Title: Using a 5 E Lesson Plan in the Online Environment

Why did you select the topic? : I work for an online school where almost everything is done online. Both teachers and students work from home. Our only means of interacting with each other is online, students and teachers rarely see each other in person. Our curriculum and lessons are already written out and put together for us. However, we do have an online lesson room, a virtual classroom, where we can be creative and more authentic in our approach to working with our students. We are also not a STEM school, we rarely do cross-curricular activities and lessons. I think the 5E lesson plan would make a great PD for my co-workers. It can be implemented into a teacher's live lesson. Since doing this program I have implemented 5E lessons with my students. I have noticed that when I use 5E my students become very engaged and excited to learn.

I am also considering including the use of authentic data from NASA and/or NOAA to have as an example in a 5E lesson plan. I also want to share these resources with my colleagues so that they will hopefully use them with their students.

How does your PD integrate NASA assets and/or content from the Endeavor courses.: The focus of my PD will be the 5E lesson plan which is a big part of the Endeavor program. I am also considering using NASA (probably Mars) authentic data and/or NOAA (Climate/temperature data around the US) to use as an example in the 5E lesson plan.

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?:

I plan to do this PD with my high school science department, which has 17 teachers. The subjects covered are: biology, earth science, chemistry, physical science, physics, marine science, anatomy and physiology, earth and space science, environmental science, AP environmental science and AP biology. Each teacher has around 150-160 students.

What STEM concepts or learning goals will you and your materials address which can potentially replace other classroom activities? List NGSS and CCSS or your state standards.:

I thought about focusing on using a 5E lesson plan in general and using authentic data from NASA and/or NOAA (or maybe both) to show co-workers how to use them in their live lessons with their students. **Is this okay for a PD?**

As an example of authentic data that I can use in a 5E lesson would be going to the NOAA website and getting data for temperatures around the US and then using that information to learn about standard deviations. Another thought I have is to use atmospheric data from Mars to validate life on the planet.

NGSS standards for that would be:

HS-LS2-1.	Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales
HS-LS2-2.	Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity

and populations in ecosystems of different scales.

HS-LS2 -6.	Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.
HS-LS4 -5.	Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.

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 plan do my PD during a science department meeting. However, if I get approval from administration I can hold it separate from the science department meeting. The only issue with that is that there is no guarantee that I will get all or the majority of the science department (although I could open it up to other departments). I will hold the PD in my live lesson room so I can show a power point or google slide presentation and share my screen. All of the teachers attending will have a computer to work on. The session will be 1 hour.

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

Pre-survey:

What tools/techniques do you use to engage your students?

Have you ever used a 5E lesson plan? If so, do you currently use 5E lesson plans?

Have you ever used authentic data in your lessons?

Post-survey:

Was the PD helpful?

What did you like most about the PD?

Will you use the 5E lesson plan and/or authentic data in your live lessons?

What else would you have liked to have learned about or spent more time on?

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

I do expect that the teachers in my science department will be excited about my PD (it will be something different not only from the regular department meeting but also a different kind of PD). I do expect that they will be open to trying/implementing the 5E lesson plan, or at least parts of it into their live lessons as well as using authentic data from NASA or other websites like NOAA. I also expect that there will be a little bit or resistance from some of the teachers

How will you follow up with the teachers in attendance?

I will ask them in the following days if they have implemented or used any of

the strategies covered in the PD. I will also ask to be invited to a live lesson

where they implement the strategies (5E plan and/or authentic data). I will

also ask what their students thought and how they responded.

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

I would take both surveys and interview co-workers to collect data.

Something I would be interested in seeing is if live lesson attendance

increases after doing 5E lessons.