elevate: science

Communication and Student **Discourse**



Let's Collaborate!

Communication and Student Discourse

Scientists and engineers constantly communicate through writingfrom emails to formal grant applications and articles for academic journals. Scientists speak at conferences and present their arguments and evidence. Engineers explain their prototypes and design solutions to their teams. As a teacher, you know that the development of foundational communication skills in writing, speaking, and discourse in the context of science and engineering is essential for your students' success.

Similarly, almost all of the work that scientists and engineers do - as well as most 21st century careers - require collaboration of team members. Collaborating on the choice of the best design solution, negotiating the best way to solve a problem, and providing meaningful feedback are some of the most important skills students can take into the workforce and everyday life.



Quest problem-based learning activities call on students to connect science concepts with real-world phenomenon. Students record their results and synthesize their findings, communicate their results, and develop a product, such as a written report.



students develop and communicate clear, repeatable procedures and to answer questions, citing evidence from their experiments to support their arguments.



Collaborative activities are abundant in elevateScience.

Writing in Science

A robust science program provides ample opportunities for students to practice communication through writing, from short answers to questions and plans for laboratory procedures, to research reports. elevateScience™ provides plentiful writing assignments that guide students to develop their communication skills.

Student Discourse and Collaborative Feedback

Peer review is an essential part of science. By sharing procedures, results, and conclusions among peers, scientists ensure that their work is valid and that it is communicated clearly. Likewise, students benefit from collaborative conversations and mutual feedback about the work they are producing. They gain perspective about ideas they may not have considered, and strengthen both their own work and their peers' through specific constructive criticisms that are politely given and thoughtfully received.

AHHHHMMMM

Tips for Promoting Collaborative Conversations

When it's your turn:

- Think about what you want to say before you start speaking.
- Speak clearly.
- Use specific language so listeners know what you mean.
- Support your ideas and opinions with examples and evidence. Stay on topic.
- Connect your ideas to what you heard your classmates say.

When it's someone else's turn:

- Listen closely so you can understand the speaker's ideas and opinions.
- Nod if the speaker says something interesting.
- If you cannot hear a speaker, politely ask him or her to speak up.
- Don't interrupt or talk over the other person. Wait for the other person to finish.
- Think of questions you can ask the speaker when it's your turn.

Providing Constructive Feedback



During a presentation, ask questions if the meaning is unclear. For example:

- I thought I heard you say [rephrase what the speaker said], is that what you meant?
- I'm not sure I understand, can you give another example?



Use specific language. For example:

- What happened when you put more weights in the cart?
- Did you measure distance to the middle of the target, or to the edge?



Phrase questions politely when you disagree or if you think someone made a mistake. For example:

- A new highway will make it easier to get to work, and that's important, but what happens to the animals in its path?
- The first time I did this, I forgot to convert centimeters to meters. Do you think that might have happened?



Tell the other person what is working, along with what needs improvement. For example:

• Reading the thermometer every five minutes is a good idea, but the draft from the window might be changing your results. Is there a way to shield the setup?



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elevateScience[™] is a K-8 phenomena-based science curriculum that immerses students in the inquiry process. Science and engineering practices, core ideas, and crosscutting concepts combine to help students develop a deeper, more cohesive understanding of science.

For classrooms, hybrid instruction, and distance learning

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