Methods of Stem Education

NASA STEM EPDC (Educator Professional Development Collaborative)

Ambassador Reflection of Professional Development

Shonda Baggette 11/20/2017

Title: How to Integrate the "E" in STEM for Elementary Grades

School Name: Highland Park Elementary teachers in Muscle Shoals, AL.

Number of educators and grade levels: Six first grade teachers and six second teachers, the school special education teacher and the school principal.

Learning Outcomes: My goal at the end of this Professional Development was to introduce the teachers to Engineering Standards for elementary students, and how to apply Engineering and the Engineering Design Process component in STEAM.

The teachers will become familiar with the Engineering Design Process and identify each of the steps.

The teachers will apply six characteristics into their STEAM lessons

The teachers will incorporate and apply the Engineering Design Process into their classroom in Science, Technology, Language Arts and Math curriculum.

NGSS Performance Expectations Addressed:

Asking questions, gathering information, defining problems, planning and completing investigations, Developing and using models to solve problems, analyzing data from two test objects and using argumentation from their evidence in science and math,

NASA data/resources used:

https://observer.globe.gov/

https://www.nasa.gov/offices/education/centers/marshall/classroom/index.html

https://www.nasa.gov/audience/foreducators/index.html

https://www.nasa.gov/audience/foreducators/k-4/classroom-combo

Summary of Project

This Professional Development occurred on October 13th 2017. I presented during our monthly Grade Level Meetings at my school. Once for the First-Grade teachers and once for our Second-Grade teachers. My goal for this Professional Development was to introduce the teachers to STEAM and not look at it as one more thing they have to do or add into their busy day or something else they have to teach extra. I used a power point that I created to guide me throughout the meeting. I first reviewed each component and the definition of STEAM. Then, I focused on the Engineering component of STEAM and the importance of introducing the students to Engineering in the elementary classroom. I demonstrated the Engineering Standards and compared them to our eight Mathematical practice standards. I wanted the teachers to realize how the Engineering standards integrated with what they have already been teaching in math and science. Next, I reviewed the characteristics of a great STEAM lesson: (1) Use real world issues and problems (2) Have students solve problems by using the engineering process. (3) Students using hands- on inquiry and exploration. (4) Involving teamwork (5) Allowing multiple right answers and it's ok to fail. (6) Students using argumentation to defend their answers.

Reflection: The teachers were very receptive and from the feedback I received, they found the PD to be very informative. At first, I was worried that the teachers would think, great one more thing to have to teach or do. I stressed that by students learning and applying the Engineering Design Process in all areas, it would help them become better problem solvers and how to persevere in all subjects. Students not being able to persevere has been a complaint from many teachers. By showing a video of my students using the Engineering Design Process helped the teachers understand how it would benefit them to use this during their Math and Science lessons. Several teachers asked for a copy of the engineering standards, and the Engineer Design Process poster to use in their classroom. Teachers also requested the links and resources that used I to change one of our science lessons to a 5E lesson plan. I teach an enrichment math group and a STEAM class, teachers have asked to observe these classes and asked for ideas to incorporate STEAM into their classroom.

Outcome: Overall, I think the PD was very successful! I think this because my principal said that I did a great job, and he wants me to present other Professional Developments as I learn more, while earning my Master's Degree and taking the Endeavour Stem courses. The teachers met the leaning goals stated earlier for this Professional Development. I think that most teachers in my school will continue to use what they have learned from this PD, especially after seeing that it is not a lot of changes they will have to make and that it will benefit the students. One teacher in particular is perusing her National Board Certification and asked for my help to integrate the NGSS and Engineering Design Process for the science and Math lessons that she will be videoing.

Contacts of people who attended the PD

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