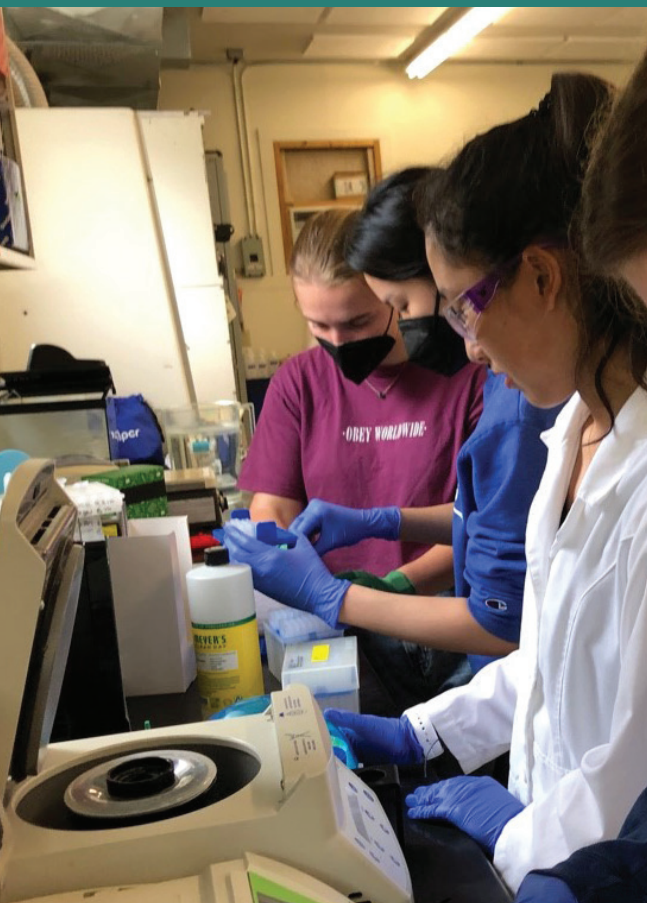


CREDIT-FOR-LEARNING



New Hampshire Academy of Science

Lyme, New Hampshire

50 Average number of students served during the school year

80% Families with low incomes

Main funding sources:

- ▶ National Institutes of Health
- ▶ The Couch Family Foundation

Developing a future generation of STEM professionals

Learn a coding language, conduct research in a professional lab setting, develop leadership skills, advocate for educational equity, or take a boat-building class: credit-for-learning programs in the afterschool space offer opportunities for students to learn new skills and individualize knowledge acquisition, complementing school-day lessons for middle and high school youth. Through student-centered, active approaches, youth can learn advanced scientific research techniques, foster foundational skills like empathy, resilience, and communication, and safely explore outside of their comfort zones.

Overview

NHAS students experience rigorous, discovery-based science, technology, engineering, math, and medicine (STEMM) research in a professional laboratory setting. Participants choose an area of research and learn advanced research techniques with cutting-edge equipment in NHAS afterschool and summer programs and are mentored by professional scientists and engineers. Students can submit their research for NHAS peer review and publication and present their research at regional, national, and international STEMM conferences.

A typical day for students

During the summer, students start the day with their research team, reviewing the previous day's results and today's plan. Students spend the rest of the morning working in the university research lab, followed by lunch and a break to walk in the local forest or sit at the brook on campus. Participants take the afternoon to complete more research and interactive activities, like meeting with a regional STEMM professional and discussing STEMM careers.

Outcomes

Around 90% of NHAS participants go on to study STEMM-related majors in college. Over the past six years, NHAS participants have gone on to attend MIT, Harvard, Princeton, Northeastern, Yale, Dartmouth, Duke, University of Vermont, University of New Hampshire, University of Virginia, University of Chicago, and Brown University – to name a few. As of 2023, at least 12 NHAS participants will be published in scientific journals or magazines, mainly on the conservation of regionally endangered orchids.

Program characteristics

NHAS participants have the chance to choose their area of study: tissue culture and environmental studies of Lady's slippers species, molecular biology, protein modeling, analytical chemistry, neurological and cancer research using model organisms, machine learning, bioinformatics, water quality analysis, and optical engineering. Examples of recent research projects include building advanced cameras for drones to monitor forest health, neurological research around memory and mental health issues, and chemical analysis of foods and commercial products. NHAS scientists mentor participants to use advanced scientific instruments and complete in-depth investigations during afterschool and summer programs. Participants publicly present their work once their research is completed, such as at the New England Science Symposium sponsored by Dartmouth College.

NHAS has satellite labs in Vermont and New Hampshire and an Equipment Loan Library. Rural schools can borrow advanced lab equipment to carry out inspirational classroom science experiments under the guidance of NHAS STEM professionals.

NHAS was the first out-of-school time organization to give out middle and high school credit in science in New Hampshire and was the first accredited by the statewide Learn Everywhere program. Students can earn credits in Physics Research, Chemistry Research, and Biology Research for their work in the Applied Research Program over 5 weeks. NHAS also works with schools and districts for Extended Learning Opportunity credits.

Program history

NHAS was founded in 1919 as an affiliate of the American Association for the Advancement of Science and began as an organization geared towards professionals that gave out grants. In 2016, the organization became a nonprofit focusing on supporting high school and middle school youth interested in pursuing careers in STEM and conducting scientific research in an advanced research lab setting. Programs are funded by grants from the National Institutes of Health, The National Science Foundation, and the Couch Family Foundation. These grants ensure equitable participation in programming by offering financial aid and long-term mentorship to ensure students go on to rewarding STEM careers.

The need for credit-for-learning opportunities

Credit-for-learning expands educational opportunities for youth, where young people can explore their interests and delve deeper into subject matter outside of the classroom. These programs provide diverse learning experiences, promote student engagement, and prepare students for life after graduation.



Boosting motivation and engagement



Improving college and career readiness



Addressing opportunity gaps

Read Credit-for-Learning: [Make Learning Outside of School Count](#) to learn more, and check out the [Start-Up Guide for Implementing Credit-for-Learning Programs](#) if you're interested in starting your own.

Recommendations

for fostering positive relationships with schools as a credit-for-learning provider:

- ▶ Aim to make the credit process as easy as possible for schools: NHAS contacts a student's school directly and sends a formal letter with the credit that should be associated with the student's work
- ▶ Meet regularly with program partners to develop strong connections
- ▶ Get involved in the school and broader community as much as possible: join committees and attend school board meetings