Professional Development Proposal

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STEM Leadership

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The title for my STEM professional development will be, Digitizing Young Minds: Embracing Technology in Elementary Classrooms for Enhanced Learning. I selected this title because I will be focusing on how to incorporate technology into an elementary classroom, more so than just having students work on apps. I wanted a title that would reflect and show what we are needing to do as we move forward into the future, embrace technology into our elementary classrooms. I selected this topic because of the lack of technology we use, or lack of proper way of using it. Today, implementation is often thought of, or used, as placing students on an iPad or Chromebook to play an educational game (ie; Khan Academy, PBIS Kids). I know that our young elementary students are capable of using technology in so many more ways. Technology doesn't have to be scary for the older generational teachers, either. It should be welcomed and used to support students learning, and to help educators with time management.

My PD integrates the content I learned from the Endeavor robotics course. I aim to introduce my elementary school teachers to the exciting world of robotics and coding, showcasing how these can be implemented effectively even at the lower elementary levels. The proposed audience for this PD is lower elementary grade level teachers. Teachers K-2 will be attending my PD. These educators teach all content areas for students K-2. Each classroom varies between 18-22 students. The teaching materials in our PD will address several core STEM concepts such as, focusing on logical reasoning, problem-solving, and an introduction to computer science through robotics and coding. The goal is to foster an early understanding and appreciation of these concepts in our kindergarten to 2nd grade students. By integrating robotics and coding into the curriculum, we can potentially replace some traditional classroom activities with more interactive and engaging learning experiences. For instance, instead of simple arithmetic problems on paper, students could be programming a robot to move a certain distance,

thereby indirectly learning about numbers and measurements. Coding activities could substitute for some writing exercises, as they also require sequencing, attention to detail, and story-telling skills. The aim is not merely to teach students about technology but to use technology as a tool to better understand and apply fundamental STEM concepts.

There is no technology, or computer science standards in Colorado until high school. NGSS also doesn't have specific technology standards for elementary. Technology is used to support to growth and understanding of other STEM concepts, as stated above. I will demonstrate how to implement robotics and coding to mathematics (number line), reading (writing/reading code), and science lessons (how to implement for habitats). Also, teachers will participate in what is considered an unplugged coding lesson which is a great introduction lesson for coding, using mathematical strategies such as a number line, identify numbers within 20, and writing and reading code. The PD session will be 60 minutes in length, and will be advertised via school wide email. All certified and non-certified staff within our K-2 building will be invited (22 classroom teachers plus others).

My pre-survey questions could include;

1. What is your current level of understanding and comfort with integrating robotics and coding into your classroom activities?
2. Have you previously used any form of technology to enhance reading, science, and math lessons? If yes, how effective was it in your opinion?
3. What are your expectations from this Professional Development program concerning robotics and coding?
4. How confident do you feel about conducting an unplugged coding lesson currently?

5. What challenges do you anticipate in implementing robotics and coding lessons for your K-2nd grade students?

Post survey questions;

1. How has your understanding and comfort level with integrating robotics and coding into your classroom activities changed after the PD?
2. How confident do you now feel about using robotics to enhance reading, science, and math lessons?
3. Were your expectations from this Professional Development program met? If not, what areas do you feel need improvement?
4. After experiencing an unplugged coding lesson, how prepared do you feel to conduct one yourself?
5. What strategies or insights from the PD do you feel will help overcome the challenges you initially anticipated about implementing robotics and coding lessons for your K-2nd grade students?

The outcomes I hope to see from my fellow educators is eagerness and excitement to start using robotics. I have personal robotics that I am using now for my classroom, but I hope by creating more of an interest, it can help my efforts for funding to get us more technology into our classrooms that is fun and engaging for our younger students. I intend to follow-up with an email that provides digital resources for robotics and AI for my colleagues to access and to begin using within their classrooms and lessons. I will conduct pre and post surveys, as well as, interviews with a few who would like to speak 1:1 after the PD. I feel my questions on my post survey will provide insight on the success.