Nature of Science & Math: A New Definition Argument

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In the Washington Post's, A new definition would add 102 planets to our solar system-including Pluto, Sarah Kaplan brings up the topic of "Is Pluto a planet?" Two systems we can look at to gain a better understanding of how a new definition can relate for our students is the Nature of Science from NGSS and the Common Core Mathematical Practices.

Nature of Science from NGSS

Scientific Knowledge is Open to Revision in Light of New Evidence

In Kaplan's article, she asks "Is Pluto a planet?" This question alone could spark the interest of any child I have taught. The concepts of space and planets has been one that humans both old and young debate and probably will continue to debate for years to come. Topics that change are not easy to bring up as a teacher, not because I do not want to bring up new ideas, but because students and adults have already learned information from other sources. Kirby Runyon states, " People get worked up over it, I've gotten worked up over it." He is referring to the Pluto debate Runyon sets out to create a definition of a planet and in doing so he concludes that his definition would add 102 new planets. He is challenged by Carolyn Porco. By using the NGSS we show want our students to start in kindergarten learning that scientific knowledge can change and by the end of high school we expect them to have the ability to create a revision to the previous knowledge they have learned. Scientists debating how many planets and their definitions show a real-world example to our students why we want them to learn this way.

Science Addresses Questions about the Natural and Material World

When a young child starts to learn Science, they learn first by their senses. It is a natural way to learn. In my opinion, they are exposed to learning in different ways while younger, they will continue to search out ways to learn when they are older. A child who is 4 or 5 may not struggle with ethical issues like older students, but they do always want answers for their questions. The underlying theme Kaplan's article, shows us that not every question can be answered right away and that everyone's own definition of science effects how they come to question the natural and material world around them. It is not a new to debate about planets. What is new is the technology with how we can teach each other. Today, students don't have to wander much farther than Google Earth, Google Mars and other images online to spark conversations that range from why do we not launch space shuttles anymore, to asking why a planet's rings are a certain color.

Science is a Way of Knowing.

The NGSS Overview, states "Science is a way of knowing and there are other ways of knowing." This is important for students to learn. They think that there is only way of doing things. When a substitute teacher comes into a room it is common to hear a student say, "That is not how my teacher does that." It's important to teach our students that sometimes something is more important than the lesson plan you had planned. Sometimes you need to learn something because it causes interests in your students and will make them better learners.

Common Core Mathematics Practices

Make sense of problems and persevere in solving them.

Science and mathematics should be similar in the way that we make sense of a problem and preserve in solving problems. Forming a plan before we jump to an answer or conclusion is exactly what Kaplan's article is about. As many teachers tell their students, figure out what you already know and then figure out what the question is asking you to solve.

Construct viable arguments and critique the reasoning of others.

In CCMS, students are asked to critique the reasoning of others, this is done commonly by students being able to take how someone got to an answer in math and helps us understand that there is not just one way to do math, just as in Kaplan's article, there is not one correct way to define what is a planet. It shows the different perspectives and ways that each group of scientists came to their conclusions. We are looking for something from our students' other than, "I just figured it out in my head."

Model with mathematics.

Students can and will use math in everyday situations to solve problems when they have that ability. A student could take the article on the Pluto debate and explore different sizes, distances and classifications to draw their own conclusions on what is a planet or not and if they agree with the scientific leaders now.

Works Cited

APPENDIX H – Understanding the Scientific Enterprise: The Nature of Science in the Next Generation Science Standards. (2013, April). Retrieved June 6, 2017, from www.nextgenscience.org

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