“Student interest in science and chemistry is essential. We must reach the youngest students to inspire them towards careers that propel our businesses and the economy.”

~ Business Owner
Building the Workforce of Tomorrow
By Inspiring Youth Today

You Be The Chemist connects businesses and educators to achieve a critical need: preparing students for the workforce.

When it comes to preparing the STEM workforce – those industries relying on science, technology, engineering, and mathematics – too often the focus is on students in high school and post-secondary education.

But the truth is, if students aren’t inspired by science when they are young – as early as five years old – it gets increasingly harder to engage them in learning and ultimately, enter careers in STEM industries.

You Be The Chemist programs uniquely connect business and education in local communities to reach students early in life and ignite a passion for chemistry and science-related careers.

Companies and individuals in the science and chemistry industries have invested in You Be The Chemist since 1989, to inspire young students into a lifelong passion for these fields. Programs are implemented in partnership with schools and education programs so activities align with local workforce and learning needs.

You Be The Chemist continues helping businesses and education providers show young students the potential to build a better world through the science of chemistry.

Research shows that if more children are to enter the STEM pipeline, then teachers in early elementary grades need to be prepared to provide interesting and engaging lessons that focus on developing children’s problem-solving and spatial ability while encouraging their intrinsic interest in STEM.

Together, our programs

Inspire and motivate youth to seek careers in STEM fields
Raise educator confidence in teaching chemistry concepts and content
Spotlight employee expertise through impactful local volunteer opportunities

You Be The Chemist
1560 Wilson Blvd., Suite 1100, Arlington, VA 22209 • 703-527-6223
www.ChemEd.org
Strategies & Impact:
HELPING BUSINESSES INVEST & EMPLOY

You Be The Chemist fills the workforce gap by engaging young students in science experiences.

**You Be The Chemist Strategies:**

- **Connect business and education locally**, to inspire young students to remain interested in science for study and careers later on – starting early is key!
- **Help students explore careers** with local industry employers.
- **Empower educators** through professional development that builds their confidence in teaching science concepts, to lead hands-on learning that captivates students.
- **Develop science education content** that is engaging for students and accessible for educators.
- **Celebrate and elevate the science of chemistry** through academic competitions and interactions among industry professionals and students.

**Impact:**

- **Making a difference for students.**
  We are serving a large and diverse student population that challenges national trends about who engages in science learning and activities.
  A 2018 feasibility study examining learning gains in students who participated in the You Be The Chemist Challenge showed that students experienced increased:
  - Connect business and education locally, to inspire young students to remain interested in science for study and careers later on – starting early is key!
  - Help students explore careers with local industry employers.
  - Empower educators through professional development that builds their confidence in teaching science concepts, to lead hands-on learning that captivates students.
  - Develop science education content that is engaging for students and accessible for educators.
  - Celebrate and elevate the science of chemistry through academic competitions and interactions among industry professionals and students.

**Impact:**

- **Making a difference in the community.**
  You Be The Chemist programs help businesses reduce worker shortages at all employment levels.

- **Making a difference for educators.**
  Supported Approx. 1,800 Educators
  84% Feel confident in their ability to teach science in the classroom
  Compared to 48% before program participation

<table>
<thead>
<tr>
<th>STEM Ability (based on test scores)</th>
<th>STEM Efficacy</th>
<th>NOW HIRING</th>
<th>STEM Career Interest</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
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</tbody>
</table>

**Engaged nearly 648,000 students in the 2017-18 school year**

We are reaching boys and girls nearly equally in our Local Challenges.
- 59% Boys
- 41% Girls

We are reaching students with diverse backgrounds.
- 46% White
- 17% African American
- 17% Hispanic
- 13% Asian
- 47% Received Title 1 Funding (designated based on % of low income students)

**Impact:**

- **Making a difference in the community.**
  You Be The Chemist programs help businesses reduce worker shortages at all employment levels.

Aidan Blum participated in the National Challenge in 2006. He went on to major in chemical engineering and now works at PVS Chemicals, Inc.—the same company who sponsored the Local Challenge Aidan participated in as a sixth grader.

