

Celeste Faumui  
Nature of Science and Math NGSS

Article :

Wildfires Unfurl in Colorado, Spurring Evacuations and Closing a National Forest

<https://www.nytimes.com/2018/06/12/us/colorado-wildfires-forest.html?searchResultPosition=1>

Part a:

When reading *Translating the NGSS for Classroom Instruction* we learn the importance to understand Natures of Science and that it is not just the importance of students being engaged in “doing science” but how they can understand and apply it to problem solving. We learn that these understandings broken down by the NGSS do not need to be directly addressed during instruction. We discover that the research shows that if you want students to understand Natures of Science, then teachers must be emphasizing this during their instruction. It is for this reason that the emerging support for teachers, provided by NSTA (Bybee 2013), makes it clear that Natures of Science must be “visible” during instruction. This simply means there should be some discussion, not a lecture, with students as they reflect on the science activity they just completed. It explains the importance of students becoming more engaged in authentic science practices as they learn science.

The first aspect I feel the article *Wildfire Unfurl in Colorado, Spurring Evacuations and Closing a National Forest* supports is “**scientific investigations the use of a variety of methods.**” Through this article students can begin questioning the cause of drought, how it impacts the environment around us, what impact it has on survival in our communities if it continues. With “scientific investigations use a variety of methods” students reflect on a single investigation “drought and fire” and can investigate the patterns of this trend.

The second practice I feel this article connects to is **Science Addresses Questions about the Natural and Material World**

5th grade Earth's Systems Standard

Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment. [5-ESS3-1](#)

I feel this article connects to this because of the number of fires we have had in and near our community and how they have impacted the increase in cleaning up the national forest, cleaning up debris around the communities to try to avoid fire, and the need to document the change in weather patterns and their impact of natural disasters. As a 5th grade teacher I connect this to the following standard.

### **ESS2.C: The Roles of Water in Earth's Surface Processes**

<https://ngss.nsta.org/DisciplinaryCoreIdeas.aspx?id=33&detailid=74>

- Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (5-ESS2-2)

Student questioning could be in regards to abnormal weather patterns and how they impact drought, How lightning in areas of drought can cause devastation, how does the rugged terrain in mountainous regions have an impact on being able to stop fires from becoming out of control.

Connecting this then to a STEM activity of students designing water towers or a way to hold water that can be distributed over areas when drought years occur to prevent further fires.

The third tenet I feel this article can address is **Scientific Knowledge is Open to Revision in Light of New Evidence and Science is a human Endeavor**

Through this article students can get a glimpse of how we as humans have made this task more difficult. How has building houses and businesses in

uninhabited lands caused concerns during wildfires? How can we look at patterns of rain and snow fall and get an understanding of how the lack of this will impact further wildfire issues? How can we be prepared to protect our lands in the future if this pattern continues?

By achieving these educational outcomes students learn to make observations and hopefully arrive at the distinguishing attributes through their investigations. Having students reflect on how they arrived at similarities and differences can be used to highlight “science is a human endeavor” (subjectivity, inference). Once students begin experiencing authentic science practices they will be able to be asked to reflect, in a natural way, on what they have done and why. Through these discussions and discoveries students’ will have a better understanding of the Natures of Science which will lead to a greater appreciation of science. Teachers will notice students are also more engaged and involved in their science learning.

When looking through the article *Wildfire Unfurl in Colorado, Spring Evacuations and Closing a National Forest* I found several ways to connect students research to math. The first common core math practice I found fitting was Model with mathematics. Students could create spread sheets where they could graph the amounts of rainfall over a 10-20 year span showing the differences of drought years and the increase of number of fires. THrough this visual students could begin to recognize the patterns of drought year and determine if they are increasing or decreasing. By using the appropriate tools strategically it would create visuals to answer some of the questions we were focused on in science.

Through reading the visuals students can begin to make sense of problems and persevere in solving them. Looking at trends but also then reflecting on if these trends continue how much more danger will we be in in 5, 10, or even 50 years from now. Students begin to connect these ideas to real world situations and see the importance in solving them. I feel this all goes

back to making learning meaningful to students and the increase of their engagement.

## References

Bybee, R.W. 2013. Translating the NGSS for classroom instruction. Arlington, VA: NSTA Press.

NGSS@NSTA National Science Teaching Association

<https://ngss.nsta.org/DisciplinaryCoreIdeas.aspx?id=33&detailid=74>

Connections to the Common Core State Standards for Mathematics1

[https://www.nextgenscience.org/sites/default/files/Appendix-L\\_CCSS%20Math%20Connections%2006\\_03\\_13.pdf](https://www.nextgenscience.org/sites/default/files/Appendix-L_CCSS%20Math%20Connections%2006_03_13.pdf)