

Out of this World Engineering!

Let NASA help engage your students

PD proposal - Joanie Craddock

When reading over the criteria for this project, I had no idea where to start. I have learned so much throughout the Endeavor program but I was unsure who would be willing to come to a PD and what they might want to learn from me. I met with my principal to brainstorm whether or not my knowledge would be something our staff might benefit from. Together we decided that the majority of our staff is not confident teaching engineering. It is on our report cards but the district request is to do three grade level projects per year. The projects are quick and uninspiring. There is no criteria or guidelines given to assess student capabilities. I am hoping to encourage teachers to incorporate engineering into their lessons more often. I also hope to give them tools to authentically assess their students.

NASA has so many free resources to incorporate engineering into the curriculum. From Story Time in Space to JPL lessons to the NASA website, I have found countless ideas to use in my own classroom. I have also gotten many ideas throughout my Endeavor courses from Oceanography to Astronomy. I plan to focus on the Engineering Design Process with a second grade example of how to beef up a lesson we already teach. Teachers will see a few simple tricks to stretch student engagement and easily record student progress.

When deciding who my audience would be, I tried to think of who might be able to spend an hour helping me practice my STEM leadership skills. Fortunately, my principal has blocked out an hour at a staff meeting to deliver this professional development. Our school is made up of eighteen teachers from TK - 6th grade. We teach a total of 396 students. All general education teachers are responsible for teaching and reporting on grade level engineering standards. I plan to

give them ideas to incorporate engineering into any subject to make it an enhancement rather than another subject to fit into our schedules.

As you can guess from my title, I plan to focus on engineering in the classroom. The engineering standard on our report card says: “Engineering Design”. Unless a teacher or parent takes the time to look up the standard, it is impossible to know what this means. The actual NGSS standard includes engineering practices and many more details. I did not include them in my proposal because they take up almost an entire page but I am happy to add them for reference.

The PD session will take one hour. I do not need to recruit my audience because they are required to come to staff meetings. However, I do plan to reward them with treats. The only advertising I’ll need to do is to send an email with the preliminary survey and something to spark their interest.

My survey will ask about attitudes, experience, and current practices for teaching engineering in elementary school. I would like to know how many engineering experiences teachers are giving their students this year. I would like to know where teachers need more support. I would like to see an increase in engineering projects attempted at each grade level.

Since I teach every day with all the of the teachers who will attend the PD, I will be able to have some hallway conversations and pop into a few classrooms. To officially collect data, I plan to give a pre and post survey on Google Forms to compare prior knowledge and attitudes with gains from the PD. I also plan to do exit interviews with three or four teachers six weeks after the PD to see if any of the participants were able to utilize information in their classrooms.