

Shauna O'Toole

**NASA Endeavor STEM Leadership Seminar Final Project PD Paper
Spring 2019**

Title of Project

Developing Scenes using Engineer and Design Process & CoSpaces EDU

II. Curriculum Topics, School Name(s), Number of Educators, Grade Level(s)

Topic: Mayan and Aztec Engineering and Design

Subjects covered: Science Engineer and Design fused with Social Studies and Literacy

School: Accokeek Academy in Prince George's County Maryland

We will have 13 staff members including one administrator, one TAG (Talented and Gifted)

Coordinator, One Data Coach and ten classroom teachers of all core subject areas.

- The PD will be for informational purposes for the Administrator and Data Coach, but will service all of the teachers and the TAG Coordinator.

- The teachers at the PD will be 3 Science Teachers, 3 Math Teachers, 4 Reading Teachers, one Social Studies Teacher and one TAG Coordinator who assists with all subject areas.

Everyone teaches 6th grade.

III. Standards Addressed. (you may use an Appendix)

MS-ETS1-4 Engineering Design

Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.

Performance Expectation

Grade:

Middle School (6-8)

CCSS.ELA-LITERACY.RI.6.5

Analyze how a particular sentence, paragraph, chapter, or section fits into the overall structure of a text and contributes to the development of the ideas.

CCSS.ELA-LITERACY.RST.6-8.3

Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.

MD Content Standard: 3.B.1: Examine how physical and human characteristics shape the identity of places and regions and influence the development of civilizations in world history.

IV. Summary of Project (3-4 sentences up to a paragraph=What did I set out to do?)

What I planned:

We will be working on the Engineer and Design Process to design an understanding of Mayan, Incan and Aztec building structure. Both civilizations were known for being skilled engineering designers. Scholars will design a co space that shows what they have learned based on readings which will be an interactive piece for peers to explore. The second aspect will be students building a structure using engineer and design that is element proof using natural resources of that region which they will test. These design challenges address social studies concepts and are STEM based with a touch of art and creativity. They both present a problem. 1. How can I best design a co-space that explains how engineering of structures were made in ancient times and what purpose the design served. 2. How can I best design a structure that can withstand the elements with given natural resources.

V. Pre-questions Survey List

This was done on google forms since it allows you to view group and individual response date. The survey was sent to 14 educators who will attend and 11 responded.

Mr Bush
Dr Jelks
Ms Burrows
Mr Shepperson
Mr McIntrye
Ms Pirtle
Ms Meyer
Dr Bell
Dr Wilson
Mr Goforth
Ms Dickerson

Questions from Survey:

1. Do you know the difference between STEM and STEAM?
2. Do you integrate STEM regularly in your classroom instruction?
3. How have you integrated STEM into you classroom instruction?
4. Would you be interested in learning about new sources to incorporate STEAM into your classroom?
5. Have you heard of the Engineer and Design Process?
6. Would you be interested in learning about how to use Engineer and Design in your classroom? Yes or No and why
7. How comfortable are you with online basic code programs?
8. Are you interested and willing to learn about a basic code application to use in your classroom to aid instruction?

VI. Brief Description of the Actual Professional Development Training

What the teachers did in the PD:

The teachers were able to listen to me discuss the need for cross curricular concepts for the next school year and the incorporation of STEAM in all subjects. We discussed the use of Cospaces Edu and how it can be used to build a more STEAM friendly environment in all settings, knowing that the state will be requiring instruction and testing in Social Studies to be upped next year to increase overall state rigor in Maryland.

Due to the timing of the PD my trial license expired so they were not able to play in the program with code as planned, but I was able to show them a video and open my account to them to use on a limited basis. This was something out of my control due to a suicide of a student on our 6th grade team in March. I pushed it back to be sensitive to people's time. Despite this, during the PD we explored how Cospaces Edu could be used for an explore within 5e and with The Engineer and Design Process from NASA. I shared with them how an activity like the clay boats we did in the fall could be cross curricular depending on their curriculum. I referenced books they were reading in English and math topics to bridge a connection. I then went into the 5e integration with engineer and design. I went over my social studies lesson concept, having the social studies teacher I consulted with chime in with my ideas.

It ended up being a more informative PD verse a hands-on PD. Knowing my team I knew they rather also be given information and work with it in their own ways. We also all tend to eat lunch during our team meetings and due to the timing, I knew that I could share with them what I would have the children do, but most would not be on board to build and get creative on their free time.

What we would do with scholars:

If this were to be executed with the scholars I would team up with MS Dickerson, the social studies teacher to get creative with creating the Cospaces Edu settings and teaching code to then move into the engineer and design piece with building and testing structures. Children would be given time to research, plan, model and develop and it would also incorporate math concepts of angles and measurement. I explained to the team that fusing the subjects is the direction that I think would be most beneficial for our scholars and it is the way they best hold onto the information since it creates an experience.

Please see the power point- which was created prior to knowing the license was expired and after discussing if people would be willing to be hands on during our meeting.

