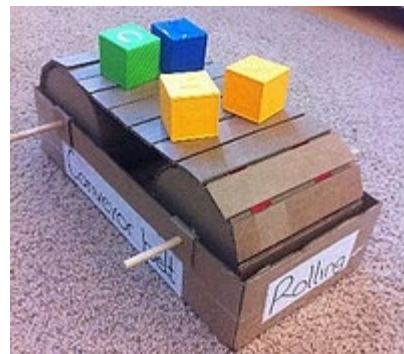


SWENextEd Newsletter - April 2019

Welcome to the April 2019, Issue 1 of SWENextEd. In this issue, we highlight **Manufacturing Engineering**. Manufacturing engineers help their communities by focusing on the design and operation of integrated systems to produce all sorts of products. We provide activities to incorporate into your lesson plans that get your students thinking like a manufacturing engineer, and we introduce you to Madam C.J. Walker and her manufacturing business. In this newsletter, we also share educator member Deborah Calhoun's story and share actionable tips for you to help increase female representation in the manufacturing industry. Read on to learn more about the various resources available to K-12 educator members! Get in on the conversation and **join our SWENextEd Facebook page** to participate in engaging discussions and receive tips for the classroom, resources for educators and more!

Manufacture a New Lesson Plan

Demonstrate the design step of the manufacturing process by having your middle school students create the **coating for a pill** to withstand a simulated digestive system. If your students just can't get enough about manufacturing engineering, try out a **three-day manufacturing lesson plan** where students learn the history of manufacturing engineering and design a plan for a driverless car. Help your high school students learn how to move material around factories by designing and building a **conveyor belt system**. Give your students more range to be creative by allowing them to employ the engineering design process to **design a product** and present to their classmates or at an expo.



"Women of Steel"

Sarah Breedlove, later [Madam C.J. Walker](#), was born in 1867 to a family of sharecroppers on the Louisiana cotton plantation where her parents were enslaved just two years prior. A child of cruel farm labor, an orphan at age 7 and an abuse victim by age 14, Madam Walker defied all odds and launched herself into a life of self-made success.



During the 1890's, Walker suffered from a scalp condition that resulted in the loss of her hair. This personal ailment inspired her to experiment with many home remedies and ultimately led to the founding of Madam C.J. Walker Manufacturing Company in 1910. Traveling the country to educate women on the use of her "Wonderful Hair Grower," Madam C.J. Walker worked tirelessly to transform her ideas into a profitable business. Soon her cosmetics company expanded to include a factory, salon, beauty school and even a research lab.

"I am a woman who came from the cotton fields of the South...I have built my own factory on my own ground." –Madam C.J. Walker, 1912

As word of Walker's company spread, it became a symbol of African American female empowerment across the country. Madam Walker insisted that many of her employees were women and began training "Walker Agents," female sales beauticians who became synonymous with Walker's mission of "cleanliness and loveliness" to help advance African American status. In 1917, she convened one of the first national gatherings of female entrepreneurs to both celebrate her employee's successes and encourage political activism.

Today, Walker is remembered as one of the first American women to become a self-made millionaire and a tenacious symbol of African American advocacy. In honor of Black History Month, SWE celebrates Madam C.J. Walker and the many African Americans who embrace her empowering philosophy. [Read about more prominent African American women in engineering here.](#)

Educator Spotlight: Deborah Calhoun

"When it comes to the students, you don't say 'this is not my job'"

SWE Educator Member, Deborah Calhoun, M. Ed, has been inspiring students to pursue STEM for over three decades! She currently teaches freshman biology at [Pike High School](#), in Indianapolis, IN, and



serves her school's community as the Science and Engineering Academy Leader. Deborah embraces career readiness in her classroom by hosting an in-class career expo and she takes every avenue presented to her to bring opportunities to her students. She advises teachers to keep their "eyes, ears and mind open to what the students are saying" in order to become a better teacher. Learn more about Deborah's classroom and extracurricular initiatives and get more expert tips by reading the full article on SWE's All Together Blog!



Women in the Manufacturing Engineering Fields (Social Research)

While we have made great strides in improving the number of women in STEM fields, in certain industries, the percentage of women is still quite low. For example, in 2017, women only made up **27% of the workforce** in manufacturing. As you can read in **SWE's research update** from the end of 2018, Industrial/Manufacturing/Systems engineering is one of the top ten engineering degrees women received in the 2016-2017 school year, yet **women make up less than 1/3rd of the manufacturing workforce**. This **article from Redshift by Autodesk** gives us three actionable strategies to get more women in manufacturing. As educators, it is important to provide **positive reinforcement** when students are taking on challenging STEM topics. Involving the community to provide role models can also transform your students' perceptions of manufacturing engineering. Look to the Women in Manufacturing organization to find women to feature in your lesson plans. By doing this, we help combat the industry perceptions that only men are able to be successful in manufacturing careers.



Be part of the SWE Community

SWE values educators as integral to attracting and engaging the next generation of engineers. SWE **Educator Membership** is only \$20/year. Benefits

include access to role models, networks, magazines, training, grants, news and events. Both men and women are welcome.



Your students can also be a part of SWE. K-12 students can join SWENext for free. [SWENexters](#) receive a monthly newsletter with cool projects, contests, SWE goodies, advice from women engineers, scholarships, events and more.

A horizontal banner with a yellow and green striped top border. Below the stripes is a light gray bar containing social media icons for Facebook, Twitter, LinkedIn, YouTube, Instagram, YouTube, and Google+. The bottom section of the banner is dark purple and contains the following elements from left to right: the "swe NEXT" logo, the text "Visit our newsletter page. Join the [SWENextEd Facebook Group](#)", and the "swe" logo with a gear icon.