



Idlers, Please Stop Your Engines!

Georgia Commute Schools 3rd - 5th Lesson Plan

Lesson Background

Grades: 3rd - 5th

Length of Lesson: Two class periods, each approximately 45 minutes

Materials:

- Colored pencils, graph paper, cardstock paper
- Computer and internet access, or printed information from websites

Student Handouts:

- Handout 1: Data Collection for Car Rider Lanes
- Handout 2: Data Table – Compiling Idling Data
- Handout 3: Analyzing Idling Data
- Handout 4: Graphing Idling Data
- Handout 5: Impacts of Idling, Part 1
- Handout 6: Impacts of Idling, Part 2
- Handout 7: Make the Call—Idling Case & Recommendation

Throughout this document, you will see items highlighted in various colors to indicate alignment to specific standards. Each color corresponds to a different framework component—**Disciplinary Core Ideas (DCIs)**, **Science and Engineering Practices (SEPs)**, **Crosscutting Concepts (CCCs)**, or **Georgia Health Standards**. Highlighted text may appear in directions, prompts, or other instructional text to help quickly identify where these standards connections occur throughout the lesson.



EDUCATION STANDARDS

Anchoring Phenomenon

Cars are waiting in the school pick-up line.

Georgia Standards of Excellence

[S3L2](#): Obtain, evaluate, and communicate information about the effects of pollution (air) and humans on the environment.

[Performance Expectation: 4-ESS3-1](#). Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment.

Next Generation Science Standards

Science and Engineering Practices (SEPs): Obtaining, Evaluating, and Communicating Information

Obtain and combine information from books and other reliable media to explain phenomena.

[Appendix F Science and Engineering Practices in the NGSS, page 15](#)

Science and Engineering Practices (SEPs): Analyzing and Interpreting Data

Represent data in tables and/or various graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships.

[Appendix F Science and Engineering Practices in the NGSS, page 15](#)

Disciplinary Core Ideas (DCIs): ESS3.C Human Impacts on Earth Systems

Energy and fuels that humans use are derived from natural sources, and their use affects the environment in multiple ways. Some resources are renewable over time, and others are not.

[Appendix E - Progressions within the Next Generation Science Standards, page 3](#)

Crosscutting Concepts (CCCs): Cause and Effect

Cause and effect relationships are routinely identified and used to explain change.

[Appendix G - Crosscutting Concepts, pages 5 & 15](#)



<p>Reading & Writing Skills</p>	<p>Reading Skills:</p> <ul style="list-style-type: none"> ➔ Ask and answer questions to demonstrate understanding of informational texts about air pollution and idling. ➔ Identify cause-and-effect relationships in short passages, videos, and graphs. ➔ Integrate information from multiple sources (e.g., readings, graphs, and videos) to describe human impacts on air. ➔ Analyze and compare data displayed in different graph types. ➔ Evaluate arguments and claims in informational text (e.g., why idling matters). <p>Writing Skills:</p> <ul style="list-style-type: none"> ➔ Write short responses using evidence from observations or texts ("Idling hurts air quality because..."). ➔ Use simple data (counts, tallies) to support written explanations. ➔ Complete structured CER (Claim-Evidence-Reasoning) prompts with sentence frames. ➔ Compose short persuasive paragraphs recommending behavior changes. ➔ Write short opinion or argument pieces supported by data and reasoning.
<p>Health and Physical Education Standards</p>	<p>HE3.5: Students will demonstrate the ability to use decision-making skills to enhance health.</p> <p>HE5.5.a: Identify health-related situations that might require a thoughtful decision.</p> <p>HE3.5.b: Discuss situations when support is needed when making a health-related decision.</p> <p>HE5.5.c: Predict the potential outcomes of each option when making a health-related decision.</p> <p>HE3.5.d: Indicate the possible consequences of each choice when making a health-related decision.</p>



Big Idea: Air Pollution and Idling

Overview

Students will research background information on the main air pollutants and complete a graphic organizer illustrating that information. Students will collect idling data from the school's parking lot or car rider lane for one week. Students will compile the data to create four types of graphs illustrating the data. Students will create a way to share their findings with others-this could be a poster in the hallway, a short presentation to another class, or a message for the morning announcements.

