

Name: _____

SCIENCE EXPO: How Can I Contribute?



“As I review the nature of the creative drive in the inventive scientists that have been around me, as well as in myself, I find the first event is an urge to make a significant intellectual contribution that can be tangible embodied in a product or process.”

— Edwin Herbert Land

Quoted in New York Times (2 Mar 1991), 1 and 29.

Belonging is the act of being accepted as a member or a part of a group. This seemingly simple word describes a key need of all humans - to feel accepted. When one belongs, loneliness drops away and the feeling that one is a part of something bigger emerges. Whether it is friends, family, co-workers, classmates, or fellow citizens, humans have an inherent desire to connect to others and to be seen and valued for who they genuinely are.

Adolescence is a time when questions of belonging are paramount. How do I see myself? How do others see me? In what way can I connect with those around me? Do I fit in? Am I accepted? Almost all of this period of life is spent sorting through these questions. While there are often no quick answers, this process of discovery is key in sorting out the adult one will become.

On March 15th, we will present our science expo projects to the school community. In the process, we will explore how scientific research and discovery provides a way to connect with others and provide beneficial information that advances the quality of life for our community and future generations. By providing scientific research to the community in the form of journal articles and teaching materials, we are playing a vital role in society and are at once connected to everyone who will benefit from our discoveries, transcending space and time. In a nutshell, the purpose of science is to benefit others, and in doing so, we find one way to contribute and to belong to this complex world.

Essential Question

How can scientific discovery advance the quality of life for the present community and/or those of future generations?

Guiding Questions

1. What is the scientific process?
2. How do I use the work of others as inspiration to seek answers to my own questions?
3. How do I form a hypothesis based on previous research?
4. How can I communicate my discoveries to the community?

What You Will Learn

1. The steps of the scientific method and how each of these steps is conducted.
2. How to do scientific research.
3. How to design and set up an experiment to answer a scientific question.
4. How to analyze results qualitatively and quantitatively.
5. How to use statistics to report robustness of my results.
6. How to use writing, graphics, and other physical craft skills to teach others my most important discoveries.

What You Will Do

Final Project Work (Science Expo: March 15th)

1. During this exploration, you will conduct an experiment to answer a scientific question that you propose, and you will report your results in a formal paper that has the format of a professional journal article.
2. You will produce a tri-fold display board to show the community the most important discoveries from your work (a format for this board will be provided).
3. You will create a teaching material to demonstrate the most salient result from your experiment to those who come to see your presentation. This material should be engaging, and it should be appropriate for a wide range of audiences.

Classwork

1. Following the weekly assignments posted on Google Classroom that are designed to guide you through this process step-by-step and reinforce advanced planning and executive functioning skills.

Homework

1. Any work not completed during work blocks in class should be done at home in order to meet all deadlines on the checklist.