Approaches to Inquiry-Based Learning: Using the Classroom and Greenway to Teach Air Quality, Condensation, Speed, and Acceleration

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Abstract

Inquiry-based learning allows students to explore and discern difficult scientific concepts instead of being lectured. This method, however, is underutilized in classrooms. In the GK-12 partnership between UNCG and Welborn Academy, we have developed various labs for the 7th grade that focuses on our students doing hands-on inquiry based science instead of learning from a textbook.

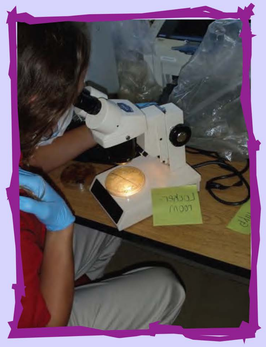
Methods

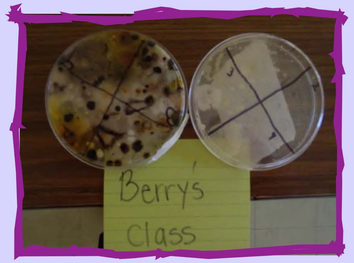
We developed four labs that are centered on air quality, condensation, speed and acceleration.

1. **What am I breathing?** Students used petri dishes to test the air quality in various rooms around the school. In addition, students identified and counted the different bacteria and types of fungi that were found.
2. **Where does dew come from?** Students used condensation cans to test how different temperatures affect when the dew point is reached.
3. **Fast and Furious!!** Students were given plywood scraps to build ramps of different heights with no design instructions. Using model cars, students tested how ramp height affected speed and acceleration. Students graphed their data in excel and presented their results to the class.
4. **How fast is the current?** Students tested the water speed at different places along the creek, which is located behind the school. At each site, students measured the speed of the creek by using meter sticks, stopwatches, and tree branches. Students hypothesized what factors affected the speed at their site and communicated their resuts.

Classroom Activities

What am I breathing?



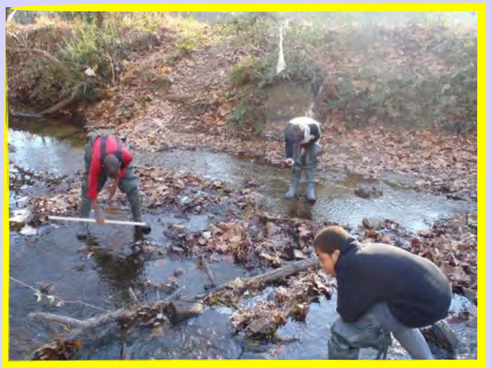


Where does dew come from?

Fast and Furious!!

Greenway Activity

How fast is the current?



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