Engaging Context Data Integration

Data Sources:
Initial Phenomena- [Photos of "The Mystery of the Red Sky" from CBS News](#) Do not give context about the images at first
[Berkeley Earth Air Quality](#) and [The World Air Quality Index project](#)

Lesson Enhancement: This air quality data enhances my unit of Sharing the Planet by helping students make the connection that the air we breathe is shared throughout the planet, and that our responsibility is shared. It also gives my students authentic numbers to work with. They need to be adding and subtracting within two and three digit numbers, and these PPM readings are the perfect size.

Core Ideas I can address
- LS2.A: Interdependent Relationships in Ecosystems - By exploring the cause of the air pollution, the additional effects of fire, and how it affects animals, humans, and plants differently we can start to make connections between life forms and their relationships
- LS3.B: Variation of Traits- How do trees vary in their traits, or seed types? How do animal traits vary when they live in hot spot areas like Australia?
- LS4.C: Adaptation- What are some examples of Physical and Behavioral adaptations? How have trees, animals, and humans adapted to areas with higher air pollution, or higher chance of fire? How have they **not** adapted? How **could they** adapt?

Scientific Practices I can address	Concepts I can address
- Asking Questions and Defining Problems - Carrying Out Investigations - Analyzing and Interpreting Data - Using Mathematics and Computational Thinking - Constructing Explanations and Designing Solutions - Engaging in Argument from Evidence - Obtaining, Evaluating, and Communicating Information	- Cause and Effect - Structure and Function - Stability and Change

It changes my teaching immensely. Instead of teaching them about forest fires and ecosystems to start, I won't be touching on the explicit information for the first week. Students should try to make sense of the visual data on their own, and then the air quality data on their own. Many may bring preexisting knowledge about industrial pollution to the table. The learning all of a sudden becomes student generated, authentic, and important to them.

Using Data: I believe that all lessons should be connected back to, or driven by real-world data. Even making observations about patterns within books, or story structure could be considered examinable data. Student-observation and collection is very powerful, but there are many constraints around what students can interact with, especially in Remote Learning. Data from another source must be accessible by all in the classroom, and hopefully, conclusions should not be drawn to easily.

Rationale: I chose the images of the red sky because I felt they would be very engaging. I thought it would prompt conversations about reliability of information, as well as really diverse hypothesis for the causation. I chose the air pollution data source because the interface is user friendly enough for my third and fourth graders. I also liked that the numbers in the data were accessible to each student in my grade level. The math standards have focused on place value up to the millions in fourth grade, and up to the thousands in third grade, but I have many students who still need practice with 2 and three digit numbers.

Interdisciplinary STEM: This data lends itself to many opportunities within mathematics, engineering, and technology. The data could be collected day by day, and trends could be examined in a digital table or graph. This way students would be presenting analyzed data with different forms of technology. Additionally, differences in regions, or totals of regions could be calculated to understand how the air quality is impacting different areas. Finally, students could engineer solutions that would help humans, plants, and animals better adapt and manage air quality, and fires within the ecosystem.