

## Archuleta's STEM PD Proposal

- 1) What is the title of your STEM professional development?
  - o Title: NASA Authentic Data Sites and How to Effectively use them for ANY Class
  - o PD Topics: This PD is an introduction to NASA Data websites that include data and information for all five of Earth's spheres. For each site I will also show staff how to navigate the sites and examples of how to use this data in their own classrooms ranging from upper elementary to high school in science, math, history, or language arts.
  - o School Name: Center Consolidated Schools (Center, Colorado)
  
- 2) Why did you select the topic?
  - o I selected this topic because I have enjoyed learning about the vast amount of resources the Endeavor classes have shared. My school is always discussing ways to teach across classroom content and using relevant data the students can connect with. These resources show the students the "why" they are learning the content.
  - o The website and information will also show students how this data is being used in the real world and introduce students to jobs that are in the STEM fields of study.
  
- 3) How does your PD integrate NASA assets and/or content from the Endeavor courses?
  - o My PD will integrate NASA resources in the form of the following NASA websites. I feel these websites reinforce real life data that is updated throughout the year and contains interesting subject matter. I feel these sites are also student friendly across the multiple grade levels.
    - <https://myasadata.larc.nasa.gov/>
    - <https://spacemath.gsfc.nasa.gov/planets.html>
    - <https://spaceplace.nasa.gov/mars-rovers/en/>
    - <https://climatekids.nasa.gov/>
    - [https://aquarius.oceansciences.org/cgi/ed\\_activities.cgi](https://aquarius.oceansciences.org/cgi/ed_activities.cgi)

- 4) Who is your proposed audience? Which teachers will you serve with your PD and activities? What grades, subjects, and how many students do they teach?
- o My proposed audience is high school, middle school, and upper elementary teachers of any content. These websites can be used to create new content or reinforce content already in place.
    - High school class sizes range from 10-20 students
    - Middle school classes range from 20-30 students
    - Elementary classes range from 12-18 students.
- 5) What STEM concepts or learning goals will you and your materials address which can potentially replace other classroom activities?
- o Learning goals will include how to navigate these websites and how to use this information in classes.
  - o STEM concepts will include Earth's Spheres, Space Math, Mar Rovers, Climate, and Ocean concepts.
- 6) List NGSS and CCSS or your state standards.
- o 2020 Colorado Science Standards:
    - 1. All stars, including the sun, undergo stellar evolution, and the study of stars' light spectra and brightness is used to identify compositional elements of stars, their movements, and their distances from Earth.
    - 7. The role of radiation from the sun and its interactions with the atmosphere, ocean, and land are the foundation for the global climate system. Global climate models are used to predict future changes, including changes influenced by human behavior and natural factors.
    - 8. The biosphere and Earth's other systems have many interconnections that cause a continual co-evolution of Earth's surface and life on it.
    - 12. Global climate models used to predict future climate change continue to improve our understanding of the impact of human activities on the global climate system.
  - o 2020 Colorado Math Academic Standards



- 8) To demonstrate that teachers have learned something new, generate a pre- and post-survey. What, in general, will your pre-survey and post-survey ask? Your final surveys must include 5- 10 questions, some of which must have responses that can be quantified, such as Likert-style questions.
- o The pre/post survey will include questions that ask:
    - How many times in a current unit is real life data included?
    - How many times in a current unit is a natural phenomenon used to introduce a topic?
    - How many website do you know about that have real world data?
    - Do you feel your content would benefit from STEM data?
  - o Final survey will include Likert-style questions based upon the quality of PD that was delivered, the likelihood of using the material in your classes, and would you recommend your colleagues to this PD.
- 9) What outcomes or expectations do you hope to see for your educators?
- o I hope to see fellow educators using NASA material embedded into their units. If the material does not fit into any current units I hope they would create a single day for a portion on the material (example: National Space Day: the first Friday in May).
- 10) How will you follow up with the teachers in attendance?
- o Before the end of the PD I would like the teachers to create a SMART goal to reflect upon how and when they will include the day's information into their class material. I will look at the "T" in their goal and follow up with the individual teachers after that assigned time has passed.
- 11) What data collection methods (e.g., surveys, interviews) will you use to analyze the PD's success?
- o I would like to use both surveys and interviews to analyze the PD's success. Success from the surveys will be from an analysis of pre and post surveys responses. Interviews will be conducted after the teachers stated timeframe for PD implementation.