

- I. My project is “Eyes on Exoplanet PearDeck”. I had a hard time finding anyone interested in my own district because it is so small and we only have one teacher in each department. Furthermore, my schedule of a junior high and high school teacher did not coincide with the schedules of the elementary teachers. As a result, I had to go outside my district to find enough participants.
- II. Curriculum Topics
 - A. MS-ESS1-1. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.
 - B. MS-ESS1-2. Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. within them.
 - C. MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system.
- III. Northeastern Colorado Teachers Cohort
 - A. Elementary Educators (Holyoke, Fleming, La Junta, Eads, Lone Star)
 - B. All schools have K-12 populations of under 200.
- IV. What did I set out to do?
 - A. I wanted to show my colleagues the usage of PearDeck because it has really helped me in my classroom. The engagement of my students during lessons has increased in a measurable way and I wanted to share this with my audience. I chose to engage my colleagues with a lesson from NASA’s Jet Propulsion Laboratory at the California Institute of Technology. Due to the fact that exoplanets are completely out of our well studied solar system, it tends to hone the curiosity out of anyone who decided to embark on the journey.
- V. My audience:
 - A. Briana Bickel- 1st Grade
 - B. Brooke Zillich- 5th Grade
 - C. Kristin Bickel-Special Education
 - D. Megan Parker- 2nd Grade
 - E. Amanda Cook- 1st Grade
 - F. Jocelyn Ham- Special Education
- VI. Pre-Survey Questions
 - A. Have you ever used PearDeck?
 - B. Have you ever used any NASA Educational Services?
 - C. On a scale of 1-5, What is your knowledge of the exoplanets?
- VII. I had the teachers join my PearDeck session. I then went through a presentation about the exoplanets and how to use the *NASA Eyes* application. On several of the slides I asked the teachers to participate in interactive questions using the PearDeck App and showed them how to explore a session of *Eyes on Exoplanet* on the *NASA Eyes* App.

- VIII. NASA's *Eyes* App is an interactive application from the Jet Propulsion Laboratory. It starts the explorer in our solar system. The user is then able to zoom out from there. It measures how many light years away from the solar system that is being explored. There are other options available for the user. He or she can pick discovering "Super Earths", "Giant Gaseous" planets, or many other different types of planets. The user can also be educated on the different missions NASA has done.
- IX. *Do you think this lesson would be beneficial in your classroom?*
- A. I think one participant said it best, "*This would benefit a lot of teachers, and I loved the lesson, but it would not fit in my classroom.*" What I discovered doing this professional development is that each district has a different view on STEM. We all live in rural communities, who need STEM to preserve our way of life, but many people see it as a threat. Although the administration of a district may be supportive of STEM, the supporting community may look unfavorably on it. Some of the teachers in my professional development are special education teachers and thought they would find it neat, but not sure they would actually learn anything.
- X. *Do you think students would enjoy using PearDeck?*
- A. The educators in my professional development said they all planned on using PearDeck in their classrooms. They liked that it can record interaction, but allow the student to remain anonymous to one another. This has been my experience using PearDeck, is that students are more apt to participate in a discussion if they can remain slightly anonymous.
- XI. The success of my professional development is kind of loaded. My audience was not ideal for the content, so therefore I think it was uninteresting to the people who took the time out to listen. I think they all appreciate being show PearDeck, but the NASA resource side of the professional development fell short. Generally, the way I teach my STEAM classroom is that the students write the actual curriculum. I usually partner with a school who has a very different student body than we do, but is interested in the content matter. Then the kids do the professional development. However, I learned a lot doing this project on what a successful professional development would look like.
- XII. One thing I learned from this course and professional development is the importance of honest discussion and feedback. The primer written by Laura Desimone, discussed effective discussion as opposed to surveys. In the case of my professional development, where I had such a small group, the surveys were not effective at all. I had to produce my feedback from discussion about what was effective and what was not. Thankfully, I had a great audience who was not afraid to give healthy criticisms.
- XIII. Luft, Dubois, Kaufman and Plank (2016) discussed that there were teachers that wanted professional development, but did not have time. I discovered this with my own professional development. I found people who were interested, but could not find a time they could all get together at the same time. It seems professional development needs to

be ordered by the administration. Once the teachers are forced to go to professional development, it generally loses its effectiveness.

- XIV. I probably will not approach this type of audience with this professional development again. It was nice to introduce instructors on PearDeck in a fun way, but I did not give an effective presentation for my audience in STEM. I did not do the wonderful application NASA provided justice it deserves. I hope to do this professional development again sometime with a STEAM based audience who are interested in partnering for a project.

Works Cited

Desimone, L. M. (2011). A Primer on Effective Professional Development. *Phi Delta Kappan*, 92(6), 68-71. doi:10.1177/0031721711109200616

Luft, J. A., Dubois, S. L., Kaufmann, J., & Plank, L. (2016). Science Teacher Leadership: Learning from a Three-year Leadership Program. *Science Educator*, 25(1), 1-9.