

### **Teacher Implementation 1**

At the beginning of class, and before handing out the Data Nugget, I shared an introductory video that introduced the study system in the Data Nugget to help engage students in the lesson. As a class we discussed the theme of the lesson and tied it to previous curriculum we had covered in class, along with local examples of the phenomena in our area. I then passed out the Data Nugget and had students take turns reading paragraphs from the *Research Background*. During the reading, I interjected with some questions to ensure students understood the information, and to reiterate the connections to previous classroom lessons. Then, I had students work with a partner to identify the hypothesis and variables. We briefly checked in as a large group to discuss whether they all underlined the same sentence and identified the correct variables. Students worked with their partners to make their graphs and quickly moved on to the claims-evidence-reasoning questions. I told the students to write their follow-up questions from the *Next Steps as a Scientist* on whiteboards that I had spread across the room. Towards the end of the class, I went around and read some of the questions that the students had come up with.

### **Teacher Implementation 2**

At the end of class, I gave the students the assignment of reading the *Research Background* as homework. I told them the next day we would discuss the study system and experimental design, along with the sentences they underlined as the hypothesis. When students came to class the next day, I asked them, in their own words, to share their summary of the research study system and scientific questions. We compared the lines they underlined as hypotheses, which made me realize we needed to pause and have a discussion reviewing the difference between predictions and hypotheses. Because it was the beginning of the school year, I selected the student versions of the Data Nugget that had the graph already fully displayed (graph type A). We identified and interpreted trends in the graph as a group, and then I had students complete the rest of the Data Nugget in small groups and turn it in at the end of class. I made the CER scaffolding tool available so students could choose to use it to help construct their explanations. I plan to continue using Data Nuggets and the next one I assign will be a level B.

### **Teacher Implementation 3**

At the beginning of the year, I established *working* groups and *sharing* groups that the students would form throughout all active assignments. I had the students get into their working groups at the beginning of class and told them to read the *Research Background* quietly. Then, I posted two discussion questions about the experimental design for them to talk about in their working groups. I then had some of the groups report their ideas to the whole class before moving on. The working groups identified the hypothesis and variables and we checked in as a class to make sure everyone was on the right track. Next, the groups worked to graph the data and to identify and interpret two features on their graphs. Then, I had students form their sharing groups. Because these were groups with new members, each student brought ideas from a different working group and shared with other students until the end of the class. The next day, the students re-formed their working groups to complete the CER questions. I had them form their sharing groups again to compare responses and to discuss any discrepancies. I had them work independently on the *Next Steps as a Scientist* section to develop their own follow-up research questions. Some students then shared some of their questions and as a class we discussed the strengths. We chose one and informally developed an experimental design to test the ideas.