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Authentic Data Integration
July, 2021

Data Source: Provide a title for the data and the specific link for access.

To address the standard
4-ESS2-2   Analyze and interpret data from maps to describe patterns of Earth's features

Students will access Landsat Look to analyze and describe patterns of Earth's features in the local Las Vegas area. The specific link is https://landsatlook.usgs.gov/explore?date=2013-08-08%7C2021-05-09. In the event the link offers an access denied error, go to https://landsatlook.usgs.gov/ and click *explore* on the top right of the screen. Type Las Vegas in the search field on the left of the screen.

Lesson Enhancement: How does the data enhance your topic/lesson/unit? What new objectives can you address? How does it change the teaching/learning?

   For this topic, students need to analyze and interpret data from a map to describe patterns of Earth's features. The NGSS has a clarification statement regarding the standard that states, "Clarification Statement: Maps can include topographic maps of Earth's land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes." This data source is an outstanding resource to analyze maps because it is our local area. In the satellite image, students can identify the Spring Mountains, Lake Mead and the Mojave Desert. It can be an entry point to address patterns as a cross cutting concept as a new objective. Using Landsat Look changes the teaching and learning as it offers an authentic, real world example that is relevant to a fourth grader from Las Vegas, Nevada. As educators we know that relevant examples in our teaching is effective teaching. Therefore, including a data source that is relevant to students is a great way to enhance a lesson.

Using Data: What is your opinion about using data in the classroom, either collected by student-observation or from another source?

Using data in the classroom provides real world context for students. All too often, science instruction in particular has been nonfiction text comprehension skills. In the State of Nevada, students take a Science Criterion Referenced Test at the end of fifth grade to measure their understanding of science content from elementary school. There is a heavy emphasis to provide nonfiction text and practice answering constructed response questions based upon scientific passages. I have even overheard colleagues say that it "used to be" hands-on was important in science, but now it is primarily about reading lessons for scientific passages.

If this is the general consensus among practitioners in elementary classrooms, will students engage in the content in a meaningful way? Will they inquire, investigate and explore scientific phenomena? No. Using data in the classroom provides meaning and real world examples to create authentic experiences for students. I believe it is important to include both student observation data as well as real time scientific data for students to see the importance and relevance. As educators, we are asked to ensure students can answer "What am I learning? Why am I learning it? How will I know I learned it?" for each lesson. Including data is a great example of helping students see why they are learning it.

Rationale: What is your rationale for the use of the data source? Clearly explain how the data can be used to integrate across STEM content areas.

My rationale for using the data source is that it correlates with the **science** standard 4-ESS2-2 quite well. It can be used to address the standard by having students analyze the map. In addition, there is a time lapse feature where students can examine the map over a course of several years. In Southern Nevada, not only do we live in a desert but we are experiencing an extreme drought. Looking at the time lapse feature of the area, students can make observations if the drought is evident from satellite imagery.

As for **Math**, a horizontal alignment is 4.MD.A.2 - Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. Students could generate real world examples using the imagery from the map as well.

Using this specific site of Landsat Look, which is a partnership between NASA and USGS, is integrating **technology** as it is using satellite imagery to generate. It isn't a static map from a textbook, but a current image.

As for **engineering,** it addresses Analyzing and interpreting data from the 8 practices for engineering standards.

Therefore, it is a good data source as it integrates each component of STEM.

Interdisciplinary STEM: How can the use of this data help to integrate across STEM content and/or pedagogy?
Another reason I selected this is because the Nevada Academic Content Standards for Social Studies includes the study of the State of Nevada. Specifically, students learn about the history and geography of Nevada. Therefore, this is a great opportunity to integrate across other content areas as well. Specific standards could include the following:
SS.4.3 Analyze primary and secondary sources and use them to construct arguments about the past.
SS.4.23 Create maps that include human and physical features and that demonstrate spatial patterns in Nevada.
SS.4.24 Examine how and why Nevada's landscape has been impacted by humans.

In addition, other content areas to integrate across would be ELA. Specifically the following standards would correlate for horizontal alignment

 RI.4.7 - Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.
W.4.7 - Conduct short research projects that build knowledge through investigation of different aspects of a topic.