PD Proposal
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● What is the title of your STEM professional development?

Gaining Time through Integration

● Why did you select the topic?

This will take a STEM project that has been stand alone and integrate it into our everyday lessons to not only make the project more impactful for students but also help teachers to feel more confident integrating STEM projects into ELA and Math.

● How does your PD integrate NASA assets and/or content from the Endeavor courses?

- Drag Aircraft Design experiment to reinforce/introduce what we have/are learning about physics. This will vary based on grade level.
- Teachers will also have access to NASA's BEST lesson on creating a landing pod.
- To help students visualize the challenge I will include this video as a resource for teachers to use

● Who is your proposed audience? Which teachers will you serve with your PD and activities? What grades, subjects, and how many students do they teach?

- I will be primarily serving my school's 3-5 team with this PD. We will be completing the challenge together as a whole.
- I will also be reaching out to the 4th grade teachers across the district to present them with this PD. I have heard from them that they are looking for ways to integrate STEM into Math and ELA

● What STEM concepts or learning goals will you and your materials address which can potentially replace other classroom activities?

- We will be engineering a device to assist in landing an eggonaut safely to the Earth from the arm of a local power truck. This will involve engaging in the engineering cycle including testing and refining our design.
- Students will be asked to collect and evaluate success data at our trials to determine which designs are successful and why. I will also be having students compare the data collected by their class with other classes collecting data.
- Students will write a proposal including a materials list and then follow that up with a results summary in the end listing what they found to be successful or why their product was unsuccessful using data and information learned to support their claims.

● List NGSS and CCSS or your state standards.

- **NGSS:**
- 3-PS2-1. Plan and conduct an investigation to provide evidence
  Planning and Carrying Out Investigations
  Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.

Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered.
of the effects of balanced and unbalanced forces on the motion of an object.

CCSS:

- ELA.SL.1 - Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacherled) with diverse partners on grade level topics and texts, building on others' ideas and expressing their own clearly.
- ELA.4.W.9 - Draw evidence from literary or informational texts to support analysis, reflection, and research.
- 4.MD - Represent and Interpret Data

● How long will the session be? How will you recruit your audience? Where will you advertise your PD session?

- This session will last about an hour. I will teach two sessions, one with the teachers in grades 3-5 within my building and one with grade 4 teachers across my school union.
- I will ask for time within my building by requesting the use of one of our team meeting times to present. This time is already built into our schedules and teams can use it as needed. I have already requested that the 3-5 team take part in the activity and this PD will provide these groups with the materials and some time to work through discussions of how we will incorporate it. I have already requested that our Curriculum Coordinator set aside time during union in service days for the grade 4 teachers to meet up and work together. I will reach out to the other teachers in this group to present my plan and request participation. I hope that this will allow them time to think about how they teach these standards already and how they could incorporate these STEM activities into their classroom units.

● To demonstrate that teachers have learned something new, generate a pre- and post-survey. What, in general, will your pre-survey and post-survey ask? Your final surveys must include 5-10 questions, some of which must have responses that can be quantified, such as Likert-style Questions.

- **Pre-Survey**
  - How do you currently teach Science?
  - Is Science its own subject or do you integrate it in some way?
  - What is your biggest struggle in teaching Science?
  - Are there any projects you have always wanted to do with your students but you weren't sure how to approach the project?
  - Do you currently use or have access to any NASA educational resources?
    - If so, what NASA educational resources do you use?
- **Post-Survey**
  - Which resources do you think you will use?
  - Briefly describe a unit you want to develop using these resources.

        - What is one goal you might have for your students in science using integrated STEM practices?
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● What outcomes or expectations do you hope to see for your educators?
    - I hope to have the 3-5 teachers in my school leave with an outline to build upon with their teaching partner showing where they will start with their planning and what resources they will use to do this.
    - I would like the Union 4th grade teachers to leave the PD with resources to bring to their classrooms and a list of STEM topics they would like to use to integrate into Math and Science.
● How will you follow up with the teachers in attendance?
    - I will provide a post survey asking teachers if they have used any of the resources provided with their students. I will also ask if they have developed plans for future integration between STEM, ELA, and Math.
    - I would also like to provide a google doc with discussion questions to allow teachers to ask followup questions and respond to others with what they have learned.
        - This document would also be presented and shared during a team meeting with the 3-5 teachers at my school to allow reflection and continued collaboration within our group as well.
● What data collection methods (e.g., surveys, interviews) will you use to analyze the PD's success?
    - **Grades 3-5 at my school**
        - Short term - Post survey as well as interview/discussion. We will be meeting regularly as a team and I will use the team meeting following the project to see how teachers felt about the project. Did they have enough time to allow for iteration? Did they feel that the integrated subjects were taught authentically or merely reinforced by the project? Are there other units they would like to develop, or have already developed, as integrated units that they would like to share?