



Date: 5/29/26

Your Name: Lucy Koup

Your School: Bow High School

Grade Level(s): 10-12

Course(s) Taught: Integrated Life Science, Environmental Science

Number of Students Involved (Total): 50

Name of your scientist partner and their institution, and any other partners (other partners can include, but are not limited to, collaborations within the school, community groups, non-profit organizations such as the YMCA, or stand out family or friend mentors that helped your project succeed):

Priyanka Roy; Keene State College

Teacher Profile: A brief biography of yourself. How long have you been teaching? What did you study in school? What are you passionate about inside and outside the classroom? Why are you interested in the All About Arsenic+ project? How long have you been participating in SEPA and how were you recruited to participate?

I have been teaching high school science since 2021. Prior to that I coordinated and taught science to middle and high school students in an adventure-based environmental education program with the Appalachian Mountain Club. I hold a B.S. in Environmental Science from Villanova University and an M.S. in Environmental Studies from Antioch University New England.

I am passionate about helping others foster their relationship with the natural world, and about connecting students to real world experiences doing science field work in their communities - this made the All About Arsenic project a natural fit!

Abstract: Provide a 500-word summary of your project. Describe the curriculum. How was drinking water sampling, data analysis, and science communication integrated into that curriculum? Provide specifics (number of samples collected, what the samples were analyzed for, how Tuva was used, what opportunities students had to talk about their data through some public outreach, etc...). Did students use the Science Communication Toolkit and/or Solutionaries Framework to prepare for this outreach event or guide their participation in SEPA this school year? Did students participate in an Intergenerational Learning activity (pH exercise etc.)? Please include anecdotes or stories in this section!

During the 25-26 school year, about 50 students were involved in the water collection. Collection began in March of 2026. The project is set up to integrate with topics in the Chemistry and Environmental Science curriculum throughout the school year. Data literacy curriculum begins in September and is a continuous strand that students come back to over the year. Incorporating data literacy skills in a scaffolded and meaningful way into science curriculum at BHS has been an area of focus for the last few years. The Chemistry curriculum is based around water and water contaminants and the removal of such is integral to the course. The Environmental Science curriculum covers a broad range of topics including water quality and watersheds. This year, Environmental Science engaged in multiple experiences designed to help build their knowledge of water contaminants and their effect on humans, as well as engage in a meaningful science communication project in their community. Scientist partner, Priya Chowdhury, visited Bow High School in May to share a presentation related to her research on Daphnia. Students engaged in a hands-on activity exploring how environmental stressors impact Daphnia. Students worked alongside Karen Bieluch to better understand the "Message Box", and how they would use it to develop their Science Communication Outreach product. Students analyzed water sampling data using TUVA, and were able to formulate research questions to answer using the data collected. As a culminating experience, students chose a topic we learned about this semester, and developed a Science Communication Outreach product using the "Message Box" format.

Details

Did you...

	No	Yes	If yes, how many?
Collaborate with your Scientist Partner? - If so, how? Priya Chowdhury visited Bow High School in May to share a presentation related to her research on Daphnia. Students engaged in a hands-on activity exploring how environmental stressors impact Daphnia.	☐	☒	_____
Use the Science Communication Toolkit? - If so, how? We used the "Message Box" format instead of the Science Communication Toolkit	☒	☐	_____
Use the Solutionaries Framework? - If so, how?	☒	☐	_____
Use any Intergenerational Activities? - If so, how?	☒	☐	_____
Collaborate with any other teachers in your school? - If so, who and what do they teach? Bethany McKilen, Chemistry Amanda Guilbert, Chemistry	☐	☒	_____
Conduct any experiments? - If so, what kinds of questions did students ask?	☒	☐	_____
Go on any field trips? - If so, where and why?	☒	☐	_____
Have any guests visit your classroom? - If so, who and why? What did the guest do? Priya Chowdhury visited Bow High School in March to share a presentation related to her research on Daphnia. Students engaged in a hands-on activity exploring how environmental stressors impact Daphnia. Karen Bieluch visited our classroom in early May to introduce students to the Message Box tool, and show them how they would use it in their Science Communication Outreach Projects.	☐	☒	_____

Have a Community Meeting? - If so, where was it, what did the students do, how many people attended, etc...?	☒	☐	_____
Have other Outreach Events? - If so, where were they, what did the students do, how many people attended, etc...?	☒	☐	_____
Use your stipend to purchase anything for your classroom? - If so, what, and how did you use it? Collection bottles, envelopes	☐	☒	\$50

Describe the student, or group of students, whose work most exemplified the All About Arsenic+ project this school year. What were they excited about? How did that facilitate their learning? Please include anecdotes and stories here.

Students were particularly engaged this year in Priya's presentation about Daphnia. It was great to see them engage with the model organism, and this presented a really tangible experience for them to be able to understand how arsenic might impact human health over time.

Reflect on your students' primary learning outcomes/gains with reference to data literacy, science communication, and using data visualizations in communication. What are they getting out of their involvement in this project? Please include anecdotes and stories here.

