

Leadership Proposal

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Endeavor STEM Teaching Certificate Project

What is the title of your STEM professional development?

Engineering for Young Minds

Why did you select the topic?

I feel that most elementary teachers do a wonderful job implementing math, science, and technology lessons and activities. Engineering is the STEM area that is often left behind. With such a huge focus on standardized tests in math and science, teachers often do not spend as much time on engineering activities. Engineering activities can be very beneficial for student though. Engineering provides an opportunity for students to apply what they know about math and science, while building critical thinking and problem-solving skills. Engineering activities are based on real-world technologies and problems, which helps students to understand how STEM areas like math and science are relevant to their lives.

How does your PD integrate NASA assets and/or content from the Endeavor courses?

I recently took the course, “The E in STEM: Meaningful Content for Engineering.” I enjoyed this course and learned about many ideas and resources that I will share in my professional development. Some of the content I will cover are the following:

- Problem solving activities
- Engineering design models
- Engineering notebook
- Engineering design challenges including those from NASA/Design Squad

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 audience will be elementary teachers from my school district and another local school district. The teachers teach grades K-6 and all academic subjects. They each have an average of 25 students in their classes.

What STEM concepts or learning goals will you and your materials address which can potentially replace other classroom activities? List NGSS and CCSS or your state standards.

3-5-ETS1-1.

Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2.

Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3.

Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

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?

Since I am on a sabbatical, I will record and send my professional development to the teachers. They will use their computers to watch the PD and explore the various resources. It will be sent in March and will be about an hour. I also plan on doing my PD in person when I return to work next year as part of an in-service day to share some of my work from my sabbatical.

What, in general, will your pre-survey and post-survey ask?

My pre-survey will give me a better idea of the amount of time teachers spend teaching the various STEM components. I will also assess their familiarity with the engineering design process, engineering notebooks, the importance of engineering, and resources that are available. My post-survey will assess what aspects of the PD were most beneficial and what resources teachers plan to use with their students.

What outcomes or expectation do you hope to see for your educators?

My hope is that my professional development will inspire teachers to incorporate more engineering activities in their elementary classrooms. I would love for teachers to understand the importance of engineering as well as to feel comfortable implementing engineering activities with their students. I hope the resources that I share will make this a little less stressful for teachers.

How will you follow up with the teachers in attendance?

I will continue to send engineering resources and ideas that I find and encourage the teachers to share activities that they use also.

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

I will conduct a pre-survey and post-survey to determine teachers' knowledge of engineering resources and to assess how beneficial the PD was. This will help me to make improvements for the future.