

Making Sense of Data In a Controlled Investigation

Investigative question:

What is the effect of wheel size on the distance a go-cart can travel?

Wheel Size vs. Distance Traveled

Wheel Size (cm)	Distance Traveled (cm)			
	Trial 1	Trial 2	Trial 3	Mean
7.5	127	159	134	only 140
9	198	209	223	210
, but 11.5	267	299	283	283

In fact, $\frac{283}{143}$

FIGURE 11-6 Data table as scaffolding

1. Answer the investigative question. Talk about answering the question by comparing both the manipulated and responding variable. For example, "Larger wheels make the go-cart travel farther than the smaller wheels do."
2. Provide evidence to support your answer or claim. Ask students to use their data table to structure their writing: "The data show that with 7.5 cm wheels, the go-cart travels a mean distance of only 140 cm, but with 11.5 cm wheels, the go-cart travels a mean distance of 283 cm." (The handout abbreviates the second part of the sentence so students have to think about how to write it.) Ideally, students should say and write, "The 7.5 cm wheels make the go-cart travel a mean distance of only 140 cm . . ." But this language and writing are more complicated. Sometimes it is appropriate for elementary students to use a kind of shorthand language until they are ready for more complex phrasing.
3. Write a concluding statement. This statement is more of a generalization than the opening sentence in the conclusion. For instance, one sentence could be, "Therefore, I think that the larger the wheels, the longer the distance the go-cart travels." Or "Therefore, I think that as the wheel size increases, the go-cart travels farther."

Note that the first three components of the basic conclusion consist of answering the question (making a claim), then supporting that answer with evidence, and finally, adding a generalized statement that requires a higher level of understanding and language skills. When needed, the fourth component of a basic conclusion refers back to the student's prediction and explains whether or not the data support the prediction. If students had been doing this investigation, rather than just reading the data, they would have made a prediction before they conducted the trials and could add this fourth component.

After you finish modeling the process, remove the shared writing. Have students follow their handout as they write their own conclusion.