

Objective

By the end of this lesson, Brodi will have a clear understanding of how a car works, including the main components and their functions. He will be able to explain the basic principles of internal combustion engines, the role of the electrical system, and how these systems work together to power a vehicle.

Materials and Prep

- Access to a computer or tablet for research
- Notebook and pen for taking notes
- Printable diagrams of a car engine and electrical system (can be found online)
- A whiteboard or large paper for drawing diagrams (optional)

Before the lesson, ensure that Brodi has access to reliable internet for research and can print out diagrams if needed. Familiarize yourself with the basic parts of a car and how they function.

Activities

• Research and Diagram Creation

Brodi will research the main components of a car, including the engine, transmission, and electrical system. He will then create a labeled diagram of a car's internal systems, highlighting the function of each part.

• Hands-On Simulation

Using everyday items around the house, Brodi can simulate how a car engine works. For example, he can use a balloon to represent combustion and demonstrate how it pushes a piston (a rolled-up piece of paper) to create movement.

• Video Exploration

Brodi will watch a short documentary or educational video on how cars work. After viewing, he will summarize the key points and discuss what he found most interesting.

• Q&A Session

At the end of the lesson, Brodi can prepare a list of questions he has about cars and their functions. You can discuss these questions together, encouraging critical thinking and deeper understanding.

Talking Points

- "Cars are essentially machines that convert fuel into motion. The engine is the heart of this process."
- "An internal combustion engine works by igniting a mixture of fuel and air, creating small explosions that push pistons."
- "The transmission is like the gears on a bike; it helps control the speed and torque of the car."
- "Electric cars use batteries and electric motors instead of gasoline engines, which is a cleaner way to power a vehicle."
- "The electrical system in a car powers everything from the lights to the radio, and it's crucial for starting the engine."
- "Understanding how a car works can help you troubleshoot problems and make informed

decisions about maintenance."

- "Safety features like airbags and anti-lock brakes are designed to protect passengers in case of an accident."
- "Regular maintenance, like oil changes and tire rotations, keeps a car running smoothly and extends its lifespan."
- "Exploring the mechanics of a car can lead to exciting career opportunities in engineering and automotive technology."
- "Cars have evolved significantly over the years, from simple machines to complex computers on wheels."
- "Learning about cars combines physics, chemistry, and engineering, making it a perfect example of applied science."
- "Every time you drive, you're experiencing physics in action—acceleration, friction, and momentum at work!"
- "The automotive industry is a major part of our economy, influencing everything from job creation to environmental policies."
- "Understanding how cars work can also help you appreciate the technology we often take for granted."
- "As you learn more, you might find a passion for cars that could lead to a hobby or even a career!"