Nature of Science

Part A:

The article talks about the changes that occur to the coral reef specially when the water's acid level changes. The paper reflects on three tenets: scientific investigations use a variety of methods, scientific knowledge is open to revision considering new evidence, and scientific knowledge is based on empirical evidence. For the first one, scientists used the scientific method on the coral reef to figure out how the coral reef itself forms. They knew corals went through a process called calcification but didn't know how to prove the actual process. They then decided to use their knowledge and ran tests by "using ion pumps" to "decrease the acidity of seawater to have calcium carbonate form spontaneously" (Yin 1). Afterwards they increase the acidity to see if the coral itself can still form its skeleton. For the second tenet, the coral's process of calcification has been debated for decades. Different scientists form new ideas over the topic and consistently tried to prove their theories. A recent discovery was added that coral as a "protein similar to the ones that help us make our teeth and bones" (Yin 1). Finally, for the last tenet, different tests are done to prove their findings instead of creating more theories. As professor Falkowski stated, the coral is alive, and Ms. Allison stated that the "report of amorphous calcium carbonate in coral" is one of the first to prove that coral can control how much sold material can be deposit (Yin 1).

Part B:

The article meets three practices from the common core mathematics practices: construct viable arguments and critique the reasoning of others, use appropriate tools strategically, and look for and make use of structure. For the first practice, Mr. Falkowski argued that the coral is alive and that even if the acidity of the ocean changes, the coral would still produce it's skeleton but of course not everyone agreed. The other party, Mr. Venn stated that "the problem is they have lots of data that show many coral species are very sensitive to environmental change" (Yin). Even though both have valid agreements, they can critique each other's reasonings. For the second practice, the scientist used different test methods and tools to prove their own theories. One team used an ultrahigh-resolution microscopic imaging to see the structure of the coral which leads to the third practice. By using the microscope, they were able to see the structure and study the different amounts of calcium carbonate being produced. This helped with their findings overall to see if the effects of acid in the seawater would stop the coral from secreting calcium carbonate or instead make it secrete spontaneously.

Works Cited:

Yin, S. (2017, June 1). In Coral Skeletons, Microscopic Portraits of Resilience? Retrieved September 15, 2018, from https://www.nytimes.com/2017/06/01/science/coral-skeletons-ocean-acidification.html?ribbonadidx=8&rref=science&module=Ribbon&version=context®ion=Header&action=click&contentCollection=Science&pgtype=article