

## **Affecting Transportation Choices—Walk, Don't Ride!**

### **Purpose**

- Understand carpooling and trip reduction.
- Examine family and community driving patterns.
- Think about how to reduce trips and change mode of travel.

### **Time Requirements**

- One to three 20-30 minute class periods and one day or one week of 5-10 minute homework/out-of-class assignments

### **Subject Areas**

- English
- Language Arts
- Reading
- Mathematics
- Science
- Health Education

Driving less, bicycling, walking, carpooling, or taking the bus—these are the easiest ways for an individual or a family to reduce the environmental impact of personal transportation. Kids can make a difference in their communities—especially at their schools where traffic congestion and air quality are often problems at the beginning and end of the school day. The activities in this lesson are designed to encourage students to examine and possibly change their families' transportation habits, especially for trips to school. The message is that the least polluting methods of transportation are also the least expensive and the healthiest.

### **Activity 1: Observing Transportation Choices in Your Neighborhood**

#### **Grades K-5**

#### **Objective:**

Students will observe and record use of carpools, as well as become aware of alternative means of transportation.

#### **Background:**

Air pollution is a problem in many areas. Air pollution is air that is dirty compared to its original state. Air pollution can be harmful to people, animals, plants, and structures. Vehicles produce a large percentage of air pollution. Vehicle exhausts contains carbon monoxide and small traces of volatile organic compounds. These compounds, on hot, sunny days with light winds, can produce ground-level ozone. Ozone is an air pollutant that can cause health problems after high levels of exposure. Ozone is a main component of smog. (More information and activities on ground-level ozone are available on the TCEQ web site.) Another common pollutant is airborne particulate matter. Some examples are tiny particles of soil, ash, or emissions from some factories that can get into your lungs and cause health problems.

In order to control air pollution, the government has placed restrictions on how much of these contaminants can be released into the air. One thing you can do to keep the air clean is to encourage your family or friends to walk, ride a bike, or take a bus when possible instead of driving. (More information on ridesharing is available on the TCEQ web site.)

[Grades K-1](#)

[Grades 2-5](#)

## **Grades K-1**

### **TEKS:**

- English, Language Arts, and Reading
- Grade K: 1C, 1E, 4B, 8A-B, 10A, 12C
- Grade 1: 1C, 3C, 4B, 11A-B, 13A, 15A, 15C, 18F

### Science

- Grade K: 1A, 2B, 4A
- Grade 1: 1A, 2B, 4A

### Health Education

- Grade 1: 4B, 7B, 8B

### **Time:**

- One story time reading session

### **Materials:**

- *Henry Hikes to Fitchburg* by Donald Johnson

### **Directions:**

1. Read the book to the students. The story is about a bear who travels on foot and has more fun and spends no more time getting to his destination than his benighted colleague who works diligently to accumulate money for train fare.
2. Ask the students if anyone walks to school. Talk about what is good about walking instead of driving to school. Has anyone ever walked with his or her family to another destination? Ridden the bus? Shared a ride (carpooled)?
3. Point out that these are some of the ways that we can all help the air in Texas.

### **Resources:**

#### *Other*

- Johnson, D. B. *Henry Hikes to Fitchburg*. Boston: Houghton Mifflin Co., 2000. 32.

## **Grades 2-5**

### **TEKS:**

- English, Language Arts, and Reading
- Grade 2: 1C, 3C, 8A-C, 14D, 20A
- Grade 3: 1C, 3C, 8A, 8C, 12A, 20A
- Grade 4: 9A-C, 21A
- Grade 5: 9A-C

### Science

- Grade 2: 1A, 2B, 4A
- Grade 3: 1A, 2B, 4A
- Grade 4: 1A, 2B, 4A
- Grade 5: 1A, 2B

### Health Education

- Grade 2: 3B, 5A-C
- Grade 3: 1B, 4B, 6A-C

- Grade 4: 2A-B, 6A-B
- Grade 5: 4A, 8B, 8D

**Time:**

- Two class periods and one 5-10 minute out-of-class assignment

**Materials:**

- Paper
- Pencils/pens

**Directions:**

1. Ask the students how they get to school and graph the types of transportation used on the board or an overhead.
2. Students will tally cars they observe on a sheet that has been categorized as follows:
  - o One person in car
  - o Two persons in car
  - o Three or more persons in car
3. Have students go to the front of the school in the morning or afternoon when there is the most traffic. If this is not feasible, another alternative is to assign the task as homework that the students can do either on their way to or from school simply by observing the cars around them.
4. Have students observe and tally the cars (count how many passengers are in the car) for five minutes.
5. Have the students discuss their observations.
6. Graph the outcomes of the experiment during the discussion.
7. Discuss alternatives to driving alone.
8. Make a list of the different alternatives to driving and discuss how they can help lessen air pollution.

**Resources:**

*Web Sites*

- <http://www.tceq.state.tx.us/compliance/monitoring/air/monops/ozonofacts.html>

Ozone: The Facts, Texas Commission on Environmental Quality

- [http://www.tceq.state.tx.us/assets/public/assistance/education/air/ride\\_share.pdf](http://www.tceq.state.tx.us/assets/public/assistance/education/air/ride_share.pdf) [PDF]

What Is Ride Sharing?, Texas Commission on Environmental Quality

- <http://www.erideshare.com/statecity/TX.htm>

Texas (TX): Carpool / Rideshare Links by City, eRideShare.com

**Activity 2: Trip Tally**

**Grades 3-5**

**Objective:**

- Students will collect, tabulate, graph, and analyze information on how they get around.
- Compare advantages and disadvantages of different forms of travel.

