

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

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This paper explores the nature of science and mathematics in the everyday media. I have chosen an article from the media group, IFL Science, titled, We Now Know Why Naval Sonar Leads to Mass Whale Strandings. I selected this article since I teach middle level science classes that have a curriculum heavily based in ecological principals and the human impact on populations. Additionally, the article also touches on sonar, which is briefly discussed as a scientific tool used in studies to gain indirect evidence on the earth's interior and in mapping the ocean floor. In this paper I will draw on the connections this article has to the tenants of the Nature of Science and the Common Core Math principals.

There are three main tenants that this article touches on, which are connected to the Nature of Science beliefs. These include; science addresses questions about the natural world, scientific knowledge is based on empirical evidence, and science is open to revision in light of new evidence. To begin, my article demonstrates the tenant; science addresses questions about the natural world. In the article, questions are raised about how MFA sonar could cause whales to beach themselves, and investigates how the MFA sonar used by the Navy could lead to the whales' stress, cause nitrogen poisoning of their blood, and ultimately lead to hemorrhaging and damage to their vital organs, forcing them to breach. (Baxter, 2019). According to The Nature of Science (2013), one of the four practices considered fundamental to NGSS is finding the cause and effect through investigations to build on student understanding. The second tenant illustrated in my article, is that scientific knowledge is based on empirical evidence. The IFL Science article provides several examples of this evidence. For instance, "MFAs sound volume of 170 to 195 decibels can be compared to a loud rock concert at 120 decibels." (Baxter, 2019). This data is used to demonstrate that the "total of 121 mass stranding events from 1960 to 2004" has increased with its use. (Baxter, 2019). This information further strengthens the Nature of

Science article, which explains that we should have students build arguments from evidence. (2013). Lastly, the third tenant the IFL Science article demonstrates, is that science is open to revision in light of new evidence. In the article by Baxter, she shares conclusions drawn by the investigation, and the use of a new review paper that was published in, Proceedings of the Royal Society, which tells why the newer MFA sonar sounds may be too intense and detrimental to whales, specifically, beaked whales. (2019). This tenant is outlined in the Nature of Science article (2013), whereas it mentions that we should analyze data, use patterns, and demonstrate how these practices can help make explanations. This helps give context in order to deepen understanding.

The IFL Science article I chose, makes strong connections to the principles outlined in the Common Core State Standards Initiative article. These include; make sense of problems and persevere in solving them, reason abstractly and quantitatively, and to construct viable arguments and critique the reasoning of others. To begin, the IFL Science illustrates how to makes sense of problems and to persevere in solving them. It does this by first explaining the difference between mass and atypical strandings in order to find a starting point for a solution to the problem. In addition, the problem of finding a solution to the increase in atypical mass stranding events is discussed. (Baxter, 2019). This correlates to the first principle that proficient mathematical students should be able to do; “explain the meaning of a problem and look for solutions,” by “searching for trends,” and by the “use of concrete objects or pictures.” (CCSSM, 2019). Next, my current media article, reasons abstractly and quantitatively. For example, Baxter (2019) uses the quantitative data of “atypical” beached whales as a total over a period of time, compared to other mass strandings in a given area. CCSSM states this helps students understand relationships with real problems and how math can be used as a strategy for finding

the solution. (2019). Finally, the IFL Science article, makes connections to the principle; constructing viable arguments and critique the reasoning of others. A moratorium to mitigate the impacts of sonar based on the study, done on the use of MFA in the Canary Islands in 2004, was used as an argument. (Baxter, 2019). In the CCSSM article (2019), it states that students should know how to “use previous results to make their arguments,” and to “analyze and justify conclusions, in order to communicate to others.”

In conclusion, the article I choose, “We Now Know Why Naval Sonar Leads to Mass Whale Strandings,” clearly makes a good media article for use in a NGSS classroom. It supports how both of the Nature of Science tenants and the Common Core Mathematics principals can be used in media’s every day communication.

References

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