What key vocab did I learn today? Draw own diagram of water cycle.

Materials / Handouts

- Poster
- Crayons
- Markers
- Pencils
- Pictures

than other areas with less traffic.

Label using vocab words.

Procedure:

- Students will present poster of their neighborhood's findings.

Elaborate

Days/Hours: _____

Key Questions:

How is the water in the U.S. different from the water in Bangladesh?

Why do individuals filter water?

Science Journal:

Students will complete for classwork or homework.

- What did I learn today?
- How did I learn it?
- What key vocab did I learn today? Draw own diagram of water cycle. Label using vocab words.

Materials/Handouts

- EIE UNIT: Water, Water Everywhere
- Saving Salila's Turtle

Materials: p. 70 EIE

Key Concepts:

- People and animals cause water pollution.
- Water pollution is a serious problem in the US and Canada.
- Polluted water contains chemicals and germs that can kill aquatic ecosystems.
- Green water has too many algae plants growing it.
- It is difficult to identify polluted air by appearance.
- Pollution never disappears it just changes form.
- Be more aware of what is going down your sewer.

Procedure:

- Create a Venn Diagram comparing and contrasting US water with Bangladesh water.
- Read aloud Saving Salila's Turtle
- Students will construct their own water filter and share their discoveries.

Evaluate

Days/Hours: _____

Procedure:

- Students will complete post test.
- Students will be responsible for completing a blank water cycle.
- Students will write 5 important ways to minimize water pollution.

- Post-test
- Water Cycle Handout
- Science Journal

Timeline: Create a timeline for this project.

Engage-	Day 1	Define Water concepts
Explore-	Day 2	Water Pollution- students explore neighborhood.
Explain-	Day 3	Teams present their findings and share what they have learned l
Elaborate-	Day 4	Students learn about water filtration using EIE unit.
	Day 5	Design and test water filter
Evaluate-	Day 6	Post Test, Student Assessment, Share Journal Entries

Sources:

Water Pollution Scavenger Hunt Poster Rubric
http://rubistar.4teachers.org/index.php?screen=CustomizeTemplatePrint&
4 2 Explore - Water
http://www.42explore.com/water.htm

Beach Water Pollution Activities
http://www.epa.gov/waterscience/KidsStuff/drop3.pdf
Contaminant Scavenger Hunt
http://www.epa.gov/safewater/kids/wsb/pdfs/682.pdf
DeKalb County - Watershed Info
http://dekalbwatersewer.com/education_form.html
EEK - Our Earth - Water Wonders
http://www.dnr.state.wi.us/org/caer/ce/eek/earth/groundwater/index.htm
EPA - Bayonne
http://oaspub.epa.gov/enviro/ef_home3.top_display_zip?p_zipcode=07002
EPA - Water for Kids
http://www.epa.gov/safewater/kids/other.html
Farming Today & Tomorrow
http://www.campsilos.org/mod4/students/hunta.shtml#watershed
Freddy the Fish
http://courses.ttu.edu/thomas/conference%20paper/tes1998/Freddy%20the%20Fish.htm
Kid Zone - Water cycle lesson
http://www.kidzone.ws/water/
Pro Teacher
http://www.proteacher.com/110056.shtml
River Project
http://www.educationworld.com/a_tech/tech122.shtml
Stevens Institute Center for Environmental Systems
http://www.cee.stevens-tech.edu/
The Water Shed Game
http://www.bellmuseum.org/distancelearning/watershed/watershed2.html
USGS - Water Resources Posters
http://water.usgs.gov/outreach/OutReach.html
USGS - Water Science For Schools
http://ga.water.usgs.gov/edu/
Water Consumption Calculator
http://www.csgnetwork.com/waterusagecalc.html
Water Cycle Diagram
http://www.arboretum.fullerton.edu/grow/primer/images/water-cycle.gif
Water Cycle Wheel - Printable
http://www.epa.state.il.us/kids/fun-stuff/water-cycle/wheel-part-1.html
Water Pollution FAQs
http://www.lenntech.com/water-pollution-FAQ.htm
Water Pollution Project

http://pan.intrasun.tcnj.edu/501/projects/Cruz/water_pollution.htm
Water Use
http://www.aag.org/HDGC/www/intro/units/unit1/worksheets/wksheet1-3.PDF
Water Use Around the World - worksheet
http://www.educationworld.com/a_lesson/dailylp/dailylp/pdfs/dailylp011.pdf
water wheel sheets
http://www.actewagl.com.au/education/Teachers/WaterWheel/WaterWheel_TeacherInstructions.pdf

Name: _____ Date: _____

WATER POLLUTION SCAVENGER HUNT

List and take pictures of the following pollutants you find around the perimeter of the school yard. Make sure to keep a tally of the objects you find.

MATERIALS

- Scavenger Hunt Clue Sheet
- Pencils
- Camera

	Item	Yes, we found this.	No, we didn't find this.	Tally
1.	Food wrappers			
2.	Beverage bottles			
3.	Paper			
4.	Cigarette butts			
5.	Broken glass			
6.	Pet waste			
7.	Rubber bands			
8.	Grease or oil spots			
9.	Pesticide treated areas			
10.	Gum			

Created By:
Kristen Farley, Vanessa Geerin, Melissa Grillo, Casey Jorgensen, and Maryanne Parks

Water Cycle
By Lori-Ann Phelan

(Sang to the tune of She'll Be Coming Around the Mountain)

Water travels in a cycle, yes it does
(use pointer finger to make a big circle)

Water travels in a cycle, yes it does
(repeat finger circle)

It goes up as evaporation
(moves hands up to the sky

Forms clouds as condensation
(make a cloud overhead with arms)

Then comes down as precipitation, yes it does!
(sprinkle with fingers while bringing arms down in front of you)