



## STEMworks – STEM Advisory Council’s Approved STEM Program October 2019

### HEADWATERS SCIENCE INSTITUTE

#### PROGRAM OVERVIEW

*Headwaters fosters curiosity through science. We engage students’ natural curiosity, guiding them to design and perform experiments that answer their own questions through the scientific method. To do this, we teach programs for science classes at schools and nearby field sites as well as overnight programs at our Donner Summit Field Site.*

#### TARGET GRADES

6-12th grade

#### A UNIQUE OR SPECIAL FOCUS OF THE PROGRAM

*The focus of Headwaters programs is to teach students how to do complete scientific research projects independently. All Headwaters programs are taught by scientists and every group of students is mentored through their project by a scientist. The most unique aspect of our programs is our focus on and ability to get students outside, in the natural world, looking at real examples of what they are studying.*

#### THE PROGRAM’S IMPACT ON STUDENTS

*Understanding science and the skills involved in scientific research is critical in today’s world. The ability to research, assess information, and use critical thinking skills to make decisions is absolutely necessary for many aspects of modern life and effective civic engagement. In addition, an appreciation of the natural world, and an understanding of the processes that shape it prepares young people to be effective stewards of nature as we face life-altering climate challenges.*

#### SPECIFIC SKILLS STUDENTS WILL LEARN

*Increase understanding of the scientific method to help build overall confidence in science classes; Exercise and build public speaking skills by disseminating information on original research topics through presentations; Increase familiarity with scientific research; Gain a better appreciation of the environment and the need to protect it; Recognize how humans impact and change the natural world; Gain more interest in science-related careers; Overcome inherent challenges in their research and methods during their project (building academic resilience); Increase analytical and critical thinking skills; Get connected to and learn from scientists.*

#### RESOURCES PROVIDED TO EDUCATORS

*Headwaters gives all educators our student-driven research teacher’s guide. This guide walks teachers through the process of how to do research projects with students. We also take teachers through a three-part professional development series while we are teaching their classes. During the first program, they observe. After the first program, we meet with the teacher to discuss the areas they feel most comfortable with. Our program director then works with the teacher to develop a breakout Next Generation Science Standard lesson. In the second program, they teach some and we provide feedback. By the third program, they organize the program and we provide scientist mentors to help the students with specific parts of their projects as the extra help is needed. We give the teachers feedback as necessary. Our hope is to help as many teachers as possible use the skills they learn during our programs in their regular classrooms.*

#### WEBSITE

<https://headwatersscienceinstitute.org/>

#### CONTACT INFORMATION

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