Engineering by Design NEWS

January Edition

Welcome to the third issue of EbD News, (Grades 3 and 4), Verona's STEM Elementary Engineering newsletter. This month, the engineering students are modeling water, or Hydrologic Cycle systems. They are exploring natural patterns of evaporation, condensation, precipitation, accumulation and infiltration. Scientists must understand how water is naturally transported across the Earth. Engineers design systems and products to treat contaminated water.

Engineers design and construct models. This

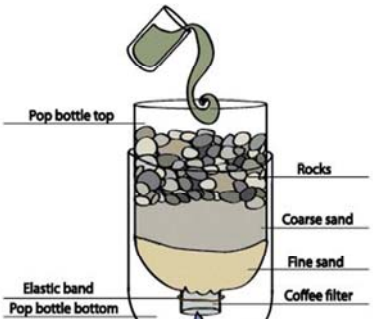
facilitates product development that creates water treatment systems to meet humanities' needs and wants.

Verona's elementary engineers produced models of aquifers and replicated Earth's natural sedimentary layers to create filtering systems in order to clean polluted water. Interestingly, fresh water aquifers lie under the New Jersey Pine Barrens. These aquifers, along with treated water from the Delaware River, offer access to clean water for thousands of southern New Jersey residents.

Did you know that the "jet stream", a fast moving narrow river of air in the upper atmosphere, is responsible for the water cycle? When traveling above Canada, it will deposit snow and ice. Above warm regions of the Earth, the jet stream will collect moisture and then deposit it back to ground level in the form of hurricanes.

In the coming weeks, the students will envision and understand the global water cycle within an aquarium. Sand, soil, gravel and ice cubes will illustrate the processes of evaporation, condensation, accumulation and infiltration. Many third and fourth graders have asked me if they can replicate these models at home. The students have captured the "spirit of the activity" and it is certainly encouraged. One fourth grader exclaimed to his classroom teacher, " I always thought that I wanted to be an engineer. Now I have the vocabulary to understand why I want to be an engineer."

Yo Yo Ma, the famous cellist, was asked why he thought that it was important to gather musicians from around the world in order to create a traveling ensemble. He responded, "Collaboration, flexibility, imagination and innovation represents the critical skill set of the 21st century."

EbD…. problem solving for the 21st century!

Dr. Larry "Doc" Siegel