

DISCUSSION GUIDE

INSPIRE!

Three
Insightful
Educational
Videos

clarkson.edu/INSPIRE

A photograph of two young women, one Black and one white, sitting at a table. They are both smiling and looking at a white robot head with red eyes and a red mouth. The robot head is connected to a white cord. The woman on the left is holding a red object. The woman on the right is holding the robot head. The background is a blurred indoor setting.

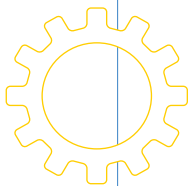
INSPIRE!

2

Engineering remains one of the undergraduate majors with the [smallest percentage of women](#) in the United States. The [percentage of women engineers](#) in the workplace is even smaller. *Inspire!* is a collection of three educational videos with an accompanying discussion guide that will empower middle school and early high school girls with the tools to overcome obstacles facing girls and women in STEM fields, such as a lack of confidence and discouragement from others. One of the videos, *Educate! What is an Engineer? Perspectives of Trailblazing Women Engineers*, would be appropriate for use with young people regardless of their gender identification.

Each video features inspiring, real stories told by accomplished women engineers that contextualize and examine hurdles that girls and young women may face in the engineering field and offer strategies to overcome those hurdles. As we hear these stories, we see trailblazing women engineers serving as mentors and role models for the next generation of girls, who embrace the excitement of an engineering education within the context of a STEAM summer camp at Clarkson University, a nationally recognized technological university with locations in Potsdam, Schenectady and Beacon, New York.

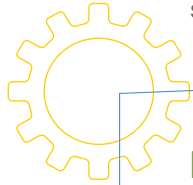
The videos can be used together or individually. The following discussion guide is for teachers, guidance counselors, Scout leaders, parents and others to use with middle school and early high school students.



ENCOURAGE!

Leading Women Engineers Encourage the Next Generation

Leading women engineers encourage girls to do what they love, defy stereotypes, push through setbacks and pursue engineering. (4:40 minutes)



Prior to Viewing

- **What is a stereotype? Do stereotypes exist in today's world? If so, what are some of them?**

According to the American Association of University Women's report, [*Solving the Equation: The Variables for Women's Success in Engineering and Computing*](#) (2015), "[a] stereotype is an association of specific characteristics with a group ... Stereotypes can be descriptive (what women and men are like) or prescriptive (what women and men should be like)." (37)

- **Do stereotypes have an impact on our lives?**

According to [*Solving the Equation*](#), stereotypes "can lead to biased behavior or discrimination when we view members of a group based on their group status rather than as individuals." In particular, "[g]ender stereotypes tend to place greater social value on men and evaluate men's competence as greater than women's." (37)

- **Have you ever tried something and failed? Did you learn anything from the experience or did anything good come out of it?**

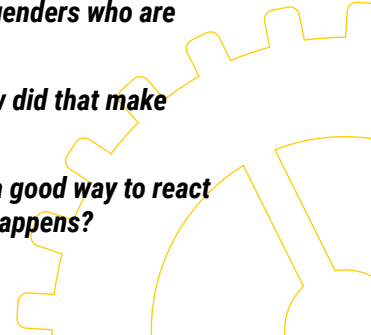
Post Viewing

Now that you've seen the video:

- **Do you think that stereotypes limit our dreams? Do you think that there are stereotypes in engineering? How do you think they might affect you? If you come across any stereotypes that might affect you, how might you deal with them? Do you think we're making progress in changing these stereotypes?**
- **How does diversity create a better engineer or product?**
- **Why would creativity be an integral part of engineering?**
- **Does trying but not being successful or failing have value? How? How can a mistake help you to learn?**

Self-Reflection and Moving Forward

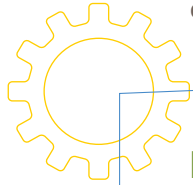
- **What experiences have you had that built your confidence and made you believe you could be successful in anything you tried?**
- **What are some of the ways you could be better supported as a girl or gender-nonconforming young person interested in science and/or math? Do you think that people have the same expectations for young people of different genders who are interested in science and/or math?**
- **Have you ever been teased because you like science or math? How did that make you feel? What can you say in response?**
- **Have you ever been called a nerd or a geek? What do you think is a good way to react to that? Who do you have in your life to turn to for support if this happens?**



MOTIVATE!!

Motivational Messages From Accomplished Women Engineers

Accomplished women engineers inspire young women and give them advice about their future careers and lives. (3:39 minutes)



Prior to Viewing

- ***Has anyone ever given you advice? Did you listen to it? Why?***
- ***Who would you go to for career advice? Why would you select that person?***

Post Viewing

Now that you've seen the video:

- ***Which message or piece of advice was the most meaningful to you? Why?***
- ***Career choices are hard to make. What should you consider as you think about career possibilities?***
- ***Why is having your voice heard important?***
- ***Why is asking questions important?***

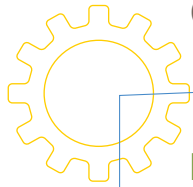
Self-Reflection and Moving Forward

- ***What advice would you give yourself if you are interested in engineering as a career?***
- ***What can you do if you find out that the career path or college major you are thinking about seems hard, boring, disappointing or not what you thought? Why?***
- ***Even though it can be hard to talk about your strengths or feel like you're bragging about yourself, it's important to own your strengths so that you can make good choices that really reflect who you are and what you care about. What are your strengths? What is one strength you have that might make you a successful engineer?***



