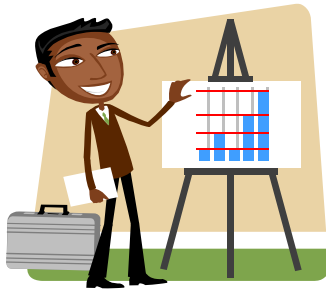


Graphing School Travel Choices

Subject: Math, Language Arts



OBJECTIVES:

- Students will learn how to make bar graphs and pie charts.
- Students will learn how to give surveys and analyze data from these surveys.
- Students will understand the barriers that exist that keep them and their friends from walking and bicycling to school.



MATERIALS:

- Survey handout
- Field trip permission slips



SETTING: indoors



ESTIMATED TIME:
2 class periods



VOCABULARY:

- Data, analyze, pie chart, graph, walking school buses



ACTIVITY SOURCE:

Safe Routes to Schools, Alameda County



OVERVIEW: Students will learn about bar graphs and pie charts, and then will take surveys of their friends to analyze how they get to school. Students will discuss their findings, focusing on possible solutions to the barriers that exist in keeping children from walking and bicycling to school.

BACKGROUND: It's hard to believe that a mere generation ago, more than 60% of students were walking and bicycling to school. Today that number is a mere 6-13%. Why do so many children get driven to school? In many areas it is estimated that 20 to 30% of peak morning traffic is school-related. The reasons are obvious: the journey between home and school has become longer and more treacherous because of decades of auto-oriented suburbanization. Parents are concerned that their children will be exposed to dangerous strangers. Sidewalks, crosswalks, and bike paths are scarce. Other reasons are not as obvious; parents often drop their kids off on the way to dropping off another sibling or on the way to work.

This activity attempts to analyze these school travel choices through surveys with students and their peers. In investigating why or why not kids are walking or bicycling to school, the students themselves come up with solutions that will help lead more and more of them to getting to school the old-fashioned way— walking and bicycling.

LESSON SET-UP:

1. Photocopy surveys for each student.
2. Either photocopy the page with the graphs, or create the graphs (bar graph and/or pie chart) on butcher paper or on the board.

STATE STANDARDS

Math:

Statistics, Data Analysis and Probability:

- 1.0 Students conduct simple probability experiments by determining the number of possible outcomes and make simple predictions.
- 1.3: Summarize and display the results of probability experiments in a clear and organized way (e.g., use a bar graph or a line plot).

Language Arts:

Writing Strategies

- 1.0 Create a single paragraph.
 - A. Develop a single topic sentence.
 - B. Include simple supporting facts and details.

Graphing School Travel Choices

BUILDING BACKGROUND/ DISCUSSION:

1. Discuss the **Fantastic Four Reasons** to walk and bike to school:
 - ✓Cutting down on pollution
 - ✓Getting good exercise
 - ✓Cutting down on traffic
 - ✓Having fun
2. Discuss what carpooling is. If you live in an area with casual carpools (informal car pools that form when drivers and passengers meet – without specific prior arrangement – at designated locations), you could also introduce this term.
3. Discuss what bar graphs are and give them an example of one.
 - You could also have an entire lesson at this point about bar graphs, discussing the following: x and y axis, order pairs, line plots, tally charts, etc.

ACTIVITY:

PART I:

1. Take a survey of the class, using the survey provided on the accompanying page.
2. Record their answers on a bar graph.
3. Discuss reasons why students don't walk or bike to school.

PART II:

1. Tell students that they will be repeating this survey with five of their peers.
2. Before they do the survey with their peers, have them predict the outcomes of their surveys. They can guess the following:
 - How many (out of 5) walk to school
 - How many bike to school
 - How many drive to school
3. Give students up to a week to finish this assignment. They can do it before or after school, or during lunchtime.
4. Have students make another bar graph alongside the one that they used to predict the answers.
5. Have students write a paragraph that summarizes their survey results, including how students

got to school, the barriers preventing students from walking and bicycling to school and possible solutions.

