

## **I. Title of Project**

Real Data, Real STEAM Results

## **II. School Name, Grade Levels, and Curricular Topic**

I teach at Knollwood Preparatory Academy in Granada Hills, CA. It is a part of the Los Angeles Unified School District (LAUSD). It is a PreK-5 school. Students come from diverse backgrounds and varying socio economic status. Our neighborhood comes from middle income, but we have enrollment from neighboring areas with much lower socio-economic status. The school has about 400 students.

This professional development was delivered during our usual Monday faculty meeting. The curricular topics discussed were STEAM education, how to incorporate real data within our STEAM lessons, and where our district is currently with STEAM implementation. There were 24 people in attendance. This included the principal, two coordinators, two supporting substitutes for remote learning, four special education teachers, and 15 general education teachers from Preschool to Fifth Grade. Below is the contact information for four people in attendance:

- Tracie Cho- 3rd grade teacher, [tracie.cho@lausd.net](mailto:tracie.cho@lausd.net)
- Jessica Ramos- 5th grade teacher, [jessica.ramos2@lausd.net](mailto:jessica.ramos2@lausd.net)
- Cecilia Salazar- principal, [chp1562@lausd.net](mailto:chp1562@lausd.net)
- Sarah Kim-1st grade teacher, [sxk6072@lausd.net](mailto:sxk6072@lausd.net)

## **III. Standards Addressed**

Since the staff comes from a variety of grades and student populations the main goals will be to help staff see how the framework of NGSS supports data integration of STEAM lessons. Some standards that can be applicable across grade level include, but are not limited to:

- **K-2 ETS1-1:** Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- **3-5 ETS1-1:** Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

Both of these standards call for a need for STEAM education. Students need to focus on a real problem, ask questions, research, and develop. These standards also force teachers to have to plan across grades so students can start to receive more depth into their research as years pass.

## **IV. Summary of Project**

The PD defined STEAM as an acronym, defined terms around how to teach STEAM lessons, showcased a couple STEAM lessons using real data, then allowed teachers time to explore how to incorporate real data in their lessons. The staff was given time to explore the [NASA/JPL Teach webpage](#). From there, staff members shared out what they could use, what they will save for later, and how the real data seemed to impact the lesson. Then the staff completed the post-survey and about 10 teachers will be on a groupme chat with me to continue to plan and share ideas/lessons.

## V. Pre-Survey Questions

The week prior to the Professional Development I sent out the Presurvey so the professional development could be catered to what teachers needed and wanted. Seventeen staff members completed the pre-survey. Please see the PreSurvey attachment for full results. The following questions were asked ([Google Form Pre-Survey](#)):

- Grade Level? *PreK, Special Ed, 1,2,3,4,5, I work with all grades*
- Are you familiar with STEAM education? *Yes, No, Maybe*
- Describe what you feel is the goal of STEAM education (This can be a few words or a few sentences). *Short Answer*
- Are you familiar with these terms and their relationship to STEAM education? *Check all that apply: Transdisciplinary, Multidisciplinary, Disciplinary, I am not familiar with any of these terms*
- How confident are you with teaching STEAM units in the classroom (1 being "no idea where to start" and 5 being "I can teach STEAM in my sleep")? *1-5 rating*
- How often do you teach STEAM units in your classroom? (1 being very little to never and 5 being so often it is embedded into our everyday classroom) *1-5 rating*
- Have you ever incorporated real data from NASA/JPL into a STEAM lesson? *Yes, No, Maybe*
- What main subjects do you want to focus on? *Check all that apply: Art, Engineering, English Language Arts, Coding, Science, Technology, Math*
- Are you interested in seeing a sample STEAM unit and/or lessons? *Sure!, Only if it can be done with my students digitally, No thank you as I am too busy with this pandemic.*

## VI. Brief description of PD Training, The actual Training

I approached the PD in this manner because there has been very limited STEAM training with our staff, and I am currently on the STEAM collaborative for our school district where they believe it will be a very slow rollout for schools. So we began with defining the acronym and I shared how STEAM is problem based learning where the eventual goal is students come up with their own questions to guide learning. These questions need to be rooted in real issues. From here we talked about the differences in incorporation of subject matter, I showcased some lessons, and then staff was given time to explore the [NASA/JPL Teach webpage](#). From here teachers shared out what activities could be useful now, and what they want to explore even more.

## **VII. Outline of Activities**

I had plans to do a brief warm up where we go in breakout rooms and talk about what STEAM is, what we are doing with STEAM, etc. but my principal had the zoom and did not have breakout rooms in the settings. So we did more whole group talk. We met as a whole group and I gave a brief presentation on what STEAM is, what the acronym means, and what our district is expecting currently. Then, I discussed Data Integration. I explained what it is, how it is integrated, and showed some sample lessons. We spent about half the time exploring the NASA resource webpage and sharing out lessons we think we could use right away. This helped others seek out those lessons, and we shared if we felt this type of integration might be doable.

