

Nature of Science & Math: Analyzing the Presence in Everyday Communication

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Introduction

A third of the population can't see the Milky Way at night, written by Thomas Sumner briefly describes light pollution around the globe. According to Sumner, scientists used “a combination of satellite measurements and on-the-ground observations” to identify countries that can no longer see the Milky way due to pollution. With the article, a video is shown showing areas with the best and worst light pollution. Some of the worst light pollution is seen across Europe, where 60% of the population can no longer see stars at night. Whereas Sumner explains “Nights are darkest in Chad, the Central African Republic and Madagascar” where approximately 75% of these countries can see stars in immaculate condition.

The Nature of Science: Breaking it Down

Thomas Sumner's *A third of the population can't see the Milky Way at night* (2016), demonstrates a few components of Nature of Science. For instance, it does detail that scientists used a variety of methods during their investigation. Along with satellite measurements and on-the-ground observations, Sumner also states scientists recorded “light pollution from everything from streetlamps to spotlights”. Thomas Sumner detailed various ways scientists conducted their investigation, using a variety of methods to investigate is an essential component of Nature of Science.

Thomas Sumner also used this article to demonstrate the components of science as a human endeavor, scientific knowledge based on empirical evidence and science addressing questions about the Natural and Material World. These scientists examined photographs of parks and noticed the lack pollution hindering their view. They looked at the Natural World and developed an investigation to compare clarity in the sky in various cities. To demonstrate knowledge of

empirical evidence, they relied on their observations on the ground in various countries. Science is a human endeavor and they clearly showed that by recording their observations and data and developing an atlas on video to compare light pollution in the cities they examined. The whole investigation addresses the component of questions about the Natural World because it examines the amount of light pollution and details where and why certain countries can see the night sky clearer than others.

Unfortunately, *A third of the population can't see the Milky Way at night*, by Thomas Sumner lacks the following components: Scientific Knowledge is Open to Revision in Light of New Evidence, Science Models/Laws/Theories, Science is a Way of Knowing and Scientific Knowledge assuming order and consistency in Natural Systems. Thomas Sumner's article is short and is written indefinite. No other evidence or sources are given. Light Pollution is given as the sole reason for not being able to see the Milky Way. This article lacks the open-mindedness to revision in light of new evidence. No Scientific Models, Laws or Theories are cited or explained. Thomas Sumner lacks to demonstrate Science as a way of knowing and Scientific Knowledge assuming order and consistency in Natural Systems.

Common Core Mathematics Practice

Each April I teach Area of Irregular Polygons to my third graders. Prior to this lesson I teach Area and Perimeter. I begin this lesson with defining irregular, polygon and then compare irregular polygons to "L" Shapes and "T" shapes. Fortunately, our school is structured as an "H" so typically I walk the halls with students showing them each section of the school. Then I ask how they think we could find the Area of the whole school. Students typically catch on quickly

stating to find the area of one then each of the other pieces, adding the areas up to find the total area of the school. This lesson gives students the opportunity to practice some Common Core Mathematical Practices listed on, <http://www.corestandards.org/Math/Practice/>. For instance, during practices as teams, students achieve standard CCSS.Math.Practice.MP3: Construct viable arguments and critique the reasoning of others. I tell students to explain how they found the right answer to a partner. Students always begin by arguing with one another that there's one right way to solve the problem. When solving the area of the irregular polygon, it doesn't matter which piece of the "L" you find the area of first. All that matter is each section is found and then added together. So students end up saying "I didn't do it like that, but I guess you could" or something similar. Students also practice math CCSS.Math.Practice.MP4, by applying multiplication strategies to real life places. They solve the area of parks, schools, roads, etc. or set up equations to solve how they would find the area of a place. CCSS.Math.Practice.MP8, is also practiced because the process of solving for each irregular polygon is very similar. It's repetitive and always stays the same. Find the area of one rectangular figure, then the area of the other and add the two together to find the total area of the irregular polygon. While examining the mathematical practices, I have realized that standard CCSS.Math.Practice.MP5, which is to use appropriate tools strategically could easily be accomplished with this standard. While introducing students to this lesson I could use geoboards and rubber bands to give them a better visual and hands on practice. I could also easily find geometry software to incorporate into this unit.

Resources

Sumner, T. (2016, June 10). A third of the population can't see the Milky Way at night. Retrieved June 12, 2016, from

<https://www.sciencenews.org/article/third-population-can't-see-milky-way-night>

Standards for Mathematical Practice. (n.d.). Retrieved June 12, 2016, from

<http://www.corestandards.org/Math/Practice>