

For this paper, I am going to focus on the Nature of Science through the lens of a Kindergarten/ early elementary teacher.

Teaching Science in the Kindergarten classroom, I like to teach scientific concepts through exploration, questioning, and play. Whether it is through planned or guided lessons that align with our scope and sequence, or teachable moments sparked by questions and curiosity on the playground, I try my best to encourage their curiosity and fuel their thinking with questioning, rather than just giving them the answer or scientific reasoning behind a phenomena. I want my students to lead their own investigations and try to create their own reasoning on topics because they want to know why or how something is the way it is. I want them to enjoy and love Science. Working mainly with Kindergarten through 2<sup>nd</sup> grade during my teaching career, some tenets of science tend to happen more naturally in the younger classrooms. For example, children in younger grades are still very curious and observant of the world around them. They have not had their creative, imaginative ways of thinking drained out of them. They are able to take in data through observations, process the information, and come up with their own ideas about the world around them. They are able to make inferential statements in order to make sense of their world. Sometimes, their schema needs to be built up a little with background knowledge to reign in their active imaginations and inferences so their minds can forge solid neurological connections. They more easily grasp that Science is tentative and empirical, in a sense, because they are still building their knowledge of every aspect of school and life, it is all always changing for them. They may not know what the terms “tentative” and “empirical” mean, but they naturally see their worlds changing around them as they build up their understanding. Their perceptions are always changing as they make new observations. They do not think of Science solely as a subject of study until they reach the upper elementary grades. They do not have those defined scientific procedures and rules pounded into them yet. They are still free to explore out of pure, intrinsic desire.

Although I feel science in elementary should heavily focus on the exploration aspect, I realize my teaching is not perfect and we, as educators, should always strive to grow, reflect on, learn from, and improve our teaching. One aspect of the Nature of Science I would like to focus on for my professional growth is focusing on the grander, societal nature. Science should be connected in integrated into students’ lives, communities, and worlds. I encourage them to observe and question the information around them, but need to do better in teaching both how science influences society, as well as how society impacts Science. Part of me wants to think it might be a bit beyond their grasps at such a young age, but at the same time I feel a tinge of guilt not expecting more from my students. I need to keep in mind that even though they are little, they are capable of understanding so much more than we often give them credit for. Often, educators naturally feel a little afraid of tying in politics or religion into school, because we become vulnerable stepping into the grey area of uncertainty. There has to be a balance I can find in between where I can tie the concepts into their lives, make it concrete and meaningful, without overstepping the boundaries of being a public/government servant. Students need to see how what they are learning in school affects them, all subjects, including Science, for their learning to truly be meaningful to them. They need to see themselves represented in the Scientific and larger

academic community. They need to take in all of this information, internalize it, so they can be the ones leading the change and improving our world in the future.

The Natures of both Science and Math align in many regards. One way the principals of the Nature of Science and the Nature of Math overlap is that they both involve making sense of the world around you. They both consist of making observations and finding patterns and connections in the natural world. Also, both the Nature of Science and Nature of Math both require students to build on their knowledge and understanding from their observations and inferences to understand more complex concepts in the areas of study. Just like how, “students must learn mathematics with understanding, actively building new knowledge from experience and previous knowledge,” (NCTM) students must also learn Science through actively creating a novel schema through their own proficiencies and background knowledge. Another way the Nature of Science and Nature of Math are similar is that the Nature of Science and Nature of Math both require creativity. Students need to be creative in Science to make inferences and fill in gaps in their knowledge to make connections as they make new discoveries. Likewise, students need to show creativity in Math reasoning to show a deeper understanding of number relationships and mathematical concepts. Finally, the Nature of Science and Nature of Math are alike in that they both need to be equitable to be truly effective. Both Science and Math require, “high expectations and strong support for all students” (NCTM) to ensure students are successful in and beyond academia.

Science Learning Hub- Pokapū Akoranga Pūtaiao (2011, October 7). Tenets of the nature of science. Retrieved from <https://www.sciencelearn.org.nz/resources/413-tenets-of-the-nature-of-science>

National Council of Teachers of Mathematics (n.d.). Executive Summary Principles and Standards for School Mathematics. Retrieved 2020, from [https://www.nctm.org/uploadedFiles/Standards\\_and\\_Positions/PSSM\\_ExecutiveSummary.pdf](https://www.nctm.org/uploadedFiles/Standards_and_Positions/PSSM_ExecutiveSummary.pdf)