

Exploring Cool STEM Jobs

FIRST, WATCH THIS VIDEO:



Video Link: <https://youtu.be/VBiOs9DE9wY>

WHAT TYPE OF CAREERS IN STEM INTEREST YOU?

IN THE VIDEO, ALICIA BOLER DAVIS IS AN AUTO ENGINEER, WHAT MADE HER CHOOSE THIS CAREER PATH?

▶ Watch a video

BUILDING CARS: This GM factory in Lansing, Michigan, produces Cadillacs.

AUTO ENGINEER

Alicia Boler Davis makes sure millions of cars get manufactured safely and efficiently



GM EXECUTIVE: Alicia Boler Davis

General Motors (GM) is one of the largest automakers in the world. Each year, the company produces more than 9 million cars, trucks, and SUVs. As the executive in charge of global manufacturing for GM, Alicia Boler Davis makes sure all those vehicles get made.

Boler Davis started her career at GM as an engineer. She eventually became the first African-American woman to run an assembly plant for the company. Today, Boler Davis oversees about 165,000 employees working in more than 150 factories worldwide, including GM's headquarters in Detroit, Michigan. *Science World* spoke with her about her career as an engineer-turned-executive in the auto industry.

You started out as a manufacturing engineer at GM. What does that job entail?

A manufacturing engineer defines the process and

designs the equipment needed to create a product, like a car. For example, our plants have conveyors that move our cars from one place to the next as they're being assembled. A manufacturing engineer would design that conveyor. They need to know how much weight it's going to carry, how fast it needs to go, and whether there are obstacles it needs to avoid.

Not all of the machinery that engineers think up works as planned in the assembly line. In that case, we have to refine our designs. Once, I helped build a tool for our team to use in the plant. It was made to lift a car battery, load it under the hood within 50 seconds, and not damage anything in the process. But when we tried out the tool, it was awkward to use. It would sometimes drop the battery or bump into other parts of the car. We kept improving the design until it worked correctly and was easy for employees to use.

What's it like to work in an auto assembly plant?

The assembly plant is fast-paced and exciting. There's always something happening. In one of our plants, we have more than 1,000 robots helping us build cars and trucks. They can pick up and place parts, weld things together, and even apply paint. They help us build products safely and efficiently.

Our plants also have equipment that tests the vehicles at different points during the manufacturing process. That's to make sure everything is working the way it should before cars roll out onto the road.

What is your job like now that you are in a leadership role?

As an executive, it's my responsibility to set a team vision and goals, and

then help my employees accomplish them. In manufacturing, efficiency is extremely important. Think of it as doing things the best and safest way possible with the least amount of time and resources. For instance, building more higher-quality cars at a faster rate is a good thing from an efficiency perspective. We focus a lot on eliminating waste and making things better, which reduces costs for the company—and for our customers.

Are there any new technological advancements affecting the auto industry?

Yes, electric vehicles are becoming a big focus for companies like GM. They help people get around, just like gasoline-powered cars, but without as many negative effects on our environment. We're also working on autonomous

electric vehicles. They're basically computer-driven cars that can be programmed to drive you from one location to another. They have technology that can sense a vehicle's surroundings and make decisions, like when to brake for a red light. This helps get people to their locations safely. It's pretty exciting.

What advice would you give to young people interested in engineering?

Engineers have an opportunity to change the world. For me, it started with an interest in math and science and a desire to learn more about both. Since then, engineering has provided me with opportunities to do so many different things and to travel the globe. That can happen to you too if you dream big and pursue your passion.

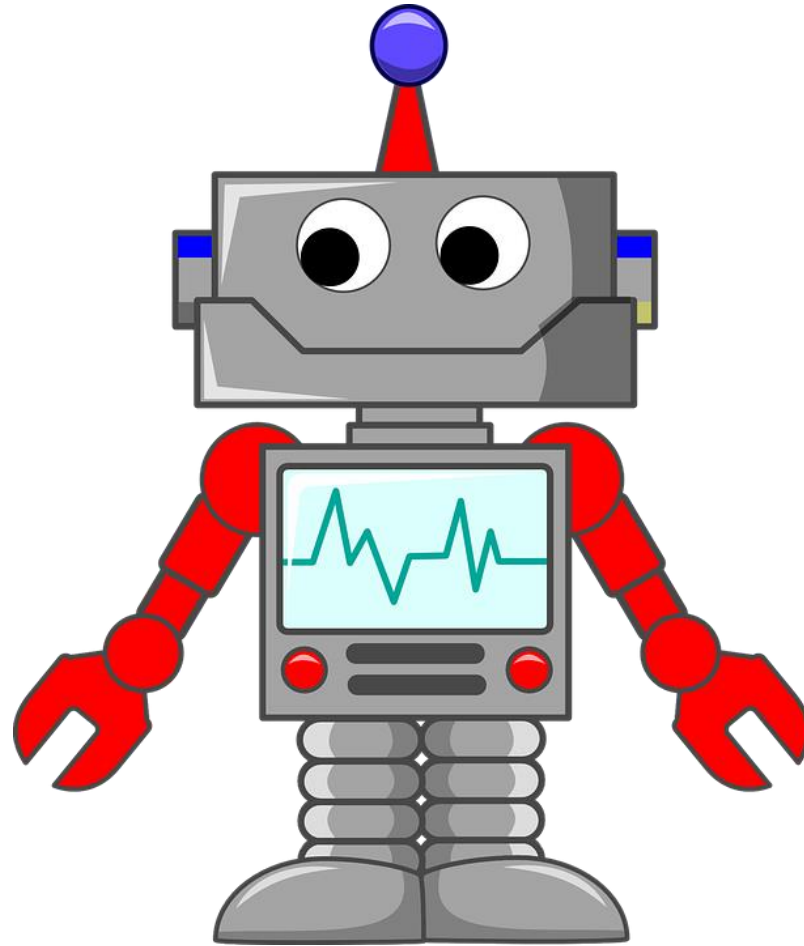
—Alexa Kurzius



GLOBAL CITIZEN: Boler Davis tours a GM plant in Germany.

DESIGN A ROBOT

In the video and the previous article, “Auto Engineer”, you learned how Alicia Boler Davis started out as a manufacturing engineer, designing equipment and robotic machinery. This activity will help you design your own robot.



STEP 1:

Brainstorm an idea: Think about something you would like to do with a robot. Explain the function of the robot and why it will be useful to people. Be sure to give your robot a name.

Consider your audience: When designing robots, engineers consider who will use them. That can help them refine their design. Who would be most likely to use your robot?

How will it work?: What will power your robot? Will it need a remote control? How will it move? Explain how your robot will work

STEP 2: Plan and Design

Create a visual design: Engineers often start by drawing a visual representation of their designs. Draw your robot. Remember to label all its parts.

STEP 3: Refine and Design

Refine your design: Show your design to your classmates. Is it clear to them how your robot will work? Make changes based on their suggestions.



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Submit completed slides to:
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