I AM
EDUCATIONAL SERIES

Ellen Ochoa

Objectives:

By the end of the lesson students will be able to:
1. Know that Ellen Ochoa was the first Hispanic woman to travel in space in 1993.
2. Understand the definition of a stereotype and how they are used.
3. Organize ideas to create scenarios of someone that is stereotyped.

Materials Needed Prior to Lesson:
1. Watch School Tour Scene of the **Wonder** movie. Scene is 2:23 minutes:
https://www.youtube.com/watch?v=ceWNY5eNSWY
or
2. Watch Stand and Deliver Accused of Cheating Scene:
https://www.youtube.com/watch?v=Jyo1kI1EBaE

Materials Needed:
1. Picture of the Solar System with names of planets displayed.
2. Photo NASA
3. What is NASA Handout (Provided)

Vocabulary
- Solar System
- NASA
- Stereotypes

Bloom Taxonomy	Affective Domain	Gardner's Multiple Intelligences
- Knowledge - Understanding - Application - Analysis	- Receiving - Responding - Valuing - Organizing	- Audio - Linguistic - Interpersonal

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Background on Ellen Ochoa

- Born on May 10, 1958 in Los, Angeles, California.

- Studied electrical engineering at Stanford University and **earning a masters in 1981 a doctorate degree in 1985.**

- Ochoa worked as a specialist in creating optical systems and worked as a research engineer at Sandia National Laboratories and at the Ames Research Center of the National Aeronautics and at NASA.

- **Ochoa was also an inventor**.

- Ochoa was awarded patents for creating optical systems for the detection of imperfections and repeating patterns and for the recognition of objects.

- In 1990, Ochoa was selected by NASA to participate in the astronaut program and became **the first Hispanic female astronaut** when she completed her training in 1991.

- Ochoa was a mission specialist aboard the STS-56 mission on the space shuttle Discovery in April 1993.

- Ochoa went on four spaceflights and **spent more than forty days in space**.

- Ochoa became the deputy director of the Johnson Space Center in Houston in 2007. After six years, she became the director and the **second woman to have that position and the first Hispanic.**

- In 2018, Ochoa retired from the Johnson Space Center and became vice chair of the National Science Board.

Introduction/Motivation:
- Review the picture of the solar system with students or share a short video that reviews the names and order of the planets.
    - Elementary: https://www.youtube.com/watch?v=-BFZd38k6ek
    - Middle: https://www.jpl.nasa.gov/edu/teach/activity/solar-system-scroll/
    - Highschool: https://www.youtube.com/watch?v=MK5E_7hOi-k
- Discuss the names of each planet and their order from the sun with students.
- Ask students which planet they would like to visit and why? If students do not mention Mars, it would be a good idea for the teacher to mention a desire to visit Mars.
- Introduce NASA, **National Aeronautics and Space Administration** by using the **What is NASA Handout**.
- Share with students that NASA has developed a program to visit the planet Mars.
- Mars is often called the Red Planet. Discuss with students what they think planet Mars is like:
    - What do you think the weather is like?
    - What do you think the land is like?
- Information about Mars: https://spaceplace.nasa.gov/all-about-mars/en/
- Review **Who Works for NASA?** section of the **What is NASA?** Handout.
- Share with students that today, *we are going to learn about a scientist that worked at NASA and became the first Hispanic woman to go to space. Her name is Ellen Ochoa*.

Introduction/Motivation: For Older Students
- Ask students, "What is your dream job?".
- Have students share a variety of careers.
- Discuss with students the work/activities one must complete to achieve their dream job.
- If no one mentions a dream job in STEM fields, ask, "Is anyone interested in a career in STEM fields?"
- Discuss careers in STEM fields (Science, Technology, Engineering, Math) Use Handout provided.
- Tell students that today, *we are going to learn about a woman who achieved her dream job as an astronaut. In fact, she became the first Hispanic woman to go to space. Her name is Ellen Ochoa.*

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Body

- Review background on Ellen Ochoa.
- Remind students that Ellen Ochoa was the first Hispanic woman to go to space, the second woman to be the director of the Johnson Space Center and the first Hispanic.

Activity 1# Don't Judge A Book by Its Cover

- Introduce students to the word stereotype:
  - Display the word.
  - Ask students if they know what the word means.
  - For the students who know the word, ask them in what circumstance or situation did they hear the word.

