Environmental Sciences - High School
Eliciting Student Thinking

Scenario Guide
Activation Date:
Intensity Level: Low

Author(s)	Avatar(s) & Environment	Suggested Learner Audience
Simulations for Secondary Science Teachers Conference John Clark Dr. Anita Deck Dr. Michael Hynes Dr. Liz Kolb Dr. Demetrice Smith-Mutegi **Mursion** Julie Snyder	**Host Avatar(s)** Nina/Michael **Simulation Avatars** Ciara, Angela, Jordan, James, Stephanie **Environment [ML3z]** High School	• Pre-Service Teachers • Non-credentialed Teachers • Novice Teachers

Delivery Mode(s) Available for Scheduling
1:1, Facilitated Group

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Learner-Facing Vignette:

You are a teacher in a High School Environmental Sciences classroom focusing today on an assignment related to Nuclear Power. For homework you gave your 11th grade students the following prompt:

"You have been elected mayor of your city and you have been charged with determining if a nuclear power plant is a viable type of energy. Be prepared to present your conclusion to your citizens and share your justification."

You are prepared to spend your lesson digging into your student responses by posing questions that provoke students to share thinking about the content in order to evaluate understanding and surface ideas that will benefit other students. You may also find opportunities to clarify the difference between personal opinion and unbiased fact. To do this effectively, carefully choose your questions and check alternative interpretations of students' ideas and methods.

Outcome:

Your goal in this scenario is to elicit thinking from all students.

Strategies/Best practices to consider:

- Pose higher order questions that provoke students to share thinking about content
- Encourage students to consider the sources of their justification for accuracy and bias
- Build on questions to help connect students' responses

Information about Intensity Level: Low

- Low intensity sessions are meant to build confidence for the learner. This setting is recommended for first time learners.

Supplemental Materials:

This scenario is gearing toward practicing the following of the Next Generation Science Standards 8 Practices of Science & Engineering:[1]

Engaging in Argument from Evidence
Argumentation is the process by which explanations and solutions are reached.
Obtaining, Evaluating, and Communicating Information
Scientists and engineers must be able to communicate clearly and persuasively the ideas and methods they generate. Critiquing and communicating ideas individually and in groups is a critical professional activity.

Information for Course Instructor Scenario Selection:
This lesson utilizes the following Next Generation Science Standards listed below:[2]

- LS2-07. Students design, evaluate, and refine a solution for reducing the impact of human activity on environmental diversity.
- PS-1C Physical science standard-students are made to understand *what is the chemical process that's happening in the power plant.*
- ESS-3C Human Impacts on Earth Systems
- AP Standards:
    - ENG-3 (overarching): Humans use energy from a variety of sources, resulting in positive and negative consequences.
        - ENG-3.G.4: Nuclear power generation is a nonrenewable energy source. Nuclear power is considered a cleaner energy source because it does not produce air pollutants, but it does release thermal pollution and hazardous solid waste

[1] NSTA, and using information from Appendix F of the Next Generation Science Standards © 2011, 2012, 2013 Achieve, Inc. "Science and Engineering Practices." *National Science Teaching Association*, 2014, https://ngss.nsta.org/practicesfull.aspx. Accessed 10 8 2021.
[2] Achieve. "Next Generation Science Standards." *Next Gen Science*, 2013, https://www.nextgenscience.org. Accessed 10 July 2021.