Instructional Strategies – Analyzing and Interpreting Data

Analyzing and interpreting data includes making sense of the data produced during investigations. Because patterns are not always obvious, this includes using a range of tools such as tables, graphs and other visualization techniques.

Potential Instructional Strategies for *Analyzing and Interpreting Data*
1. After an investigation, ask each group of students to briefly state a pattern they see in the data. Provide sentence starters such as "As the amount of _____ increases…" and "We saw that changing _____ caused…"
2. Provide written steps for students to follow to scaffold analyzing complex data tables. For example, students might be asked to first state how many trials were conducted, then asked what pattern they see in the first column of the data table. As student capability with finding the patterns in data improves through the school year, slowly remove the scaffold.
3. Ask students to vote (thumbs up/thumbs down) whether they agree with a fellow student's interpretation of the patterns in data.
4. To practice figuring out patterns in the data give groups of students a data table and sentence strips with various statements about the patterns in the data. Have students decide whether each statement is accurate or inaccurate based on the data table.
5. Have groups of students compare and contrast their data tables. If differences exist in the data, ask student hypothesize about why these differences exist. Have students make a plan to reduce sources of error in future iterations of the investigation (i.e. dropping a ball from the same height, having the same students operate a stopwatch through the investigation, etc.).
6. Ask students to graph their data to visually represent the patterns in the data. Provide checklists for students to use to ensure their graphs contain key components, such as labels on the axes and a title.
7. Conduct a gallery walk for students to view and critique each other's data tables or graphs. Encourage students to use sticky notes to ask questions and provide feedback about how well their data tables show the patterns in the data. Give students time to use the feedback to improve their work.
8. Model for students how to construct a graph. Talk about what decisions must be made when creating a graph (e.g. bar graph vs. line graph) and the reasons for one choice or another. Point out aspects of graphs that enable other to comprehend patters in the graph (e.g. reasonable intervals on the axes).

9. Hang posters in the classroom with examples of different types of graphs (bar, line, etc.) that students can reference as they decide what type of graph to construct and as they make their graphs.

10. After students construct a graph for data, ask them to defend their choice of that type of graph. Facilitate a discussion about the differences in how each graph type shows the patterns in the data.

11. Have students write 1-2 sentences that summarize the pattern(s) in a graph. Provide sentence starters such as "My graph shows..." and "Over time, plant A...".

For a classroom example of instruction using this science practice, visit our website at www.sciencepracticesleadership.com and click on the Grade 5 Exemplar under Case Studies.