

**Project Title:** Arsenic and Well Water

**School:** Mt. Blue High School

**Grade Level:** 10th grade

**Your Name:** Doug Hodum

**Project Partners:** I have two partners at the university level, though neither are fully engaged with the program as a whole. Terry Morocco and Doug Reusch are my two partners at UMF.

**Teacher/Scientist Partner Profile:**

I have been teaching for 22 years, nearly all at Mt. Blue High School. I was an independent major as an undergraduate, creating my own major of Environmental Technology (anthropology, environmental studies, math, physics). I went on to earn my MS in Ecology and Environmental Science. I love being outside and keeping fit all year. For the class, I love to see students making connections to the world around them and to understand how interrelated everything is. The “ah-ha” moment is the best time for a teacher. The connections that I hope to help students make are why I am interested in the All About Arsenic project. It allows students to see real issues that could affect our, or other, communities.

**Summary:**

I started the year off with the lettuce seed bioassay for all my students. It was a great way for me to have students DOING science and collecting data, which we later graphed and interpreted with all the classes pooling data. This was the link into data literacy. Unfortunately, the vast majority of my students were either on town water or not interested in having water tested. By the time a few of my students returned the paperwork, it was too late to submit samples from my community.

**Project Details:**

I taught a total of fifty-three (53) students across my four (4) classes, nearly all of whom were involved in the lettuce seed bioassay experiments. Each group had samples that included a control sample and one polluted sample (iron, copper or arsenic; 10 or 100 or 1000 ppm). We used the protocol provided by Jane Disney, where each sample included 10 seeds per water type. This data has been shared with Jane. The data was somewhat convoluted and inconclusive, as the growth was erratic all over

I used a modicum of funding to acquire lettuce seeds, as the solutions we used were carried over from previous years.

I did not use Tuva nor did a community outreach program get planned.

**Discussion:**

The students worked through creating graphs and also interpreting the data they graphed. This was an arduous task for some, as many had never used Google Sheets or created a graph. Additionally, many students do not have experience identifying and generating graphs that will help answer a question, such as

which water/concentration (the pollutant and concentration were unknown to students until AFTER the graphs were generated and interpreted).

Every year, I am reminded that students do not have experience asking questions or interpreting the data that they collect. I also have an idea about using this program to jump start my students asking questions nearly immediately following the initial data collection. This is something that I would do differently, as I believe it can be a way for students to ask questions and develop research questions that they can answer. I also may use that in a semester class I am teaching to help with the characteristics of life. I also think the use of *Planaria* to have students ask questions about and do research.

**Conclusion:**

This continues to be a positive experience, despite my failure to pull together much data or use the program over a longer period of time. My students enjoy the hands-on component which is done nearly immediately after the start of school. I hope to employ this longer term over the course of the year.

**Acknowledgement:** The work reported in this publication was supported by the National Institute of General Medical Sciences of the National Institutes of Health under Award Number R25GM129796. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.