In a rapidly changing world, the need for effective, high-quality STEM education has never been greater.

As we rush to keep up with a changing energy and employment landscape, and the growing influence of robotics and A.I., a practical knowledge of STEM concepts will become critical for everyone in the developed world. Systems analysts, software developers, biomedical scientists and engineers — these are the roles of the tech-driven future. Over the next decade, an estimated 80% of jobs will require STEM skills of some kind. In North Carolina alone, there are currently over 400,000 STEM-related jobs, and an estimated 70,000 more will appear by 2020. At both the state and national level, STEM education is the underpinning of our health, our economy, and our democracy. From vaccines and obesity, to energy production and environmental policy, issues related to STEM pervade our country, and our world.

Governments, industries, and heroic educators are working hard to meet the challenge. Top-down and bottom-up initiatives have done much to help students across North Carolina, and countrywide. But there is still much work to be done. Unfortunately, more than 20% of U.S. high schools fail to offer the full range of science and math courses. In North Carolina, as elsewhere, geography, race and socioeconomic status still determine access to STEM learning, to an unacceptable extent.
This is where support, education, and outreach come in. STEM-related programs, projects, festivals, competitions, and awards help to increase engagement and interest in STEM-related subjects and careers. They help formal and informal educators create exciting and memorable experiences for their students. And they help improve access to learning for groups still lamentably underrepresented in STEM fields.

At the local level, such programs have been shown to help reduce truancy, improve classroom behaviors, increase high school graduation and college acceptance rates, and provide a positive focus for communities as a whole.

When well designed, and adequately supported, STEM programs and resources help educators to work at entirely new levels — reaching more students, and creating more impact, than they could ever hope to do on their own.

For this reason, Burroughs Welcome Fund and the North Carolina Science, Mathematics and Technology (SMT) Education Center have been working together since 2002, with a view of supporting and connecting STEM programs throughout the state, and building the resources necessary to make NC STEM education the best in the country.
The grants and programs we support foster initiatives, interactions and partnerships between educators of all kinds, and range from handy networks and databases to exciting challenges and awards. You will find details of five key programs and resources within this guide, including who they are intended for, who is eligible to apply, and how and when to go about it.

We encourage you to consider all the options, and share with anyone you feel is doing great work, could benefit from these resources, or might be a good fit for a specific program. Together, we can support our communities, transform our state, and prepare ourselves for the future ahead.

For more information, visit www.bwfund.org, and www.ncsmt.org.
Burroughs Wellcome Fund and the North Carolina SMT Center support a wide range of programs aimed at improving STEM education throughout and beyond North Carolina. Individuals and organizations, formal and informal educators, kindergarten and high school classrooms — there are resources for everyone dedicated to providing exceptional educational experiences.

### Programs & Resources

- **SMT Center Awards**
  For outstanding contributions to science, math, and technology education in North Carolina

- **NC STEM Center**
  Network and knowledge base for STEM educators at all levels, throughout North Carolina

- **NC International Science Challenge**
  High school science & engineering research competition with epic international travel prize

- **PRISM Grants**
  Awards to support K-12 educators with equipment, materials, and professional development

- **SSEP**
  Student Science Enrichment Program for exceptional and underserved students, supporting after-school activities with multi-year grants
Looking for high-quality learning resources, but overwhelmed by the online options? Searching for science-related events and programs in your region, but unsure of where to begin?

Then look no further. The **NC STEM Center** is your one stop shop for all things related to Science, Technology, Engineering and Mathematics education in North Carolina. The Center is on a mission to improve access to STEM education statewide, and they have everything you need to get started.

If you need a general overview, the **learning resource** page offers information on STEM education and research in NC, including schools marked for distinction in STEM teaching.

If you need help finding STEM-related activities and events, you can use the **searchable database** to locate summer camps, science fairs, festivals, competitions, and drop-in events throughout NC, from the mountains to the coast.

Doing great work yourself, and want to let people know about it? **Share your STEM-related activities** with the STEM Center, and they will make them available to students, parents, teachers, and adult learners across the state.

Looking further afield? No problem. You can also **connect to nationwide STEM resources**, get **regular news updates** on relevant topics, and search for **STEM-related jobs and funding opportunities**.

So don’t just sit there. Get yourself connected today, at [www.ncstemcenter.org](http://www.ncstemcenter.org)
For science and math students at the K-12 level, hands-on, Inquiry-Based Learning (IBL) activities are hard to beat. They shift the role of the teacher from knowledge resource to facilitator, and transform the learning experience into something truly memorable. But such lessons take time and effort to prepare, and often require special materials and equipment. In the high-pressure teaching environments of today, the time and expense of hands-on activities make them seem like a daunting prospect, or an ill-afforded luxury.

