Leadership Proposal

1. What is the title of your STEM professional development?
   Exploring NASA Resources for STEM

2. Why did you select the topic?
   I selected this topic because teachers in my district are looking for resources that they can readily incorporate and use with their students. The resources I have been exposed to through the Endeavor STEM program are available for all educators to use. I was not aware of the multitude of resources that were available until I completed the Endeavor courses. I truly appreciate these resources. My colleagues will appreciate these resources too.

3. Who is your proposed audience (minimum 12)? Which teachers will you serve with your PD and activities? What grades, subjects, and how many students do they teach?
   My proposed audience is any K-12 STEM teacher within my district. Elementary teachers typically have classes of about 20-25 students while secondary teachers have about 80-100 students each. I will offer an in-service class for any teacher that is interested. In my district, teachers sign up for in-service classes once the district catalogue is released in October. I am not sure how many teachers will sign up for this PD, but I hope at least 12 will.

4. What “general” science or mathematics concepts or learning goals will you and your materials address which can potentially replace other classroom activities?

   My learning goals for this PD is for teachers themselves to explore the NASA resources and determine for themselves as least one NASA material that they

would like to use with their students. Since I am opening this PD to all K-12 teachers, there will be a variety of concepts that teachers could address.

5. How and where do you intend to carry out your PD? How long will the session be? When will it be held? Will teachers have access to computers?
I intend to lead an in-service class for teachers in my district. This in-service class will be two sessions that are each 1.5 hours long. The first session will be held in mid-October. The second session will be the following week. These sessions will be held in my school's computer lab.

6. What outcomes or expectation do you hope to see for your educators?
I will first share with the participants what NASA's STEM Endeavor program is. I will share with them the three courses I completed for this program. In particular, I will share the following materials from each course:
    - Methods of STEM: I would like to share the 5E lesson plan design, NASA Educator resources from the website https://www.nasa.gov/audience/foreducators/index.html , NASA data sets from the website https://data.nasa.gov/browse and NASA Space Math website https://spacemath.gsfc.nasa.gov/ .
    - Culturally Responsive Teaching: I will share how I modified a multiple choice assessment to help minimize biases and also share the article *Sounds Like Success: A Framework for Equitable Assessment*
    - The E in STEM: While I have not fully completed this course, I would like to share the problem solving resources from the following sites:
        - The Three Jugs Problem http://www.cut-the-knot.org/water.shtml
        - Tower of Hanoi https://www.mathsisfun.com/games/towerofhanoi.html
        - Entrapment http://www.theproblemsite.com/games/entrapment.asp
        - Trio Match http://www.theproblemsite.com/games/trio_match.asp

- Wolf, Sheep, & Cabbage http://www.plastelina.net/game1.html
- http://www.novelgames.com/flashgames/game.php?id=53&l=e

In addition, I would also like to share the NASA's Engineering Design Model, NASA and PBS Design Squad website http://pbskids.org/designsquad/parentseducators/workshop/welcome.html and the NASA "On the Moon" educator guide https://www.nasa.gov/audience/foreducators/topnav/materials/listbytype/On_the_Moon_Guide.html .

After sharing these materials, I will give participants time to explore resources from the NASA website to see if each participant can identify one resource they would like to implement with students. I am also hopeful that maybe some participants may want to pursue an Endeavor teaching certificate as well.

7. How will you follow up with the teachers in attendance?

   During the second session of this in-service class, I will answer any questions teachers have about the Endeavor STEM certificate program. Since these are teachers within my district, I will also encourage them to reach out to me via email with any questions they have.

8. What data collection methods (e.g. surveys, interviews) will you use to analyze the PD success?

   Each district in-service class concludes with participants completing a district survey about the effectiveness of the PD. I will also encourage participants to reach out to me via email with any questions they have. In addition, I will

create my own survey for people to complete at the end of the second session. This survey will include the following questions:

- What grade level/courses do you teach?
- State one thing you learned from this in-service.
- Identify one resource you are interested in using with your students.
- What would you like to learn more about from this in-service?