Step 1:
- Define the word stereotype with students:
  - Stereotype: **"**A standardized mental picture that is held in common by members of a group and that represents an oversimplified opinion, prejudiced attitude, or uncritical judgment." (merriamwebster.com)
  - Simplified: A stereotype is an opinion, a prejudiced attitude, or an uncritical judgement about someone or something.
- **Example**: Show students a movie clip from the movie "**Wonder",** a movie about 10-year old Auggie Pullman with extreme facial conditions. The movie is based upon a book by R.J. Palacio.
  - The book was inspired by a real-life encounter R.J. Palacio had with a child who had a craniofacial disorder.
- Show movie clip: https://www.youtube.com/watch?v=ceWNY5eNSWY

Step 2:

- After watching the movie clip, have students individually or in groups answer the questions:
  - Was there a stereotype in the School Tour Scene?
  - If so, describe it and discuss who said it.
  - Where do you think the stereotype came from?
- Use the transcript provided if needed.

Step 3:

- Remind students that sometimes kids that look different or come from another culture are stereotyped.

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- Have students, individually or in groups, create a scenario where Ellen Ochoa is stereotyped.

- The scenario should:
  - Describe at least 3 characters
  - Take place in a school setting
  - Include a written script
  - Include each student to participate (have a speaking part)
  - Discuss the definition of a stereotype and evaluate is good or bad.
  - Be presented in front of the class

Activity 2: Don't Judge a Book by It's Cover for older students

- Introduce students to the word stereotype:
  - Display the word.
  - Ask students if they know what the word means.
  - For the students who know the word, ask them in what circumstance or situation did they hear the word.

Step 1:
- Define the word stereotype with students:
  - Stereotype: **"**A standardized mental picture that is held in common by members of a group and that represents an oversimplified opinion, prejudiced attitude, or uncritical judgment." (merriamwebster.com)
  - Simplified: A stereotype is an opinion, a prejudiced attitude, or an uncritical judgement about someone or something.

Step 2:

- Share background on Stand and Deliver movie:
  - **"Stand and Deliver"** is about Jaime Escalante, a high school mathematics teacher, who transforms potential dropouts into kids who learn so much that 18 of them pass a tough college credit calculus exam. The exam is so hard that only 2 percent of students nationwide pass it. Therefore, the students are accused of cheating.
- Show "Stand and Deliver" Accused of Cheating movie scene.
- Fully discuss the scene:
  - How did the agents treat the students?
  - How did the students respond to the agents?
  - Did the agents stereotype the students? How? Why?

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Step 3:
- Remind students of Ellen Ochoa's accomplishments.
- Ask students, "Do you think Ellen Ochoa was stereotyped?"
- Have students create a scenario in which Ellen Ochoa is stereotyped.
- The scenario can be created individually or in groups.
- The scenario should:
    - Take place in a school setting
    - Include a written script
    - Discuss the definition of a stereotype and evaluate whether a stereotype is good or bad.
    - Be presented in front of the class

Links:
- About Stand And Deliver: https://www.rogerebert.com/reviews/stand-and-deliver-1988
- About Wonder: https://www.theatlantic.com/entertainment/archive/2017/12/wonder-is-a-feel-good-movie-that-needed-more-realism/548828/
- About Ellen Ochoa: https://www.britannica.com/biography/Ellen-Ochoa
- About Ellen Ochoa: https://www.nasa.gov/centers/johnson/about/people/orgs/bios/ochoa.html

Transcript for Wonder Movie School Tour Scene 2:23 minutes

Charlotte: Wow this reminds me my guest spot on law and order.

Julian: So, the science elective is supposed be really hard, so you probably won't be spending much time here no offense but if you've never been in real school before.

Jack: Dude he's been homeschooled okay.

Julian: Just saying science is supposedly really hard but you're taking it too right, maybe you could fail together.

Jake: Why don't you get out of the way so we can check it out.

Julian: Okay, I mean there is nothing much to see desks chairs the incubator bunch of murders those are some really gross science poster and **oh and this is an eraser he knows what an eraser is?**

Jack: Dude!

Julian: How am i supposed to know what he knows? He doesn't say anything.

Charlotte: You know what an eraser is right dude? You have to say something**.**

Auggie: yeah i know what an eraser is. it is your name jack or jack well?

Julian: wait you thought his name was jack will?

Jack: Yeah, a lot of people call me by my first and last name. i don't know why. Got any other questions?

Julian: Actually, I've got a question for Auggie. What's the deal with your face?

Jack: Dude!

Julian: I mean were you in a car crash or something?

Charlotte: Julian!

Julian: What? Tushman said we could ask questions if we wanted to.

Charlotte: Not rude questions. Besides, he was born like that Mr. Tushman said.

Julian: Yeah i know i just thought maybe he was like in a fire too.