- **Making a difference for educators.**
  Supported Approx. 1,800 Educators
  84% Feel confident in their ability to teach science in the classroom
  Compared to 48% before program participation

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www.ChemEd.org
The American Workforce Needs STEM Workers

Students Must Be Better Activated to Consider Jobs in Science-Related Industries

America needs a workforce ready for STEM-related jobs at all levels – but it’s not happening.

Jobs are unfilled – opportunities abound for skilled and degreed workers.

Number of STEM Jobs Advertised Online for Every Unemployed STEM Worker (2015)

In 2018, an estimated 1.2 Million STEM JOBS will not be filled by our nation’s employers.

Too few students receive early, hands-on science instruction to prepare them for employment.

Few Students are Proficient in Science

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage Proficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>4th Grade</td>
<td>32%</td>
</tr>
<tr>
<td>8th Grade</td>
<td>29%</td>
</tr>
<tr>
<td>12th Grade</td>
<td>20%</td>
</tr>
</tbody>
</table>

More than half of 4th Graders receive less than 3 hours of science instruction/week

Educators need more support to confidently teach science to young students.

Percentage of 4th Graders whose schools provide supplies or equipment for science labs, 2015

In 2018, an estimated 1.2 Million STEM Jobs will not be filled by our nation’s employers.

The Basic STEM Skills Gap

38% of companies say at least half of their entry-level job applicants in the U.S. lack even basic STEM skills.

By 2022: 1 Million STEM Opportunities

Projected for individuals who are STEM literate or have related degrees. Half will not will not require a 4-year degree.

U.S. Students Lag International Students in STEM Rankings

Science (23rd) Math (30th)

Research Shows:

Hands-on Science Experience + Collaborative Learning = Higher Performance in Science

Only 39% of elementary school teachers feel very well prepared to teach science.

Teachers surveyed before participating in You Be The Chemist programs report low confidence in their ability to teach hands-on science instruction.

Teachers surveyed before participating in You Be The Chemist programs report low confidence in their ability to teach hands-on science instruction.
You Be The Chemist Programs Are A Solution For Building The Workforce Of The Future

You Be The Chemist builds capacity in K-8 science instruction in schools and programs nationwide.

Essential Elements — professional development workshops that build confidence in teaching science.
We equip K-8 educators with best practices for STEM education, share resources for science learning, and build educator confidence in leading inquiry-based, hands-on learning.

Activity Guides — hands-on science lessons with low-cost materials that educators need.
Hands-on learning is proven to engage young students in exploring science. Our Activity Guides are educator-friendly roadmaps for using household items, without formal lab space, so students can explore foundational science concepts anywhere.

Academic Challenge — celebrate and elevate the science of chemistry to inspire students into ongoing study and careers.
This local, state, and national academic competition targets students in grades 5–8, when most U.S. students have not studied chemistry as its own subject. Students prepare for multiple-choice quiz bowl competitions and advance to the annual, prestigious National Challenge that celebrates the role of chemistry in businesses and communities.

Over 70% of attending educators since 2015 work in public schools.
PARTICIPANTS ARE:
more confident teaching science; offer more hands-on learning in the classroom; and report that their students enjoy learning science more.

Now in its 5th edition, with over 1,000 activities.
Organized by content to align with standards. Spanish translation in production.

48,000 GRADE 5-8 students in the 2017-18 School Year.
You Be The Chemist: Essential Elements
Building Educator Confidence to Teach More Science, Better

**Research Shows:**

61%

Percentage of 4th Graders whose school provide supplies or equipment for science labs, 2015

61%

Teachers surveyed before participating in You Be The Chemist programs report low confidence in their ability to teach hands-on science instruction.

48%

Only 39% of elementary school teachers feel very well prepared to teach science

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**Program Specifics:**

In the U.S., minority students have the least experienced teachers, limited access to supplies and equipment for science labs, and teachers who lack the resources to succeed. Our Essential Elements program tackles these issues head on:

- Workshops taught by trained professional development providers
- Alignment with learning standards yet flexible for local use
- Time to practice using materials and You Be The Chemist activity guides
- Ability to deliver in partnership with local chemistry businesses
- Scheduling for K-8 educators’ convenience

Impact:

Teachers surveyed before and after Essential Elements workshops and again 30 months later indicated an increased confidence in teaching science and plan to offer more science-based activities in the future.

