



SWENextEd Newsletter - March 2020

Welcome to the March 2020 issue of SWENextEd Newsletter. In this issue, we highlight **Electrical Engineering**. Electrical engineers help their communities by working with electrical components ranging from small microchips to large power station generators. We provide activities to incorporate into your lesson plans that get your students thinking like an electrical engineer, and we introduce you to Hertha Ayrton and her work to understand the electric arc. In this newsletter, we also share resources you can reference in class to complement your textbooks to encourage female students' interest in and understanding of science topics. 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!

Hertha Ayrton and The Electric Arc

In 1899, **Hertha Ayrton** became the first female to ever read her own paper at an Institute of Electrical Engineers (IEE) convention. Soon, she would be elected as the first female member of IEE. Ayrton's work contributed a great understanding to the world of electricity and lighting. Most notably, she studied the electric arc, a flow of electrons generated in air between two electrode rods. This technology was commonly used in lighting at the time but had complications with flickering and hissing. Ayrton unearthed the cause of these complications in her paper, "The



Hissing of the Electric Arc," and continued her prolific scientific journey with many more publications and 26 patents. Her successes led the British Association for the Advancement of Science to allow women to serve on committees, and she would continue on to found the International Federation of University Women in 1919. [Read](#)

[about Hertha Ayrton's journey towards her successes here.](#)

Want to learn about more accomplished women in electrical engineering? Check out this spotlight on [Edith Clarke](#), the first woman to graduate MIT with a master's degree in electrical engineering and the first professionally employed female electrical engineer in the US.



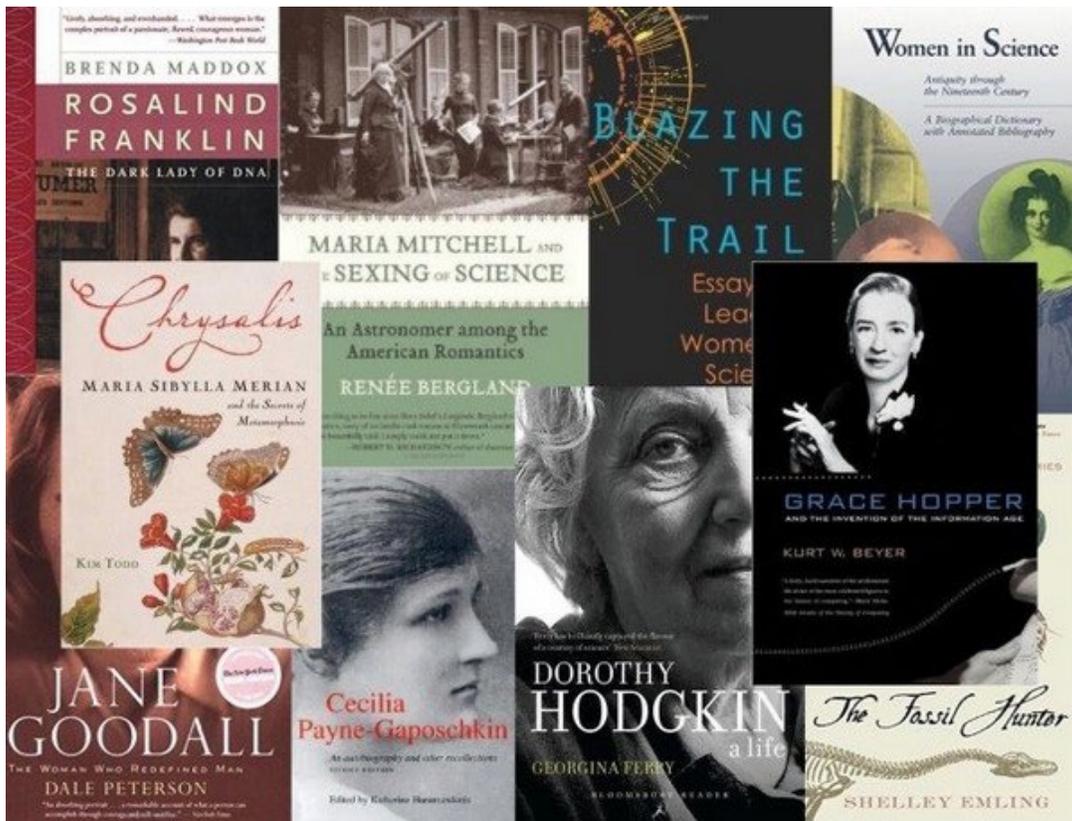
Electrify Your Curriculum



Teach your elementary school students about the breadth of electrical engineering applications by exploring together on [PBS's Building Big](#). Have your students “meet” an MIT electrical engineer who used inspiration from dance to build a software program in this [video](#). Looking for hands-on activities? Investigate circuitry and e-textiles in your middle or high school classroom by challenging your students to create their own [light-up plush toys](#) or [masks](#) with conductive thread and LEDs. Consider making [Play Dough circuits](#) with younger students. Even more interactive circuitry lessons can be found [here!](#)



Sticking to Your Textbook Isn't Enough



Gender representation of scientists in textbooks is a factor in secondary student's performance in science. A [2007 study](#) showed that after completing chemistry lesson with counter-stereotypical images of female scientists to female students, they performed better on a comprehension test than female students who had not seen counter-stereotypical images. Lack of representation also has a negative effect on female students' career aspirations, as demonstrated by a [2019 study](#). Despite the evidence, female representation in science textbooks has remained low. A [2016 study](#) found that science textbooks feature male scientists three times more often than female scientists. To combat this, it is crucial to regularly build in time to feature women and other diverse groups outside of the textbook. If you're looking for inspiration, [check out this reading list](#) of 20 books featuring the stories of women in science.

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