

# Engineering Messages and More

DiscoverE's *Messages Matter* and *Despite the Odds* research shows that **appealing messages** combined with **role models** and **doing hands-on activities** are the keys to building a student's engineering identity.



## Today's students':

- Don't know what engineering is.
- Think they aren't smart enough to be an engineer.
- Don't like math and believe engineering requires a lot of math.
- Believes everyone needs a four-year degree to work in the engineering field.

## Let's change this! Here's your roadmap.

### 1 Talk About Engineering!

When we change how we talk about engineering, we can change what students think about engineering. Embed these messages into your outreach and teaching to increase your students' interest.

- **Engineering Is Open to Everyone.**

Engineering teams are made up of several different positions—specialists and technicians with associate degrees to engineers and technologists with bachelor's degrees—that work collaboratively to invent, design, and create things that matter.

- **Earn a Big Salary.**

Engineers, technicians, and technologists earn a lot of respect and a lot of money! Even the starting salary for entry-level jobs is impressive. Engineering is your path to financial freedom.

- **Make a Difference.**

Everywhere you look you'll see examples of engineering having a positive effect on everyday life. Cars are safer, sound systems deliver better acoustics, medical tests are more accurate, and computers and cell phones are a lot more fun! You'll be giving back to your community.

- **Be a Creative Problem Solver.**

Engineering is a great outlet for the imagination—the perfect field for independent thinkers. Creative problem-solving will take you into uncharted territory. Be prepared to be fascinated and to have your talents stretched in ways you never expected.

- **Work in Teams.**

Engineering takes teamwork, and engineers work with all kinds of people inside and outside the field. Whether they're designers or architects, doctors or entrepreneurs, engineers are surrounded by smart, inspiring people.

And finally, don't speak about **"being good at science and math"** as the first or main requirement to work in engineering. Instead, speak about how everyone must work hard at science and math at some point and that learning to learn is as valuable, if not more valuable, than being or feeling "naturally" good at it.

[Learn more about embedding engineering messages in your outreach or teaching.](#)

## 2 Do Hands-On Engineering Activities

When students undertake authentic, real-world challenges structured around the engineering design process, they are building their confidence in their ability to do engineering. Activities like these also provide you with an opportunity to share how engineers approach a problem and make connections to your engineering projects and impact.

- Explore DiscoverE's [Engineering Activity Library](#)
- Download DiscoverE's [Facilitation Tips E-book](#)



### 3 Role Models Matter: Bringing Engineers & Students Together

A role model plays a critical role in helping a child build their STEM identity as they can increase a student's sense of belonging and build their confidence. Role models also represent what's possible and give kids a chance to think about their future and who they want to be<sup>2</sup>.



Being a role model really is as simple as being yourself. Your willingness to share your enthusiasm, knowledge, and time will be recognized and appreciated.

- [Learn More About Being a Role Model](#)
- [Setting Up a Visit to a Classroom or Afterschool \(for STEM Volunteers\)](#)
- [Inviting an Engineer into your Classroom or Afterschool \(for Educators\)](#)

### 4 Create Inclusive Engineering Experiences

Welcoming environments where students feel like they belong is vital. Five quick tips:

- **Involve Everyone.** Look for opportunities to talk to the quiet or hesitant students. A great time is when students are working on their projects, and you can ask questions about their ideas and designs.
- **Be Curious and Respectful.** Every child has different perspectives and experiences. As you are asking questions and listening, find ways to acknowledge and validate them by providing constructive, specific, and encouraging feedback.
- **Acknowledge Achievements.** Kids are experts in identifying and ignoring obvious cheerleading. Meaningful feedback that recognizes their effort and ideas, helps to build a connection and their engineering confidence.
- **Be Aware of Hidden Struggles.** Kids are masterful at hiding their differences and struggles. No one wants to be in the spotlight for something that indicates they are not part of the crowd. Whether it's a hidden disability or they are struggling with an academic concept, it's important to remember that we're experiencing things differently.
- **Be Student Centered.** Resist the urge to fix a team's design or give them specific instructions on how to get the right answer. When students drive their learning, they are more motivated and engaged.

Visit [DiscoverE.org/Messages-Matter](https://www.discovere.org/messages-matter) for more information.

<sup>2</sup> Shin, Jiyun; Levy, Sheri; London, Bonita. "Effects of role model exposure on STEM and non-STEM student engagement". 2016/07/01. Journal of Applied Social Psychology.