Lesson 1 (Saving Salila’s Turtle Storybook)

ELA
- Integrate with Language Arts curriculum (use the storybook for one week’s lessons)
- Partner read
- Record key vocabulary in Science notebooks
- Identify character traits; tie these into a discussion about “what is engineering?”
- Writing: Anticipation guide—before and after reading (skill of predicting)
- Incorporate reading strategy/skill of the week
- Storyboarding: beginning, middle, end
- Use the story for the mini-lessons from Good Habits Great Readers
- Write a story creating an environmental problem and how the problem was solved
- Research a variety of non-fiction books pertaining to environmental awareness
- Vocabulary through content
- Extra questioning on the story where we are working on literal and inferential type questioning
- Tie it in with the type of writing being done at the time (descriptive, personal narrative, realistic short story, etc.)
- Journal writing on personal thoughts of water pollution
- Read other stories on the same type of issues

Social Studies
- World & US—oil spill in Gulf of Mexico or problems on Mississippi or Minnesota Rivers
- Geography—India or distance to India
- World languages
- Why do people congregate/form cities near rivers?
- Have a theme of the year for Geography—rivers and bodies of water around the world
- Connect to studying Indian history and politics, including Gandhi

Art
- Create a diorama of the Ganges

Science
- Water cycle
- Identify a problem
- Connect to FOSS Science kit on Water
- Ecology/pollution
  - Address river pollution by studying waste products and microbes found in the river (work in the same teams)
  - Field trip to a water treatment center or Nature Center to see animal habitats
  - Make a compost pile at school
  - Water quality at Quaking Bog in Wirth Park, Mpls lakes, or Bassett’s Creek

Miscellaneous
- Big River Journey (National Park Service)

Lesson 2 (Who are Environmental Engineers?)

ELA
- Write about better ways to dispose of waste
- Write about contaminants in our building
- Use a T-chart to discuss problem and solution
- Real-world connection: take cameras to the Mississippi or a nearby lake to photograph natural and artificial pollutants, then write photo captions
- Identify activity as “classification”
- Narrative/procedural writing
- Journal how we feel about these contaminants. What can we do as kids to change things now?
- Have students take notes on other environmental issues for a more global/city-wide perspective

Science
- Careers: How much college is required for engineering jobs / salary for engineers
- Use microscopes to look at water samples
- Healthy Food Chain
- Identifying natural vs. human contamination
Art
- Design posters/logos promoting environmental issues

Miscellaneous
- Half-unit on human waste, garbage, plastics, composting at beginning of year
- Recycling in the lunchroom
- Using disposable vs. reusable bottles in the classroom
- Discuss local pollution, what can you do to reduce it?
- Discuss ways of preserving the environment
- Connections to own community recreational and commercial water uses of water

Lesson 3 (Exploring Filter Materials)

ELA
- Gary’s Sand Journal—reading about where sand comes from
- Write to explain your reasoning about which materials work best, how you know the properties of a material
- Vocabulary – write sentences with words
- Predictions
- Speaking and Listening: during reflection

Math
- Create a graph to represent the data
- Use idea of fractions when measuring amount of water
- Measurement of liquids (volume, mL, fractions of cups, etc.)

Social Studies
- Connect with sources of fresh water and environmental issues.
  - Make connections with Coldwater Springs (Minnesota history)

Science
- Data collection
- Discuss solutions and suspensions
- Water Gardens—natural vs. artificial filtration
- Ways to prevent pollution in our rivers and streams
- Variables – pour speed, etc.
- Real life uses of filters/strainers – restaurants, cooking, tomato juice, etc.
- Observation skills
- Diagramming

Lesson 4 (Designing a Water Filter)

ELA
- Explaining/providing reasons for their choices
- Using evidence to support an idea

Math
- Money math—connect to school store
- Problem solving
- Reinforces collecting and analyzing data
- Addition of cost for filter / addition of total score for filter
- Decimals

Social Studies
- Connect to American history—using cheesecloth for cooking, how water has been filtered in the past, etc
- Government – who decides and funds clean-up projects?
- Regions of the US – who is concerned about water quality?
- Cause and effect

Science
- Recording data
- Write reflections and discuss with a partner
- Independent and dependent variables
- Analyzing how varied materials filter water at different speeds
- Diagramming

Miscellaneous
- Teach as part of a Water/Science Day