

## Unit Overview for the Teacher

### ORGANIZATION

Throughout this unit, learners will be organized into inquiry circles and science investigation teams that reflect the roles of practicing scientists. By taking on the roles of scientists as they engage in text-based and hands-on investigations, and by learning to read, write, speak, and listen like scientists, children develop deeper science learning and science-specific disciplinary literacies.

### DAILY SCHEDULE

The sequence of instruction for the unit will be as follows (you may space the three components throughout the day in the way that best fits your usual schedule):

- mini-lesson on science-specific disciplinary literacy
- science inquiry circles
- guided science investigation

### MINI-LESSON

Each day, the teacher will lead a mini-lesson on a science-specific disciplinary literacy strategy before the children work in their inquiry circles. The mini-lessons are taught as whole-class lessons in which the teacher models and explains a literacy strategy relevant for use with informational texts or media. Mini-lessons are organized around teaching children various literacy strategies associated with science and scientists. They are designed to help learners become more strategic in their reading through intentional instruction. **The strategies children learn in the mini-lessons are practiced with texts during the inquiry circles.**

Teacher instructions are provided for each day's reading strategy mini-lesson. These instructions consist of **declarative knowledge** (statement of what children will do or learn), **conditional knowledge** (context or background related to what children will learn), and **procedural knowledge** (explicit instruction and practice).

Our goal in these lessons is to give you (the teacher) **suggested language** to use when teaching these strategies and a set of materials that will support you in explaining those strategies to children. **We have not scripted the lessons for you.** Rather, we hope you take these suggestions as the starting points for working with children on constructing an understanding of what it is we do when we read and write like a scientist.

### SCIENCE INQUIRY CIRCLES

Throughout this unit, children will participate in inquiry circles—small teams that will work together to investigate one of four methods of disposing of food waste:

- composting food scraps

- feeding food scraps to worms (vermicomposting)
- feeding food scraps to pigs
- sharing or donating leftover food.

We have selected these food disposal methods as examples of methods that schools across the U.S. are using to reduce cafeteria food waste.

The informational texts and media the teams use in the text inquiry (see the **“Food Waste Resources” spreadsheet** in the “Before the Unit Begins” section) should guide learners toward acquiring and/or building on information that leads to thinking about and asking questions about methods of reducing food waste and about the matter cycling and energy transfer that occurs when organic matter (e.g., food scraps) are broken down and used by living organisms. Learners in each inquiry circle investigating a food disposal method (e.g., an inquiry circle investigating composting) will build their expertise on how schools use this method to reduce food waste and how matter is cycled and energy is transferred when this method is used. **In the “Food Waste Resources” spreadsheet, a small sampling of texts labeled “Exploratory Texts for Selecting Inquiry Topics” should be used on Day 1** when learners or teams choose which food disposal method they will learn about.

The teacher will create the inquiry circle teams. **We suggest no more than four children per team**, although the number of inquiry circles you have will depend on the size of your class and other considerations. There will be likely be multiple teams studying the same food-disposal method.

**Teachers have two options for creating teams:**

Option 1: The teacher creates teams before the lesson begins. The teams then explore texts and rank their top methods of food-disposal as a team. The teams will be assigned a food-disposal method to investigate based on their preferences (hopefully their first or second choice).

Option 2: The children explore texts in existing table teams on Day 1 and rank their top choices individually. The teacher will then assign children to teams based on common interests, with everyone receiving (hopefully) their first or second choice. The teams would be revealed on Day 2.

In their inquiry circles and in their science investigations, children will encounter information about schools in the U.S. that use various food-disposal methods to reduce their cafeteria food waste (e.g. an article about a Colorado elementary school that uses vermicomposting). They will also encounter information about the food-disposal method more generally (e.g., how vermicomposting works, how to set up a worm bin). To deal with this diversity, the children can record findings about specific schools (e.g., elementary schools in Illinois have reduced their food waste by creating share tables) as well as findings about the food-disposal method more generally (e.g., share tables can lessen the amount of food thrown away but only safe, uneaten foods can be shared).

You will recognize that the instructional model for inquiry circles is similar to that of literature circles in which learners build skills and develop strategies in reading. You, the teacher, will model inquiry and literacy practices for learners, who will work together in their teams to collect data about the food disposal method they are investigating.

## GUIDED SCIENCE INVESTIGATIONS

Guided science investigations are teacher-facilitated science explorations, with children working in collaborative teams. Children will work in the same teams during Inquiry Circles and during Science Investigations.

**NOTE: Background information relevant to each day’s science lesson is included for the teacher.** The information provided is not intended for the children, as it may contain terminology or concepts above their grade level. Rather, it is intended to enhance the teacher’s understanding of the daily topic or concept.

## TEAM ROLES

Team roles with jobs will guide the children’s work both in the inquiry circles teams and in their science investigation teams. Typically, science teams have a leader, called the Lead Scientist, and various other science roles, such as Lab Director, Data Scientist, and Equipment Director.

You may use a variety of methods when assigning team roles or allow learners to choose their roles. To provide variety, learners should rotate positions in different activities, allowing each learner to try each role.

The “Team Roles” anchor chart PDF in the Day 1 section contains four 8.5” x 11” reproducible anchor charts that you will review with your learners and display as a reference. Team roles and their duties are given below:

### Lead Scientist

- Asks the questions.
- Guides the work of the team by reading directions.
- Keeps the team focused on the investigation and text-based inquiry.
- Checks the work.

### Lab Director

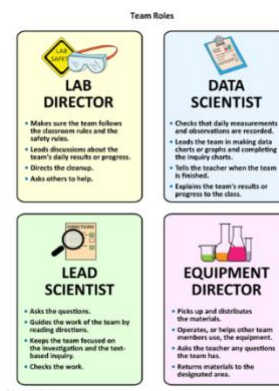
- Makes sure the team follows the classroom rules and the safety rules.
- Leads the discussion about the daily results and progress.
- Directs the cleanup.
- Asks others to help.

### Data Scientist

- Checks that daily measurements and observations are recorded.
- Leads the team in making data charts or graphs and completing the Inquiry Charts.
- Tells the teacher when the team is finished.
- Explains the team’s results or progress to the class.

### Equipment Director

- Picks up and distributes the materials.
- Operates, or helps other team members operate, the equipment.



- Asks the teacher any questions the team has.
- Returns materials to the designated area.

### SCIENCE LANGUAGE

The strategies related to science-specific reading and writing in the mini-lessons and inquiry circles enable deep science learning. Rather than simply memorizing *vocabulary words* without true understanding of their relationship to their scientific work, children develop fluency with the language of science **in context**, both in text-based inquiry and scientific inquiry. We encourage you to model using this language in context often to enhance children’s learning.

We have provided science language picture cards suitable for building reference-word walls for children. **The teacher will need to print color copies of the picture cards before Day 1. Each day’s science language is listed near the end of the lesson. The science language picture cards and an alphabetical list of all the science language used can be found in the “Before the Unit Begins” section.**

### “FOOD WASTE RESOURCES” SPREADSHEET

The “Food Waste Resources” spreadsheet in the “Before the Unit Begins” section provides a list of informational texts and media resources. **Please be sure to have texts and media resources prepared prior to beginning the unit.** Learners will need ready access to these resources when they begin their investigations in their inquiry circles.

### SUPPORTING MATERIALS

The “**Lessons at a Glance**” document in the “**Before the Unit Begins**” section lists the materials needed for each day’s lesson. Any additional supporting documents referenced in a lesson (including anchor charts and printable or downloadable files) can be found in the “**Supporting Files**” section for that day’s lesson.