

Title: Active Participation Through the 5E Model

Why: I had never used the 5E Model prior to my Endeavor courses. When it was first assigned, I was hesitant - I had just completed a year's set of lessons following the IB lesson template and thought that I was basically starting over. However, the 5E Model only enhanced the units I already had in place. This model is a strategy for unit planning that I would like to share with my colleagues.

Integrate NASA/Endeavor: The 5E Model was introduced in my first class, Methods of STEM and used throughout my subsequent courses. I will be utilizing The 5E Instructional Model available on the NASA website (<https://nasaclips.arc.nasa.gov/teachertoolbox/the5e>) along with the Endeavor 5E Lesson Plan Template as a guideline and <https://cbm.msos.edu/teacherWorkshops/mspResources/documents/day1/5eSummary.pdf>. Additionally, I plan on sharing lesson resources provided to educators on the NASA website: <https://spacemath.gsfc.nasa.gov/SpaceMath.html> & jpl.nasa.gov

Audience: Teachers within my school community. Participants teach grades 5-12, many multi-subject with the majority in the sciences and math. Class sizes range by grade but may be as small as 15 or as large as 39 students. Currently, grades 5-8 teachers are in full attendance in the classroom; grades 9-12 classes are running a 3-cohort hybrid model.

STEM Concepts/Learning Goals: Teachers will be introduced to the 5E Instructional Model and how its implementation can enhance units through scaffolding on prior knowledge and allowing students to generate questions and new ideas, thus leading to a deeper understanding. Teachers will also be introduced to some of the lesson resources offered by NASA. Together, we will edit their previous lesson's introduction to create an engaging "hook" for students.

Standards: Presenting a 5E Unit Plan created in another class, the lessons focus on NGSS HS Inheritance and Variation of Traits (HS-LS3-1, HS-LS3-2, & HS-LS3-3) as well as the associated Science and Engineering Practices, Disciplinary Core Ideas, and Cross-cutting Concepts.

Length/recruiting: My PD will be approximately 1-hour. I will send an invite email to my colleagues and create a post on our Google Classroom Faculty page. Follow-up will be on-going throughout the school year on our group stream and during PLCs.

Survey: I will generate a pre & post survey via Google forms.

Possible pre-survey questions:

- What grade do you teach?
- What content area(s) do you teach?
- How often do you create / edit lesson plans? daily, weekly, monthly, never, other
- How do you plan on introducing your next unit?
- How do you assess your students?
- How often do you adjust your lesson plans based on evidence of student understanding?
- Have you had previous experience with the 5E Model of Instruction? Yes, no, not sure

Possible post-survey questions:

- Did today's presentation provide you with a general understanding of the 5E Model? yes, no, maybe
- Could this model be utilized to improve/enhance your current unit plans? yes, no, maybe
- Will the resources presented today be useful additions to your teaching? yes, no, maybe
- Consider the way in which you plan to present your next unit. Is there a way to edit your introduction to this unit that will engage students' curiosity without providing terminology or explaining initial concepts?
- Do you have any follow-up questions?

Outcomes/Expectations: I would like teachers to be inspired to collaborate on enhanced lesson planning utilizing this method. For those teaching in a hybrid classroom, my goal is to encourage the use of the NASA project resources, in order to keep students engaged even when they are learning remotely.

Follow-up?: My school's faculty members participate in a Google Classroom page for the exchange of ideas. This could be a way to follow-up through a post which encourages the sharing of experiences and any edited unit plans. It can also become an on-going soundboard for advice from fellow teachers. We also meet once per cycle for PLCs; follow-up can take part during part of these sessions.

DATA/ analyze success: I will analyze the post-survey responses to gauge whether the participants found my presentation relevant. After a few weeks, I plan on posting a Google Question on our Classroom Stream to check-in on progress and answer any follow-up questions. Ideally, teachers participate in an ongoing conversation about 5E lesson/unit plans and share experiences in which students are engaged and improving.