Vocabulary

The vocabulary section of a lesson plan provides key terms and definitions that support student comprehension and engagement with the lesson content. Teachers can reference this section to introduce new words during instruction, reinforce understanding through activities, or provide background information to support differentiated learning.

- ➔ **Air Pollution:** substances in the air that have harmful or unpleasant effects
- ➔ **Idle or Idling:** to run a vehicle's engine when it is inactive, not in use, not moving, or in operation
- ➔ **Non-renewable energy sources:** once these resources are used, they will not be replenished during a human lifetime (fossil fuels)
- ➔ **Fossil fuels:** the three most important fossil fuels are coal, petroleum, and natural gas. They are called fossil fuels because they are the remains of organisms that lived long ago.
- ➔ **Idling:** leaving a car's engine running when the car isn't moving
- ➔ **Other:** Line graph, bar graph, pictograph, interval, key, x- and y-axis



Engage: How does idling impact the environment and health? (10 minutes)



LIVED EXPERIENCES

Connect to students' lived experiences by sharing a picture of the pickup line at your school's campus or inviting students to connect the provided image to their own experiences. This helps them see that their observations matter and sets the stage for investigation.

1. Show students a picture of cars lined up to pick students up from school.

Ask students the following questions:

Q What do you notice about this picture?

A Possible Answer: Lots of cars, cars aren't moving, some have exhaust, people are waiting, we think the engines might be on.

Q When have you seen something like this at school?

A Possible Answer: Drop-off in the morning, pick-up in the afternoon, when the school hosts events like sports games and band concerts, at the traffic light next to the school. Tell students that when the car's motor is left running, this is called "idling."

Q What do you think is happening while the cars are still sitting with their engines running?

A Possible Answer: wasting gas, making smoke, making noise, making air smell bad

Q How might that affect people or the environment?

A Possible Answer: Not sure, might be bad for the environment and health. Student answers likely won't reference the different pollutants yet, but they will have ideas about why it's bad.

Q Where do you think the gas that makes cars run comes from?

A Possible Answer: gas stations, underground oil, the gas pump. Don't delve into this answer just yet; this is to pique students' curiosity.



2. Explain to students that they will be exploring how idling impacts the environment and health throughout this lesson.

Connect to students' lived experiences by sharing a picture of the pickup line at your school's campus or inviting students to connect the provided image to their own experiences. This helps them see that their observations matter and sets the stage for investigation.



LIVED EXPERIENCES

As an optional extension to deepen students' connection to their lived experiences, have them participate in a mini observation activity. Ask students to quietly observe the school pickup line—or another location where cars are idling—for a few minutes, paying attention to how many cars are idling, how long they remain running, and any smells, smoke, or sounds they notice. Afterward, have students share their observations in pairs and then discuss them as a class. This activity helps turn abstract ideas about idling into concrete, personal experiences that students can relate to and reflect on, and prepares them for the next activity in the Explore. As another option, if students cannot physically visit a space, they may watch a video of a local place where cars are idling.

Explore: Collecting Idling Data (25 minutes)

3. For this activity, break students into lab groups of three to five students. Each lab group will need a clipboard, a pencil, and a separate copy of the **Student Handout 1: Data Collection for Car Rider Lane** for each day of data collection.
4. Each group should collect data for 5-10 minutes at the same time each morning and afternoon for one week.

Note – if this is not possible because of student class schedules, consider recording a video of the car rider lane or a fast-food pick-up line where students can watch and collect data that way.



