STEM Leadership Seminar

I. The title of my STEM profession development is called, “Survival Mode: Water Filtration”. The reason I selected this topic is because there are many people in the world who take clean water for granted. I believe this topic will help others see how much work it takes to provide clean water in other areas and water pollution. My PD integrates NASA’s resource links. I’m also basing my content from my past Endeavor class called Lessons from the Ocean. In this class I learned for the first time about ocean literacy and the high amounts of pollution in the ocean. I plan to conduct an hour-long PD in the following week or so in my classroom at Texans Can Academy in Ft. Worth. Teachers will have access to computers at the appropriate time, but handouts will be printed out. My hope and expectation of presenting this PD is for my audience to see the importance of clean water and how it can be incorporated into their own subject lessons through the resources like the NASA website. I plan to collect surveys to analyze the PD’s success.

II. Proposed audience

- Attempting 12 high school teachers that teach around 20 students per class period
  - 9^{th} – 12^{th} grade Math (3 educators)
  - 9^{th} – 12^{th} grade Science (2 educators)
  - 9^{th} – 12^{th} grade History (2 educators)
  - 9^{th} – 12^{th} grade English (4 educators)
  - 9^{th} – 12^{th} grade Inclusion (1 educators)

III. What STEM concepts or learning goals will you and your materials address which can potentially replace other classroom activities

- My main learning goal is to teach others the thought process that goes into filtering polluted and dirty water and the design process. I also wanted my audience to learn about current pollution in the ocean which gears my lesson towards a science-based PD. It is however related to engineering and technology.
- https://www.jpl.nasa.gov/edu/teach/activity/water-filtration-challenge/

IV. List NGSS and CCSS or your state standards

- HS-LS2-7 Ecosystems: Interactions, Energy, and Dynamics
    i. Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.
- HS-ETS1-2 Engineering Design
    i. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
- CCSS.ELA-Literacy.RL.9-10.2
    i. Determine a theme or central idea of a text and analyze in detail its development over the course of the text, including how it emerges and is shaped and refined by specific details; provide an objective summary of the text.
- CCSS.ELA-Literacy.RH.9-10.7

  Integrate quantitative or technical analysis (e.g., charts, research data) with qualitative analysis in print or digital text.

V. Pre/Post Survey Questions

- Pre-Survey Questions

i. How much do you know about current water pollution?
ii. Do you think students would be interested in filtering water?
iii. Do you feel confident in teaching about water filtrations?
iv. Can you think of any ideas to implement pollutions studies into your subject area?

- Post Survey Questions
    i. Did you have any ideas for Water Day?
    ii. Did you learn anything new from exposure to ocean literacy?
    iii. Do you think your students would be excited for this activity?
    iv. How useful did you feel this PD was for you?
    v. Did you learn any new techniques when planning with in your group?

VI. Subject Implementations

- Science: Teachers can conduct this activity and continue to talk about pollution
- History: Teachers can look at data and have students compare and write when pollution in water started to increase
- English: Teachers can have students read about water filtrations and write paragraphs explaining solutions and ideas they could use
- Math: Teachers can create math problem scenarios or conduct the activity and allow students to calculate measurements