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SCED 548

Nature of Science & Math

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Nature of Science

1. Scientific Investigations Use a Variety of Methods

   The article I chose is from Wired.com and is about toxins from plastics affecting bacteria in the ocean. The scientists found that the toxins are preventing the bacteria from performing photosynthesis. These bacteria produce about 20% of the oxygen we breath and remove carbon from the air, which is why they are so critical (Simon, 2019). The article meets this tenet because the scientists used several methods to investigate the affect of plastic toxins on cyanobacteria. One part of their research involved measuring the photosynthetic ability of the bacteria as the concentration of toxins increased. They also looked at the genetic makeup of the bacteria. By using different methods, the scientists have more evidence of the issue.

2. Science Addresses Questions about the Natural and Material World

   The research involved in the article meets this tenant because the scientists are researching how oxygen-producing bacteria in the ocean is being affected by toxins from plastic. This is important research because the Earth is increasingly becoming damaged by human impact. As scientists provide greater evidence of the damage, I hope that the general population becomes informed and changes are made.

3. Science is a Way of Knowing

   There would be no obvious effect of plastic toxins on bacteria if it wasn’t for scientists. The bacteria are microscopic, and we cannot see the oxygen being produced or carbon being removed by them. If it wasn’t for the painstaking efforts to investigate this issue, people would not be aware of what is happening. We are in the midst of an environmental emergency and we need evidence for people to act.

Common Core Mathematics Practices

1. Make Sense of Problems and Persevere in Solving Them

   I chose this practice because the scientists wanted to know the effect of toxins from plastic on cyanobacteria in the ocean. The scientists had to conduct an experiment in a lab to find out exactly what happens to the bacteria when they absorb the toxins. The scientist found that they could no longer perform photosynthesis, or they died. These effects on the bacteria are affecting the air we breath and the carbon levels in the air.

2. Look for and Make Use of Structure

   I chose this practice because the scientist also investigated the genetic make up of the bacteria. They would be able to look at healthy bacteria's DNA and compare it to DNA that has been altered by the plastic toxins. By comparing the structures of the DNA, the scientist would find evidence of damage from the plastic in the water.

3. Reason Abstractly and Quantitatively

   Scientists know that the crisis of plastic in our ocean is having a great impact on marine life. They could make the reasoning that bacteria are being impacted as well. Scientists then used an investigation to examine bacteria that have been exposed to plastic toxins. They can show using quantified data that there is an impact on the health of these microorganisms.

Resources:

M. Simon. (May 17, 2019). *NOW OCEAN PLASTICS COULD BE KILLING OXYGEN-MAKING BACTERIA.* Retrieved June 2, 2019, from https://www.wired.com/story/ocean-plastics-bacteria/