- Our data show that workshop participants are more confident teaching science and they offer more hands-on learning in the classroom, and they report that their students enjoy learning science more.

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Essential Elements Provides:

- Professional development that builds K-8 educator confidence to implement hands-on science activities with students
- Connections among educators and chemistry professionals to grow local workforce interest
- Acknowledgement and celebration of the role of chemistry in everyday life

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“I loved the connection between educators and professionals in chemistry.”
You Be The Chemist: Activity Guides

“I love the hands-on activities. I can’t wait to take all these activities back to my classroom!”

Research Shows:

Nearly 50 science activities using common, inexpensive household materials

Nearly 150,000 students are reached through distributed Activity Guides

Program Specifics:

Includes experiments, activity sheets, and supplemental resources for educators

Real-world connections to careers and life that rely on science and chemistry concepts

Realization techniques to enrich learning in K-8, and across ability levels

Impact:

Hands-on science experiences develop students’ ability to engage in sustained scientific inquiry

Nearly 32% of 4th grade students are not highly proficient in science

Activity Guide Topics:

- Properties of Matter
- Chemical Reactions
- Energy
- Forces & Interactions
- Life & Earth Sciences

Activity Guides Provide:

- Flexibility for hands-on science learning: no lab space or equipment needed; deliver in classroom or out-of-school time learning
- Student engagement with foundational science concepts that align with learning standards
- Educator and student confidence to explore science and chemistry

“You made it so easy to follow along and gave us everything we needed. So simple since I am so busy so THANK YOU!!!!!!”

Where can I use the Activity Guides?

Classrooms
At home
Science fairs
Camps
Libraries and museums
Afterschool programs
Children’s hospitals
School family nights
...and more!
You Be The Chemist: Challenge

Celebrate and elevate the science of chemistry to inspire ongoing study and careers

Research Shows:

- Early science exposure inspires students to further study and work in these fields
- Before high school, most U.S. students have not studied chemistry as its own subject, making it more difficult to prepare them for higher learning, training, and working in STEM fields

Challenge Provides:

- Exposure to chemistry concepts in grades 5-8 — earlier than most U.S. students even begin studying chemistry
- Connections with industry professionals to see how chemistry offers needed and fulfilling careers
- Inspiration for girls and students of color who benefit most from having scientist role models and early science learning experiences
- Acknowledgement and celebration of the role of chemistry in everyday life

Program Specifics:

Students prepare and then compete individually for their local challenge, if available in their communities. Participants seek to advance to their state and then National Challenge. Only one student from each state and territory is represented at the National Challenge annually. Nominated educators join their state’s student at the National Challenge to further celebrate the science of chemistry. In 2019, the Challenge is in its 15th year.

Impact:

- 86% of students feel more confident in their ability to understand chemistry
- 82% of students are more interested in STEM careers after participating in the You Be The Chemist Challenge
- 80% of students report having an increased awareness of chemistry’s role in everyday life
- Approximately 100 Challenge volunteers, in 42 states plus D.C. and Puerto Rico, receive technical assistance and training
- College scholarships plus other prizes to National Challenge winners and participants
- Students attend FOR FREE thanks to generous sponsor partnerships
- Approximately 48,000 Grade 5-8 Students in the 2017-18 School Year
- We are reaching boys and girls nearly equally in our Local Challenges.
- 47% Received Title 1 Funding
- 46% White
- 17% Hispanic
- 17% African American
- 13% Asian

You Be The Chemist: Challenge

Celebrate and elevate the science of chemistry to inspire ongoing study and careers
#YouBeTheChemist

## Invest in the Workforce for Tomorrow

*You Be The Chemist* is designed to fill the pipeline with students interested in science-related careers. The programs create high quality, fun, and memorable experiences that engage communities in bringing science to life for students. With the support of companies and individuals, we ensure that every student — regardless of geographic location or background — has access to hands-on science learning experiences.