What is an Engineer? Perspectives of Trailblazing Women Engineers

Trailblazing women engineers explain what engineering is and debunk myths about the field.
(3:55 minutes)



Prior to Viewing

- ***What do you think of when you hear the word engineer?***
- ***What do you think engineers do?***
- ***Do you know any engineers? Are any of them women?***

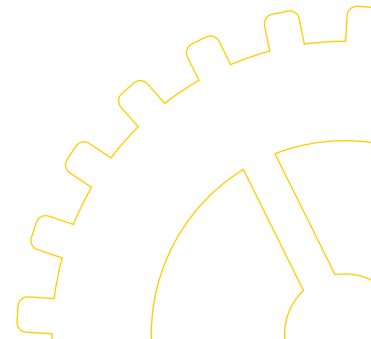
Post Viewing

Now that you've seen the video:

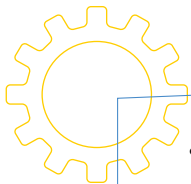
- ***How would you answer the question: what do you think engineers do?***
- ***What kinds of skills do you think engineers need?***
- ***How do you think engineers solve problems?***
- ***What makes a good or effective engineering team? Why?***
- ***Were you surprised by any of the jobs that engineers do? Which ones did you find particularly interesting or want to know more about?***

Self-Reflection and Moving Forward

- ***Can you see yourself choosing engineering as a career? What types of engineering can you imagine being interested in?***
- ***What kind of information or support do you think you would need if you're interested in exploring engineering as a career?***
Some possibilities include:
 - Courses you'd need to take.
 - Special clubs [Robotics, Girls Who Code, etc.].
 - Opportunities to meet engineers or do job shadowing.
- ***Is any of the advice that the engineers gave useful even if you're not interested in pursuing a career in engineering? Give some examples. What advice would you give a friend who is considering becoming an engineer?***



FREQUENTLY ASKED QUESTIONS



- **What's the best way to use the videos?**

Your class or club schedule and plans will inform the best way for you to use the videos. You can use just one video, two videos or all three. No matter how many you use, we suggest that you show them one at a time: review the pre-viewing discussion questions, show the video and then continue the discussion using the post-viewing questions.

We strongly suggest that you provide time for discussion; the videos were designed to address why young women might not pursue or struggle with their pursuit of a STEM career. The issues raised here may resonate with your students, and others may surface given enough time and space.

- **Could I use the videos with high school juniors and seniors?**

Yes! Educators can use the videos with the student audience of their choosing. The videos were created with a middle school and 9th- and 10th-grade audience in mind. Our short documentary (19:18 minutes), *Trailblazers: The Untold Stories of Six Women Engineers*, which received an Award of Merit in The Impact DOCS Awards Competition, would be appropriate to use with older high school students.



Trailblazers provides an overview of the project. It tells the stories of six trailblazing women engineers (the same women who are featured in the educational videos) as they share their experiences overcoming obstacles and paving the way for the next generation. We have not included discussion questions for *Trailblazers* but believe that the questions above could be adapted for teachers, or student leaders, to use with our documentary.

- **Would these videos benefit young men or young people who are gender-nonconforming?**

All three of the videos would be beneficial for young people regardless of gender identification. One of the videos in particular, *Educate! What is an Engineer? Perspectives of Trailblazing Women Engineers*, would be useful for all young people. That video is designed to introduce young people to engineering; that introduction just happens to showcase the perspectives of trailblazing women engineers and girls.

- **Can I use the videos for non-school groups like Scouts?**

Absolutely! The videos would be great for Scout leaders to use with their scouts, as well as for parents to use with their children.

- **I'm a guidance counselor. Can I use the videos?**

Definitely! The video, *Educate! What is an Engineer? Perspectives of Trailblazing Women Engineers*, would be especially good for guidance counselors to use with their students. It introduces young people to engineering.

- **Is there a fee for using the videos and materials?**

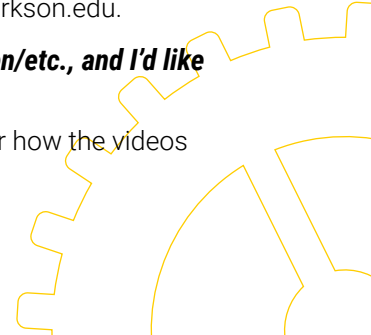
No! They are free. We hope that as many young people as possible benefit from these videos. Spread the word to your colleagues, family and friends!

- **Do I need any special technology to show the videos?**

You don't need to download or install any programs or apps. The videos will be accessible on the [Inspire! page](#) on clarkson.edu.

- **I used the videos with my students/Scouts/children/etc., and I'd like to provide feedback. How can I do that?**

E-mail inspire@clarkson.edu. We would love to hear how the videos worked in your classroom, club or home!



INSPIRE!

About These Videos

The producer of *Inspire!* is Dr. Laura Ettinger, a history professor at Clarkson. The videos are part of her research project, funded by the National Science Foundation, on trailblazing American women in engineering. The director of *Inspire!* is Zac Miller, founder of the independent production company, Uncommon Image Studios. He has produced educational content for Harvard Medical School, the National Science Foundation and the U.S. Department of Transportation. Dr. Mary Margaret Small, educational partnership coordinator at Clarkson's Institute for STEM Education, created the discussion questions, with the assistance of New York State Master Teachers Lisa Dunkelberg and Tonya Lackey. The *Inspire!* videos were filmed during the July 2019 Horizons STEAM camp at Clarkson and would not have been possible without the program's help.

7



HORIZONS
PROGRAM