

Proposal: Professional Development Session Mike Mahoney

1. Title: **STEM, a model for cross curricular education.**
Subtitle: **By Example**
2. In talking with Steve States, principal of Grand River Academy, I learned that he had interest in how his teachers could incorporate STEM as a means to integrate cross curricular activities. I chose to use a carbon footprint calculator as an example of how a current and relevant problem can be used to integrate STEM into the curriculum and generate student interest.
3. Grand River Academy uses a blended school model for its K-12 students. My professional development will include resources that are accessible and applicable to elementary, middle, and high school students. The subject taught by the teachers attending are: Reading, Writing, Math, and Social Studies. **Number of teachers and students served to be determined.**
4. I will use highlights from my 5E lesson developed in the Methods of STEM course by using the carbon footprint calculator (<https://www.footprintcalculator.org/>) to demonstrate how STEM can be integrated into their curriculum and give the teachers something that they can go back to the classroom and use immediately.

Professional Development Outline:

- What is STEM?
 - Teachers answer this question on the questionnaire.
- Are you familiar with the 5E lesson plan?
 - Teachers answer this question on the questionnaire.
- Definition of STEM
- Introduce Problem Solving and the Engineering Design Process
- Visit Carbon Footprint Calculator: <https://www.footprintcalculator.org/>
 - o Teachers work through calculator imputing their own information
 - o Teachers identify personal overshoot day
 - o Teachers identify which of the five consumption categories has the greatest impact
 - o Survey teachers for their overshoot day
 - o Calculate average overshoot day of teachers
- Model questions from lesson plan
- Open discussion on the related science and math (grade levels)
 - o Math
 - Data collection, interpretation, and predictions
 - o Earth Science
 - Manage natural resources
 - Biodiversity
- Continue discussion on how this can be used in reading, writing and social studies
- Share 5E lesson on **How Big is Your Carbon Footprint?**
 - o Share NASA's BEST website: <https://www.nasa.gov/audience/foreducators/best/index.html> and discuss how to link the following to the carbon footprint calculator:
 - Engineering Design Process
 - Green Propellant Infusion Mission challenge
- Share other resources

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- Revisit – What is STEM?
- Questions

I will leave the teachers with the following resources gained through the Endeavor program:

- How Big is Your Carbon Footprint? 5E lesson Plan
- A copy of NASA's Engineering Design Process
- A copy of the Green Propellant Infusion Mission challenge
- Links to the following resources:
 - o <https://www.nasa.gov/audience/foreducators/best/index.html>
 - o <https://www.footprintcalculator.org/>
 - o <http://www.corestandards.org/>
 - o <http://www.nextgenscience.org/>
 - o <http://pbskids.org/designsquad/>

5. The professional development is scheduled for September 24, 8:30 – 9:30 am at Grand River Academy campus. Preferably in a computer lab.
6. Outcomes:
 - a. The teachers will be able to define STEM.
 - b. The teachers will be able to incorporate the How Big is Your Carbon Footprint? 5E lesson plan into their curriculum.
 - c. The teachers will be able to describe the Problem/Engineering Design Process
 - d. The teachers will gain knowledge on accessing of STEM resources.
7. A week after the professional development I will follow-up with an email thanking them for their participation and asking if any questions have arisen since the session.
8. I will have a questionnaire for the teachers to fill out at the end or after the professional development and have them email the completed form to me. In my follow-up email I will attached copy of the questionnaire and politely remind them to email me the questionnaire.