Here are ways to invest in the STEM workforce pipeline:

<table>
<thead>
<tr>
<th>Amount</th>
<th>Description</th>
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<tbody>
<tr>
<td>$300,000</td>
<td>Inspire 60,000 future STEM leaders through participation in the Challenge;</td>
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<tr>
<td></td>
<td>provide study materials, academic mentoring and educational support from</td>
</tr>
<tr>
<td></td>
<td>1,000 industry, teacher and community volunteers.</td>
</tr>
<tr>
<td>$200,000</td>
<td>Empower 3,000 educators to bring science to life for 500,000 students</td>
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<tr>
<td></td>
<td>through Essential Elements Teacher Training Workshops.</td>
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<tr>
<td>$100,000</td>
<td>Engage 150,000 students in hands-on science experiments by increasing access</td>
</tr>
<tr>
<td></td>
<td>to Activity Guides.</td>
</tr>
<tr>
<td>$50,000</td>
<td>Update resources to reach diverse and underserved populations.</td>
</tr>
<tr>
<td>$30,000</td>
<td>Celebrate academic excellence in chemistry by supporting college scholarships</td>
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<tr>
<td></td>
<td>for the top four National Challenge students.</td>
</tr>
<tr>
<td>$20,000</td>
<td>Bring science education programs to your community through support of a You</td>
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<td></td>
<td>Be The Chemist certified instructor; building community partnerships and</td>
</tr>
<tr>
<td></td>
<td>employee engagement opportunities.</td>
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<tr>
<td>$10,000</td>
<td>Provide 200 students with Challenge Study Materials or 60 educators with 3+</td>
</tr>
<tr>
<td></td>
<td>hours of training at Essential Elements Workshops.</td>
</tr>
<tr>
<td>$5,000</td>
<td>Provide 100 educators with chemistry career highlights through employee</td>
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<tr>
<td></td>
<td>participation in Essential Elements Webinars.</td>
</tr>
<tr>
<td>$1,000</td>
<td>Provide 25 classrooms with all the materials needed to perform 50 Activity</td>
</tr>
<tr>
<td></td>
<td>Guides experiments.</td>
</tr>
<tr>
<td>$500</td>
<td>Support a local You Be The Chemist Challenge for 50 students.</td>
</tr>
</tbody>
</table>
You are investing in a better world through the science of chemistry

Be an Investor: Which one are you?

INDIVIDUAL INVESTOR

Join the cadre of students, educators, families, community members, professionals, and industry leaders who make individual investments to You Be The Chemist.

INDIVIDUAL INVESTMENT LEVELS

- **Legacy Club** Lifetime investment of $100,000+, or Planned Giving Partner
- **Catalyst Club** $5,000+ annually
- **Reactors** $1,000 - $4,999 annually
- **Conductors** Under $1,000 annually
- **Individual Donor Affinity Groups** Individual investors who participate in You Be The Chemist programs (past or present), including students, parents, educators, and volunteers

CORPORATE & FOUNDATION INVESTOR

Join the community of private and philanthropic investors who realize the value of building the STEM workforce pipeline.

CORPORATE & FOUNDATION INVESTMENT LEVELS

- **Impact Champions** $150,000+
- **Innovators** $100,000-$149,999
- **Influencers** $50,000-$99,999
- **Ambassadors** $20,000-$49,999
- **Advocates** $5,000-$19,999
- **Allies** Under $5,000
- **President’s Club Members** NACD Member distributor companies who contribute based on a formula of $50 or more, per million dollars in sales

Select from Three Investment Options:

- **Sponsorship**
  Provide designated funds for specific initiatives; work in partnership to collaborate on local program implementation. Sponsorships are not tax deductible.

- **Donation**
  Directly fund our mission to inspire students in grades K-8 into the STEM workforce pipeline. Donations are tax-deductible under law.

- **Planned Giving**
  Planned giving may allow individual donors to give with income and estate tax reduction and potentially avoid or lessen tax liabilities.

www.ChemEd.org/Invest

**You Be The Chemist: A Sound Investment for 30 Years**

*You Be The Chemist* is the signature program of the Chemical Educational Foundation (CEF), which was founded by the National Association of Chemical Distributors (NACD) in 1989. Since becoming a distinct entity in 1997, CEF continues its strong relationship with NACD members who see the growing need for a skilled, qualified workforce in all stages of their business.

CEF has grown its circle of supporters to include even more investors from the chemistry and chemical industries, as well as consumer product corporations and a range of STEM and science-related businesses that are U.S. and global leaders. Join us!