## **VIII. Nasa Data Resource**

The main resource I used was the NASA/JPL TEACH Webpage. This was given as a resource from Ota Lutz. I also showed a unit designed by myself and the art teacher, which I used for my math class. This site uses NASA's Climate Change Kids Site. For preschool, I sent them a lesson about cooking smores using solar energy that I created for a math class with endeavor and it had data from Climate Change Kids. My focus was to empower teachers to find NASA data and understand its relevance within their classroom. So Below are even more resources and names of sites that staff had options for exploring.

### **Focus NASA Site**

- (NASA/JPL TEACH): <https://www.jpl.nasa.gov/edu/teach/tag/search/>

### **Additional Sites:**

- Teachers got the access code to a Schoology (My districts online platform) Group to join for LA Unified STEAM TK-12 which has resources, live presentations, and STEAM information for our district.
- NASA Climate Change Kids: <https://climatekids.nasa.gov/menu/big-questions/>
- NASA Moon: <https://moon.nasa.gov/>
- National Geographic Kids: <https://kids.nationalgeographic.com/>

## **IX. Follow Up/Post Survey**

The Post Survey was given right after the PD. I will have follow ups with the staff the first week of May. Many staff members are feeling overwhelmed currently as our district just announced reopening on campus and with the system set up, our classes and numbers can change weekly. Eleven staff members completed the post-survey. Please see the PreSurvey attachment for full results. The follow questions were asked ([Google Form Post-Survey](#)):

- Grade Level? *PreK, Special Ed, 1,2,3,4,5, I work with all grades*
- Are you feeling more confident with STEAM Education? *Yes, No, Maybe*
- How likely are you to incorporate real data in your STEAM units? 1 being very little and 5 being all the time. *1-5 Rating*

- How likely are you to use the NASA/JPL resource explored in the PD (1 being never and 5 being extremely likely)? *1-5 Rating*
- Are you interested in more PD's about STEAM education? *Yes, No, Maybe*
- Are you interested in having a STEAM GroupME chat? The purpose being to send resources, live STEAM links, etc. *Yes, No*
- Are you interested in collaborating on cross grade level STEAM units? *Yes, No, I am interested in the future but not at this time.*
- Name (Optional, but helpful if you want to collaborate more) *Short Answer*
- If you are interested in future collaboration, what main subjects do you want to primarily focus on? Check all that apply: *Art, Engineering, English Language Arts, Coding, Science, Technology, Math*
- Suggestions, Comments, Questions:

For a follow up I am planning on having the staff that was interested (10 teachers from various grade levels) participate on a GroupMe chat where it can be a safe place to share ideas and ask for collaboration. Our school needs time dabbling in STEAM since we are not trained well in yet. If we can start to have more PD and have time to make units cross grades with each other, the confidence will boost, and more teachers might be willing to add STEAM teaching into their philosophy of teaching.

#### **X. Outcomes, final data collection/Analysis Reflection**

The PD happened a week after our superintendent announced we will be returning back to school in person when we were digital all year. Within that week parents were sent out a parent survey and no one in my staff knew if they would teach all day in person, all day on zoom, or half and half. The day I presented was the day my principal would discuss the numbers based on surveys. So the staff's focus was elsewhere, which was understandable. Due to this huge shift in attention, I cut out any intro game or ice breaker and focused more on exploration of the site. I emphasized that the resource had complete lesson plans. I focused on lessons that can be hybrid or on zoom. I also added in my district's online platform, Schoology. I had access to a STEAM group that gives teachers access to a community of STEAM educators within the school district and resources. The PD needed to be immediately applicable to be remembered on the day I presented.

Based on the presurvey, some themes that emerged were that staff viewed STEAM as hands-on and involving science heavily, staff had never incorporated real data into lessons, and staff wanted to see lesson samples that have actually been used in both hybrid and in person. I took in this information and built off of it. Although STEAM does involve science, the primary focus is real life application and phenomena. So I displayed some anonymous answers about STEAM and stated that we were all correct. Yet, one of the largest pushed for STEAM is its importance to the economy. To stay competitive in the global market and create a sustainable planet, it is essential to teach real activities. The PD was perfect as incorporating data was new. So since our preschool program operates on different standards, I showed a lesson they could review as I went through some K-2 and 3-5 lessons, and

focused on how we all have solid STEAM lessons but data will enhance and make it better. Then staff got to explore the NASA resource so they could have their own pre-set lesson to start their gears turning.

The results were great. I feel like I definitely need more PD time with the school. This might be possible though because my principal wants to now put me in more leadership positions, especially with STEAM programs next year. Based on the surveys, 90% of the staff felt better/more confident about what STEAM means. There was an increase in likelihood to use real data from NASA and to attempt to teach STEAM lessons. The best result however was that 90% of teachers wanted more PD on STEAM so the buy in is there within our staff now. In addition, ten teachers out of our 17 in classroom teachers want to be on a groupme chat about STEAM. This is the platform we use to communicate amongst staff. It is not associated with our district so we have a social chat, and one with our principal for more formal announcements. It is very convenient. Due to our schools opening quite abruptly after the PD, I wanted to wait to start the chats so everyone can get settled. So I will start the chat on May 3rd. I am hoping for more collaboration through this. The same teachers also said they wanted to collaborate more on cross grade level and grade level units to use in the classroom.