As in previous years, students were able to personalize their Chemistry and Environmental Science learning by applying the information to their wells at their homes and their own health. The value of this cannot be overstated. Through engaging with the project and the associated curriculum, students gain valuable data literacy skills such as formulating scientific questions and analyzing data for trends. Learning how to fix the problem is also such valuable learning. Environmental Science students engaged in work to develop science communication skills - in particular how to choose an audience and a goal. Students were asked to use the "Message Box" tool to develop their own Science Communication Outreach product, about a topic we studied this year.

If you are a teacher who has participated in both SEPA grants, how have you shifted your teaching to include the additional goals of science communication and intergenerational learning?

I have only participated in the current SEPA grant.

How did you use our Tuva drinking water dataset? Did you use the software for teaching, was it a tool students used to create data visualizations? What about other Tuva data activities? Did you use them in your teaching? Did students build skills using those activities? Please include stories that illustrate students understanding the link between data visualization and literacy and science communication. If you are a teacher who has participated in both SEPA grants, how have you shifted your data literacy focus to include this grant's science communication goal?

In Chemistry classes, Tuva was introduced early as a tool for data analysis, and was used regularly in the practicing of these skills. In addition to data analysis, TUVA was used in some cases for the delivery of content.

In Environmental Science, TUVA was used after data was received from our water samples. Students completed two TUVA data activities - "Well Should We Question the Water" and "Can Arsenic be Filtered Out." Students practiced skills of formulating experimental questions and evaluating/analyzing data.

What challenges did your students have with Tuva, the website, the datasheet, Aneccdata, anything related to the project process.

Overall, the process was very smooth, especially considering the volume of water samples collected. In previous years, issues have arisen when entering student data into Aneccdata - particularly regarding students gathering data about their particular water filtration system at home, and entering data accurately and completely. We worked hard to combat that problem this year, and I believe had more success.

If you did not use Tuva this year, how did you analyze drinking water data? Please explain why you did not use Tuva. What challenges and successes did students experience with your chosen data analysis/visualization tool?

We used Tuva this year.

How did you enhance *your own* Data Visualization and Science Communication skills As an educator or scientist partner?

Participation in the SEPA DataCom in NH this Fall was a valuable way to reinforce my learning on data visualization. In addition, working with Karen Bieluch on the Message Box and incorporating it into the culminating project was especially useful in helping me to hone my Science Communication skills.

Science Communication Outreach

What kinds of science communication outreach products did your students produce?

Students are still in the process of making their Science Communication Outreach Products, but it seems that most are choosing to create an Informational Poster.

Did your students work with the Science Communication Toolkit this year? Yes ☐ No ☒
If yes, please describe how it went. What worked best? What improvements could be made?

Please include anecdotes or stories here. If you did not use the Science Communication Toolkit, why not? What other resources and activities did you use to teach or facilitate science communication? Did the science communication skill building inspire outreach or build capacity in your students in ways not directly associated with the SEPA project?

Students used the Message Box this year instead of the Science Communication Toolkit. Students were particularly engaged during Karen Bieluch's visit to my classroom to introduce the Message Box. They worked together to build a Message Box together about Deforestation. Doing this together helped them to work through any confusion they might have had about the different components of the Message Box, and their particular purpose in the science communication process. This experience was extremely helpful as they transitioned to using the Message Box for their own projects.

Don't forget to add all final student products to your teacher folder on the shared google folder! (Feel free to add additional products that led to the final products. Simply create a separate folder under your teacher folder.)

Intergenerational Learning

Did you send an intergenerational activity home to parents? Yes ☐ No ☐

If yes, please describe the activity. What are stories and anecdotes you can include about student participation in intergenerational learning activities?

If no, please describe why. What other resources or activities did you use to teach about or facilitate intergenerational learning?

What worked best? What improvements could be made?

Did the intergenerational activity go home at the same time as the drinking water samples? Yes ☐ No ☐
Please explain.

What feedback did you hear about the activity?

Solutionaries Framework

Did you use the Solutionaries Framework in your class? Yes ☐ No ☐

If yes, please describe.

What worked best? What improvements could be made?

If no, why not? Please include other activities or resources you used to teach about or facilitate systems thinking, placed-based discovery, or project-based learning.

Did you attend the Institute for Humane Education series on the solutionaries framework in your class?

Yes ☐ No ☐

Which aspects of this Communicating Data project will you repeat next year?

Which aspects of this project will you change next year?

List and describe the resources that helped your students the most this year.

Provide a list, and links, if applicable, to specific curricular items such as online worksheets, articles, books, YouTube videos, and labs.

Add addendums such as stories and anecdotes, photos, student assessments, testimonials from parents/students, etc.

What were gaps or barriers you experienced this year?

What are the anticipated needs for the 2025-2026 school year?

Acknowledgments: The work reported in this publication was supported by the National Institute of Nursing Research of the National Institutes of Health under Award Number **1R25NR021077**. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health. [Acknowledge any other sources of support/funding/people or organizations involved and explain their role]