Lesson Implementation & Reflection

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My fifth grade math students are working on decimal place value. One of the lesson units that was giving my students some troubles was rounding decimals. They were not seeing the value in decimals in their lives except with money. So I needed to find another way show them how important decimals were in the real world. With this in mind, I searched the NASA Jet Propulsion Laboratory California Institute of Technology website, and found the *Graphing Global Temperature Trends* lesson plan. I really liked how the lesson plan could be modified for my group of students and my needs. I broke my students up into 6 groups and instead of looking at 136 years of data we condensed it down to 60 years of the data recorded. Each of the six groups of students, looked at ten years of data focusing only on the actual temperatures not the anomalies. Students were asked to round the data to the nearest hundredth.

I explained how science and math work together to solve real problems like climate change. I watched as they collaborated with each other and discussed the problems they had with rounding the data sets. I made sure to check on those student groups that were struggling. Eventually all the students were finding strategies to help them round decimals. I used a "Catch and Release" protocol with the students. I would "catch" or bring the students together on the carpet, so I could re-teach or explain any misconceptions or problems I was seeing as I observed their work. Then I would "release" them back to work. Soon after, I found that many students did not really know how to plot on a graph with the decimals. After some explaining and modeling they soon figured out how to use the graph properly. For this lesson I chose to use the basic graph that already had a scale set-up.

After they finished graphing individually, each group chose their best graph to put with the other groups graphs to create a larger class graph. Now we could look at 60 years of data

instead of ten years alone. When the class saw that the data showed temperature rise over 60 years, great discussions about climate change occurred. They also made connections to the video *NASA Earth Minute: Earth has a Fever*. The next time I try this, I would like to try having the students figure out the scale for the graph. I would also like to take time to have students learn to convert the Celsius temperatures to Fahrenheit and compare the graphs. Finally, another reason I liked this lesson was that it also tied into our science unit on Earth systems and many of the students notice it as well. I feel the lesson satisfied my purpose of showing students how decimals are used in the real world beyond just money. Practicing rounding using real data inspired my students and renewed their interest in math.

