

Leadership Curriculum

Lesson 2

STEM Role Models

Lesson Overview:

Students will continue the Leadership Curriculum by completing the following steps: 1) examining the career of a STEM role model 2) investigating what it takes to be successful in a STEM field 3) exploring STEM careers 4) researching and writing short profiles of the STEM role models of their choice

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Leadership

Lesson 2 – STEM Role Models

Lesson Overview:

In this lesson students will identify the attributes of successful STEM professionals by examining the backgrounds and careers of STEM role models. Students will also explore the breadth of career opportunities in STEM fields.

Time Frame:

2-4 hours, including time for students to complete independent work

Core Concepts:

- Many successful STEM professionals share similar attributes.
- Identifying STEM role models can inspire and guide your own work in STEM courses and careers.
- A wide variety of jobs and careers are available within STEM fields.

Lesson Objectives:

In this lesson students will:

- Understand what it means to be a STEM professional and identify key attributes of successful STEM pros.
- Explore the breadth of career choices available in STEM fields.
- Recognize ways in which STEM professionals are similar to themselves.

Materials Needed:

- [STEM Role Models slide show](#)
- List of Leadership Skills from Lesson 1 (See slides 2-4 from Leadership Skills slideshow.)

Step 1: Introduce the Lesson

Tell students that in this lesson, they will investigate the attributes and careers of successful STEM professionals, then research, write, and share profiles of the STEM role models of their choice. Explain the value of having career role models — these professionals can inspire students' ideas and goals for their own careers, provide examples of how to achieve success in a STEM field, and motivate students to do their best.

Step 2: Activate Background Knowledge

Ask: *Does anyone already know of a STEM professional whose career path or skills and achievements you hope to emulate? Why is this person a role model for you?* List students' choices on the board, and engage in a class discussion of why these people are role models.

Step 3: Present the STEM Role Models Slide Show

[Slide 1]

Highlight of a STEM Role Model – Maryam Mirzakhani

Present the slide about Maryam Mirzakhani. Then display the *Wired* magazine profile of Mirzakhani and read it aloud as a class, or print the article and make time for students to read it independently or with partners. Post or display the list of leadership qualities from Lesson 1 and ask students to consider, as they read, which qualities Mirzakhani possesses.



Maryam Mirzakhani grew up in Tehran, Iran. Today, she is a professor of mathematics at Stanford University in California. In 2014, Mirzakhani became the first woman to win the Fields Medal, which most people consider the highest honor in mathematics. To learn more about her, and for an excellent example of a profile, read this article about Mirzakhani's life and work.

<http://www.wired.com/2014/08/maryam-mirzakhani-fields-medal/>

Step 4: Think-Pair-Share

Have partners meet briefly to discuss the *Wired* profile, identifying two leadership qualities Mirzakhani possesses and two ways that she is a good model. Then convene the whole class, asking several pairs to share their thoughts.

Step 5: Continue the STEM Role Models Slide Show

[Slide 2]

Researching STEM Role Models

Remind students that learning by example is an excellent way to learn. In fact, many successful STEM professionals emphasize the importance of good role models in helping them succeed. Ask students to complete these steps—in class and/or as homework—to identify and learn more about their own possible STEM role models:

- Investigate one or more prominent professionals in a STEM field. Choose your own subject, or pick someone from the list provided on the slide. Research your subject on the internet and/or at a library.
- Write one or more short profiles of the professional(s) and her/his/their work, focusing on:
 - Contributions to their field(s)
 - Leadership skills and qualities they exemplify
 - The effects their work has had on the world
 - The reasons that you view him/her/them as a role model for your own studies and future career.
- Submit your profile to your teacher.

[Slide 3]

Potential Role Models in STEM

Looking for some inspiration? Check out some amazing STEM professionals by using the website below. Choose one of these people or someone else and using additional websites and/or library resources to complete your research.

- [Famous Engineers](#)
- [Famous Scientists](#)
- [40 Famous Inventors](#)
- [More Famous Inventors](#)
- [Famous Mathematicians](#)
- [NASA People](#)
- [Complete the History Books: Women in STEM](#)
- [Top STEM Professionals of Color](#)
- [10 Black Scientists You Should Know](#)
- [50 Incredible Women in STEM](#)
- [The Untold History of Women in Science and Technology](#)
- [Meet the Women Scientists of TIME 100](#)

Step 5: Share Profiles

When they have submitted their profiles, ask students to share the profiles with the class. You might schedule time for students to read their profiles aloud, scheduling about 4-5 students per read-aloud session. Or, post students' profiles on a classroom bulletin board and schedule a series of Gallery Walks, inviting the class to peruse about 4-5 profiles per Walk. Be sure to schedule enough time for a question-and-answer session and discussion about the profiles presented. In addition to discussing each subject's accomplishments, contributions, and leadership skills, encourage students to identify how each profile added to their knowledge of the breadth of STEM careers. Be sure, also, to add your own questions and feedback to the discussions, and share with students how your role models have inspired you.

Step 6: Take a Survey

Wrap up the lesson by inviting students to respond to the following survey questions. Tally and discuss their responses.

- Based on your investigation into STEM professionals, name someone who you found really inspirational or motivational.
- Do you think that it is important to have role models in STEM? Why or why not?

ADDITIONAL RESOURCES

STEM Role Models in the Media

Students may find it particularly challenging to locate women role models and inspiring stories of women's achievements in STEM fields. While many women leaders in STEM have remained hidden in the shadows of time and culture, some women are gaining recognition through books, podcasts, documentaries, and even the movies! Share these exciting resources with girls (and boys!) who are interested in learning more about women STEM professionals:

[Sisters in Science](#)- This documentary podcast explores the state of science and technology in Tanzania from the perspective of the country's women scientists. Click on the link here to listen to or download the podcast.

[Breakthrough: Portraits of Women in Science](#)- This short documentary anthology was created by Science Friday and Howard Hughes Medical Institute. It highlights women scientists around the world as leaders in their fields. The series is new, so be sure to visit the website again and again for new documentaries.

[Women in Science - 50 Fearless Pioneers Who Changed the World](#)- This fun and beautiful illustrated book contains snap shots of women in STEM throughout history and around the globe.

[The Madame Curie Complex: The Hidden History of Women in Science](#)- In addition to highlighting the many contributions of women in STEM, this book explores the historical context and different methodologies of the women and how their contributions to science have changed their fields, and science as a whole.

[Women in Science - Podcasts](#)- This series, created by the Nuffield Department of Medicine, highlights several contemporary women in STEM. Many are internal scientists within the Department of Medicine, but others are visiting scientists from around the world.

[Hidden Figures](#)- This movie was just recently released in the US and shares the story of a team of African-American women mathematicians who worked through the data that was critical as NASA raced to launch its first manned space missions. Watch for it in the movie theater or soon on DVD and/or online media outlets.

[Gorillas in the Mist](#)- Made in 1988, the movie is based on the book with the same name written by Dian Fossey, a famous and distinguished primatologist. Look for this film in your local library.

[The Race for the Double Helix](#)- the movie focuses on Watson and Crick, but also highlights some of their questionable ethics as they raced to beat Rosalind Franklin in discovering the actual structure of DNA. The movie came out in 1987, so it may be difficult to find. Look for it in your local library.