Inquiry Mini-Lessons

Organizing Data or Information

As students collect data or information they need to learn how best to organize and display the data in charts, tables, and graphs with appropriate titles and labels, as needed. It is important that students have the opportunity to explore a variety of ways to represent their data and to make their own decisions about the categories of data that will provide useful information for the audience.

There are generally four steps to working with data:

1. Collecting data
2. Organizing data
3. Displaying data so it is meaningful
4. Interpreting the data and making predictions

Time: 30 minutes

Materials:
- chart paper and markers, or interactive whiteboard

Grouping: whole class and small groups or partners

Procedure:

1. Explain to students that they need to start thinking about ways to analyze and interpret their data.

2. Ask students a question such as how they got to school that day.
   Note: If students used a combination of ways, have them choose one as the main method, e.g., if they took the bus then walked from the bus stop, they can choose "bus" as the way they got to school.

3. Make a tally for each method of transportation and explain that these will be the categories for representing the data:
   - car
   - bus
   - school bus
   - walk
   - bicycle
   - skateboard/scooter

4. Discuss with students how best to display the data, for example, a bar graph. Emphasize the need for accurate labels on the axes and generate an appropriate title to describe what is being shown.

What do you think would be a good title for this graph? Yes, "How We Got to School Today" would describe what is being shown on the graph. What label should we use to identify the categories for the graph? What label should we use to identify the units used?

Teaching Tip: It is important for students to learn how misleading it can be to display the data in an inappropriate way. An example of this would be a bar graph with a scale that starts at 100 and has six bars ranging between 100 and 110. If the graph starts at zero, you can easily see that there isn't much difference between the values, but if you start the graph at 100, it looks like there are bigger differences between the categories.

5. Discuss how the data can be analyzed and interpreted. What conclusions can be drawn? What predictions can be made?

Which category of transportation was used the most often to get to school today? Which category was used the least often? How does the graph show this information?

6. Working in partners or small groups, students can select a set of data and an appropriate method of organizing this data. Ask students questions to help them think about how they might represent the data:
   - How can you organize the data into categories?
   - How will you represent the data in a way that allows others to compare the data?

Teaching Tip: Encourage students to make their own decisions about the types of representation they will use. If necessary, show students how to create and use a specific type of graph or chart.

7. Have groups or pairs present their data. Ask questions to clarify their thinking.

Why did you create this kind of graph? What does your graph show? What parts of the graph help to present information about the categories used?

Teaching Tip: If students are researching in small groups, pairs, or individually, ask them to go back to their own data to decide which information is important to represent and to choose the best method for displaying it.