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Practicum in STEM Leadership

February 5, 2020

PD Proposal

1. What is the title of your mini STEM professional development?

Here is my title: **The E in STEM-Integrating Engineering and Science**

2. Why did you select the topic?

I have selected this topic because I have finally learned a systematic approach on how to integrate engineering in my science standards. I am looking forward to spreading this to my colleagues.

3. a) Who is your proposed audience? b) Which teachers will you serve with your PD and activities? c) What grades, subjects, and how many students do they teach?

a)12 teachers at Cottonwood Elementary in Holladay, Utah

b) I will present in front of elementary teachers in grades K-6th grade.

c) Kindergarten teacher has 48 students (morning and afternoon classes) First grade team has 81 students, Second grade team has 80 students, Third grade has 70 students, Fourth grade has 78 students, Fifth grade team has 60 students and Sixth Grade team has 80 students. All teachers teach all the grades except sixth grade. I teach science, my other teammates teach math and Language Arts.

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

I will use the following statement as an example how my colleagues can use NASA resources and the engineering design template to match their standards with STEM:

I chose the lesson "Feel the Heat"(https://www.nasa.gov/pdf/417998main_OTM_Feel_Heat.pdf) This lesson targets Utah 6th grade science standards (see number 2 below). The big idea is to use the engineering design process to measure how much heat is transferred in a solar water heater design. Also, to test the water heater and improve upon its design.

Utah 6th Grade Science 6.2.4 standard:

Design an object, tool, or process that minimizes or maximizes heat transfer. (PS3.A, PS3.B, ETS1.A, ETS1.B, ETS1.C)

NGSS standard:

MS-PS1-6 Undertake a design project to construct, test and modify a device that either

releases or absorbs thermal energy by chemical processes.*

After I present my example, I will ask my colleagues to revisit their standards and see if they can adjust any or all parts the engineering design into their curriculum. I am also planning passing out my lesson plan using the NASA 5Eclipse lesson plan as a guide to help teachers format their STEM lessons. (https://nasaeclips.arc.nasa.gov/teachertoolbox/the5e)

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?

Pending approval of my PD proposal, I will do my presentation February 7th in our school Library. I will present for 20 minutes to about 12 teachers. Teachers will have access to their laptops and/or a chromebook supplied by the computer specialist at our school.

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

I hope to increase their interest and knowledge about how it is possible to integrate STEM into their classrooms. I will provide them with the following resources to help them plan a future lesson in STEM:
https://pbskids.org/designsquad/parentseducators/workshop/process_id.html

https://www.nasa.gov/audience/foreducators/best/edp.html

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

I will provide an interest survey to teachers before the PD to gather information about their knowledge regarding STEM. I will then pass out the same survey after the PD.