



Teaching the Concept of Density Using Inquiry Based Learning

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Signs of Inquiry

- Students deconstruct and construct their own knowledge
- Students are engaged
- Students discovery knowledge not confirm it
- Students retain the knowledge longer



Setting

- Allendale High School had about 600 students in the 2007/2008 school year
- Rapid growth has been changing the school
- The school offers a college prep course or a basic chemistry course usually taken during the junior year



Why Density ?

- Important concept to all areas of science
- Students memorize the formula and really do not understand the concept
- The formula $\text{Density} = \text{mass}/\text{volume}$ does not cover all density applications



Pre-Lab

- Very important to use this no matter how many of the other labs you choose
- Students are asked to define density
- Uses population density to expand their own definition
- Leads students to “Amount of stuff in the amount of space”



Wired Lab

- This lab stresses Linear density, measurement, graphing, and Sig. Fig.
- First lab of the year near the beginning of the first unit, after the pre-lab
- Sample Tasks
 - Find the density of each wire and see if they are the same or different
 - Find the slope of the mass vs. length and what does that number represent



Mass that Gas

- This lab stresses finding the density of a gas and a particulate understanding of that density
- Used this lab as a review lab 2nd semester when gasses were introduced
- Sample tasks:
 - Students draw picture representations of the gas particles in the syringe
 - Students predict what happens to the density at different volumes



Does it Float

- This lab stresses density of liquids and introduces solutions
- Used this lab at the end of the first unit
- Sample tasks
 - Students given a box of equipment and have to develop their own lab
 - Understand how floating and sinking relate to density



Density of an Egg

- Most open ended lab I do
- Students choose what data to collect and have time to make mistakes
- There are Ah-ha moments
- Some students need more guidance than others





To access materials

<http://www.gvsu.edu/targetinquiry>

- Password required to obtain materials (data collection only)



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The End