STUDENT SUPPORT











Flexible Data Collection Options

Not all students can observe at arrival or dismissal. Use one or more of the options below so every student can participate:

- Whole-class snapshot: Schedule a single observation window and collect data together.
- Rotating teams: Assign small groups to gather data on different days.
- Adult/volunteer partners: Coordinate with staff, families, or volunteers to collect counts or time-stamped notes for students to analyze.
- Provided dataset: Use the vetted sample dataset (provided in the lesson materials) when live collection isn't possible.
 - These options ensure all students can engage in analyzing and interpreting data—even if they cannot personally attend the pick-up or drop-off line.

Want anti-idling resources beyond the classroom? [Georgia Commute Schools has a toolkit to help.](#)

5. Students will document types of vehicles, weather, and the time(s) the data was collected. If students are unable to collect the data, an alternative would be to have adults collect the data for the students to compile.

Monday	Tuesday	Wednesday	Thursday	Friday
				
				



Analyzing Data

6. After collecting the data, complete the **Student Handout 2: Data Table - Compiling Idling Data** together as a class, and have each student record the information on their own handout. For older students, you may consider having them research the weather for the week and add that information to the table.
7. Each student should use their data table to independently answer the questions about the idling data table found on the **Student Handout 3: Analyzing Idling Data**.

Graph Idling Data

8. Have students work in groups to complete the graphs and questions from **Student Handout 4: Graphing Idling Data**. Students will represent the data using pictographs and double bar graphs. An option extension is provided for students to try line graphs and pie graphs.



STUDENT SUPPORT

Optional extension: Have students graph the data as either a line graph or a circle (pie) graph.

Whole-class option: Model the process step-by-step and create the graph together. Add a title, label axes/parts, and show how to plot the data while students copy each step.

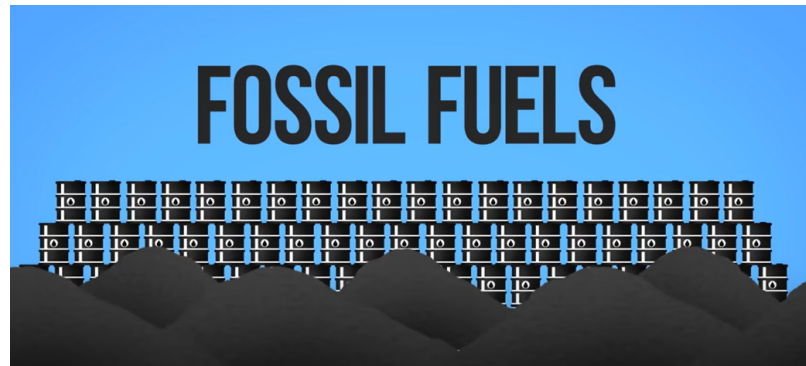
9. After creating the graphs on their worksheets, each group will create the graphs on a poster board to display in the halls of the school.

Student Resources: The **Graphing Rubric** can be used to grade the graphs.



Explain 1: Where does fuel for your cars/ vehicles come from? (10 minutes)

10. Show students a picture of cars at the gas station pump. Ask them **where they think the gasoline, the fuel, for cars comes from**. Facilitate a discussion so that students have the opportunity to discuss their answers to the question. Record some of the answers on the board or in a space everyone can see.
11. Tell students that they will be watching an informational video about fossil fuels. Ask students what they think fossil fuels are, and why they are called “fossil fuels”.
12. Show students the Fossil Fuels 101 video from Student Energy by clicking on the image below. Have them listen for the answer to where **gasoline (a petroleum product) comes from**.



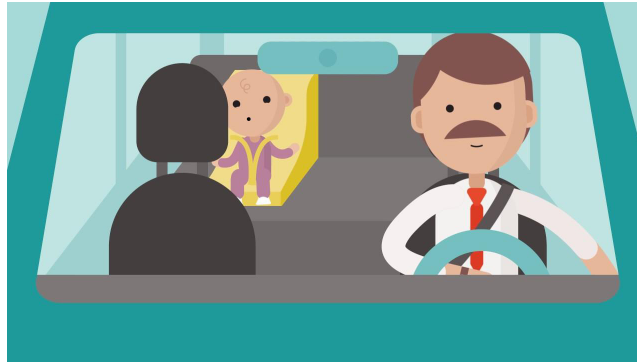
Video hyperlink: <https://www.youtube.com/watch?v=zaXBVYr9lj0&t=12s>.
Video length: 2 minutes and 42 seconds.

