Practicum in STEM Leadership
Project Proposal Plan

By: Nataliya Zakharchuk

Title: Data- enhanced investigations of climate change in science classroom

The particular PD session will take place at the American Dream Charter School, South Bronx (510 E141 St, 4th floor, Bronx, NY 10454).

Activity:

For the PD activity I decided to use real- life data from NASA on global temperature trends (https://www.jpl.nasa.gov/edu/teach/activity/graphing-global-temperature-trends/) where teachers can perform the activity where they have to create a line graph to compare the short- and long- term patterns that are used to determine if global temperature is actually rising based on the data provided for 137 years. Materials that are accessible to investigate global warming: global annual mean temperature data and global monthly mean temperature data. **The main purpose** of the PD is to introduce data- based innovative methods of teaching that can help teachers to shape up their classroom and make it more inquiry- based and interactive for students.

Description/ justification:

Science is often seen as an attempt to see the truth about natural world that uses a single determined method in order to prove scientific concepts and facts. However, science is much more complicated and interesting, has it's limitations and depends on scientific investigation that requires various steps including finding a question or phenomenon to formulate a hypothesis, creating an experiment, making observations and/or collecting qualitative or quantitative data, analyzing that data, and making a valid conclusion to either prove or disprove previously formulated prediction. Thus, in order to help our students to feel like real scientists and enhance their understanding of why we are learning certain concepts in class educators require to create a certain learning environment that will allow to adapt student data investigation activities. I decided to show the importance of real- data analysis by implementing few lessons on climate change that

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are based on real- data from NASA. In this particular PD session I will be able to share my knowledge, skills and science curriculum activities with other science, math and English teachers who will be able to use these resources/ ideas in their classrooms to discuss such relevant at recent times topic on climate change.

From my personal observation, students in our school heard about climate change from their prior schools, family or friends, but do not have full understanding of how the process itself is relevant to their lives and our planet's future. If us, educators will be able to make learning fun by presenting real- life data on global temperature change for the past 137 years or drastic global sea ice thinning (for example), maybe some (or all) our students will be able to gain knowledge that will spark their interest and allow them to make future contributions to solve such problem.

General science & math standards:

Math:
6.SP.B.5: Summarize numerical data sets in relation to their context
6.SP.B.5.A: reporting the number of observations.
6.SP.B.5.B: Describing the nature of the attribute under investigation, including how it was measured and its units of measurements.
6.SP.B.5.C: Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviations), as well as describing any overall pattern and any striking deviations from the overall patter with reference to the context in which data was gathered.
ELA:
RHST.6-8.2: Determine the central ideas or conclusions of a text: provide an accurate summary of the text distinct from prior knowledge or opinions.
RHST.6-8.3: Follow precisely a multistep procedure when carrying out experiments taking measurements, or performing technical tasks.
RHST.6-8.4: Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in specific scientific or technical context relevant to Grades 6-8 texts and topics.
Science:
4.2a Heat moves in predictable ways, flowing from warmer objects to cooler objects until they both reached the same temperature.
2.1a Nearly all the atmosphere is confined to a thin shell surrounding the Earth. The atmosphere is a mixture of gases, including, nitrogen, oxygen, with small amounts of water vapor, and carbon dioxide. The atmosphere is stratified into layers each having distinct properties. Nearly all weather occurs in the lowest layer of the atmosphere.

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2.2i Weather describes the conditions of the atmosphere at a given location for a short period of time.

Audience:

For the particular PD I am planning to involve 19 teachers and 2 school leaders:

