

Dear CSU Extension Internship Application Committee,

We are proposing an internship program to support a partnership that will build on existing expertise and existing resources to allow us to share STEM experiences focused on energy and sustainability with K-12 students all over Colorado. The internship program will be developed and supervised by Heather Michalak (Assistant Director of LSOP), Wade Ingle, CSU Extension Specialist in STEM and K-12 Outreach, and Brian Jones, Master Instructor and Director of the Little Shop of Physics (LSOP) who will serve as the faculty mentor. Brian will coordinate research on the activities developed following the approach of recent research projects in LSOP. We will look at changes in content knowledge and student efficacy as a result of taking part in programs.

As we work, we will establish a sustainable partnership between CSU's Little Shop of Physics and CSUE 4-H that will provide hands-on experiential college and career readiness activities for Colorado's youth using remote, hybrid, and in-person delivery modes. During the pandemic, it is more important than ever to connect to students using hands-on materials. LSOP has developed a number of "single-serving" science exploration kits. The materials are only used by one person, who then keeps the materials. These kits are low cost, and use everyday items (some parts reused from items that would have been sent to a landfill). The intent is for people to continue to use these kits. In addition to developing kits, we will work with an intern to create large scale demonstrations that illustrate key concepts to a physically distanced audience. The large scale demonstrations will use parts from garage sales, thrift stores, or items people donate to LSOP. Upcycling will be discussed in the signage and integrated into the activity discussions.

The activities and materials to be shared via the 4-H Mobile STEM Lab will focus on renewable energy and sustainability. Energy production and consumption can seem mysterious. Both of our groups feel passionate about demystifying where our energy comes from so that the current generation of students can be inspired to develop creative solutions regarding energy production and consumption.

The intern will be mentored directly by Heather, and have regular meetings with Brian, , and Wade. The intern will conduct work remotely as prescribed by guidelines set by the local health department. Should face-to-face work on CSU's main campus resume, the internship work location will be modified to remote/in person hybrid as needed for program development support by LSOP and/or CSUE 4-H STEM K-12. This is a great opportunity for a future teacher and/or a person who would like to be able to learn how to reach the general public to discuss topics like sustainability.

These are the learning outcomes and professional development opportunities for the intern:

1. The intern will have a chance to learn science by teaching science.
 - o We have found over the 30 years of Little Shop of Physics, people do learn by teaching.
2. The intern will be able to infuse lessons with their unique perspective.
 - o Diversity and inclusion plays an important role in science and science education. The intern will have the opportunity to share their own story and culture around energy and energy consumption.
3. The intern will learn to develop hands-on science experiments that are engaging, simple, low cost, and durable.
 - o This will include professional development in science education, engineering, and budgeting.
4. The intern will learn how to deliver training using hands-on materials.
 - o This is an opportunity for professional development in teaching pedagogy for informal hands-on science education.

Check out more about the 4-H Mobile STEM labs and Little Shop of Physics during 2020/2021:
<http://www.4hstemk12.colostate.edu/4-h-stem-mobile-lab-overview/>;
<https://www.lsop.colostate.edu/virtual-connections/>

Please feel free to email [Heather Michalak](#) or [Wade Ingle](#) with any questions.