Using Data Integration – “What’s your SLANT?”

Nicole M. Estacio

U.S. Satellite Laboratory – Nasa Endeavor

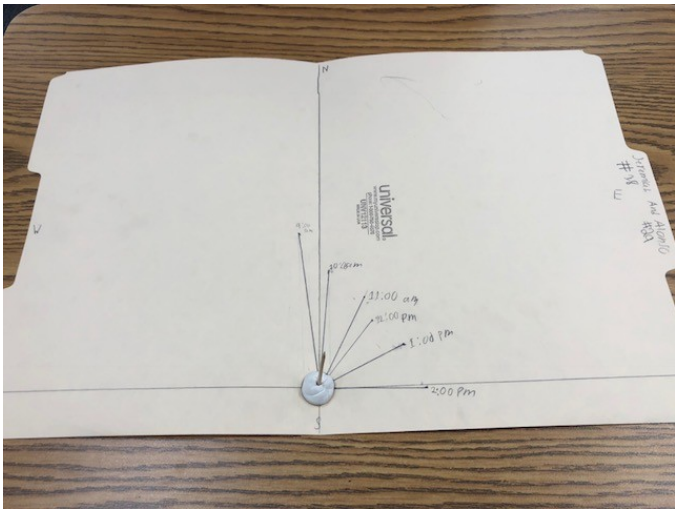
I believe that integrating data into my classroom is a critical part of learning for my students. I try to incorporate it as much as I can into every subject. My students have a data file in their desk that is full of data about their reading and math progress. They can refer back to it at any point and adjust goals as needed. Integrating data into a Science activity with hopes of collecting and then comparing it to other students around the globe, was very intriguing to my students.

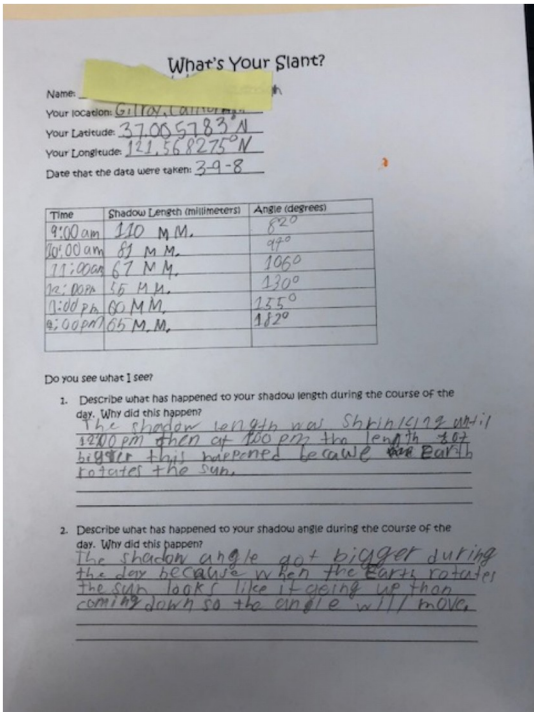
My class is currently learning about the tilt of the Earth during certain times of the year. I found an activity from the Center for the Astrophysical Research in Antarctica (CARA) that had students create a tool in order to measure the length of a shadow and its angle measurement throughout the day. The goal was to then enter the data onto their website and compare it to other locations on the globe. To reinforce understanding of location on Earth and the location of the sun. However, the website has been shut down and this was not determined until my students tried to enter their data. This was an error on my part, not knowing that the website was no longer valid, but there was no way to know this until having data to enter. My class enjoyed finding the shadow measurement and learning about angles and how to find them during this activity. It has enhanced their knowledge of the sun and how it creates shadows and how the Earth rotates through the day. I will have my students find this data again when it gets closer to summer and the sun is higher. At that point, they can compare their data and reflect on the relationship between the sun, the Earth, tilt, and rotation.

During this activity, my class was learning about angles, measurements, and used technology along with the Earth's rotation. We have been learning about corn during Language Arts and Social Studies and have discussed how the rotation of the Earth makes corn a better

crop in certain locations and seasons. Having connected the data gathering along with their prior knowledge of crops and the rotation of the Earth, my students have hands on experience to explain why in certain seasons, the sun is higher and up longer than during other seasons. Incorporating using this specific data has allowed my students the experience of watching the sun move across the sky as the day goes on and being able to explain why this is happening and how we benefit from such movement.

I have included pictures of one group's folder and data collection sheet for reference.





What's Your Slant?

Name: [redacted]
Your location: Gilroy, California
Your Latitude: 37.005783° N
Your Longitude: 121.568275° W
Date that the data were taken: 3-9-8

Time	Shadow Length (millimeters)	Angle (degrees)
9:00 am	110 M.M.	82°
10:00 am	81 M.M.	94°
11:00 am	67 M.M.	106°
12:00 PM	56 M.M.	130°
1:00 pm	60 M.M.	135°
2:00 pm	65 M.M.	112°

Do you see what I see?

1. Describe what has happened to your shadow length during the course of the day. Why did this happen?
The shadow length was shrinking until 12:00 pm then at 2:00 pm the length got bigger this happened because the Earth rotates the sun.

2. Describe what has happened to your shadow angle during the course of the day. Why did this happen?
The shadow angle got bigger during the day because when the Earth rotates the sun looks like it going up than coming down so the angle will move.

References

Next Generation Science Standards (2013, January). NGSS Appendices: Nature of Science. Retrieved from NGSS for States, by States"

https://www.nextgenscience.org/resources/ngss-appendices

What's Your Slant? (n.d) retrieved from the Center for Astrophysical Research in Antarctica on February 26, 2018, from

http://astro.uchicago.edu/cara/southpole.edu/angle.html