How Does AI Drive Self-Driving Cars!

This lesson plan is designed to help you support your child with this topic: How Does AI Drive Self-Driving Cars!

Learning Objectives (What You'll Learn Today)

- Understand what AI does in a self-driving car
- Explore how sensors like lidar and cameras help the car see
- Learn how AI makes real-time driving decisions
- Discuss challenges and the future of driverless cars

Estimated Time

60–90 minutes, depending on discussion time and quiz completion

Let's Get Started

Ask your child: Would you feel safe in a car that drives itself? Why or why not?

The Main Lesson

What Is AI and How Does It Help a Car?

Artificial intelligence (AI) is what helps a self-driving car "think". It takes in information from its surroundings and decides how to react—just like a human driver, but much faster. AI works by processing data from many sources at once, learning from examples, and getting better over time. In a car, AI links up with tools like maps, sensors, and software. Together, they help the vehicle understand where it is and what it should do next. It's like giving the car a digital brain.

Mini-Task: Ask your child: What would a car need to know in order to drive safely?

How AI "Sees" the Road

AI self-driving cars use a combination of radar, cameras, and lidar (laser scanning) to view their surroundings. These tools help the car detect people, road signs, traffic lights, and other vehicles. Each sensor does something different: radar tells how far objects are, cameras capture images, and lidar builds a 3D map of the environment. Together, they act like superhuman senses!

Mini-Task: Draw a picture of a car and label where you think the sensors would be placed.

Making Fast Decisions

Once the AI gathers all this information, it needs to decide what to do. Should it turn? Slow down? Stop? These decisions are based on programmed rules and learned behaviour.
The car uses something called machine learning to get better at making choices. It learns from thousands of real-world examples—just like people learn from experience.

Mini-Task: Roleplay! You be the car and your child gives you sensor info (e.g. “pedestrian ahead”), then you decide what the car should do.

What Happens When Things Go Wrong?

Sometimes the car’s AI gets confused—maybe it can’t see well in fog or the road has unusual markings. In those cases, the system has a backup plan.
Most autonomous vehicles are programmed to slow down or stop when they’re unsure. Some even allow remote control by a human if needed. Safety always comes first.
Mini-Task: Talk about a time when you didn’t know what to do. What helped you decide?

The Future of Self-Driving Technology

AI self-driving cars are improving every day. Right now, they’re being tested in cities and used for deliveries and public transport. In the future, they might reduce traffic and even lower road deaths. But we’re not there yet. The technology still has a lot to learn, especially about working in busy or unpredictable places. It’s exciting, but there are big questions to think about, too.

Mini-Task: Ask your child: What do you think cars will be like in 50 years?

Think and Discuss

- How is a self-driving car similar to a human driver?
- Why do you think AI needs so many sensors?
- Would you rather trust a person or a robot to drive? Why?

Wrap-Up Summary

AI helps self-driving cars collect information, understand their surroundings, and make safe decisions. They still have a long way to go, but they could change how we travel in the future.

Quiz

1.What does AI stand for?
2.True or False: Radar helps AI detect road colours.
3.What sensor makes a 3D map?
4.What is the main role of cameras in an AI car?
5.True or False: AI can never make mistakes.
6.What does a self-driving car do if it gets confused?
7.Which tool helps detect how far away something is?
8.What's one job AI must do inside a car?
9.True or False: Self-driving cars are already used for deliveries.
10.Why might AI cars be safer in the future?

Answers

1. Artificial Intelligence 2. False 3. Lidar 4. Capture images of surroundings 5. False 6. Slow down or stop 7. Radar 8. Make decisions 9. True 10. They don't get distracted or tired

Short Essay Prompt

Write a short essay, say 3 paragraphs explaining how AI helps a self-driving car make safe decisions. Use examples of the types of data it uses.

Extra Learning

Design your own AI-powered car on paper. Where would you put the sensors? What would your car be best at—parking, deliveries, or city driving?

Final Reflection (What Did You Learn?)

Ask your child: What's one thing that surprised you about self-driving cars? What would you improve if you were designing one?