Authentic Data Integration Assignment

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Topic: Earthquakes

a) **Data Source:** Latest Earthquakes, USGS

Link: https://earthquake.usgs.gov/earthquakes/map/

Summary: This is an interactive map created by the United States Geological Survey to display data on the latest earthquakes, including their magnitude and where they occurred on Earth.

b) **Lesson Enhancement:**

This authentic data from the USGS could be incorporated into a unit on natural hazards designed for students in grades 3-5 to expose them to where earthquakes occur. After the students have been given time to explore the data and pan the Earth, we can discuss where the most earthquakes are happening and begin to think about why they happen there. Since it is data that is being updated in real-time, I foresee the students being very intrigued to see what is going on in the world around them.

Personally, I believe it is important to integrate authentic data into lessons because it sets an engaging context for the students, it provides real-world applications, and it encourages discourse. When faced with a set of data, students' interest is peaked and they begin applying important skills such as inferring and drawing conclusions. Data also provides an entryway for *all* students into a topic. The students can begin to discuss their opinions as they work to interpret data and the teacher can facilitate the discussion to not only guide their understanding, but to assess their understanding as well. Additionally, it provides an avenue for integration with other subjects.

c) **Interdisciplinary Context:**

This data can easily lead to an integrated math lesson on place value in multi-digit numbers and patterns in numbers by having the students calculate the length of time some of the earthquakes lasted based on their magnitude on the Richter scale. The website TeachEngineering has a Richter Scale conversion worksheet that can be adapted for this purpose. This website also ties in engineering by explaining how engineers compare earthquake activity. The link for this resource is: https://www.teachengineering.org/activities/view/cub_natdis_lesson03_activity4

Another way this data can be used is as a springboard for a project based on earthquakes. Once an understanding of the conditions that lead to an earthquake have been explained, the students can be

presented with this data again and be asked to chose a location that has recently experienced an earthquake. They can then research this area to develop an understanding of the risks that are associated with earthquakes and complete an engineering design challenge to create a device or structure that could reduce the impact of a future earthquake in that location.