

Healthy Travel for You and Planet Earth

LEVEL: K-1-2-3-4-5-6

SUBJECT AREA(S): Health, Social Studies, Language Arts, Mathematics, Art, Science

OBJECTIVE: 1) Students will learn that walking, bicycling, and using mass transit will benefit the environment and enhance their own health. 2) Students will learn about environment-friendly ways motor vehicles can be used so they can discuss these methods with their parents/guardians.

TIME: Two to three 45-minute periods

MATERIALS

Chalkboard, chart paper, or overhead projector
Butcher paper and various art supplies

Figure 11-1: Multiple-Choice Quiz – Environment-Friendly Motor-Vehicle Use

Figure 11-2: Answer Key to Figure 11-1

Figure 11-3: True/False Quiz – Save the Planet

Figure 11-4: Answer Key to Figure 11-3

Figure 11-5: Ideas and Themes for Activities/Discussion

Figure 11-6: More Information about Environment Friendly Motor-Vehicle Use

SUGGESTED ACTIVITIES

1. Write the following words on the board or chart paper. Have students tell what each word means.

- Community member
- Community activist
- Environment
- Environmental activist
- Mass transit
- Pollution
- Traffic jam

For Your Information

This activity can be made into a matching or fill-in-the-blank worksheet for homework.

Definitions:

Community member: an inhabitant of a place.

Community activist: a community member who acts to protect the community.

Environment: our natural surroundings, including air, water, and land.

Environmental activist: a community member who acts to protect the air we breathe, the water we drink, and the land on which we live for the community.

Mass transit: transportation systems that move many people from one place to another.

Pollution: unclean environmental conditions or substances.

Traffic jam: a condition in which too many cars crowd or jam a roadway; this is an unpleasant, inefficient, expensive, polluting, inconvenient, and sometimes unsafe situation that often requires much waiting.

2. Have students take Figure 11-1: Environment-Friendly Motor-Vehicle Use as a pop quiz or discuss it with them beforehand. Have them take it home to review with their parents/guardians.

For Your Information

See Figure 11-2: Answer Key to Figure 11-1 and Figure 11-6 for more information about environment-friendly motor-vehicle use.

3. Organize a poster contest around the theme "Iowa Kids on the Move!" and the idea of promoting alternatives to single-occupant vehicles.
4. Using the following formula, have students estimate the costs of commuting:

Estimate daily round-trip commute miles. _____

Multiply daily round-trip commute miles by number of days worked monthly to determine monthly commute miles. _____

Estimate monthly non-commute miles. _____

Add monthly commute miles and monthly non-commute miles to determine total monthly miles. _____

Estimate the commute percentage of overall monthly miles. _____

Estimate commute costs per month for a single occupant in a vehicle:

\$ _____	car payment
+ \$ _____	insurance
+ \$ _____	gasoline
+ \$ _____	oil/tires/maintenance/repairs
_____	TOTAL COSTS
% _____	Commute Percentage
\$ _____	Monthly Commute Cost

For Your Information

You can estimate the monthly commute for carpoolers by dividing the commute share of the cost of gasoline by the number sharing the cost.

ASSESSMENT

1. Have students exchange the posters they made and then explain them to the class.
2. Give students the True-False Quiz (Figure 11-3) at the beginning of the next class.

EXTENSIONS

1. Write these words on the board:

Environment/Livability
 Personal Health
 Freedom/Mobility

Using these three categories, have students brainstorm all the reasons they can think of for choosing to walk, bicycle, or use mass transit rather than a motor vehicle.

Discuss how using alternative forms of transportation is something people can do to protect the environment.

2. Have students suggest non-polluting changes we could make in our city to make it easier to bike, bus, or walk. How could the region's transportation system be changed to accommodate their ideas?
3. Have students make a pledge to change one weekly trip by car to a carpool, school bus, bike, or walking trip.
4. Discuss the work of local community members and officials working on environmental protection or transportation, or invite them to class to be interviewed by students: a DEQ (Department of Environmental Quality) employee, a city planner, a city

commissioner, a local bicycle advocate, etc.

5. Using a local bus route map, have students locate the Park & Ride lots in their own areas.

ADDITIONAL RESOURCES

Please refer to the Iowa Safe Routes to School Encouragement and Education Program Web site for additional resources (www.iowasaferoutes.org).