**Background:**

There are many possible solutions to the problems of an automobile dependent transportation system. Some of the changes need to come through new laws decided upon by the government. But most need to come from changes in personal travel habits. The easiest way for an individual or a family to reduce the environmental impact of personal transportation is to choose to drive less—bicycle, walk, or take the bus. If driving is the only option, choose the most efficient vehicle available, and keep it well maintained. By choosing to live close to work and services that fill most needs, a family can further reduce its environmental impact from transportation and turn time spent in an automobile into family time. Kids can

make a difference in their communities—especially at their schools, where traffic congestion and air quality are often problems at the beginning and end of the school day. This activity is designed to encourage student to examine and change their families' and others' transportation habits, especially for trips to school.

#### *Walking or Cycling*

It takes about 10 minutes to walk 1/4 mile or bike a whole mile! Walking and cycling produce no pollution, and are excellent forms of exercise.

#### *Taking the Bus*

Buses usually run regardless of the number of passengers. A bus with as few as seven passengers uses less fuel per passenger per mile than a typical car carrying only a driver. A bus with 40 passengers uses much less fuel than 10 cars with four passengers each. Taking the bus with your friends can be fun too!

#### *Ride-sharing or Carpooling*

With two people in a vehicle, emissions per person are reduced by half; with three people, by even more. Regular trips to work, school, or after-school activities are the easiest to arrange around a carpool. Ride with, or give a ride to, classmates, co-workers, or friends.

#### **TEKS:**

Mathematics

- Grade 3: 14A-B
- Grade 4: 13C
- Grade 5: 13B-C

Science

- Grade 3: 1A, 2B
- Grade 4: 1A, 2B
- Grade 5: 1A, 2B

Health Education

- Grade 3: 1B, 4B, 6A-C
- Grade 4: 2A-B, 6A-B
- Grade 5: 4A, 8B, 8D

#### **Time:**

Three 30-minute class periods plus five minutes daily homework for a week

#### **Materials:**

- One trip tally, trip tally sample, trip tally graph, and trip tally graph sample for each student.
- Overheads of trip tally and trip tally graph

#### **Directions:**

1. Explain that by keeping track of how each student gets around, the students can determine how they already help reduce pollution and can get ideas on how to do a better job.
2. Review the example trip tally using the overhead projector. Explain that students will use the trip tally to record "Car Trips" and "Saved Car Trips." Explain that they will use an "X" to record every time they ride in a car and a check mark to record every time they save a car trip.
3. To complete a trip tally, fill out one row for each trip.

Enter:

- day of the trip
- kind of transportation used and destination
- "X" in the "All Car Trips" column if a car was used

- check mark in the appropriate column for each car trip saved

Note: A "trip and back" may be entered on one row, with all X's and check marks increased accordingly.

4. Use the following guidelines for "Saved Car Trips":

**Carpool:** Place a check mark for each extra passenger in a carpool. (Don't count the driver. A driver, one student, and one other passenger are considered to be one extra passenger for this exercise.)

**Combined Trip:** Place a check mark for each extra purpose in a trip. (A trip to the grocer, work, and school is two extra trips.)

**Bus Ride:** Place only one check mark for each bus ride, no matter how many people are on the bus.

**Bike or Walk:** Place a check mark for each trip you bike or walk.

**Other:** Place a check mark for any other method that saves a car trip.

5. Have students record trips every day for one week.
6. At the end of the week, have students total their data for each column of the trip tally. Working in groups or as a class, tabulate class totals for each column of the trip tally.
7. Pre-class preparation: Tabulate all possible trips by adding the class's total car trips to all saved trips. Set up the trip tally graph to accommodate this number. Write in graph numbers on the sides of the graph.
8. Pass out the trip tally graphs and display one with an overhead projector.
9. Review how each method of transportation reduces pollution.
10. Discuss with the class:
  - What was your favorite way to save driving trips?
  - What did you like about saving trips?
  - What didn't you like about saving trips?
11. Demonstrate on the overhead how to represent category totals on the graph. Write the category totals below the appropriate bar.
12. Have students complete and color their trip tally graphs. (You may want to suggest that they use colors that represent pollution or clean air as appropriate.)

### **Extensions:**

Fifth grade students may record actual miles instead of X's and check marks.

You may want to issue a challenge that the student with the most miles saved at the end of the week wins a prize.

Advanced students may total car trips saved from all "saved" categories while others are still completing their graphs.

Discuss with the class:

- What was the class's best way to save car trips?
- Did they know this method helped the environment?

Add up the total car trips saved from all "saved" categories, if not already completed. Graph the "Total Saved Trips" and the "Total Car Trips" in their respective columns.

Discuss with the class:

- If more trips were saved than driven, does that mean the air is less polluted than if no cars were driven?
- If all trips were taken by single passenger cars, how many trips would have been taken?

Add "Total Saved Trips" and "Total Car Trips" to get "Total Possible Trips" and fill in this chart category.

Discuss with the class:

- Transportation produces one-third of the air pollution and greenhouse gases in the United States. Is saving trips a good way to reduce pollution?
- Why or why not?
- How can you reduce driving trips in the future?

**Resources:**

*Classroom Materials* [PDF]

- [Trip Tally](#)
- [Trip Tally Sample](#)
- [Trip Tally Graph](#)
- [Trip Tally Graph Sample](#)

Source:

ACTIVITY 1:

Grades K-1:

- Northeast Sustainable Energy Association, <http://www.nesea.org/>

Grades 2-5:

- Integrated Thematic Unit Scholastic, "Air Quality and Transportation," Texas Commission on Environmental Quality
- Teresa Ayala, University of Texas at El Paso TES Course, 1995

ACTIVITY 2:

- Northeast Sustainable Energy Association, <http://www.nesea.org/>