

# ARE SELF-DRIVING CARS SAFE?

*THIS ACTIVITY SHOULD TAKE ABOUT 90 MINUTES. IF LEARNERS ARE ABLE TO REVIEW MEDIA PRIOR TO THE LESSON, ACTIVITY TIME SHOULD BE 45 TO 60 MINUTES.*

## INVESTIGATE

Read, watch, and listen to the three media resources on the Thinkalong module. Learners can use the Investigate graphic organizer to summarize each piece of media and record new information. Below are summaries of the three pieces of media curated in the Thinkalong module.

### THREE TASKS DRIVERLESS CARS NEED TO LEARN

NOVA | September 3, 2019 | Video

2:43 minutes

To match human drivers, automated vehicles need to learn how to handle seeing everything around the car, understanding what it's seeing, and planning the car's path.

- Most self-driving cars rely on cameras, radar, and LiDAR (light detection), but each has weaknesses. Cameras don't work well at night, radar can't distinguish between objects, and LiDAR can fail in harsh low-light weather.
- For computers, making meaning out of data is difficult, but for the human brain, perception comes naturally.
- Since 2010, machine learning artificial intelligence gives machines the ability to take in data, understand it, and make predictions.
- Planning software needs to plan different scenarios of what might happen, on top of also seeing what's around the car and understanding the environment.

### SELF-DRIVING CARS NEED LESSONS ON HUMAN DRIVERS

NPR's Maddie About Science | August 21, 2018 | Video

4:10 minutes

NPR Science Desk host Madeline Sofia explores self-driving vehicles and the differences between autonomous and human drivers.

- At Stanford University, Dorsa Sadigh studies how people drive to help autonomous vehicles understand human drivers.
- Sadigh says safety is a big problem with self-driving cars. They're fine driving in normal conditions on normal roads, but when they're in unexpected situations, they don't perform well.
- If all cars were autonomous, it would be much easier for vehicles to communicate with each other and ensure safe roads.
- Sadigh's study looks at a human driver's attention, steering, acceleration, and braking in different situations to see how people behave behind the wheel. She hopes it will help build a model of human behavior that can be programmed into autonomous vehicles.

## TAKE A RIDE THROUGH PHOENIX IN A DRIVERLESS CAR

Here & Now | January 4, 2021 | Audio

10:39 minutes

In Phoenix, tech company Waymo has launched Waymo One, a driverless car service, but what's it like getting a ride from one?

- Waymo started testing the driverless vehicle service around Phoenix for a while, but in October opened the service to the public. Phoenix is a good test area because the region is relatively small and sunny – good conditions for self-driving cars.
- The service has a 50 square mile range in the suburbs of the city and drives on residential streets and larger roadways.
- Waymo's project manager Saswat Panigrahi says the program is meant to build trust with the riders by doing things like slowing down before a bump, just as a human driver might. Panigrahi says trust is a big issue for human riders.
- Panigrahi considers them safe because computers don't drive impaired, tired, or get distracted. But the vehicles in testing were still involved in 18 collisions, with three being serious enough for the airbags to deploy.
- Missy Cummings from Duke University says that driverless cars may have trouble in bad conditions, like snow or dust storms, that would affect the car's sensors and cameras.

### KEY WORDS

Look out for these important keywords in the news stories. Discuss the definitions with your learners and see how they affect the understanding of the story.

- LiDAR
- Autonomous
- Impaired

### CONTEMPLATE

Learners will use media literacy questions to critically engage with news by thinking about its purpose, searching for bias and discussing missing perspectives. They will answer the 5 Key Questions of Media Literacy created by the Center for Media Literacy, which are:

1. Who created this message?
2. What creative techniques are used to attract my attention?
3. How might different people understand this message differently than me?
4. What values, lifestyles and points of view are represented in, or omitted from, this message?
5. Why is this message being sent?

A graphic organizer is included in this guide and the Thinkalong website to help learners answer these five questions about each piece of media.

### DEBATE

Use the debate tool on the module webpage to help form evidence-based responses to the debate question.

Thinkalong is designed to help learners engage with real issues that are relevant to their lives. [Structured discussions](#) allow learners to practice their critical thinking skills through evidence-based debate with their peers. Discussions are designed to take about 30 minutes. Educators are encouraged to modify aspects that work best for their learners.

To encourage civil discourse, please review the [Code of Conduct](#) with your learners.

*Using public media — video, audio and digital reports — about newsworthy topics, these classroom-based exercises help learners to think critically about media messages, develop informed opinions, and practice how to take a stand.*