OPTIONAL: Put everyone's findings together on one large pie chart, by mode, on a large piece of paper.

6. Discuss the findings together as a class:
 - Do more students walk, bike or drive to school?
 - What are some of the barriers to not walking or bicycling to school?
 - If students drive alone with their parents, how could they work to set up carpools with students?
 - Discuss the idea of walking school buses, if parents don't think it's safe or don't have the time to walk. Walking school buses are groups of students from the same neighborhood who walk together where they walked with their neighborhood friends to school, with parents trading off.
 - Discuss any solutions that students came up with to overcome barriers to walking and bicycling to school.

EXTENSION IDEAS

1. Have students take these surveys home to their parents, focusing especially on the last question. Have students share their parents' reasons behind their specific mode choice.
2. In one month, take another survey with the class, asking the same question of how students arrived to school. Compare the results of the two surveys.
3. Introduce pie charts to the students. Have students make a pie chart alongside their bar graph summarizing the results of their findings.
4. Have students compare the costs, benefits and negatives of using the following: driving a car (including the costs of owning one), riding a bike, walking, riding the bus, taking BART, etc.

SAFE ROUTES TO SCHOOLS SURVEY

1. How did you get to school today?

- Walking
- Bicycling
- Taking the bus
- Driving in a car alone or with a sibling
- Carpooling (carpooling means more than one family sharing a ride)
- Scooter
- Other (*please describe*)

2. How did you get to school yesterday?

- Walking
- Bicycling
- Taking the bus
- Driving in a car alone or with a sibling
- Carpooling (carpooling means more than one family sharing a ride)
- Scooter
- Other (*please describe*)

3. If you walked or rode a bike, why did you?

- It's good exercise
- It helps the environment
- I like to talk with my friends that I walk with.
- My parents make me because I live close to the school.
- Other (*please describe*)

4. If you did not walk or bike to school, why not?

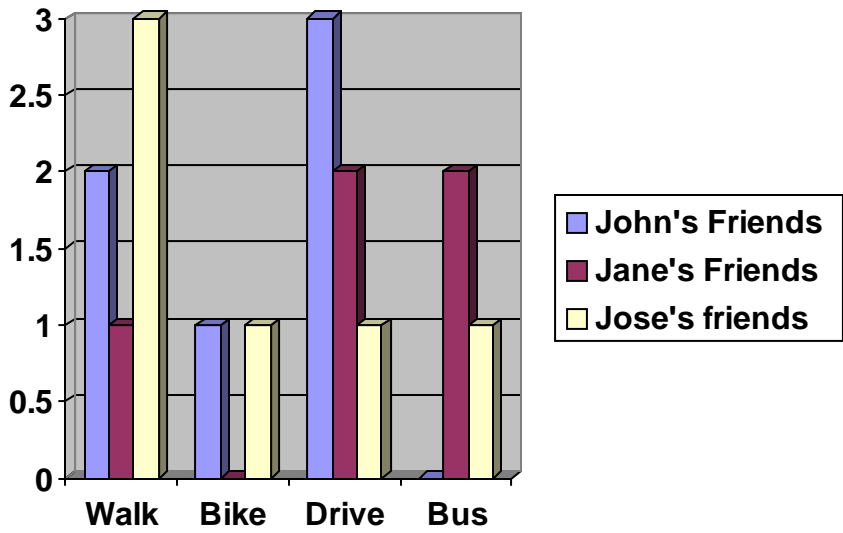
- Too far
- My parents say that it's not safe enough
- We're in too much of a hurry in the morning.
- We have to drop off a sibling at another school.
- The school is on the way to my parents' work.
- I take the bus.
- Other (*please describe*)

5. What would help you to start walking or bicycling to school?

- I don't live close enough, but if my parents parked a few blocks from the school I could walk a little bit.
- If I had other kids to walk with in the neighborhood we could all walk together.
- If we found a safer route my parents would let me walk to school.
- I could try to get up earlier in the morning.
- Other (*please describe*)

Examples of Graphs

Bar Graph



Pie Chart