Multiple-Choice Quiz: ENVIRONMENT-FRIENDLY MOTOR-VEHICLE USE

- Which of the following choices is the biggest contributor to air pollution in Iowa?
 - Kids blowing bubbles
 - Automobile exhaust
 - Industrial pollution
- In the world, there are:
 - More bikes than cars
 - More cars than bikes
 - More penguins than people
- When you ride the bus, you get more time to:
 - Read
 - Listen to your personal stereo
 - Enjoy yourself
 - All of the above
- You make 1 pound of pollution when you drive:
 - 2 miles
 - 25 miles
 - 2,500 miles
- You can minimize pollution from your car by:
 - Driving at a steady speed
 - Not using your air conditioning
 - Having a fuel-efficient vehicle
 - All of the above
- Cars are helpful because they are:
 - Noisy
 - Dangerous
 - Polluting
 - None of the above
- In many cities, police find it more efficient and quicker to get around using:
 - Cars
 - Mountain bikes
 - Pigs
- By riding the bus to work, one can save:
 - \$2,000 a year
 - \$10.00 a year
 - \$2 million a year
- The average amount of land that cars take up in cities is:
 - 50%
 - 100%
 - 10%
- The U.S. has 5% of the world's population but uses what percent of the commercial energy?
 - 5%
 - 10%
 - 26%
- If each car carried two passengers instead of one, how much gas would be saved each day?
 - 2,000 gallons/day
 - 40 million gallons/day
 - 200 billion gallons/day
- If you can't walk to a bus stop and you can't find a place to park where you're going, the solution is to:
 - Buy a camel
 - Drive to a Park & Ride lot and then take the bus
 - Never leave your house
- You can save gasoline every day in your car by:
 - Making sure the tires are properly inflated
 - Using radial tires
 - Driving 55 mph instead of 65 mph
 - All of the above
- Traffic congestion will keep increasing in Iowa if:
 - More people move in than out of the area
 - People keep driving their cars instead of taking mass transit
 - People don't care about the quality of the air they breathe.
 - All of the above

Figure 11-1

Multiple-Choice Quiz: ENVIRONMENT-FRIENDLY MOTOR-VEHICLE USE Answer Key

1. The #1 form of air pollution in Iowa is:
 - a) Kids blowing bubbles
 - b) Automobile exhaust**
 - c) Industrial pollution
2. In the world, there are:
 - a) More bikes than cars**
 - b) More cars than bikes
 - c) More penguins than people
3. When you ride and Tri-Met drives, you get more time to:
 - a) Read
 - b) Listen to your personal stereo
 - c) Enjoy yourself
 - d) All of the above**
4. You make 1 pound of pollution when you drive:
 - a) 2 miles
 - b) 25 miles**
 - c) 2,500 miles
5. You can minimize pollution from your car by:
 - a) Driving at a steady speed
 - b) Not using your air conditioning
 - c) Having a fuel-efficient vehicle
 - d) All of the above**
6. Cars are helpful because they are:
 - a) Noisy
 - b) Dangerous
 - c) Polluting
 - d) None of the above**
7. In many cities, police find it more efficient and quicker to get around using:
 - a) Cars
 - b) Mountain bikes**
 - c) Pigs
8. By riding the bus to work, one can save:
 - a) \$2,000 a year**
 - b) \$10.00 a year
 - c) \$2 million a year
9. The average amount of land that cars take up in cities is:
 - a) 50%**
 - b) 100%
 - c) 10%
10. The U.S. has 5% of the world's population but uses what percent of the commercial energy?
 - a) 5%
 - b) 10%
 - c) 26%**
11. If each car carried two passengers instead of one, how much gas would be saved each day?
 - a) 2,000 gallons/day
 - b) 40 million gallons/day**
 - c) 200 billion gallons/day
12. If you can't walk to a bus stop and you can't find a place to park where you're going, the solution is to:
 - a) Buy a camel
 - b) Drive to a Park & Ride lot and then take the bus**
 - c) Never leave your house
13. You can save gasoline every day in your car by:
 - a) Making sure the tires are properly inflated
 - b) Using radial tires
 - c) Driving 55 mph instead of 65 mph
 - d) All of the above**
14. Congestion will keep increasing in Iowa if:
 - a) More people move in than out of the area
 - b) People keep driving their cars instead of taking mass transit
 - c) People don't care about the quality of the air they breathe
 - d) All of the above**

Figure 11-2

True-False Quiz – Save the Planet!

