

TLC Elementary School Lesson Plan Math Investigations II

Subject

Mathematics

Grade level

2

Duration

One or two class periods

Objectives

Students will

- practice measuring the length and width of objects around the classroom;
- create two bar graphs, comparing length and width; and
- discuss why bar graphs are useful in displaying data.

Materials

- Paper and pencils
- Common objects: desk, chair, notebooks, textbooks
- Rulers
- Graph paper (optional)
- Colored pencils (optional)
- *Math Investigations II* video and VCR

Procedures

1. Tell students that they will learn measuring and graphing skills.
2. Divide the class into small groups. Tell students that each group will measure the length and width of the objects listed below; they will draw one bar graph showing their lengths and a second bar graph showing the widths.

Objects to Measure

- desk
 - book
 - notebook
 - chalkboard
 - tissue box
3. Give students time in class to work on the activity. Remind them to measure accurately and record the width and length of each object. This will help them organize the data and have it available when it is time to create the graphs.
 4. You may want to show students "Length," Segment 5 of the video, which explains how to measure an object and how to read a ruler.

5. Next, show how to draw a bar graph. You may distribute graph paper, or have students draw the graphs on unlined paper. For the first graph, label the horizontal axis "Object" and the vertical axis "Length." For the second graph label the horizontal axis "Object" and the vertical axis "Width." Students may use a different color for each object.
6. If students have questions about how to draw a graph, show "Weather," Segment 2, which explains how to make bar graphs and why they are useful.
7. After each group has measured the objects and drawn the graphs, bring the students together for a discussion. Did the groups get similar results? What kinds of variations were in the results? What caused the differences?
8. Conclude by discussing why bar graphs are used to display data. Do students think it is easier to compare data looking at a graph or looking at a chart? Help students understand that a bar graph is a quick way to show results and compare data.

Evaluation

Use the following three-point rubric to evaluate students' work during this lesson.

3 points: Students were engaged by the activity and worked effectively in their groups to measure different objects, drew accurate and complete graphs, and participated actively in class discussions.

2 points: Students were somewhat engaged by the activity and worked in their groups to measure different objects, drew partially accurate and mostly complete graphs, and participated in class discussions.

1 point: Students were not engaged by the activity and had difficulty working in their groups to measure different objects, did not complete their graphs, and participated minimally in class discussions.

Vocabulary:

bar graph

Definition: A pictorial representation of quantities; a bar graph is often used to compare amounts.

Context: A store owner may create a bar graph to compare monthly sales over the course of a year.

horizontal axis

Definition: The reference line on a graph that is on the bottom and is drawn from left to right

Context: When making a bar graph showing temperatures over a year, the months are often indicated on the horizontal axis.

math

Definition: The study of number, quantity, form, and relations

Context: Drawing graphs and analyzing data are important parts of math.

measure

Definition: The length, width, quantity, or capacity of an object or a liquid

Context: To measure the width of a book, hold the left edge of the ruler on the left edge of the book, then look at the number at the right edge of the book.

ruler

Definition: A piece of wood, plastic, or other material off in units such as inches that is used for measuring length, width, and height.

Context: Builders, architects, dressmakers, and graphic artists use rulers regularly in their work.

vertical axis

Definition: The reference line on a graph that is on the left side and is drawn from top to bottom.

Context: On a bar graph comparing the cost of a private school over a three-year period, the year is usually on the horizontal axis, and the cost is on the vertical axis.

Academic Standards

This lesson plan addresses the following standards from the National Council of Teachers of Mathematics:

Number and Operations Standard**Grades Pre-K–2**

Understand measurable attributes of objects and the units, systems, and processes of measurement:

- recognize the attributes of length, volume, weight, area, and time;
- compare and order objects according to these attributes;
- understand how to measure using nonstandard and standard units;
- select an appropriate unit and tool for the attribute being measured.

Apply appropriate techniques, tools, and formulas to determine measurements:

- measure with multiple copies of units of the same size, such as paper clips laid end to end;
- use repetition of a single unit to measure something larger than the unit, for instance, measuring the length of a room with a single meterstick;
- use tools to measure;
- develop common referents for measures to make comparisons and estimates.

Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them:

- pose questions and gather data about themselves and their surroundings;
- sort and classify objects according to their attributes and organize data about the objects;
- represent data using concrete objects, pictures, and graphs.

Credit

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