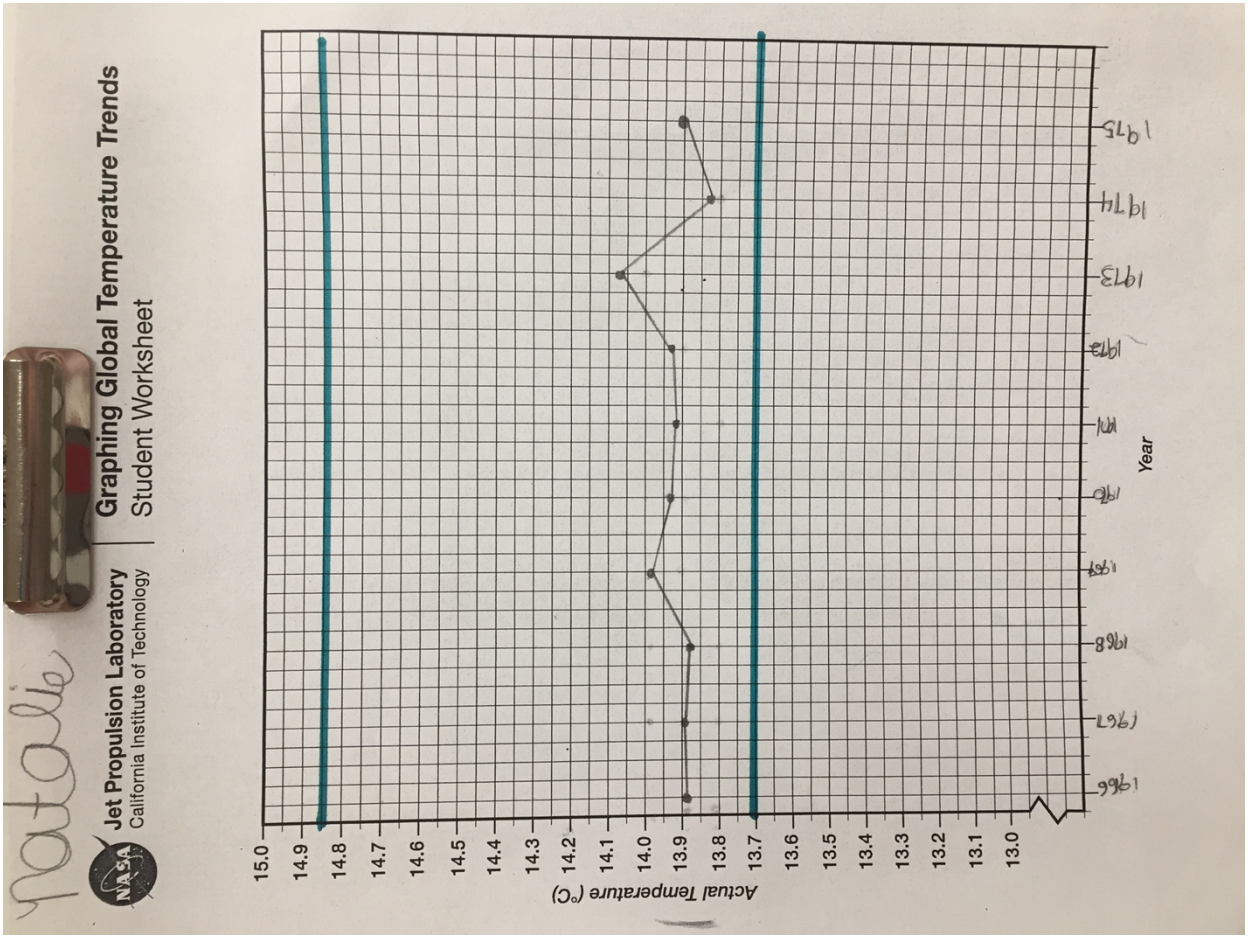
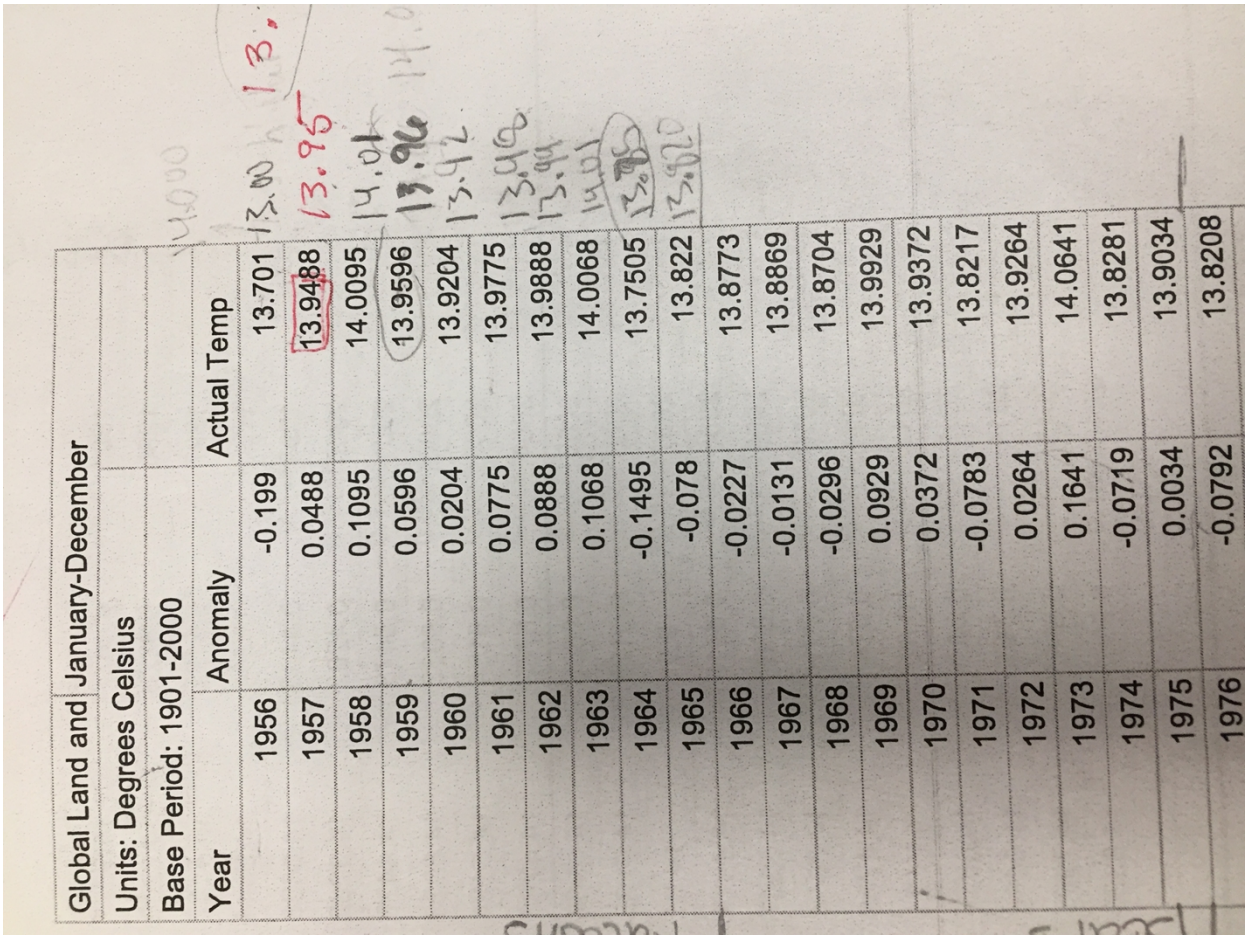


