Create a Generation of Problem Solvers
We inspire innovative problem solvers who think creatively as they identify and solve challenges in the world. By putting the engineering design process at the heart of everything we do, we build a strong foundation of critical thinking for even the youngest learners. We develop lifelong learners by helping them to discover their inner engineer.

Engineering for All.

*Start early. Stay strong.*

Our curriculum introduces the engineering design process as early as Preschool to reach ALL learners and to build a strong foundation of problem solving and critical thinking.

Proven Effective.

*Designed with teachers to create a hands-on engineering classroom.*

Our research-backed curriculum is proven to significantly improve engineering and science outcomes. EiE integrates with core disciplines to make all learning experiences deeper and richer.

Innovate. Influence. Lead.

*Tomorrow’s creative thinkers led by today’s classroom innovators.*

We combine best teaching practices, theory, thought leadership, and research to help teachers create innovative engineering experiences right in their own classroom. EiE has been designed for today’s classroom, but with tomorrow’s world as our vision.
Implement engineering to help you meet rigorous STEM standards.

30 more than 30 states are implementing new science and STEM standards.

By starting early, we inspire children to become lifelong problem solvers and STEM learners

65% of surveyed scientists and graduate students reported that their interest in science began before middle school.

Help teachers introduce innovative engineering practices to their classroom

73% of elementary teachers do not feel adequately prepared to teach engineering

1% of elementary science teachers had at least one college course in engineering

Break stereotypes

57% of children think engineering is more for boys

Girls are twice as likely as boys to say they aren’t good at STEM subjects

Girls are much more likely than boys to choose negative words to describe engineering, such as difficult, messy/dirty, or boring

Provide equitable learning experiences for all learners

14.9% Women are under-represented: Engineering has the lowest percentage of females in science & engineering occupational fields

African Americans and Hispanics are under-represented:

3.7% African Americans in STEM-related occupations

6.6% Hispanics in STEM-related occupations

Create new paths and possibilities for children as they discover who engineers are and that they can be one too!

Through engineering we challenge these misconceptions:

- Engineering is only for the ‘smart kids’ in class
- Engineering is for boys
- Engineers build things
- Engineers sit at a computer all day
- Engineering is not collaborative
Inspire hands-on engineering in today’s classroom

EiE was designed specifically to make engineering more accessible, to create a problem-solving mindset, and to encourage young learners to become critical thinkers.

BUILD HABITS OF MIND
EiE develops positive problem-solving and critical-thinking strategies. These essential skills can change the way students and teachers approach challenges in all subject areas.

MAKE ENGINEERING ACCESSIBLE
We designed EiE to be inclusive, from the units’ varied geographical story settings to the extensive resources for diverse learners, regardless of background or prior knowledge. Our curricula build in time for material and concept exploration to level the playing field and give equal access to all learners. We break down stereotypes about who can engineer and help all children find their inner engineer.

ENGAGE LEARNERS IN SCIENCE AND ENGINEERING
Our units tap into children’s natural curiosity about how the world around them works, inspiring them to think creatively, innovate, and work collaboratively to solve problems they can relate to their own lives. Each unit aligns to a commonly taught science topic, so students can deepen their understanding and see the real-world applications of science knowledge.
An age-appropriate engineering design process guides student learning

By anchoring our curricula with the engineering design process (EDP), we help educators develop lifelong STEM learners. Children develop and practice 21st century skills like teamwork and perseverance as they work through the steps of our age-appropriate EDPs. They learn critical thinking, the value of failure, and the validity of multiple approaches and solutions.

PRESCHOOL/PRE-K 3 STEP

Our unique, simplified EDP is specifically created for preschoolers. By following its three steps young children learn not only how to solve problems, but how to reflect on the process and improve their designs.

ELEMENTARY 5 STEP

The foundational 5-step EDP guides elementary students through structured problem solving. The cyclical nature of the EDP encourages them to continually reflect and improve upon their solutions.

MIDDLE SCHOOL 8 STEP

As our learners grow, so does the EDP. The 8-step EDP encourages middle school learners to expand their thinking as they investigate problems, evaluate test results, and present their findings to their peers.
Two hands-on units align to kindergarten engineering performance expectations and allow for cross-curricular experiences, preparing children for the future.

- Uses EiE’s foundational 5-step EDP to guide young learners through engaging hands-on STEM challenges.
- Engages kindergarteners with fun, relevant activities designed just for them while helping educators meet NGSS science and engineering standards.
- Inspires young learners to practice the 21st century skills they are already developing in social, emotional, physical, cognitive, and language domains.

Ten hands-on units, designed for afterschool and out-of-school settings, challenge learners to solve meaningful, real-world problems and build confidence with engineering.

- Shows learners how to solve problems using a 5-step EDP as they explore the role engineering plays in the world around them.
- Builds 21st century skills as students learn to solve problems and collaborate, communicate, and share their solutions with peers.

Create a Generation of Problem Solvers

ENGINEERING PRESCHOOL TO 8TH GRADE
Two hands-on units align to kindergarten engineering performance expectations and allow for cross-curricular experiences, preparing children for the future.

- Uses EiE’s foundational 5-step EDP to guide young learners through engaging hands-on STEM challenges.
- Engages kindergarteners with fun, relevant activities designed just for them while helping educators meet NGSS science and engineering standards.
- Inspires young learners to practice the 21st century skills they are already developing in social, emotional, physical, cognitive, and language domains.

Ten hands-on units, designed for afterschool and out-of-school settings challenge learners to solve meaningful, real-world problems and build confidence with engineering.

