

Gutierrez Leadership PD Proposal

- The title of my STEM professional development is “Pi in the Sky - Implementing STEM Activities for Pi Day!”
- I selected this topic as a way to encourage the other math teachers at my school to implement STEM activities into their lessons. I chose NASA’s resources for Pi Day because it is a day we all love to celebrate and will hopefully gain the interest of my colleagues.
- The professional development I am planning integrates the NASA assets by utilizing the Pi Day Challenge materials they have provided on the JPL website. NASA hosts an online Pi Day Challenge every year so I will be doing the PD prior to this starting in hopes the participants find a way to implement what I teach them to their classes in celebration of Pi Day.
- My proposed audience are my colleagues in the math department at my school. There are a total of 13 other math teachers at my school, as well as 3 math intervention specialists, totalling 16 teachers who will be invited to attend my session. The invited teachers teach grades 9-12 and teach an average of 125 students each. The courses represented in this group of teachers are as follows: Algebra I, Algebra II, Algebra II Essentials, Honors Algebra II, Geometry, Honors Geometry, Statistics, Trigonometry, and Functions, Financial Algebra, Precalculus, Honors Precalculus, AP Calculus, AP Statistics, IB Math Studies, IB Standard Level Math, and IB Higher Level Math. The intervention specialists teach small group math classes and team teach for Algebra I and Geometry. Although the audience teaches a large variety of classes, NASA has so many Pi Day resources that every teacher should be able to utilize at least one of the activities with their students.
- The STEM concepts the Pi Day Challenge will address will be solving real world problems and using the same math applications are used at NASA by scientists, engineers, and astronauts. With the number of problems NASA has in their “Pi in the Sky” series, I could see every high school math class being able to replace something they are currently using. For example, in a Geometry class, the teachers could use the activity within their unit on circles when students really dive into what Pi is and where it is used. In Algebra I, the teachers could implement the activities where students have to use and solve problems with multi-variables in their solving equations unit.

CCSS Standards:

-A-CED.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm’s law $V = IR$ to highlight resistance R .*

-A-REI.3. *Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.*

-G.C.A.2. *Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed*

Gutierrez Leadership PD Proposal

angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.

*-G.SRT.C.8. Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.**

- I intend to carry out my professional development session in my classroom after school with the invited teachers. My session will last an hour and will be held in early March in preparation for Pi Day. The teachers attending the session will be instructed to bring their Chromebooks and I will have additional Chromebooks available, if needed.
- Examples of pre-survey questions:
 - Have you ever implemented STEM activities into your class?
 - If you have, did it go well and what was the activity? If you haven't, what is holding you back from doing a STEM activity?
 - Do you feel you have access to STEM activities that you could use?
 - Are there lessons you could change in order to incorporate a STEM lesson?
 - What is your level of knowledge of STEM?
 - What are your goals in regards to STEM education?
- Examples of post-survey questions:
 - Could you see yourself implementing one of the Pi Day resources with your students?
 - What questions do you still have regarding STEM activities?
 - Are you interested in accessing more NASA resources for your classroom?
 - Do you feel that your understanding of STEM is better than it was before?
- The outcomes I hope to see from the educators in my session are having an open mind to the resources, finding at least one change they can make in their classroom toward implementing STEM, and taking the leap of faith and doing one of the Pi Day activities with their students.
- I will follow up with the teachers by continuing to collaborate with them and getting feedback on how the implementation of their activities went. Since they are the teachers in my department, I will be able to touch base with them often and work with them to get ready for the activities.
- The data collection method I will use will be surveys given on Google Forms and interviews after the teachers have attempted their activities.