

A Proposal for Professional Development Project

By Soyoung Chon

Title (tentative): “Building a Strategic STEM Hub: Catalyst for Integrated Curriculum”

1. Why did you select the option/topic?

This year, my school is dedicated to developing a STEM-integrated curriculum. The main project involves constructing a centralized STEM lab that consolidates all individual classroom STEM-related activities. Since I am enrolled in the Endeavor STEM certification course, I unexpectedly find myself a member of the advisory team, collaborating with veteran teachers on this special initiative. We secured funding for building the STEM lab and other related activities. The school administration is currently exploring the most effective ways to leverage the funding to integrate STEM into the school-wide curriculum. This is still in the initial brainstorming stage, and the lab construction is anticipated to take place during the summer.

2. 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?

We have formed an advisory team to lead a special STEM-integrated curriculum and lab-building initiative. The team comprises two science teachers responsible for 5th to 8th graders (approximately 175 students) and a technology coordinator who oversees pre-K to 8th grade (approximately 400 students). The upper-grade science teachers initiated constructing their mini labs last summer. Our current effort aims to consolidate all of their individual initiatives into one comprehensive STEM lab. The designated space is the old media center, which will be transformed from the existing computer room. To facilitate collaboration, we have been conducting brainstorming sessions during our monthly staff meetings.

I propose integrating my mini professional development (PD) session into these staff meetings. This session would serve as an ongoing part of our brainstorming discussions, incorporating insights gained from my Endeavor courses. Essentially, it will function as an "information-sharing" session. So far, the participants for my PD would just be our four team members including myself. To enhance its significance, I am considering inviting a principal to attend and contribute to the presentation.

3. How will your project demonstrate integration of STEM in the classroom?

My professional development (PD) session will showcase the STEM lessons I taught to 3rd graders during my participation in the Endeavor course, "The E in STEM: Meaningful Content for Engineering." This initiative originated as a course assignment, and I identified an excellent

opportunity to blend literature with an engineering design project for the younger grade, aiming to provide a holistic educational experience.

I integrated NASA's Touchdown engineering design challenges into these lessons. Using Brian Floca's book, 'Moonshot,' which provides insights into the historic Moon landing, as a catalyst, I encouraged students to apply their newfound knowledge by designing and constructing shock-absorbing landing gear. I selected the "Touchdown" challenge from NASA and Design Squad, utilizing resources from NASA JPL and the Engineering is Elementary (EiE) Engineering Design Process, as recommended by Professor Josh. This project spanned approximately six weeks, during which students engaged in the full spectrum of the engineering process—brainstorming, designing, building, testing, and refining their landing gears until they achieved success. I facilitated this process with a simple engineering notebook for them to document their progress. This interdisciplinary STEM project was highly successful and was recognized by homeroom teachers, students, and parents.

I also could present future lesson plans formulated through my other two courses, "Methods of STEM Education" and "Math Connections in the STEM Classroom," although they have not been implemented yet.

4. What outcomes or expectations do you hope to see for your educators?

I hope to encourage educators to develop creative lesson plans that seamlessly integrate STEM into their courses, making use of the abundant resources offered by Endeavor and NASA, which will be included in my presentation.

Together, we can develop a collaborative plan that maximizes the potential of the forthcoming STEM lab, transforming it into a centralized hub for catalyzing interdisciplinary teaching and learning.

During my STEM lessons with 3rd graders, I encountered numerous logistical challenges in their small classrooms. The establishment of a dedicated STEM lab equipped with ample space and resources would not only overcome these challenges but also elevate the enjoyment and effectiveness of these activities. This example highlights the critical need for a well-equipped lab, and I hope to explore ways to ensure its proper implementation alongside my fellow veteran teachers.

5. How will you follow up with teachers in attendance?

I plan to create a Google Form to collect their feedback. I am also eager to assist in constructing their curriculum and schedules for the next year, ensuring that the STEM Lab is utilized effectively.