VII. Brief Outline of the Activities in the Pick-up Unit

- Teacher will have used DAC chart with articles 1-5 from the curriculum
- Teacher will have also shown a video on Aztec and Mayan cultures
- <https://www.youtube.com/watch?v=4ZQZJqtHpg8#action=share>

| Documents | What is the overall message? | How does this document connect, support, or counter the overall messages presented in the other documents? |
|-------------------------------------|------------------------------|--|
| Text 1: Aztecs, Maya and Inca | | |
| Text 2: Ancient Mayan Cartoon | | |
| Text 3: Mayan civilization facts | | |
| Text 4: Inca Empire for Kids | | |
| Text 5: Aztec Empire for Kids | | |

VIII. What NASA data did you include?

I used the engineer and design process from NASA.

IX. Follow-up Activities & Post-questions Survey List

Activities:

Post Survey

1. Would you use Co spaces in your classroom?
2. Can you see the correlation between Engineer and Design with other processes you already use within your content in your classroom?
3. Do you feel more comfortable exploring how to blend STEAM into your classroom instruction?

Unfortunately, no one responded to the survey but below is feedback from a social studies teacher, science and English teacher right after the PD



Kia Dickerson Mon, Apr 29, 9:48 AM (2 days ago)

to me, Trevine, Patricia, Gillian, Roshea, William, kimberly.buegler, Marie, Sharlyn, Deborah, Kevin, Lauren, Jose, Brian, Austin, Jeffrey, Amanda, Barbara, Michael, Rachel, Valerie

Thank You for sharing with us. It seems like a great tool to use with this generation of tech savvy students. Appreciate the information!



Jeffrey Bush Mon, Apr 29, 10:22 AM (2 days ago)

to Kia, me, Trevine, Patricia, Gillian, Roshea, William, kimberly.buegler, Marie, Sharlyn, Deborah, Kevin, Lauren, Jose, Brian, Austin, Amanda, Barbara, Michael, Rachel, Valerie

Great resource. My students would love to use this in science.



Sharlyn Kilkelly Mon, Apr 29, 1:27 PM (2 days ago)

to Jeffrey, Kia, me, Trevine, Patricia, Gillian, Roshea, William, kimberly.buegler, Marie, Deborah, Kevin, Lauren, Jose, Brian, Austin, Amanda, Barbara, Michael, Rachel, Valerie

Yes, I certain the website highly appropriate for all content areas. Thanks for sharing!

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Both the English teachers said they would be open to use the resources in classroom when planning with the curriculum since the year has already been laid out.

X. Outcomes. Final Data Collection and Analysis

a. Survey Results/Comment on the content included in the project

Please see above listed comments above. No one responded to the post survey, even after being asked a second time to do so. It is a very busy time of year and bad timing with PARCC.

b. Survey Results/Comment on the pedagogy in the project

see question above

c. Was your professional development successful? Why or Why Not?

Yes and no. I felt if the free trial did not end on cospaces the connection of letting the educators play with the tool and seeing the connection to engineer and design would have been stronger. I also think if the timing would have allowed them time to be hands on and not just on our weekly team meeting (our only free time for such a PD sadly) it would have allowed them to engage in STEAM, therefore making it more meaningful.

d. How did this project relate to the readings? Cite two examples.

The Kaniuka reading talked a lot about consistency and routine with keeping logs of experience. I think if next year we were to move to a project based learning style infusing STEAM in all subjects to address covering more social studies curriculum and had a straight forward curriculum set up with routine it could be successful. The key would be that it would need to be done to fidelity for it could work for our school since our kids

thrive on this. I think if we also set up PLC like Fulton spoke of, we would be setting up a culture for success.

e. Will the teacher do these activities again?

The teachers said they would be willing to visit using engineer and design in their classrooms next year and Cospaces Edu if they could plan to blend it in.

f. Reflection

I learned many things from this experience, mainly about my school community and its needs. There are so many ideas that can be brought to the table, but like each reading explained, it is about the culture that is established in the school that help drive how and how well the structure of the professional activities that are planned blend into everyday school life. My school has many creative people, but I think getting STEAM in our school on a large scale would have to be planned out properly with blending curriculums on a district level. It made me realize I want to do bigger things and maybe this organization is just a stepping stone for bigger things to come with people would are more about hands-on. I feel like our school is very open minded, but the restrictions of the district hold many people back and without higher level change that ideas like mine as well as others may fall to the wayside. There is a lot of saying things are being done, but are they actually being done in a way that works best for kids. That is the question that makes me think I need to reach out and see more.

XI. Appendix: Classroom Activities/Unit with Assessment

This was taken of a very poorly planned unit. Currently, our social studies curriculum is not well organized in my opinion at all- Ms Dickerson can attest to this. Please see the resources above.

XII. Include the names and contact information of four educators who attended the PD.

Jeff Bush jbush@pgcps.org

Trevine Jelks trevine.jelks@pgcps.org

Kia Dickerson kia.dickerson@pgcps.org

Sharlyn Kilkelly Burrowes sharlyn.kilkelly@pgcps.org

Kevin shepperson kevin.shepperson@pgcps.org