

STEM Leadership Seminar  
Shaylee Rademacher  
February 6, 2020

### **What is the title of your STEM professional development?**

Let's Do Some Coding! - Integrating STEM in the Classroom with Coding and Robotics

### **Why did you select the topic?**

I feel that Coding is an important component for any STEM classroom. Students need to be introduced to coding to show them the possibility of future careers in the field, as they are becoming more and more prevalent. Stephen Hawking believed the same. He said, "Whether you want to uncover the secrets of the universe, or you just want to pursue a career in the 21st century, basic computer programming is an essential skill to learn." The word essential sticks out to me in this quote. Teachers have to provide the tools for our students to learn essential skills to allow them to be successful in their futures. Coding is one of those tools.

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

I plan to integrate much of the content that I learned in the Coding, Robotics and 1:1 Devices class taught by Dr. Sharon Mistretta through the Endeavor program. This class gave me a greater confidence and skill set to put coding into use in my classroom. I plan to introduce the teachers to Scratch coding, one of the platforms that I learned in the CRD class and is a way to begin coding without robots. Dr. Mistretta also introduced us to the Finch and Hummingbird robots, developed by Birdbrain Technologies. I plan to share with the group the possibilities of "borrowing" a classroom set of Finch robots through Birdbrain's Finch Robot loan program.

### **Who is your proposed audience (minimum 12)? Which teachers will you serve with your PD and activities? What grades, subjects, and how many students do**

**they teach?** My proposed audience will be a group of teachers that I am acquainted with from a neighboring school district. I plan to send personal invitations to many of these teachers and request that they bring a friend. It is my hope to have at least 12 teachers, and/or administrators at the presentation. At this school district, I plan to invite teachers at all levels. I will be demonstrating the Dash and Dot robots, made by Wonder Workshop, that are geared toward elementary students, and Cue, the robot also made by Wonder Workshop for the middle school level. The elementary teachers at this school have class sizes that range from 8-17 students. The junior high and high school teachers would have approximately 100 students total.

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

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## **and CCSS or your state standards.**

My school district follows the ISTE Standards for incorporating technology in each classroom. Our district technology goal for the Continuous School Improvement Plan is as follow

**Goal 1:** Develop and enhance quality educational/instructional programs to improve performance and enable students to meet their personal, academic, and career goals.

**Strategy 1:** Teachers will demonstrate high levels of teaching competence, implementing best practices in curriculum design, instruction, assessment, and in the use of technology to increase student achievement.

ISTE Standards - International Society for Technology in Education - related to coding and robotics: (Listing just 2 of the 5 ISTE Standards because of space)

1. Facilitate and inspire student learning and creativity
2. Design and develop digital age learning experiences and assessment

### **How and where do you intend to carry out your PD? How long will the session be? When will it be held? Will teachers have access to computers?**

I have reached out to area principals from smaller schools in my area that have recently incorporated 1:1 devices (Chromebooks) for their students. The reason that I don't intend to do my PD in my district is that I feel like we have had numerous PD on technology and my colleagues may feel as if this is just another tech PD..."we've heard it all before" kind of thing. I want to present to a group where this information will be brand-new to the majority in attendance. The session will be last one hour. The session will be held during a regularly scheduled professional development day. Teachers will have access to laptop computers, iPads, and robots. I will provide the iPads and robots.

### **What, in general, will your pre-survey and post-survey ask?**

One idea I had was to send the teachers a pre-presentation survey to determine what type of help do they need with incorporating STEM into their classroom. This school is new to 1:1 devices so they may be in need of something specific such as help with Google Classroom, Flipgrid, Piktochart, Powtoon, etc, in addition to the introduction to Coding and Robotics.

The post-survey will ask questions about the effectiveness of the professional development, did they learn anything new, did they learn anything that they can incorporate into their classroom the next day, did they have time to "think and do" or process all of the new information. I will have a question that will ask if they have any additional questions and if they would like for me to contact them individually to answer those questions.

### **What outcomes or expectation do you hope to see for your educators?**

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I hope to instill and encourage an excitement for coding and robots in educators teaching all grade spans. I can safely and happily say that my students for the last two years know far more than I do because I gave it a try. Students are developing computational skills, creativity, career possibilities, collaborative skills, and even language development. This is what I want to convey to the teachers that attend my presentation.

**How will you follow up with the teachers in attendance?** I plan to gather each teacher's email address and contact them as a group, and/or individually, to answer any follow up questions, give support when needed, or direct them to other resources available.

**What data collection methods (e.g. surveys, interviews) will you use to analyze the PD's success?**

I intend to use a Likert-type scale with a few questions for teachers to evaluate the effectiveness of the PD. I will provide the questionnaire as a link on whatever digital platform that I use such as Smore, Google Slides, etc.