

STEM-ZOOM Make-up for 6/29/20

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Checking in: How are you?

-- Honestly, I am feeling a little bit intimidated about the Data Integration assignment. I wish that I had been able to attend the actual ZOOM meeting.

-- I am interested in having the students generate data, and then having them use this data to prove or disprove or indicate additional experimentation. On the other hand, I do believe that students need to see/understand/analyze data from all areas of life, not just science, as they grow up. In the future, even a car lease involves data that needs to be analyzed! So, I am thinking more along the lines of providing real data for them to work with --

Comparison of "Data Sets"

-- This would be a whole new experience for my students. They have only ever compared their group's data to the data from other groups in Science lab!

Data Nuggets?

Integrated STEM Lesson Plan

-- I have been trying to include the art teacher, social studies teacher, and the religion teacher. Because I am in a Catholic school, every time that we can tie learning to religion, we will do so. In the case of STEM education, it makes a lot of sense to add in the ideas of bettering or preserving our world for our children.

-- I think that there are so many phenomena that exist in the real world -- whether strictly scientific, or climate-change related, or world-hunger related --

Adapted from....

-- I love all the resources that NASA has. In addition, there is so much more real data available now. I think that so many education companies have "upped their game" during this time of learning from home. Also, so many great, authentic resources are available -- i think I am on some really great mailing lists!

What does engineering look like in a K-12 classroom?

-- I like the comments about engineering as a process -- not just building something. I try to set up situations where my students can look at a current "product" and brainstorm how to improve that product. There is no perfect product yet, so let's engineer improvements.

Elementary vs Middle vs Secondary?

-- I believe that younger students more naturally want to engineer. They just react without limitations or preconceived notions -- and therefore, they might be more creative. I think that one of our challenges as teachers is to nurture creativity, and to nurture the engineering

process, and to nurture the idea that there are always multiple “right answers!” This is difficult for some students, parents, and for some teachers of course! There are always exceptions. I have some amazingly creative, engineering-oriented, outside-the-box students in 6-7-8. But in general, I believe that we need to find ways for very young students to engineer and to be comfortable with that process. Their parents need to be comfortable with it too, and we as teachers need to know how to assess the students' learning.

What does “argumentation” mean to you?

- It used to mean arguing with Mom and Dad!
- I don't like to argue, because I feel that arguing leads to nobody's changing. Debate might lead to change and growth. So, in my classroom I have translated argumentation into either debate, or into a presentation of your “argument” in favor of a particular viewpoint.

“Student sensemaking”

- I think that it is difficult for some teachers to let go of their control -- it's more tricky to guide students in discussion than to just teach.

How do you ensure discourse in STEM classrooms is productive?

- My thoughts are: Be present and fully engaged as a teacher, let the discourse develop (with strategic guidance to keep it on track), and allow for lots of creativity. I'm not perfect at this, because we need to cover “content.” But it is so exciting for the students -- so engaging and real-world for them. We need to value those connections.
- Also, the idea of respectful comment and questioning. This is so helpful, because the kids have clear guidelines. This is another way in which students learn to move through the real world. You might think your ideas are the best when you're in a job, but you have to be respectful!

Final thoughts --

- As in the engineering process, there is no one right answer. As teachers, we need to remember this -- maybe the word “teach” should be changed to “GUIDE.”

What do you think?