



Future Tech. Today: Emerging Transportation Technology



Summary

In this lesson, students learn about emerging transportation technology. In a culminating hands-on activity, they use problem-solving skills and creativity to design a transportation innovation of their own.

Materials

- Science Kit & household objects OR markers/paper/drawing supplies
- [Transportation Innovation Worksheet](#)
- [Transit Hubs Worksheet](#)

Teacher Background Knowledge

In this activity, students learn more about emerging transportation technology. First, they are provided some background about transportation history. Then, they will learn more about developing transportation technology such as electric vehicles, autonomous vehicles, drones, etc.

This is part 3 of 3 in a lesson series on transportation. See [part 1 here](#), and [2 here](#).


This Lesson series is a great introduction to the [Vaccine Delivery System Lesson](#).

Lesson Instructions

PART 0: Student Prep

1. Have students gather the necessary materials to prepare for the lesson

PART 1: Students learn about the history of transportation innovation

2. Instruct students to watch "[An Animated History of Transportation](#)."
3.  Have students write down their thoughts on the video. Which of these vehicles were they familiar with? Which ones were new to them?
4. Have students discuss their answers.
5. As a group, brainstorm and discuss the following: Why has transportation changed so much over time? Guide students to answers such as "to get places faster" or "to be safer." Ultimately, the group should come to the conclusion that transportation has evolved to solve problems.

PART 2: Students learn about emerging transportation technology

6. Have students read aloud Transportation Innovation Worksheet
7. Discuss the worksheet as a class. Use the following questions to review the worksheet and

guide discussion: Why do people need transportation? When and why does transportation change? What kind of problems can be solved using drones? What about electric vehicles? What other transportation inventions and innovations do you know?

PART 3: Students design their own transportation innovation

8. Have students watch "[Future of Transportation.](#)"
9. Instruct students to pair off and brainstorm problems in transportation. Good starting points include: efficiency, safety, sustainability, cost, etc.
10. Discussion: Why is it important to find new ways to get around? What type of place is it harder to get around in: a busy city or a rural community? Where is it easier to add more transportation: in a city v. a rural area, and why? What are some of the obstacles?
11. Optional: Have students watch "[The Future of Public Transportation.](#)"
12. Task: Students will act as inventive engineers hired to develop an idea for a thriving city with a huge population. The city is made up of many tall buildings, two of which house the city transportation or transit hubs. Transit hubs are spaces where people and cargo are exchanged like a train station or bus station. The ground transportation in the city has been maxed out, and city planners and engineers are looking to the sky for a solution. Students draw ideas for how to get people to and from the two hubs. Then, using the materials and steps below build a model of your proposed solution for the city.
13. Materials: two sturdy household objects that you can tie a string between (i.e. a chair, desk legs, doorknob, table legs, dresser, etc.), measuring tape, string, paperclips, rubber bands, straw, binder clips, 2 pieces of scratch paper, medicine cup, scissors, 5 pennies, and tape

Steps:

- Measure out 2-3 feet of string (do not cut)
 - Tie one end of string to one of the sturdy objects (e.g. table leg) to the other (e.g. chair leg) using a bow so it can be undone and adjusted to fit the design; these will represent the 2 transit hubs
 - Cut a 4x1 inch strip from your piece of paper
 - Tape the ends of your paper to the measuring cup, creating a basket and set it aside
 - Using the other tools at your disposal, develop your model
 - Consider: What will power your invention and why is this important? What types of safety features will your model include? Can you foresee any major obstacles?
14. Follow up with further resources, vocabulary, discussion, etc.

Lesson Resources

For All Ages

Webpage: [Fun Vehicle Facts for Kids](#)

Video: [Kids Explain Electric Cars](#)

Webpage: [What is a Hybrid](#)

Webpage: [Transportation Timeline](#)

Video: [The Courage to Innovate](#)

1st-3rd

Video: [Electric Cars for Kids](#)

4th-6th

Webpage: [Kids Britannica- Transportation](#)

Video: [How Drones Fly](#) (good for 6th grade)

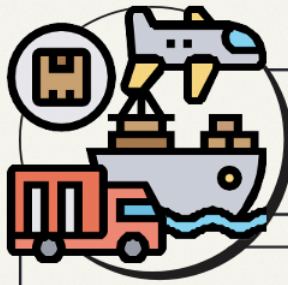
Video: [Electric Cars and Emissions](#)

Primary Modifications

- Younger students can draw a picture of their innovation instead of building it. They also may need an adult's help tying any knots/bows or using scissors.

Intermediate Modifications

- Have students write specific pros and cons of their innovation
- Have students investigate the history of a specific innovation
- Have students write a short essay/present an argument for funding for their innovation

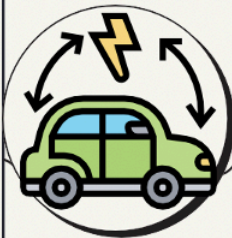


Transportation Innovation

Emerging Technology

We need transportation to move people and goods to where they need to be. Transportation adapts over time to be safer, faster, and more sustainable.

Check out these transportation innovations!

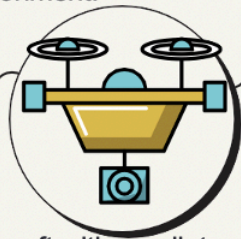


*Think about it:
What problems do
these innovations
solve?*

Electric Vehicles

Electric vehicles are powered by electricity instead of gasoline. Usually, the electricity comes from renewable sources of energy.

These efficient vehicles reduce emissions and have less impact on the environment.



Drones

A drone is an aircraft with no pilot on board. They can be controlled from a remote or by autopilot. They have been used in warfare in the past, but more recently uses such as delivering food and medicine have been explored. Some people fly small drones for fun, too.

What Else?

Other transportation innovations to investigate include high-speed rail, e-scooters, and...*what else?*

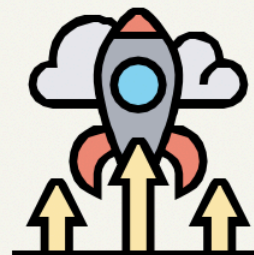


Autonomous Vehicles

Autonomous vehicles are also called "self-driving cars." These vehicles use artificial intelligence, sensors, and data to navigate without a human driver. There are already self-driving cars on the roads, but this is a new technology still being developed.

The Future

Issues like global climate change and safety affect everyone. Until we solve these problems, there will be continuous innovation. What will the future of transportation look like?





Transit Hubs Worksheet



Transit Hubs Activity

IMAGINE you are an engineer in a busy city with a huge population. There are many tall buildings in the city, including two transit hubs. **Transit hubs** are spaces like a train station or bus station where people and cargo are exchanged.

THE PROBLEM is the ground transportation in your city has been maxed out. You need to look to the sky for a SOLUTION. How will you get people to and from the two hubs? Draw some ideas first. Then follow the steps to build a model of your proposed solution for the city.

Materials: two sturdy household objects that you can tie a string between (i.e. a chair, desk legs, doorknob, etc.), measuring tape, string, paperclips, rubber bands, straw, binder clips, 2 pieces of scratch paper, small measuring cup, scissors, 5 pennies, and tape

Steps:

- Measure out 2-3 feet of string (do not cut)
- Tie one end of string to one of the sturdy objects (e.g. table leg) to the other (e.g. chair leg) using a bow so it can be undone and adjusted to fit the design; these objects will represent the 2 transit hubs
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