Full STEAM Ahead

My school has been making a shift into STEM for the past two years. This year, our district will announce that our focus district wide will be STEM. We will be working with Discovery Education to help us as we continue to grow our knowledge of STEM and how to effectively integrate it into classroom instruction.

The title, I suppose would be the same as our school and district focus: "**Full STEAM ahead**". We have several arts focused schools in our district, so we have a STEAM focus, not just STEM.

For the past year, I have conducted PD with all K-5 teachers in my building as the Technology and Math coach. This includes 2 Pre-K, 3 Kindergarten, 4 First Grade, 3 Second, Third, Fourth, and Fifth grade teachers - 21 classroom teachers total. Each of these teachers teach all content areas: language arts, math, science, and social studies. Knowing that we planned to move into the STEAM direction, we spent the majority of last year's professional development working on growth mindset. The leadership team, including our administrators, agreed that teacher must first be willing to have an open mind as we begin to let go of traditional teaching styles and move into more progressive teaching environments.

This year, my plan for PD is to introduce my teachers to the 5E lesson plan format. In introducing them to this format, I hope to help them dissect math and science standards so that they have a better understanding of what it is they need to be teaching in their classrooms. I also hope that the use of the 5E lesson plan will help me to share NASA assets and/or content from the Endeavor courses that will be relevant and engaging during the lessons.

Currently, my administrators and I have worked out several opportunities for PD. Teachers will meet all together twice a month on Thursday afternoons for PD. Thursday's will be helpful in creating the vertical discussions amongst grade levels. They will also be used to share resources and what they are doing in their rooms. The goal of this is to keep the momentum of STEAM going throughout the year and create more and more "buy in" from teachers that have not completely committed to creating change. Grade levels will meet with me for a half day planning once a month. These planning sessions will allow us to look at data and plan units based off our district's pacing guide. This is the time that I would like to utilize the 5E lesson plan format as we break the content into pieces/lessons for teachers to take back to their classrooms. A third PD opportunity is during weekly plannings. Each grade level can book me to plan with them during their weekly planning. I hope to use this time to clarify any questions or concerns they may have with moving forward with STEM integration.

Technology in the building - Currently all teachers have a laptop, document camera, smartboard, and bluetooth speakers in their classrooms. In addition to this, kindergarten and first grade classes have 4 desktops and 6 iPad minis in each room. Second thru fifth grade are 1:1 with chromebooks. We also have 6 iPods and 6 VR headsets that we use for various activities/lessons. We use programs like Nearpod, Edpuzzle, Study Island, Raz Kids as well as several others that assist with instruction and/or intervention in the classroom. We also have a LEGO robotics team. Our kids are introduced to coding in kindergarten. Some coding programs that we use are Kodable, Scratch Jr., Scratch, and Code.org.

Full STEAM Ahead

SC-CCR Standards for Mathematics:
1. Make sense of problems and persevere in solving them.
2. Reason both contextually and abstractly.
3. Use critical thinking skills to justify mathematical reasoning and critique the reasoning of others.
4. Connect mathematical ideas and real-world situations through modeling.
5. Use a variety of mathematical tools effectively and strategically.
6. Communicate mathematically and approach mathematical situations with precision.
7. Identify and utilize structure and patterns.

SC- Science and Engineering Practices
1. Ask questions and define problems
2. Develop and use models
3. Plan and conduct investigations
4. Analyze and interpret data
5. Use mathematical and computational thinking
6. Construct explanations and design solutions
7. Engage in scientific argument from evidence
8. Obtain, evaluate, and communicate information

Outcomes and Expectations - I am hoping to see more and more buy in from teachers as well as willingness to try to integrate STEAM into their instruction. We push all the time that it is okay to fail, if you try. I am hoping that the PD and co-teaching will help my teachers feel more comfortable with STEAM. I hope that they get excited about STEAM and that excitement rubs off on our students.

Follow up - I will follow up with teachers through individual conferencing and planning. As part of my responsibilities as the Technology and Math coach, I must observe, co-teach, model, and provide support. I also must meet one-on-one with teachers after an observation or co-teaching experience in order for us to talk about plus/deltas (what went well/what would we change).

Pre-Survey/Post Survey -
What is STEAM to you?
Have you implemented STEAM into your instruction before?
Do you feel like you were successful?
How comfortable are you with using technology?
How comfortable are you with introducing new technology/ideas to your students?
Do you think that integrating STEAM into your instruction was beneficial to your students? Why/Why not?

Data Collection - Data will be collected through surveys as well as through conversations during planning and conferences.