

Stephanie Nodelman
STEM Leadership Seminar
SCED 545
Professional Development Proposal

Title of STEM PD: Integrating STEM into our classrooms

I selected this topic for a few reasons. It is a topic that I can continue with teachers throughout the year and it allows me to share a lot of the NASA resources from my classes with the teachers to use before they teach certain science units. I am working with the admin team at my school and we have developed a PD plan where one Wednesday a month teacher will have a PD meeting. They will be able to select the topic they attend. At the beginning of the year we asked teachers what would like to attend more PD on. About 60% of the staff wanted to learn about integrating STEM ideas and 21st century learning. Each month I am going to offer a topic within that spectrum to help improve the STEM teaching at our school.

My audience will be for K-5 teachers and has the potential to have 20-60 participants each month. The sessions will be held on the last Wednesday of every month and last for an hour after school. Our staff has that Monday as a scheduled PD meeting day, so teachers will decide the week before what session they would like to attend. My STEM PD can involve the 45 homeroom teachers at my school and that would impact all 905 students that attend the school. Our homeroom teachers teach all subjects to their students so I will model ways to integrate subjects while teaching the NASA content. The goal is that we have at least one to two members per each grade level in each session.

Prior to the professional development I will give a pre/post assessment with google forms or Nearpod so I can share the results with the teachers at the beginning. Pre- Questions on the first survey will be; How confident are you in STEM education? Do you have resources you can use in your classrooms to teach the subjects? What do you need to become stronger in subject integrations? Post Questions will be a follow up on the prior questions as well as a spot for teacher reflection on what they took away from the PD that was helpful or useful to them. I will be able to use the reflections to follow up with teachers and support them with the topics during the school year. I can bring them needed materials or give them help on resources they are not familiar with and co-teach science lessons with them to model for them. I would hope to see teachers more comfortable with teaching STEM in the classroom and using resources with their

curriculum to enhance the student learning experience. I will be able to use the post survey of the PD as data to reflect and as feedback on what to adjust for the next month's session.

PD Topics by Month

September: will be focused on our Kinder, 2nd and 5th grade classes and their weather units

October: will be for 1st, 3rd, and 4th and will focus on their Earth in the Universe units.

November/December: STEM as inquiry K-5

Each month will include 21st century and STEM ideals while teaching these topics

September: Teachers will be introduced to the NASA website and its vast resources regarding Earth. I will show the satellites and imagery provided by NASA and their lessons regarding Earth and its weather. Our 2nd and 5th graders have to focus on a little forecasting during their lessons so the NASA site can be an amazing asset to them.

State Standards:

Kindergarten: K.E.1 Understand change and observable patterns of weather that occur from day to day and throughout the year. K.E.1.1 Infer that change is something that happens to many things in the environment based on observations made using one or more of their senses. K.E.1.2 Summarize daily weather conditions noting changes that occur from day to day and throughout the year. K.E.1.3 Compare weather patterns that occur from season to season.

Second Grade: 2.E.1 Understand patterns of weather and factors that affect weather. 2.E.1.1 Summarize how energy from the sun serves as a source of light that warms the land, air and water. 2.E.1.2 Summarize weather conditions using qualitative and quantitative measures to describe: • Temperature • Wind direction • Wind speed • Precipitation 2.E.1.3 Compare weather patterns that occur over time and relate observable patterns to time of day and time of year. 2.E.1.4 Recognize the tools that scientists use for observing, recording, and predicting weather changes from day to day and during the seasons.

5th grade: 5.E.1 Understand weather patterns and phenomena, making connections to the weather in a particular place and time. 5.E.1.1 Compare daily and seasonal changes in weather conditions (including wind speed and direction, precipitation, and temperature) and patterns. 5.E.1.2 Predict upcoming weather events from weather data collected through observation and measurements. 5.E.1.3 Explain how global patterns such as the jet stream and water currents influence local weather in measurable terms such as temperature, wind direction and speed, and precipitation

October: Teachers will be introduced to the resources and materials NASA offers to study and observe space. State objectives are as follows:

1st grade: 1.E.1 Recognize the features and patterns of the earth/moon/sun system as observed from Earth. 1.E.1.1 Recognize differences in the features of the day and night sky and apparent movement of objects across the sky as observed from Earth. 1.E.1.2 Recognize patterns of observable changes in the Moon's appearance from day to day.

3rd grade: 3.E.1 Recognize the major components and patterns observed in the earth/moon/sun system. 3.E.1.1 Recognize that the earth is part of a system called the solar system that includes the sun (a star), planets, and many moons and the earth is the third planet from the sun in our solar system. 3.E.1.2 Recognize that changes in the length and direction of an object's shadow indicate the apparent changing position of the Sun during the day although the patterns of the stars in the sky, to include the Sun, stay the same.

4th grade: 4.E.1 Explain the causes of day and night and phases of the moon. 4.E.1.1 Explain the cause of day and night based on the rotation of Earth on its axis. 4.E.1.2 Explain the monthly changes in the appearance of the moon, based on the moon's orbit around the Earth.