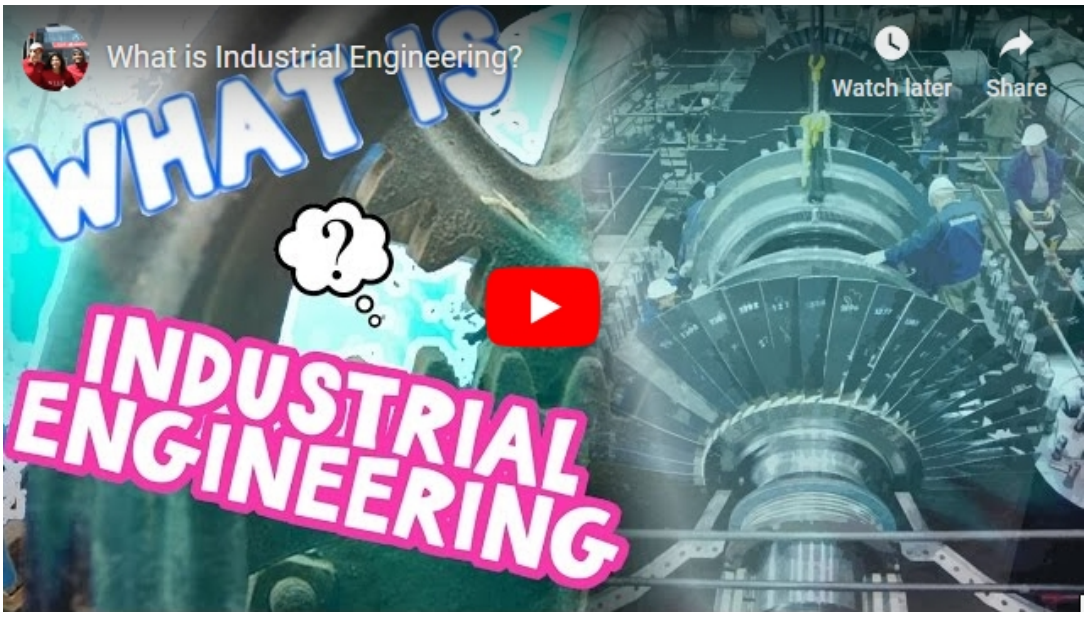
In this issue:

- **Discover the world of an Industrial Engineer**
- **Learn more about a Growth Mindset**
- **Check out our SWENext and Northrup Grumman Community Award recipients**
- **SWENext Club Corner**
- **The latest SWENext Social Media Challenge**
- **Connect with us on social media**

What is Industrial Engineering?



Many of you may be wondering what exactly is Industrial Engineering. The job of an Industrial Engineer is to study a process or system and improve that process. This field requires you to be able to look at the "big picture" and make decisions based on a wide variety of factors. Because of this, it's also important that Industrial Engineers have a good grasp on business and finance to help optimize their processes. Industrial Engineers can find jobs in many different fields because it's a very broad subject applicable to many technologies. To learn about Industrial Engineering you can **visit here**, watch the video above or **read more here**.

A Day in the Life of an Industrial Engineer

Meet Becca Lasky, a Human Factors Engineer for Bombardier Transportation. Find out how she got there, the types of projects she's working on, and how you can #BeThatEngineer on SWE's ***All Together*** Blog.

More advice from an Industrial Engineer

Jessica Rannow, **past president of the Society of Women Engineers (SWE)** and an Industrial Engineer, tells how she learned about engineering.

"I learned about engineering when I was a Junior in high school. At a business camp over the summer, I noticed that most of the CEOs that talked to us had engineering degrees. I didn't know what an engineer was so I looked it up at the library (this was before the internet!) and found out that Industrial Engineering sounded like a combination of business and engineering. I liked that a lot of Industrial Engineers did consulting and got to solve big business problems. I had done a lot of hands-on things growing up with my Dad like fixing bikes so I thought it would also allow me to do some of that.

I went to the University of Wisconsin-Madison. I grew up in Wisconsin so it was the logical choice with in-state tuition. It turned out to be a great choice for me and I'm a Badger for life!

I joined SWE right away as a freshman which was one of the best decisions I've made. SWE gave me an upperclassman mentor who showed me how to buy books and where my classes were before school even started! As I progressed through my first semester, I wasn't getting the straight A's I was used to in high school. The upperclassmen SWE members told me it was normal to get a B or C on a calculus test and that it wasn't the end of the world. Those upperclassmen mentors encouraged me to stick with the classes and with engineering. As I progressed through school, I was able to offer that same advice to incoming freshmen who also doubted their abilities.

When you are in college, take advantage of all the offerings that you can that interest you: internships, co-ops, study abroad, research, student organizations. College is the only time you can really explore lots of options. It gets harder once you are in the working world. So go for it! And join SWE when you get to college!"

Growth Mindset

The theme of looking at the "bigger picture" doesn't only apply to Industrial Engineering. This is a skill that all of us can use no matter what field we work in. A good way to do this is to develop a Growth Mindset. In a Growth Mindset, people believe that their most basic abilities can be developed through dedication and hard work—brains and talent are just the starting point. This view creates a love of learning and a resilience that is essential for great accomplishment.

Over 30 years ago, Dr. Carol Dweck and her colleagues became interested in students' attitudes about failure. They noticed that some students rebounded while other students seemed devastated by even the smallest setbacks. After studying the behavior of thousands of children, Dr. Dweck coined the terms "Fixed Mindset" and "Growth Mindset" to describe the underlying beliefs people have about learning and intelligence. When students believe they can get smarter, they understand that effort makes them stronger. Therefore they put in extra time and effort, and that leads to higher achievement.

