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I teach High School science, grades 9- 12. I will be discussing the Nature of Science. I have attached the link for the lesson.

[W 5E Yonkers Hudson River Stem project .docx](#)

1. **Scientific Investigations Use a Variety of Methods** :The lesson begins with students listing what they know about the Hudson River. The majority of the students are from Yonkers and reside near the Hudson River, which they believe is polluted. Hence To evaluate water parameters such as temperature, salinity, pH, turbidity, and dissolved oxygen, scientific research were undertaken utilizing a range of methodologies and tools such as a thermometer, hydrometer, Hach test kit, turbidity tube with secchi disk at the bottom, and Salifert chemical test.
2. **Scientific Knowledge is Based on Empirical Evidence**: Students worked in four-person groups to evaluate water samples from the Hudson River. To acquire empirical evidence, tests were undertaken in the morning and evening.
3. **Scientific Knowledge is Open to Revision in Light of New Evidence**: A discourse analysis was performed at the Center for the Urban River at Beczak in Yonkers to match their data to the scientists' probe data. To elucidate the inconsistencies between the two sets of data, a logical discourse was adopted.
4. **Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena**: According to scientific theory, the Hudson River's health is determined by physical, chemical, and biological variables. A hypothesis was developed and then tested to support or contradict the theory.
5. **Science is a Way of Knowing**: Temperature, salinity, pH, turbidity, dissolved oxygen, and biological species that will thrive in an ideal aquatic habitat were all examples of science in this lesson. With this understanding, it was applied to the Hudson River to determine the river's ecological health.
6. **Scientific Knowledge Assumes an Order and Consistency in Natural Systems**: Natural laws, according to scientific knowledge, operate today as they did in the past and will continue to do so in the future. We know that the river's tide

fluctuates in the morning and evening, thus data was collected twice during the day to ensure accuracy and a more informed conclusion.

7. Science is a Human Endeavor :Individuals and groups from various nations and cultures have made significant contributions to science, engineering, and technology advancements. Humans have invented equipment to monitor the quality of water. They even design and engineer a water quality monitoring station in Yonkers at Bezach. Their equipment is so advanced that the water quality station provides scientists with data on a daily basis.
8. Science Addresses Questions About the Natural and Material World : There were no violations of ethics. All species were handled carefully and observed in their natural environment.

My Science topic overlaps with Mathematics because students must interpret the data collected. They must arrange the raw data in a table and write an explanation for the data. Students create a regression model using Excel and a Ti-84 calculator to support and revise explanations based on evidence on factors affecting biodiversity and populations in ecosystems of various scales. Students build and compare linear and exponential models in order to tackle Hudson River health problems.