This is where the PRISM (Promoting Innovation in Science and Mathematics) award comes in. PRISM grants, supported and distributed by Burroughs Wellcome Fund, were created to support North Carolina educators dedicated to bringing high-quality, inquiry-based learning activities to their classrooms. This one-year award is open to all certified K-12 public school educators, and covers up to $3,000 for STEM materials and equipment, and up to $1,500 toward the cost of relevant professional development.

If you are passionate about science and mathematics, and need help bringing that excitement to your students, then perhaps the PRISM grant is for you. With the right materials and training, you could be looking at all-new levels of classroom engagement and fulfillment. December 5 is the deadline for submission. Successful applicants are notified in March, and the awards are distributed from April onwards.

To find out more, or to apply online, visit www.bwfund.org
The research is unequivocal—after-school science programs have a critical impact on youth STEM engagement. They increase STEM-specific knowledge and skills, improve attitudes toward STEM fields and careers, and increase the likelihood of students graduating and pursuing a STEM career.

Better yet, such programs offer benefits to kids, families and communities that extend far beyond mere academic performance. When properly designed and delivered, they have been shown to improve classroom behavior, reduce risky behaviors, promote physical health, and provide a safe, structured environment for the children of working parents.

The Burroughs Wellcome Fund Student Science Enrichment Program (SSEP) was created to support these very outcomes. It offers three-year grants of up to $60,000 each year, to help implement hands-on, inquiry-based, science enrichment activities intended for out-of-school periods (evenings, weekends and summer months).

This award is open only to non-profit organizations based in North Carolina, serving NC-based students. This includes public and private schools, colleges and universities, zoos, museums, community groups, and scientific organizations offering after-school activities. If this describes you, then grab an application and dive in. Over the last 20 years, the Student Science Enrichment Program has awarded over 200 grants to nearly 100 NC-based organizations, serving over 40,000 students. So why not yours?

The deadline for applications is April 18. Successful applicants are notified the middle of September, and the three-year award begins the following February.

To find out more, read the relevant FAQ, or to apply online, visit

www.bwfund.org/grant-programs/science-education

The NC International Science Challenge is a high school science and engineering research competition with a difference. To enter, students must design a project, undertake research, and create an abstract that explains the problem at hand.

So far, so ordinary. But here is where it gets really interesting.

The prize for truly outstanding projects is an epic trip to Beijing, China. There, the winning participants will meet students from other countries, get the VIP treatment at cultural and scientific events, and present their research to a panel of scientists and engineers. All transportation, accommodation, and meal expenses are covered by the SMT Center and the Beijing Association for Science and Technology. All you need is the passion to excel.

If you are an educator looking to inspire your teenage contingent, then this could be just the ticket. The challenge is open to any U.S. citizen attending high school in the state of North Carolina. That said, last minute purveyors of the Alka-Seltzer volcano need not apply. Winners typically spend several months designing and carrying out their experiments in research or engineering environments.

Do your high-schoolers have what it takes? Ready to watch them take their STEM game to the next level?

Full project reports and applications must be submitted to the NCISC by October 31 for judging. Finalists are selected at the end of November, and invited to present their work in person in December. The winners travel to and from Beijing in March, and take part in the SMT Center statewide science celebration in April.

For more information, and for details of how to apply online, visit ncsmt.org/competitions/ncisc
Inspired by a colleague with an exceptional gift for teaching? Know of any unsung heroes who deserve their moment in the spotlight?

Every year, the NC SMT Education Center recognizes outstanding contributions to science, mathematics, and technology, with a host of awards aimed at teachers of all kinds.

There are awards for local businesses and industries offering support to preK-12 education programs. Awards for organizations dedicated to the advancement of science, mathematics and technology. For formal educators who excel in their K-8 and 9-16 classrooms. For informal educators working with young students outside of traditional classroom environments. Awards for students showing exemplary leadership in an educational context. And for any individual providing exemplary support for science, math, and technology education in North Carolina.

Whatever the context — if there is great work being done, then we should celebrate it, encourage it, and inspire others to build upon their efforts. The annual SMT Center Awards set out to do just that.

Nominations are submitted in the fall, and the awardees are honored at the annual SMT Center’s Celebration of Science, Mathematics and Technology, held in the spring.

For the full list of awards, and to submit your nomination, visit ncsmt.org/awards/overview