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Practicum in STEM Leadership

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Project Proposal

1. Title: Using the *NASA On the Moon Educator Guide* on the Middle School Level
2. I chose Option 1: Virtual Professional Development – Content Focus. I plan to showcase the *NASA On the Moon Educator Guide* and demonstrate how to incorporate the activities from this guide into the middle school classroom. My department has been working to incorporate hands-on engineering activities into our curriculum for 8th grade physical/earth science. A number of the activities in this guide could be used in our classes once we return to in-person learning. These activities are age appropriate and incorporate some of the NGSS DCI, SEP, and CCC standards that our students will be working towards. I know that teachers in my department have struggled to find ways to include engineering activities into their lessons and the *NASA On the Moon Educators Guide* makes this process simpler by providing teacher notes, background info, and easy to follow protocols.
3. The five other 8th grade science teachers in my department will be my audience. I will also invite the 8th grade science teachers from the two other middle schools in my district to join. Each teacher teaches one or two sections of 8th grade physical/Earth science. Each class has 25-30 students. Some of these classes are co-taught with a special education teacher.
4. The activities in the *NASA On the Moon Educator Guide* can help teachers to facilitate activities in which 8th grade physical/Earth science students understand disciplinary core concepts through hands-on activities that incorporate science and engineering practices and engineering standards. For example, the “Feel the Heat” activity addresses all of the following standards:
 - a. NGSS Disciplinary Core Ideas: PS3.A: Definitions of Energy, PS3.B: Conservation of Energy and Energy Transfer, PS3.D: Energy in Chemical Processes, ESS3.A: Natural Resources, ESS1.B: Developing Possible Solutions
 - b. ITEA Content Standards: Standard 8: Students will develop an understanding of

the attributes of design; Standard 9: Students will develop an understanding of engineering design; Standard 10: Students will develop an understanding of the role of troubleshooting, research and development, invention and innovation, and experimentation in problem solving; Standard 11: Students will develop abilities to apply the design process; Standard 12: Students will develop abilities to use and maintain technological products and systems; Standard 13: Students will develop abilities to assess the impact of products and systems; Standard 16: Students will develop an understanding of and be able to select and use energy and power technologies.

5. After attending this PD session, I hope that my fellow 8th grade educators will design lessons around the activities in the *NASA On the Moon Educators Guide*. I am hopeful that each teacher will plan to have their students complete at least one of the activities in this guide each year. I know that teachers will not be able to do this during our current school year due to pandemic regulations, but I am hopeful that they use this guide as a resource in the future. We need to decide what supplies and materials we need to order for next year, so I hope that teachers decide to order some of the materials needed for the activities in this guide.
6. After the PD session, I will check in with the other 8th grade science teachers and make sure they know how to access the *NASA On the Moon Educator Guide*. I will answer any questions that they have about the activities in this guide. Additionally, I will make sure that my models for each of the activities that I have completed are available for the other teachers to look at.