Putting in extra time and effort also applies to determining our passions, deciding where we want to end up, and making decisions now that help us achieve that end goal. Without goals, it is easy to become stagnant. We can get comfortable with our current situation and miss out on challenges and opportunities that could take us places we never expected. It's important to remember that setbacks are not showstoppers. As we work towards our goals, we should try to view failures as learning experiences. This can also help narrow down goals to make them more achievable.

Do you have a Growth Mindset? **Take the Mindset Assessment** to learn more about your mindset.

Girl Scouts and engineering

Are you a Girl Scout who is also interested in learning more about engineering? There are many opportunities for Girl Scouts to earn STEM related badges. They range in topics from robotics to coding and other science fields. If you're interested in earning any of them you can check out the **Girl Scout award page** to get more information!

Congratulations to the SWENext Global Innovator Award recipients!

Congratulations to the five SWENexters who were honored with the **SWENext Global Innovator Award** at the WE18 annual conference in Minneapolis in October!

These future engineers and computer scientists were honored for their pursuits of engineering projects, their understanding of engineering principles, their roles in inspiring young girls to pursue engineering, and their contributions to the communities they live in.

Watch their submission videos and be inspired! You could be the next award recipient.

- Swathi Parthibha, senior, Middlesex County Academy, New Jersey; **Swathi's submission video**
- Jothi Ramaswamy, senior, Lakeland High School, New York; **Jothi's submission video**
- Anushka Saran, junior, Plano Senior High School, Texas; **Anushka's submission video**
- Sanjana Shah, senior, Monta Vista High School, California; **Sanjana's submission video**
- Kate Stack, junior, Glenbrook South High School, Illinois; **Kate's submission video**

Congratulations to the Northrup Grumman Community Award recipients!

Congratulations to the nine freshmen and sophomore SWENexters who were honored with the Northrup Grumman Community Award at WE18 in Minneapolis in October!

Julia Garland, sophomore, Lake Elmo MN
Holly Mastromonica, sophomore, Monmouth Junction NJ
Izabella Pollett, freshman, Tulsa OK
Sriya Mantena, sophomore, Cary NC
Kaavya Raamkumar, freshman, San Diego CA
Gabrielle Muniz, sophomore, Smithville TX
Saraswati Sridhar, sophomore, Mayaguez PR
Aneet Mangat, freshman, Castro Valley CA
Radhika Damle, freshman, Rochester MN

These future engineers each designed a poster that described their STEM-based solution to the problem of stopping Asian carp from progressing further up the Mississippi River and into Minnesota's other waterways. Then, they got to present their posters at the Invent it. Build it. Expo on October 20.

Check out photos from Invent it. Build it here.

Great job, ladies, in showing how to #BeThatEngineer!

See more pictures on the **High School SWENexter Facebook group page.**

SWENext Clubs Corner

Congratulations to the **Patrick Henry High School SWENext Club** in San Diego California! They won the **2018 SWENext Club Challenge**.

The challenge was to design a poster that shows how a woman engineer broke boundaries in one of these engineering disciplines: Chemical, Civil, Electrical, or Mechanical Engineering.

Then, the club had to create a short demonstration that incorporated that type of engineering and would be engaging for middle school students. The demo also needed to be exciting, hands-on, and have clear learning objectives. It had to be the same engineering discipline as the woman engineer they choose to feature in the poster.

Finally, the club had to submit a video that gave a brief overview of their club, information on the woman engineer they chose to feature in their poster, and showed the engineering demo along with what the middle school students would learn from it.

The winning club chose Stephanie Kwolek, the inventor of Kevlar, as their featured woman engineer who broke boundaries. Ms. Kwolek worked as a Chemical Engineer, so the demonstration they created used chemical engineering principles.

You can watch their submission video here.

The prize for winning the Club Challenge included a trip to the WE18 annual conference in Minneapolis, Minnesota for three club members, where they demonstrated their hands-on activity.

Congratulations to Uyen Nhi Nguyen, Maya Rozenshteyn, and Sarah Kosic! Special thanks to SWE Fellow Debra Kimberling, who is the SWE Member Advisor for the club.

How to start a SWENext Club

Many of you may be wondering how you can start a SWENext Club in your area, and we want to make that easy for you. Check out **SWENext Clubs 101** to learn more.

To register a SWENext Club, you must have a SWE member as an advisor. Your teacher can serve as an advisor by joining SWE for a reduced rate as an **Educator Member**. Or find your **local SWE section** to contact SWE members near you.

Questions about SWENext Clubs? Contact us at **swenextclubs@gmail.com**.

Contribute to SWENext Newsletter!

Want to contribute to the SWENext Newsletter? If you've got an interesting story you want to share, you can write an article as a guest reporter! Just contact us with your idea at **swenext@swe.org**.

SWENext Social Media Challenge with a chance to win a gift card!

Since Thanksgiving is in November, this month we're challenging you to think of something an engineer invented that you are thankful for and saves you time every day.

An example of a time saving device is an Instant Pot pressure cooker. The Instant Pot can cook rice, beans, or other food under pressure faster than you normally could on the stove.

Take a picture of your favorite device, tool, or other item and share it with us! Make sure to tell us why it helps you save time.

Post it by December 4 on our closed **High School SWENexter Facebook group page**. Don't forget to use #BeThatEngineer. The winning SWENexter will be selected by random from all entries and will win a $25 Amazon gift card.

Connect with SWENext on social media!

Subscribe at **SWENext YouTube Channel** to make sure you don't miss any new upcoming videos. **Like us on Facebook** and **follow us on Twitter**.

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