13. Return to the list recorded on the board. Facilitate a discussion so that students come to an agreement on where they think the fuel for cars comes from.



Explain 2: Idling and Its Impacts on the Environment and Health (10 minutes)

14. Now that **students know that gasoline, a petroleum-based fossil fuel, is a non-renewable energy source**, ask them how they think **idling could negatively impact the environment and health**. Allow students some time to respond and share their ideas.
15. Show the following video from Sustainable America about Idling at Schools:



Video hyperlink: <https://www.youtube.com/watch?v=FWDOC-QyHrM>.

Video length: 1 minute and 10 seconds.

Elaborate: Idling and Its Impacts on the Environment and Health (15 minutes)

16. Break students into small groups to complete the **Student Handout 5: Impacts of Idling, Part 1**. **They should use the information from both videos and class discussions to identify environmental, health, and other impacts from idling.**

Example: Cause - Vehicle emissions include toxins. Effect - Over time, vehicle exhaust is linked to increases in asthma, heart and lung disease, and even cancer. Example for Other Impacts - Cause - Running the car engine for extra minutes burns more fuel. Effect - This will cost the driver more money in the long run, a negative impact. Cause - Vehicle emissions from the student pickup line. Effect - These emissions add to air pollution.

17. After student groups complete **Student Handout 5: Impacts of Idling, Part 1**, bring the class back together to **summarize what they've learned about idling's impact** on student health and the environment. Provide each group with a scenario card located in the **Student Resources** document and then direct students to complete **Student Handout 6: Impacts of Idling, Part 2**.



HEALTH AND PHYSICAL EDUCATION CONNECTION

To support student sensemaking as they are completing Student Handout 5: Impacts of Idling, Part 1 & 2, consider creating a mini anchor chart (student-facing) with the following information:

- ➔ Stop. What health situation needs a decision? ([HE5.5.a](#))
- ➔ Think. Who could help you decide? ([HE3.5.b](#))
- ➔ Choose. What are your options, and what might happen with each? ([HE5.5.c](#))
- ➔ Reflect. What could be the consequences? ([HE3.5.d](#))



Evaluate: Make the Call — Idling Case and Recommendation (20 minutes)

18. Distribute **Student Handout 7: Make the Call–Idling Case & Recommendation**. Explain that students will use **Stop-Think-Choose-Reflect** to make a health-related decision about idling and justify it with evidence from class graphs and the videos/readings.

Post or project the class idling graphs. Remind students they must cite at least one number from the graphs and one fact from the media.

19. Read the Rainy Dismissal case (from **Student Handout 7: Make the Call - Idling Case & Recommendation**) aloud (teacher or student). Clarify vocabulary as needed (AQI, idling, asthma trigger). Give a safety reminder: students identify trusted adults; they do not confront drivers.

20. Direct students to complete the student handout, parts A-E, independently.
Circulate and prompt as needed.

➔ **Prompts:**

- » **Stop (HE5.5.a): “What is the health-related decision here?”**
- » **Think (HE3.5.b): “Who are two or more safe adults who can help?”**
- » **Choose (HE5.5.c): “List two options and predict now/later outcomes for health, environment, and fuel/cost.”**
- » **Reflect (HE3.5.d + Science): “State your claim and support it with a graph number/trend and a fact about fossil fuels or exhaust; explain the cause → effect.”**
- » **Communicate (SEP): “Write a 2-3 sentence announcement the principal could read with one action step.”**

21. Facilitate a brief share.

- ➔ Option A: 2-3 students read their announcements aloud.
- ➔ Option B: Partner check—partners underline the number used and circle the health fact cited, then star the recommended option.