Jack: Hey Julian! Shut up!

Julian: You shut up!

Charlotte: Why don't we all shut up!

Auggie: No, I wasn't in the fire and the words supposedly, what you said that science is supposedly really hard twice the word supposedly with a d. Maybe my mom can homeschool you too.

What Is NASA?

NASA stands for **National Aeronautics and Space Administration**. NASA is a U.S. government

The NASA logo is painted on the outside of the Vehicle Assembly Building at Kennedy Space Center in Florida, where spacecraft are prepared for launch. *Credits: NASA*

agency that is responsible for science and technology related to air and space. The Space Age started in 1957 with the launch of the Soviet satellite Sputnik. NASA opened for business on Oct. 1, 1958.

What Does NASA Do?

Many people know something about NASA's work. But most probably have no idea about how many different things the agency does. Astronauts in orbit conduct scientific research. Satellites help scientists learn more about Earth. Space probes study the solar system and beyond. New developments improve air travel and other aspects of flight.

NASA is also beginning a new program to send humans to explore the Moon and Mars. In addition to those major missions, NASA does many other things. The agency shares what it learns so that its information can make life better for people worldwide. For example, companies can use NASA discoveries to create new **spinoff** products.

NASA helps teachers prepare students who will be the engineers, scientists, astronauts, and other NASA workers of the future. They will be the adventurers who will continue exploration of the solar system and universe. NASA has a tradition of investing in programs and activities that inspire students, educators, families and communities in the excitement and discovery of exploration. NASA offers training to help teachers learn new ways to teach science, technology,

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engineering and mathematics. The agency also involves students in NASA missions to help them get excited about learning.

Who Works for NASA?

NASA's Headquarters is in Washington, D.C. The agency has nine centers, the Jet Propulsion Laboratory and seven test and research facilities located in several states around the country.

More than 17,000 people work for NASA. Many more people work with the agency as government contractors. These people are hired by companies that NASA pays to do work. The combined workforce represents a variety of jobs. Astronauts may be the best-known NASA employees, but they only represent a small number of the total workforce. Many NASA workers are scientists and engineers. But people there hold many other jobs, too, from secretaries to writers to lawyers to teachers.

NASA has helped develop and test a variety of cutting-edge aircraft. These aircraft include planes that have set new records. Among other benefits, these tests have helped engineers improve air transportation. NASA technology has contributed to many items used in everyday life, from smoke detectors to medical tests. In 2018, NASA celebrated its 60th anniversary.

NASA's Mars Exploration Program

NASA's Mars Exploration Program is a science-driven, technology-enabled study of Mars as a planetary system to understand:
- the formation and early evolution of Mars as a planet
- the history of geological and climate processes that have shaped Mars through time
- the potential for Mars to have hosted life (its "biological potential")
- the future exploration of Mars by humans, and
- how Mars compares to and contrasts with Earth.

Source: https://www.nasa.gov/audience/forstudents/5-8/features/nasa-knows/what-is-nasa-58.html, https://mars.nasa.gov/

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The 10 Best STEM Careers

Career and Entrepreneurship Expert

It's no secret that in today's job market, STEM – or Science, Technology, Engineering and Mathematics – is in demand. Graduates and school leavers are constantly being reminded of the importance of obtaining tech skills in order to be competitive, with many of the top-paying jobs in the world coming under the STEM umbrella.

It's not just today's market where STEM jobs are king, either – its tomorrow's, too. As technology evolves and we become ever more reliant on the digital world around us, occupations within the STEM field are likely to replace many traditional professions.

So, if you're looking to get in on the action, we've compiled a handy list of some of the highest-paying and most sought-after roles.
Here are the top 10 best STEM careers.

1. Systems Architect
Average annual salary: $108,070 / £50,510

As one of the highest-paid roles in the IT industry, systems architecture is a very wise career to pursue. In most cases, systems architects act as a bridge between business and technology, designing, coordinating, and implementing the architecture of entire IT systems to the specifications of their employer or client. As a result, the job requires not just a highly advanced knowledge of networks, structures, and software, but also a strong sense of commercial awareness and the ability to lead time-sensitive projects.

You'll also need a degree in a relevant IT subject, as well as specific industry certifications and, most likely, a project management qualification.

2. Data Scientist
Average annual salary: $90,600 / £34,980

Once infamously dubbed as the 'sexiest profession of the 21st Century', there is no denying that the availability and power of big data has changed the way that businesses work. This, in turn, has led to a huge increase in demand for skilled data scientists and analysts, who can crunch through the numbers and make effective use of the information within.

