



Curriculum Units by Fellows of the National Initiative
2020 Volume IV: Solving Environmental Problems through Engineering

Investigating Surfaces and Water Runoff in Urban Areas

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Urban areas are increasing in all parts of the world. With this shift in population into more dense and compact areas the need to increase infrastructure and to construct housing to meet these increasing demands come at a cost. Urban areas are dominated by surfaces which impact the environment. Impervious surfaces do not allow runoff to be absorbed into the soil. Examples of impervious surfaces include pavement, asphalt and buildings. These impervious surfaces contribute to increased runoff. Instead of water returning to the water table water runoff is redirected into collection systems where pollutants can be carried into local areas of fresh water. In extreme events, systems can be overwhelmed causing flooding.

My students will examine the immediate surrounding area of our school, Edwards Elementary in Chicago. They will examine the surfaces which encompass the surrounding area and begin to distinguish between examples of pervious and impervious surfaces and how much of these surfaces are represented. Students will participate in activities involving math by measuring amounts of rainfall and deducting the areas of surfaces, and proportion of permeable to total area.

This unit will teach my students how engineers take into consideration when planning construction projects and how surface areas can contribute both positively and negatively to their communities.

This unit will be part of the 7th Grade Math curriculum

(Developed for Math, grade 7; recommended for Math, grade 7)

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