Figure 1. Student graph showing ten years of data



Global Land and January-December		
Units: Degrees Celsius		
Base Period: 1901-2000		
Year	Anomaly	Actual Temp
1956	-0.199	13.701
1957	0.0488	13.9488
1958	0.1095	14.0095
1959	0.0596	13.9596
1960	0.0204	13.9204
1961	0.0775	13.9775
1962	0.0888	13.9888
1963	0.1068	14.0068
1964	-0.1495	13.7505
1965	-0.078	13.822
1966	-0.0227	13.8773
1967	-0.0131	13.8869
1968	-0.0296	13.8704
1969	0.0929	13.9929
1970	0.0372	13.9372
1971	-0.0783	13.8217
1972	0.0264	13.9264
1973	0.1641	14.0641
1974	-0.0719	13.8281
1975	0.0034	13.9034
1976	-0.0792	13.8208

Figure 2. Student example of rounding decimals to the nearest hundredth using the actual temperature data.

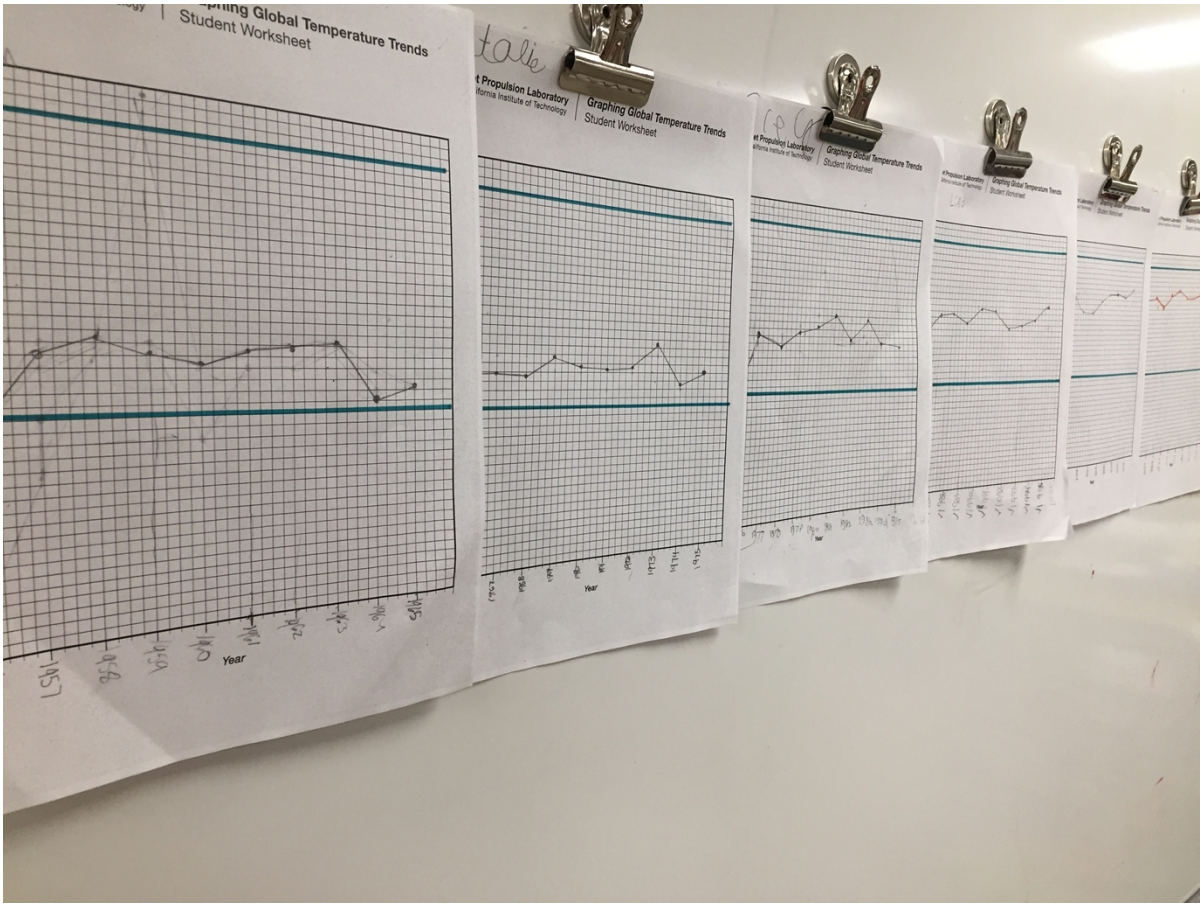


Figure 3. The class graph showing temperatures in the time period of 1956-2016.

References

Graphing Global Temperature Trends. (n.d.). Retrieved from https://www.jpl.nasa.gov/edu/teach/activity/graphing-global-temperature-trends/

NASA Jet Propulsion Laboratory. (n.d.). *NASA Earth minute: Earth has a fever* [Video file]. Retrieved from https://www.jpl.nasa.gov/edu/learn/video/nasas-earth-minute-earth-has-a-fever/