Most data scientists have a degree in mathematics or statistics, although this isn't a prerequisite; there are many postgraduate qualifications available in data science. As they can be found in nearly any industry that produces data, some knowledge of your preferred sector could help you land a job, too.

3. Mechanical Engineer
Average annual salary: $69,340 / £30,460

No matter what discipline of engineering you pursue, your skills will always be in demand; mechanical engineers are particularly sought after, though, due to their flexibility and the wide range of environments in which they can work.

It's possible to get into mechanical engineering through an apprenticeship, although many choose to attend a designated engineering school, requisites of which include strong numerical skills, a creative mind, and the ability to reason and solve problems logically. You'll spend most of your career working with moving parts, too, so an enthusiasm for how machines are built and operate is another must-have quality.

4. Nurse
Average annual salary: $60,270 / £23,760

No matter where in the world you choose to work, nursing has always – and will always – be a solid career choice. It is also now increasingly professionalized, with registered nurses requiring a degree in place of the traditional vocational entry route. This means that nurses now have greater clinical responsibility, with the option – like doctors – to specialize and conduct research in a specific field.

All in all, becoming a nurse is a hugely challenging but rewarding move, requiring dedication, enthusiasm and a unique skillset, with the opportunity to truly make a difference in the lives of the people you treat.

5. Software Engineer
Average annual salary: $83,880 / £35,360

Software engineers are skilled programmers who design, build, and maintain software applications based on the needs and requirements of their clients. They work on an enormous variety of projects across a wide array of industries, making them highly employable across the

board, while the very best engineers go on to work for large tech companies like Google, Facebook and Apple, creating tools and apps that we use every day.

To become a software engineer, you will require a strong knowledge of programming languages, as well as the ability to approach problems logically and systematically. Most engineers possess a degree in computer science, although this isn't always a requisite for landing a job.

6. Actuary
Average annual salary: $86,880 / £56,260
Despite its reputation as an unglamorous profession, becoming an actuary is actually a highly lucrative and fascinating career move. Essentially combining the use of statistics and mathematical models to predict the consequences of risk, actuaries carry a lot of weight and responsibility in the financial world, especially in insurance, equity and pension practices.

Most actuaries have a degree background in mathematics or statistics, although it is possible at some institutions to study actuarial science as a standalone degree. Once they have graduated, there are entry programmes available at all the top banks and insurance providers.

7. Petroleum Engineer
Average annual salary: $101,060 / £42,870

Given that the discovery and extraction of natural oil resources is perhaps the most lucrative business enterprise in the world, it is no surprise that petroleum engineering is on this list.

Experts in the physical and chemical behavior of water, oil and gas, petroleum engineers identify potential drilling sites, both on land and offshore. As such, their skills are in high demand with industry giants like Sinopec, ExxonMobil, and Gazprom, with their earning potential comfortably in the six-figure range.
You will require a degree in petroleum engineering or in another relevant engineering discipline, provided you complete a relevant postgraduate qualification. There are also numerous industry certifications that can help your application.

8. Cybersecurity Expert
Average annual salary: $76,380 / £30,460

Cybersecurity is a relatively broad field, meaning that the term 'expert' can be used ambiguously. Generally, though, it refers to a range of roles, such as penetration testing (often referred to as 'ethical hacking'), digital forensics and security architecture. The best part is that cybersecurity experts are hugely in demand, with businesses of all sizes desperate to protect their data, information and digital practices from malicious attackers.

There are numerous entry paths into the field of cybersecurity, with a degree in an IT subject a good place to start, followed by a postgraduate qualification or certificate in your chosen area of interest. You don't necessarily need an educational background, though, with up-to-date knowledge of hacking techniques and how to combat them just as important.

9. Doctor
Average annual salary: $140,150 / £51,020
As with nursing, medicine is a failsafe career option within the STEM world, with doctors having the potential to earn the biggest bucks of all in the healthcare field, especially if they choose to specialize in high-pressure fields such as surgery and emergency medicine.

Becoming a doctor isn't easy, though; there's fierce competition just to get into medical school, with candidates having to demonstrate a wide range of skills to even be considered by the top universities. Once in, though, you will have the chance to make a huge difference in people's lives on a daily basis – and be very well paid in the process.

10. Electrical Engineer
Average annual salary: $73,760 / £31,190

Electrical engineers work in a variety of industries, applying their expertise of electrical concepts to all kinds of problems. In recent years, this has increasingly been within the commercial sector, where products that feature electrical components – such as smartphones, laptops and, well, anything with a circuit – require the skills of a qualified engineer.

Source: https://www.careeraddict.com/stem-careers

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