student name

Directions: Circle “T” for True, “F” for False

- | | | |
|---|---|---|
| T | F | 1. The car is the main way people get from one place to another in most places throughout the world. |
| T | F | 2. Auto exhaust is one of biggest contributors of air pollution in Iowa. |
| T | F | 3. A traffic jam is a time for people who work downtown to meet one another and be friendly on their drive to and from work each day. |
| T | F | 4. Mass transit means transporting large groups of people. |
| T | F | 5. A car produces a pound of air pollution every 25 miles. |
| T | F | 6. Being a community activist means being responsible to the needs of the community. |
| T | F | 7. The only thing negative about driving a car is the amount of fuel it uses. |
| T | F | 8. There are more bicycles in the world than cars. |

Figure 11-3

Answer Key to Figure 11-3: True-False Quiz – Save the Planet!

1. False
2. True
3. False
4. True
5. True
6. True
7. False
8. True

Figure 11-4

Ideas and Themes for Activities/Discussion

In many cities, police find it more efficient and quicker to get around downtown using mountain bikes than cars – give it a try!

Motorists: Get rid of the stress and tension of driving and parking by taking mass transit.

A person can save up to \$2,000 a year on parking, gas, maintenance, and insurance by taking mass transit.

When you take mass transit, you get extra time to read, listen to your personal stereo, or just have time to yourself.

By walking, biking, and/or taking mass transit, you help keep our air clean by decreasing the amount of air pollution in Iowa.

When just one person leaves his or her car home and uses mass transit or a bike to get to work for a year, our lungs and our planet are saved from 78 pounds of pollution.

The more people use buses and bicycles, the cleaner our air will be.

Cars take up almost 50 percent of the land area in large cities (60 percent in Los Angeles), turning areas that could be parks, homes, forests, and fields into stretches of noisy, oil-splattered, traffic-congested asphalt.

Figure 11-5

More information about environment-friendly motor-vehicle use

Air Pollution

Motor vehicles cause much of Iowa's – and the world's – **air pollution**.

For every 25 miles driven, one pound of pollution dirties the air.

Driving at a steady speed minimizes pollution.

Automobiles account for about 30-40 percent of the nation's total **carbon-dioxide emissions**.

Carbon dioxide is the main contributor to the **greenhouse effect** – the slow warming of the earth's atmosphere.

Energy Usage and Fuel Efficiency

The U.S. has only five percent of the world's population, but uses 26 percent of all **commercial energy**.

Fuel-efficient and properly tuned vehicles minimize pollution, as do vehicles whose emissions control systems are working properly.

Motor vehicles burn more than twice as much gasoline during the **first few minutes of operation** as they do at other times.

Automobile air-conditioners consume more than a gallon of gasoline for each full tank burned.

Under-inflated tires cause drag, which can raise fuel consumption by as much as 6 percent.

Radial tires can improve fuel economy by about one mile per gallon.

Less gasoline is burned at 55 mph than at 65 mph.

Thirty seconds of idling can consume more gasoline than the amount used to start a car.

The more **fuel-efficient** the motor vehicle, the more money you can save and the fewer valuable resources you use. (Students can read Consumer Reports to discover the most fuel-efficient cars and trucks on the market. For example, they could make a list of all cars that get more than 30 miles to the gallon.)

Alternative fuels are available for powering motor vehicles. These fuels include electric power, natural gas, ethanol, and methanol. (Students can write to their state and federal senators and representatives, asking them to support laws that would encourage, rather than discourage, alternative motor-vehicle fuels.)

Other Impacts

Motor vehicles often have **negative impacts on neighborhood streets**: noise, air pollution, threat to safety. (Students might encourage their parents/guardians to use more major thoroughfares and to drive more slowly.)

How to Make a Difference

If you drive alone to work and switch to the bus or a carpool, you can **cut your commuting costs** by more than half.

If each car carried two passengers instead of only one, up to **40 million gallons of gasoline would be saved** each day.

When just one commuter leaves a car in the garage and uses alternative transportation for one year, our lungs and planet are spared an average of **nine pounds of hydrocarbons, 63 pounds of carbon monoxide, five pounds of nitrogen oxides, and one pound of particulates**. People can **carpool** to places of common destination: work, school, etc.

Leaving your car at home and using alternative forms of transportation – and convincing others to do the same – helps **reduce traffic congestion and air pollution, and conserves energy**.

Figure 11-6