1. Erika Jimenez Ciprian (6th grade PBL): 3 classes and approximately 30 students in each
2. Ayal Adamit (7th grade PBL): 3 classes and approximately 30 students in each
3. Stephanie Sanchez (7th grade PBL): 3 classes and approximately 30 students in each
4. Ahmad Inshan (8th grade PBL, science department head): 3 classes
5. Lucas Hernandez (8th grade PBL): 3 classes and approximately 30 students in each
6. Glory Gomez (6th grade math, head of math department)
7. Elizabeth Sanchez (6th grade math): 3 classes and approximately 30 students in each
8. Atef Choudry (8th grade math): 3 classes and approximately 30 students in each
9. Jose Alvarez (7th grade math): 3 classes and approximately 30 students in each
10. Stephanie Ferreyra (7th grade math): 3 classes and approximately 30 students in each
11. Israel Morales (9th grade biology, physics, chemistry)
12. Niki DeGiorgio (6th grade ELA, 6th grade team leader): 3 classes, 30 students in each
13. Danniel Zaureder (6th grade ELA): 3 classes, 30 students in each
14. Rebecca Allgire (7th grade ELA): 3 classes, 30 students in each
15. Audrey Lee (7th grade ELA): 3 classes, 30 students in each
16. Susan Davila (6th grade Spanish): 3 classes, 30 students in each
17. Jordan Werwa (6th grade Spanish): 3 classes, 30 students in each
18. Awilda Vasquez (8th grade Spanish, Spanish language department head): 3 classes
19. Jeni Martinez (8th grade Spanish): 3 classes, 30 students in each
20. Beatriz Banuelos (Assistant Principal)
21. Kim Higdon: ADS reading specialist

Organization:

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The PD will take place at the American Dream Charter School in the South Bronx as was mentioned previously. I am planning to do it some time after mid- winter break and already discussed with the principal regarding Friday, March 2, 2018. The PD itself will be carried out in 8th grade PBL (project- based learning) room where all participants will be split into 4 teams based on the subject they teach. The time that we will require to review and complete the activity will be 1 double- block: 2 45- minutes lessons (90 minutes in total). Additionally, teachers will have access to the computers and will be shared the following link:

https://www.jpl.nasa.gov/edu/teach/activity/graphing-global-temperature-trends/

The attendance will be taken on attendance sheet that will include the names of participants and will be passed around for teacher signatures.

Outcome/Expectations:

The main expectation of the PD is to introduce the ways to implement data- driven inquiry activities across subjects related to science, technology, engineering, math and language. Teachers as a result will gain knowledge of how to construct interactive curriculums and assignments based on project-based learning that require data visualization and analysis to allow students understand the meaning behind learning certain concepts and enhance conceptual understanding overall.

PD's success will be analyzed based on Google from that each teacher is responsible to fill out after the PD is over. The following questions will be addressed:

PD reflection form:

Please complete this PD reflection form. We are keeping track of our performance, as we want to ensure that we do the best possible job to meet your needs. Additionally, we will award you with a certificate of completion at the end of the

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year when we track how much time was spent at PD (which you need to keep track of for your professional certification).

1. Email address:
2. Name:
3. **PD title:** March 2, 2018- Data- enhanced investigations of climate change in science classroom (1:10- 2:40 pm)
4. **Facilitator:** Nataliya Melnyk
5. **The topics covered met your expectations.** *
   A. Strongly Agree
   B. Agree
   C. Disagree
   D. Strongly Disagree
   E. N/A
6. **The Power point was useful.** *
   A. Strongly Agree
   B. Agree
   C. Disagree
   D. Strongly Disagree
   E. N/A
7. **The facilitator modeled good teaching strategies.** *
   A. Strongly Agree
   B. Agree
   C. Disagree
   D. Strongly Disagree
   E. N/A
8. **I can use some of the teaching strategies I observed with my students.** *
   A. Strongly Agree
   B. Agree
   C. Disagree
   D. Strongly Disagree
   E. N/A
9. **I found this PD valuable.** *
   A. Strongly Agree
   B. Agree
   C. Disagree
   D. Strongly Disagree
   E. N/A
10. **The facilitator presented the material in a clear and understandable manner.** *
    A. Strongly Agree
    B. Agree
    F. Disagree
    G. Strongly Disagree
    H. N/A

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11. **The facilitator was prepared to teach this PD.** *
    A. Strongly Agree
    B. Agree
    C. Disagree
    D. Strongly Disagree
    E. N/A
12. **What did you learn from this PD?**
13. **What will you do differently as a result of this PD?**
14. **How and when will you have an opportunity to put these practices into place?**
15. **What supports will you need to implement these changes?**

Attendance sheet: Friday, March 2, 2018

Data- enhanced investigations of climate change in science classroom

#	Participant's Name:	Signature:
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