How to Effectively Integrate Real World Data into the Classroom

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NASA: Endeavor Science Teaching Certificate Project

Practicum in STEM Leadership

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Justification

As teachers during a pandemic, many of my colleagues have been hard pressed for time. I wanted to offer a professional development experience that I thought my colleagues would appreciate, be able to implement right away in their classrooms and walk away feeling like it was a good use of their time. Additionally, graduating students who have 21st century skills that they can apply after secondary schooling is a primary goal in our district. Having data literacy skills like the ability to engage in quantitative reasoning and utilize data science skills are a few of those important 21st century skills. Integration of data into the classroom has been shown to promote data literacy skills (Kjelvik & Schultheis, 2019). In summation, it was my hope that by delivering this professional development I could do my part to enhance data integration into the classrooms of my building and therefore aid in the data literacy skills of our collective group of students.

School and Attendee Information

- Port Jervis Middle School
- 20 Educators in Attendance
- 7th and 8th Grade, Various Subject Areas

Project Summary

My professional development was completed as a lecture style presentation. During the presentation, I highlighted the benefits of integrating real-life data in the classroom, spotlighted useful resources and then gave brief examples of authentic integration. I concluded my presentation with time for questions from the audience.

NASA/Endeavor Integration

In my professional development I spotlighted some NASA resources that provide free and open data sources and introduced a math lesson developed by NASA. The data sources included The Global Precipitation Measurement mission (GPM), My NASA Data and NASA Earthdata. I wanted to introduce a lesson related to factoring linear expressions, but I had difficulty making connections for such a topic which allowed me to make a healthy and full realization that not every lesson can have meaningful data integration. However, I then found the NASA lesson, Suit Yourself: Fitted for Space. This lesson teaches concepts of linear equations through modeling the rate of oxygen depletion during a space walk which is excellent context for learning.

With regard to Endeavor resources, my inspiration for exploring this topic was actually sparked by an article which I read during the Methods of STEM Education course. The article was called, Authenticity of Mathematical Modeling and showed an example of how providing context to a problem aided in student performance (Tran and Dougherty, 2014). It was a useful springboard to start my thinking about this topic.

Reflection

The presentation of the professional development went fairly well. I am very lucky to have a group of colleagues in my building who are supportive and I appreciated them attending of their own volition. Response was very positive and I received many compliments. Some suggestions for improvement that were given to me and that I was also able to self identify included incorporating a hands-on piece, allowing the audience to interact with each other, to not overload slides with text and do a few more practice runs before presenting. In the weeks following my presentation, I have had multiple teachers approach me to say that they have

integrated data into their classroom. It has been very gratifying to hear that some teachers were motivated to purposely include data into their lessons because of my professional development. Overall, I was happy with the professional development and its outcomes, and although there are areas for improvement, I believe that the experience was beneficial for myself and my colleagues.

Educators Who Attended

Lou Puopolo - Special Education/Science Teacher - (845) 699-8970

Megan Wieboldt - Science Teacher - (845) 754-1341

References

Tran, D., & B., Dougherty. (2014). Authenticity of Mathematical Modeling. *The Mathematics Teacher, 107*(9), 672-678. doi:10.5951/mathteacher.107.9.0672

Kjelvik, M. K., & Schultheis, E. H. (2019). Getting Messy with Authentic Data: Exploring the Potential of Using Data from Scientific Research to Support Student Data Literacy. *CBE life sciences education*, *18*(2), es2. https://doi.org/10.1187/cbe.18-02-0023

Suit Yourself: Fitted for Space. Nasa.gov. (2021). Retrieved 17 March 2021, from https://www.nasa.gov/pdf/593843main_ALG_ED_SuitYourself_final.pdf.