

STEM Learning Module Template

PISA Team:

| Name | Grade | School |
|-----------------|--------------|------------------------------|
| Suzanne Vazquez | 3-6 SPED | Joseph H. Brensinger, PS 17 |
| Elba Cruz | 4 Gen/ESL | Alexander D. Sullivan, PS 30 |

Strand(s): Land and a touch of Water POLLUTION: Our Living World and Environmental Issues

Grade(s):3-5

Key Science Terms: pollution, environment, exhaust, nature, recycle, renewable, non-renewable, resources, ecology, toxic, biodegrade, garbage, trash, pesticides, ozone, waste, conserve, products, composting, landfill, packaging

Key Science Concepts:

- Pollution is the contamination of air, soil, or water by the discharge of harmful substances
- Pollution is stinky stuff, muck, poison.
- Renewable Vs. Non-Renewable Resources
- Humans are eating, drinking, and breathing pollution most of the time
- Humans make pollution all over the world
- There are at minimum 7 types of pollution: air (indoor & outdoor), land, water, noise, light, mercury an water
- Pollution prevention is the reduction or elimination of pollution at the source (source reduction) instead of at the end-of-the-pipe or stack.
- Garbage vs. trash (Land Pollution)
- Garbage is one of the causes of land pollution.
- Humans produce tons of garbage each year.
- Waste shouldn't be burnt because it pollutes the atmosphere and we shouldn't dump it in the sea because that pollutes the waters.
- An effect is that plants will take in the chemicals and we eat the plants.
- Garbage is buried but underground it breaks down and it will decay.
- We as humans pollute our lakes, rivers, streams, and oceans.

- Many innocent animals are dieing and our drinking water is going bad. (More than one-half of the world's major rivers are being seriously depleted and polluted, degrading and poisoning the surrounding ecosystems, thus threatening the health and livelihood of people who depend upon them for irrigation, drinking and industrial water,
- Effects are often by the coasts and can kill fish, sea birds are unable to mate, whales are poisoned, and turtles can be killed. People drinking that water become very sick. Water pollution can be prevented by cleaning the water before use, in rich countries the wastes are treated before they are released into the water.
- Seventy-three different kinds of pesticides have been found in groundwater, which is potential drinking water.
- Each year U.S. factories dump 3 million tons of toxic chemicals into the air, land, and water. That compounds the over one-half billion tons of solid hazardous wastes
- Pollution kills plants and animals and destroy buildings

NJCCC Standards:

| 5E's | Procedure | Assessment Attach all assessments | Materials/Handouts Attach all handouts |
|---|---|---|--|
| Engage Days/Hours : <u>Day 1 & 2</u> | Key Questions: <ul style="list-style-type: none"> - What is Pollution? - Where do we find pollution? Key Concepts: <ul style="list-style-type: none"> • Pollution is the contamination of air, soil, or water by the discharge of harmful substances • There are at minimum 7 types of pollution: air (indoor & outdoor), land, water, noise, light, mercury and water • Pollution is stinky stuff, muck, poison. • Renewable Vs. Non-Renewable Resources • Humans are eating, | Pre-Test: Students will illustrate/write "What they think pollution is?" Collage Posters: (on-going) Students will complete in class each morning for 5 mins. <ul style="list-style-type: none"> - Each student receives 3 blank posters (one time only) - Land, | <ul style="list-style-type: none"> - Earth Day Rap Lyrics - 4 products of raw materials: <ol style="list-style-type: none"> 1. paper = wood 2. metal = rocks ore 3. glass= hour glass 4. compost = plan - Square of Life Activity - List of Renewable and Non-renewable sheet |

drinking, and breathing pollution most of the time

- Humans make pollution all over the world

Procedure:

- Pre-Test: Students illustrate what they think pollution is?
- Students will read a rap song, and then brainstorm with new words for their own version of their "Save the Earth" rap lyrics.
- Students will participate in the CIESE square of Life activity.
- Students will collect all items found in the Square of Life activity and separate into list of the 3 R'S. Reuse, Recycle, Reduce
- Recyclables will be collected as a classroom whole and a list of trash will be compiled weekly

Using math strategies, they will determine the quantity of trash generated and determine the relationship among people, trash, and space.

Water and ALL Pollution (3 posters)

- Every morning they are given magazines, newspapers, etc
- They cut out a picture or article and paste it to corresponding poster. By end of Unit, they will have 3 visual posters of Water, Land and ALL pollution

Students will recreate their school day using only non-renewable resources

- Tons of Trash activity: (classroom) They will devise and implement recycling systems to reduce trash in their classroom

- Tons of Trash Activity Sheet

Explore

Days/Hours
:
3 & 7

Key Questions:

What is the Engineering Design Process?

What is a Water Filter?

Key Concepts:

- We as humans pollute our lakes, rivers, streams, and oceans.
- Many innocent animals are dieing and our drinking water is going bad. (More than one-half of the world's major rivers are being seriously depleted and polluted, degrading and poisoning the surrounding ecosystems, thus threatening the health and livelihood of people who depend upon them for irrigation, drinking and industrial water,
-

Procedure: Ask what they know about the Engineering Design Process.

Inform them about engineers and engineering and they are going to use the scientific method for the EDP.

See attached EIE for the Water Filter.

Student will be assessing their design process as well as using calculating the materials used.

- Students will design their

and school.

- Collage posters of the environment.
- Student will choose current information to write about global concerns addressed in the lessons and article and write in their save the earth journals on how they have at least done one thing they learned and used it in a positive way.

- Presentation of several different types of pollution affecting our earth

List of environmental terms.

-
- own water filter.
 - By setting a goal, needs and materials.

Explain

Days/Hours
:
8 & 9

Key Questions: How is land and water pollution affecting the earth?

What are the disadvantages and advantages of our efforts in recycling?

Key Concepts:

- Effects are often by the coasts and can kill fish, sea birds are unable to mate, whales are poisoned, and turtles can be killed. People drinking that water become very sick. Water pollution can be prevented by cleaning the water before use, in rich countries the wastes are treated before they are released into the water.
- Seventy-three different kinds of pesticides have been found in groundwater, which is potential drinking water.

Students will continue to write in their Save the Earth journal and collage posters.

Writing and Illustrating everything they have learned on Pollution.

Testing Tap water and different specimens of pond water.

Procedure:

| | | |
|--|---|---|
| Days/Hours : <u>10 & 11</u> | Key Questions: Key Concepts: <ul style="list-style-type: none"> • Pollution prevention is the reduction or elimination of pollution at the source (source reduction) instead of at the end-of-the-pipe or stack. • Garbage vs. trash (Land Pollution) | Grocery Project. Borrow Decorate Deliver Report Is an online project www.earthdaybags.org |
| <p>Procedure: The Earth Day Groceries Project is an activity that promotes environmental awareness in a school and its community. Students will decorate a paper grocery bag with an environmental message and it will be posted on www.earthdaybags.org</p> | | |
| Evaluate Days/Hours : <u>12 & 13</u> | Procedure Give Students post test. Students each share and present their 3 collage posters | Students will take POST Test Case of the Broken Loop Pledge Contract as environmentalist pledge Case of the Broken Loop Activity Sheet |
| Students will share what they will continue to do with their community to make the efforts in saving our earth | | |

Timeline: Create a timeline for this project.