22. Collect and score using the **Student Resources: Teacher Rubric (10 pts)**:

- ➔ Health decision (2 points)
- ➔ Support network (1 point)
- ➔ Options & outcomes (3 points)
- ➔ Evidence & reasoning with data + fact (3 points)
- ➔ Communication (1 point).

Provide quick feedback on strengths and next steps by providing comments for students.

23. **Optional Extension:** Ask “If 10 cars turn off for 5 minutes, how many total minutes of idling are avoided? What health and fuel/cost benefits might result?”



STUDENT SUPPORT

To provide additional support for students, consider these differentiation strategies:

- ➔ *Grade 3:* Provide the word bank; allow drawing icons (😊 / ⚠️) for outcomes; accept oral Claim, Evidence, Reasoning (CER) recorded by the teacher.
- ➔ *Grades 4-5:* Require at least one quantitative citation and one trade-off (comfort vs. emissions).
- ➔ *MLLs:* Sentence frames—"The health decision is _____ because _____." "I recommend _____ because the data shows _____."
- ➔ *IEP/504:* Chunk timing (A-B first; then C; then D-E), or scribe for CER.

Optional Assessment Questions

The optional assessment questions section offers suggested prompts that can be used to check for understanding, guide student reflection, or spark class discussion. Teachers may choose to use these questions during whole-group conversations, small-group work, or as formative checks throughout the lesson.

- Q** What decision are we asking families to make at pick-up/drop-off?
A *Answer: Turn engines off while waiting.*
- Q** How does idling contribute to air pollution?
A *Answer: Since cars are still on while idling, they are still releasing pollutants, even though they aren't moving.*
- Q** Who could help us share this message, and when would we ask for support?
A *Answer: Principal for morning announcements; bus coordinator for driver meeting; PTO/PTA to share on social media.*
- Q** Are graphs an effective way to communicate information about idling at our school?
A *Possible Answer: Graphs help show the trends in the data we collected about the number of cars idling at school.*
- Q** Did you see trends and/or patterns when you analyzed the data?
A *Possible Answers: More vehicles idled before the pickup time began, etc.*
- Q** How do you think education and awareness will reduce idling at our school?
A *Possible Answer: Some people may not have been aware of the negative effects of idling, so after being educated, they are less likely to idle.*
- Q** What else can we do to promote No Idling at our school?
A *Possible Answers: Talk to our parents/school bus drivers about the drawbacks of idling, make announcements, post on the school's social media, etc.*



Potential Local Field Trip Ideas

West Atlanta Watershed Alliance Outdoor Activity Center

<https://wawa-online.org/about/>

The West Atlanta Watershed Alliance Outdoor Activity Center hosts environmental education programming, a nature preserve, and an outdoor activity center. Students can learn about the organization's origins as a community environmental justice organization and what they can do to advocate and protect their local environment.

Additional Resources

EPA Air Topics

<https://www.epa.gov/environmental-topics/air-topics>

This page on the EPA website has resources to learn more about air pollution, climate change, air research, and what you can do.

AirNow Clean Air and Dirty Air

<https://www.airnow.gov/education/students/clean-and-dirty-air-part-one/>

This resource is written for students and provides background information on clean and dirty air. It helps students identify if air is clean or dirty and introduces them to the Environmental Protection Agency (EPA).

AirNow Clean Air and Dirty Air Part Two

<https://www.airnow.gov/education/students/clean-and-dirty-air-part-two/>

This resource is written for students and provides background information on pollutants, including what particulate matter is.

AirNow: What is the AQI

<https://www.airnow.gov/education/students/what-is-the-aqi/>

This resource for students explains how the Air Quality Index, or AQI, is a quick way to tell people about how much pollution is in the air each day.

This lesson was designed as a part of the K-12 curriculum focusing on the relationship between human activity, transportation, air pollution, and health by Georgia Commute Schools. If you liked the curriculum, please leave a rating and review on [our Teachers Pay Teachers page](#).

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