- Shows learners how to solve problems using a 5-step EDP as they explore the role engineering plays in the world around them.
- Builds 21st century skills as students learn to solve problems and collaborate, communicate, and share their solutions with peers.

Twelve engaging units set in real-world contexts with engaging, learner-centered engineering challenges.

- Empowers learners to become more effective problem solvers as they work through the steps of our age-appropriate, 8-step EDP.
- Sharpens 21st century skills like critical thinking, teamwork, and communication, preparing learners for success in school and life.

Twenty teacher-tested engineering units, aligned to NGSS and state standards, build a strong foundation for STEM learning.

- Motivates young learners to solve problems following EiE’s proven, 5-step EDP.
- Deepens learners’ science knowledge and allows for cross-curricular connections in ELA and Social Studies.
- Reaches all students to engage them in ways that align with their learning style. So all students—including English learners, students who receive special education services, and those who have not flourished in traditional academic settings—can thrive.
Empower innovation in the classroom.

Build skills, knowledge, and confidence in our learner-centered workshops.

You and your team learn the skills you need to foster student-centered, inquiry-based learning, while enhancing your knowledge of engineering content.

TEACHER TRAINING
During these 1- to 2-day on-site workshops, educators experience an EiE unit through the lens of a teacher and a learner, and take time to discuss implementation strategies. Teachers, especially those who have never taught science or engineering, leave our workshops feeling confident and ready to lead open-ended engineering design challenges.

ONLINE PROFESSIONAL DEVELOPMENT
Interactive and on-demand, our online PD consists of webinars and other learning experiences. During these experiences, educators explore tips and develop skills necessary for running a learner-centered classroom. Educators will take a deep dive into our curriculum, learning the pedagogy, structures and student supports, along with effective questioning strategies and materials management, that will help them successfully implement engineering into their classrooms.

TRAIN-THE-TRAINER
Prepare your coaches, facilitators, and administrators to confidently run engineering professional development workshops for your educators. In our 3-day train-the-trainer workshops, we guide educators through two EiE units and encourage participants to alternate between three roles: student, teacher, and teacher educator. This pedagogical approach prompts educators to think more deeply about effective implementation strategies and helps familiarize educators with how EiE is structured and our recommended teaching approach.

CUSTOMIZED PROFESSIONAL DEVELOPMENT
We come to you. We facilitate workshops tailored to your specific needs.
Support for today’s hands-on engineering.

STANDARDS ALIGNMENT
Understand how EiE connects to NGSS and state standards to inform classroom instruction.

LESSON EXTENSIONS
Lesson extensions, literacy resources, and science resources help teachers make robust connections between engineering and other subject areas.

ASSESSMENTS
Evaluate student understanding of engineering and technology before and after learning with EiE assessments.

VIDEO LIBRARY
An extensive digital library shows best teaching practices in action, helps teachers understand the pedagogy, and supports teaching engineering in the elementary classroom.
An NSF-funded efficacy study shows improved science and engineering learning outcomes with EiE

At the Museum of Science, we develop our curricula based on research that tells us how children learn and how to create effective engineering and STEM instruction that captures the minds of young learners.

**BIG GAINS IN SCIENCE AND ENGINEERING**

In a comparison of pre- and post-tests, the mean engineering score for over 5,000 EiE students showed

- A 7.8 gain in science
- A 8.1 gain in engineering

**EXTENSIVE TESTING SHOWS EiE WORKS**

- In the first efficacy study ever conducted on an elementary engineering curriculum, researchers worked with teachers in 604 grade 3-5 classrooms in Maryland, Massachusetts, and North Carolina, and gathered data from more than 14,000 students over a two years.
- The study consisted of 4 units taught over 630 hours of instruction with over 120,000 pre- and post- assessments used to measure growth.

**EiE REACHES ALL LEARNERS**

- The study looked at the effects of 26 different variables, including whether or not a student was: female, black, Hispanic, from a home in which no English is spoken, or on an Individualized Educational Program.
- The students and classrooms studied covered a cross-section of schools differing in types of municipalities, racial diversity, and socioeconomics.
- Nearly 74 percent of the schools studied were Title I eligible.

**BIG IMPACT AFTER ONLY A SHORT TIME**

After only 8-10 hours of instruction, EiE improved learning outcomes for all kids—regardless of demographic subgroup.
Research shows EiE improves both teaching and learning

- EiE improves engineering and science learning outcomes and promotes interest in science and engineering careers.*
- EiE improves attitudes and interests about the value of science and engineering for all children, but particularly girls.†
- EiE breaks stereotypes, as girls using EiE do just as well as boys.‡
- Teachers find that EiE develops 21st century skills such as collaboration, creativity, and problem solving.||
- EiE addresses students’ misconceptions about engineering and technology, helping them gain a more accurate, standards-based understanding..§
- Populations that are underrepresented in engineering (girls, African Americans, English learners, students with IEPs) learn engineering better when using EiE.‖
- Teachers who experience EiE’s professional development feel more prepared to teach engineering, technology, and problem solving.¶
Create a Generation of Problem Solvers

EiE is an award-winning program of the Museum of Science, Boston. Our research-based, hands-on engineering curricula (PreK-8) introduce learners to the engineering design process and create a generation of problem solvers. We design our engineering curricular materials, resources, and teacher professional development to best innovate for the reality of today’s educational landscape. EiE engages all learners and empowers students and educators to discover their inner engineer.

Visit eie.org for more information

“WHY ENGINEERING?” SOURCES:

RESEARCH SOURCES:
‡ Exploring the Efficacy of Engineering is Elementary (E4), NSF #1220305
|| EiE professional development and curriculum evaluation surveys (various).