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Color Coding

Throughout *The Power of Investigating*, the text, illustrations, and graphics are color-coded to indicate the components of the instructional model.

**Questions** are printed in **red**.

**Investigations** are printed in **blue**.

**Assessments** are printed in **purple**.

Combining thoughtful **questions** with engaging **investigations** produces amazing **assessments**—just as combining **red** and **blue** colors produces **purple**.

We’ve also provided links and Quick Response (QR) Codes to the NSTA Extras page where you can view videos related to content throughout the book. Visit [www.nsta.org/investigating](http://www.nsta.org/investigating) to view all supplementary content.
Connecting Questions and Investigations

Why Is Investigating a Powerful Teaching Tool?

Children want to explore, dig, build, play, and wonder. To do this, they need to touch, feel, see, observe, listen, manipulate, plan, and create. How does a teacher build and maintain a learning environment that will help students investigate meaningful questions? How does a teacher plan and manage ongoing investigations? How does a teacher use resources to bring learning to life?

Through investigations, teachers can allow students to explore concepts and develop understanding while maintaining the integrity of the curriculum. In The Power of Investigating, we invite you to explore the promise that investigations offer when exploring student and teacher questions.

I found this snail in the garden. What do snails need to live? How do their body parts work?
We have a lizard and a salamander. How are reptiles different from amphibians?

Owls are so cool! How can we share what we learned about the owls to help the farmers in our community?
How Do Purposeful Investigations Engage Students in Standards-Based Learning?

Hands-on, meaningful investigations give life to learning, inspire questions, and engage students and teachers in thinking! Investigations transform learning experiences from being two-dimensional (words and pictures on a page) to being three-dimensional (active and engaged interaction with content).

Note: The three-dimensional teaching reference works well with the three dimensions of the Next Generation Science Standards (NGSS): science and engineering practices, disciplinary core ideas (DCIs), and crosscutting concepts.

The Powerful Practices instructional model provides a canvas to integrate the questions, investigations, and assessments that help teachers and students make sense of the content. Integration of these three components offers a means to engage students and teachers in the dynamic experience of life and learning.

Engage in Three-Dimensional Learning

As an example of an activity integrated this way, consider this possible scenario. To engage all students, the teacher asks a divergent question such as, “What do you know about worms?” A student shares that worms wiggle in the dirt and don’t have legs. Another shares that worms don’t have eyes, a mouth, or a nose.

A two-dimensional lesson might continue with reading about worms; however, bringing live worms into the classroom* will transform an engaging topic such as this one into a three-dimensional experience! To do this, the teacher then asks, “How can we investigate worms?” The students respond that worms like moist soil. To clarify, the teacher asks, “How can we investigate whether worms like moist soil?” The students reply, “We could watch them!” The teacher and students then set up investigations to observe worms. Figures 1.1 and 1.2 (p. 6) show students engaged in a three-dimensional investigation of worms.

*Note: When bringing live animals into the classroom, follow local and state safety regulations. (See also NSTA 2008.)
Students may record observations in science journals or science notebooks while exploring worms. This student’s science journal illustrates details of a worm’s structure. She used circles to draw some parts up close, as is done in a diagram from informational text.