By Lawrence F. Lowery

NSTA Kids
National Science Teachers Association

WHAT MAKES DIFFERENT *Sounds?*

I Wonder Why

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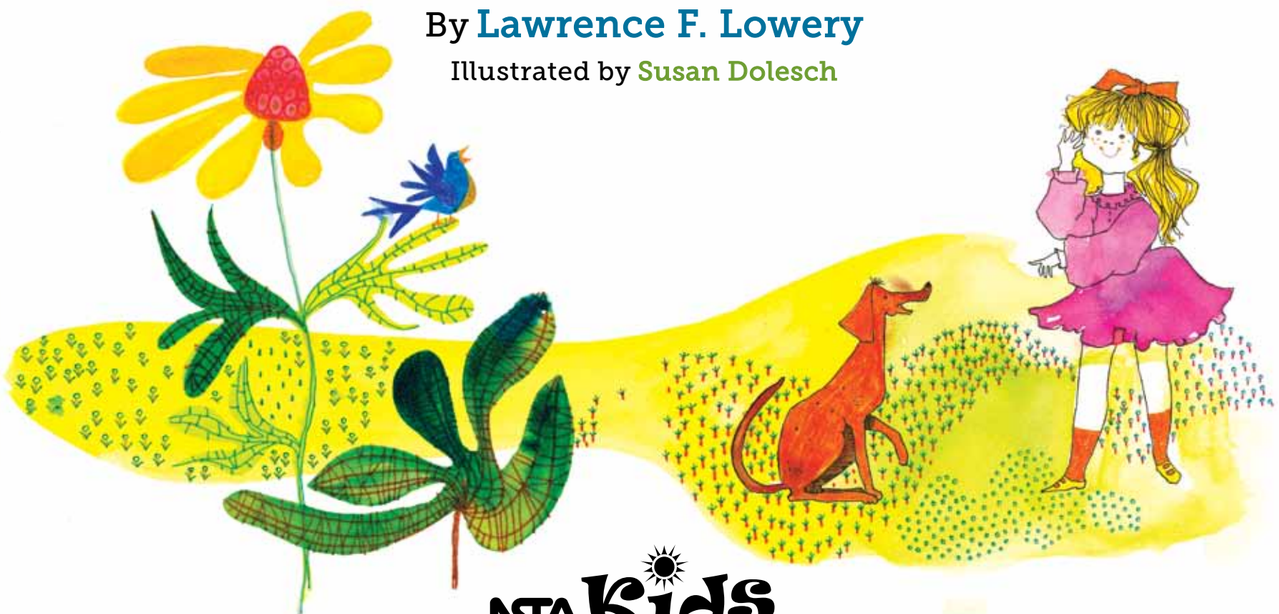
By Lawrence F. Lowery

Illustrated by Susan Dolesch



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I Wonder Why

Introduction

The *I Wonder Why* books are science books created specifically for young learners who are in their first years of school. The content for each book was chosen to be appropriate for youngsters who are beginning to construct knowledge of the world around them. These youngsters ask questions. They want to know about things. They are more curious than when they are a decade older. Research shows that science is these students' favorite subject when they enter school for the first time.

Science is both *what* we know and *how* we come to know it. What we know is the content knowledge that accumulates over time as scientists continue to explore the universe in which we live. How we come to know science is the set of thinking and reasoning processes humans use to get answers to the questions and inquiries in which we are engaged.

Scientists learn by observing, comparing, and organizing. So do children. These thinking processes are among several inquiry behaviors that enable us to find out about our world and how it works. Observing, comparing, and organizing are fundamental to the more advanced processes of relating, experimenting, and inferring.

The five books in this set of the *I Wonder Why* series focus on inquiry and various content topics: animal behavior, plant growth, physical characteristics of sound, animal adaptations, and mathematical measurement. Inquiry is a natural human attribute initiated by curiosity. When we don't know something about an area of our interest, we try to understand by asking questions and by doing. The five books are titled by questions children may ask: *How Does a Plant Grow? What Can an Animal Do? What Does an Animal Eat? What Makes Different Sounds?* and *How Tall Was Milton?* Children inquire about plants, animals, and other phenomena. Their curiosity leads them to ask about measurements, the growth of plants, the characteristics of sounds, what animals eat, and how animals behave. The inquiries lead the characters in the books and the reader to discover the need for standard measures, the characteristics of plant growth, sound, and animal adaptations.

Each book uses a different approach to take the reader through simple scientific information from a child's point of view: One book is a narrative, another is expository. One book uses poetry, another presents ideas through a fairy tale. In addition, the illustrations display different artistic styles to help convey information. Some art is fantasy, some realistic. Some art is bright and abstract, some pastel and whimsical. The combining of art, literary techniques, and scientific knowledge brings the content to the reader through several instructional avenues.

In addition, the content in these books correlates to criteria set forth by national standards. Often the content is woven into each book so that its presence is subtle but powerful. The science activities in the Parent/Teacher Handbook section within each book enable students to carry out their own investigations that relate to the content of the book. The materials needed for these activities are easily obtained, and the activities have been tested with youngsters to be sure they are age appropriate.

After students have completed a science activity, rereading or referring back to the book and talking about connections with the activity is a deepening experience that stabilizes the learning as a long-term memory.

A man in the band was striking an instrument called a triangle. It made a ringing sound.

“That sound reminds me of wind chimes,” said Jane.

“The triangle makes a soft ringing sound when it vibrates,” added Jim.

Jane and Jim remembered that only vibration can cause sounds. But when something vibrates too slowly, it does not make a sound. When something vibrates too quickly, it also does not make a sound. The triangle vibrated just right for the sound to reach Jane’s and Jim’s ears.

“The triangle vibrates to make sound! So do the drum and the horn,” said Jane. “What else vibrates to make noise?”

"Listen to the dog, Jane," said Jim. "The growl is a low sound."

"That sound must be caused by vibration too!" said Jane.

I Wonder Why

WHAT MAKES DIFFERENT Sounds?

On their walk home from school, twins Jane and Jim explore why sounds can be startling (like sirens), soothing (like certain types of music), or mysterious (like eerie creaking in an empty house). By coming along, young readers of *What Makes Different Sounds?* can learn as the twins do. They'll be introduced to the roles vibration, pitch, and volume play in how rustles, rumbles, and rat-a-tat-tats are made and transferred to their own ears.

What Makes Different Sounds? is part of the *I Wonder Why* book series, written to ignite the curiosity of children in grades K–6 while encouraging them to become avid readers. These books explore the marvels of sound, animals, plants, and other phenomena related to science and nature. Included in each volume is a Parent/Teacher Handbook with coordinating activities. The *I Wonder Why* series is written by an award-winning science educator and published by NSTA Kids, a division of NSTA Press.

Grades K–6

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