Today I Learned About Everyday Travel

Description:

The future of transportation includes multiple modes and ways of thinking about how we get around. Students learn about Complete Streets, tackle urban street design, and design their own transit system for an imaginary city.

Skills & Objectives

SWBAT
- Describe different modes of transportation
- Understand that there are design solutions to make streets safer and more accessible.
- Explain a case study related to transportation and mobility.

Skills
- Reading case studies
- Interpreting design suggestions
- Communication

**Students Should Already Know That**
- Gas- and diesel-powered vehicles release carbon dioxide, which acts like a heat-trapping blanket in the atmosphere. Trapped heat is changing Earth's climate, leading to increased extreme weather, heat waves, and flooding.

Standards Alignment:
HS-ETS1-3 Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints
HS-ETS1-2 Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems.
WHST.9-12.1 Write arguments focused on discipline-specific content
SL.11-12.5 Make strategic use of digital media in presentations to enhance understanding of findings, reasoning, and evidence and to add interest.

Disciplinary Core Ideas:
ESS2.D Weather and Climate
ESS3.A Natural Resources
ESS3.C Human Impacts on Earth Systems
ETS1.C Optimizing the Design Solution

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ENVIRONMENTAL SOLUTIONS INITIATIVE
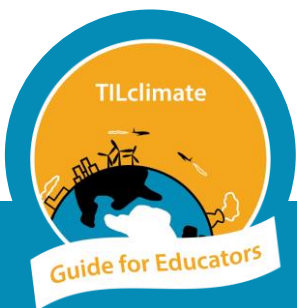
Today I Learned About Everyday Travel

How To Use These Activities:

Pages with the circular "TILclimate Guide for Educators" logo and dark band across the top are intended for educators. Simpler pages without the dark band across the top are meant for students.

Each of the included activities is designed to be used as a standalone, in sequence, or integrated within other curriculum needs. A detailed table of contents, on the next page, explains what students will do in each activity.

A Note About Printing/Materials

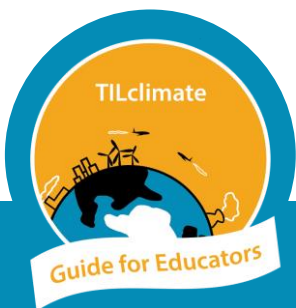All student pages are designed to be printable in grayscale.

Lacking internet, a random map for the Design a Transit System activity could be printed ahead of time, and students could work on paper.

The worksheets do not leave space for students to answer questions. Students may answer these questions in whatever form is the norm for your classroom – a notebook, online form, or something else. This allows you, the teacher, to define what you consider a complete answer.

Podcasts in the Classroom: Throughout these Guides for Educators, we invite students to think about how they would share their learning with family and friends. One way to do this is to encourage your students to create their own podcasts - they're shareable, creative, and have multiple options for embedded assessment. We would love to hear any podcasts or see any other projects you or your students create! Email us at tilclimate@mit.edu, Tweet us @tilclimate, or tag us on Facebook @climateMIT.

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Detailed Table of Contents

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Multi-Modal Transit

This Educator Guide includes two design activities and a case study investigation. Educators may pick and choose among the pieces of the Guide, as suits their class needs.

Parts of this Guide may align with the following topics:

- Life/environmental science: Impacts of urban design and sprawl on ecosystems.
- History/social science: History of city and transit planning, social impacts of transit accessibility.
- ELA/literature: Connections to transit-related stories.
- ELA/nonfiction: Communicating about complex issues.

MIT Resources

We recommend the following as resources for your own better understanding of climate change or as depth for student investigations. Specific sections are listed below:

- Climate Science, Risk & Solutions, an interactive introduction to the basics of climate change. https://climateprimer.mit.edu/

    Chapter 08

    Chapter 10

- MIT Climate Portal Explainers are one-page articles describing a variety of climate topics. New Explainers are posted monthly. https://climate.mit.edu/explainers

    Climate Justice

    Climate-Resilient Infrastructure

    Cities and Climate Change
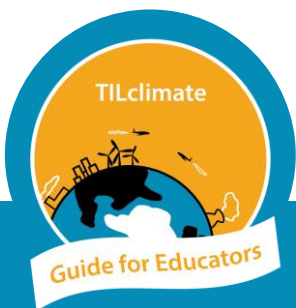
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Wrap-Up Discussion Questions

- What challenges or lessons learned did your case studies have in common? How could this solution be applied in another place?

- What most excites you about the projects you learned about?

- For your chosen design element – what problems does it solve? Most of the ideas solve more than one challenge, such as slowing traffic and creating public outdoor space.

- If you wanted to propose your solution to decision-makers in your community, who would they be? How could you find out if your city/town, county, or state already has a Complete Streets policy in place?

- What factors did you consider when designing your own transit system?

Climate Solutions

Climate solutions can be thought of as falling into four categories outlined below. Across all categories, solutions at the community, state or federal level are generally more impactful than individual actions. For example, policies that increase the nuclear, solar and wind mix in the electric grid are generally more effective at reducing climate pollution than asking homeowners to install solar panels. For more on talking about climate change in the classroom, see "How to Use This Guide".

- **Energy Shift**
  How do decision-makers make the switch from carbon-producing energy to carbon-neutral and carbon-negative energy?
- **Energy Efficiency**
  What products and technologies exist to increase energy efficiency, especially in heating and cooling buildings?
- **Adaptation**
  How can cities and towns adapt to the impacts of climate change?
- **Talk About It**
  Talking about climate change with friends and family can feel overwhelming. What is one thing you have learned that you could share to start a conversation?

What solutions are the most exciting in your classes? We would love to hear from you or your students! Images, video, or audio of student projects or questions are always welcome. Email us at tilclimate@mit.edu, Tweet us @tilclimate, or tag us on Facebook @climateMIT.

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