**Eco-columns: A Guided-Inquiry Based Approach**

*Environmental Science*

**Goal:**

* To create a simulated ecosystem in order to:
  + LS 3.3 Understand that a complex set of interactions within an ecosystem can maintain the number and types of organisms in an ecosystem that is relatively constant over time.
  + LS 4.1 Understand that matter is continuously recycled within the biological system and between the biotic and abiotic components of an ecosystem.
  + LS 4.2 Understand that all the processes that take place within organisms require energy. In most ecosystems, the energy is derived from the sun and transferred into chemical energy in photosynthetic organisms of that ecosystem.

**Role:**

* To research, design, monitor and make scientific claims about an eco-column.

**Situation:**

* You will be responsible for the research, design, and monitoring of your own eco-column. You will present data and final claims in a presentation and lab report. The class will take a field trip to purchase organisms for your eco-column.

**Plan**:

1. Plan your eco-column
   * Complete the Topic Research Worksheet.
     1. Conduct back ground research to learn more about eco-columns. Your bibliography is important.
   * Create a materials list.
     1. Decide what components to include in each section (what kind of organisms, soil, etc.) Every eco-column must have an aquatic, decomposition, and terrestrial section.
   * Create a diagram of your proposed set up.
     1. Needs to be done professionally and neat. It will be part of your final presentation.
     2. Include: bottle arrangement, contents, holes poked, tape locations, etc. Label each chamber and its contents.
   * Write a short hypothesis of how you think your eco-column will be able to sustain itself.
2. Construction:
   * Pre-assemble as much of your eco-column as possible before adding live organisms.
   * Collect materials and organisms for inside the eco-column. Field Trip to Pet Street.
   * Finish assembly of eco-column by adding organisms.
3. Observation & Data Collection:
   * Conduct weekly observations of your eco-column (digital data page will be provided).
   * Take photographs weekly.
4. Presentation of Experiment:
   * Individual presentation to an audience.
   * Individual lab report.

