

STEM Proposal

Title: Using Real World Data to meet the growing math and science data needs of students

I selected this topic because I was excited about and learned a lot about being able to provide powerful and effective STEM lessons without robotics, nanotechnology, and all the electronic and other major hands-on activities commonly thought of when discussing STEM. My original belief was that having a STEM program at a school meant separate labs, maker spaces, money spent on equipment...and through this program I have discovered that STEM activities can come from a large variety of sources. NASA, NOAA, and many national and international organizations offer live data feeds which can be incorporated into student lessons. Anytime students are doing "real science" they learn, they become passionate, and they find purpose. These are motivating skills that help inspire innovation and creativity in our students.

This PD will show math and science teachers how they are able to utilize NASA real time satellite imagery, NOAA imagery, and many other websites that provide live data and teach students important ACT skills of data translation and data collection. Teachers will explore a variety of sites and discuss ways in which they can incorporate this data into their lessons and curriculum. Teachers will have an opportunity to collaborate and brainstorm on the creation of a quick lesson that they can all leave the PD with ready to use in the classroom.

My proposed audience will be the Middle and High School teachers in both Math and Science at a private school setting. Typical class sizes are less than 30 but more than 10 students at the H.S. level. Attendance will be on a volunteer basis. I plan to present this in my classroom one day after school. Teachers will bring their laptops so they can venture to and explore some of the sites we discuss. I plan to hold this session for 30 to 40 mins.

NGSS standards: This presentation can help teachers meet the following NGSS standards:

HS-LS2-7 Ecosystems, Interactions, Energy, Dynamics

HS-LS4-6 Biological Evolution: Unity and Diversity

HS-ESS3-4 Earth and Human Activity

HS-ETS1-1 through 4 Engineering Design

My pre-survey will ask teachers to list their current understanding of STEM and what STEM activities they currently use in their classroom, if any. The survey will ask them to explore

their ideas of STEM and how STEM should or could look in their class in each of their curriculum topics. I will also ask teachers to discuss any live data sites they are already familiar with and how they utilize them in their current lesson, as well as how often they use live real world data in calculations and graphing activities.

Post-survey will ask them how they feel these sites will be useful and if they need more assistance in coming up with ways to incorporate these live data sites into their lessons.

Hopefully, I will see teachers engage their students with more data collection into their practice. Instead of pre-listed data in a question set to be graphed or calculated, the teachers will have students using real-world live data for this practice. I find that many lessons, homework, test questions and activities utilize set data, and year after year it is the same. This PD is designed to allow teachers to incorporate live data to help student learn how to plot, graph and collect data, translate data from plots and graphs, input data into formulas they are learning and utilize this data.