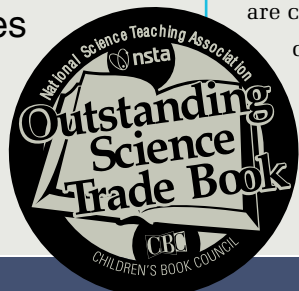




A Guide to Choosing and Using the Best Books for Children

Think back to your earliest memories of reading. What do you remember? Did the story spark a sense of adventure and discovery or make you believe you were invincible? Did the book provide answers to questions about the world around you? Did it make you smile? What feelings and images come to mind?



Books open many doors for children, and books about science help to bring the world to their doorstep. By combining a young child's interest in his or her surroundings with carefully selected books and strategies to engage them in learning, doors can be opened and a world of opportunities shared between the child and the adult.

Bring on the Books

Great books can create wonderful memories for the young children in your life. Reading science trade books is the perfect way to make those memories and, at the same time, help students build literacy skills while learning science content. Well-selected books deliver information about daily life, about children's interests and curiosities, and the world in general.

The challenge with some science trade books is that, even though they have vivid illustrations and appealing characters, they can foster misconceptions that are challenging for children to overcome as they learn new information. Therefore, carefully selecting books is important.

The National Science Teaching Association (NSTA) and the Children's Book Council (CBC) have collaborated on selecting and recommending outstanding trade books for science for 50 years. In 2017, a new list that features the best STEM books was added.

The entire list of Outstanding Science Trade Books can be found on our website at www.nsta.org/outstanding-science-trade-books-students-k-12



Suggestions for Selecting Books

Here are some ideas and questions to keep in mind when looking for the right books to open doors for children's thinking!

#1: Pick Active and Interactive Books

As tempting as it may seem, you can't pour knowledge into children. They must construct an understanding of the world around them and make sense of what they find. Look for books that coach, create interest, or have children ask their own questions as they engage with the text.

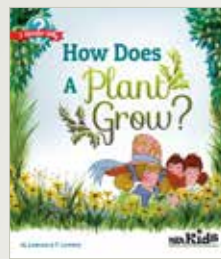
Today's science teachers talk about "practices" and exploration skills. The first skill for young children is observation, often followed by asking questions. The pictures and text in a *high-quality* science trade book will allow students to stop and make observations about what they see on the page, help answer questions they have, and generate more questions.

So, "questioning" is another science practice that needs nurturing. Any parent can attest that most preschoolers ask countless questions each day, although sometimes the endless stream of "why" questions may be a way to extend the conversation. Even so: *To expand their knowledge and vocabulary usage*, children should be encouraged to ask deeper questions such as "how" and "how many." Such questions embody important aspects of science and can provide young explorers with an opportunity to make connections between the pages of the story, their own experiences, and the real world.

Connecting the text to real life—called Text to World connections—asks students to take something they read or hear in the text and connect it to a larger example in their community or world. Questions such as "How is this the same as/like/different from something you've seen?" allow young children to expand on their original thoughts. Children aren't the only ones who get to ask questions at this point—the adult reader can, as well, which will allow students to continue the conversation about a topic.

A particular science practice called "argumentation" can begin when children respond to questions and explain their thinking. After all, turnabout is fair play. Four-year-olds are famous for their tendency to argue with others, especially adults, about why they "believe" or "think" something is true. Since the development of questioning skills and process thinking is essential, the adult can guide the young child's natural talent to argue and move mere arguing toward the skill of argumentation by asking for the reason for an answer—which is a part of real science. Find a book where you can ask, "What do you think?" And then "What is your reason?" (Don't be picky. For preschoolers, any reason will do.)

Exploring and Observing



In the book *How Does a Plant Grow?*, readers are asked to consider questions such as "Have you ever wondered how plants grow?" Readers are encouraged to think about the questions and make observations by looking at the illustrations as they enjoy this book.

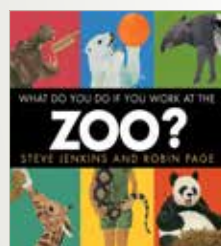
When reading books such as these, students can learn new ideas and be introduced to new terms within the context of the story.



Books that provide detailed information about a child's interest can also offer opportunities to make observations. *Jumbo: The Making of the Boeing 747* tells how this plane was designed and built while comparing it to other aircraft at the same time.

For the curious child interested in airplanes, this book offers multiple ways to make observations.

Developing Questioning Skills



The book *What Do You Do If You Work at the Zoo?* takes the reader on a journey through zookeepers' different tasks. The pictures and text come together to provide information and opportunities for students to ask additional questions.



Another book that helps generate questions is *Uma Wimple Charts Her House*. Uma loves to make charts to explain information, and when given an assignment, she tackles making charts that describe her house. She keeps track of information such as who holds hands and what types of pizza people like. This book provides the perfect tie-in for students to ask their own questions and find answers.

#2: Keep It Real

What young child wouldn't want to go to the Moon? Or ride a dinosaur? Unfortunately, rockets are scarce, and dinosaurs are extinct. For the early learner in your life, a pill bug may be far more fascinating than its meter-long prehistoric relative.



Children's books that are authentic are genuine, credible, and not contrived—and cover a wide range of both fiction and nonfiction topics. More narrowly: Many authentic nonfiction books are expository literature that helps inform, explain, or describe. These books allow readers to dive deeper into a topic in order to answer their questions. When choosing authentic literature, choose a book about the things in your young reader's world that can be seen, touched, played with, and challenged instead of stories about things that can only be found in the imagination.

As a bonus, buy a toy or safe tool—like a simple wagon, magnifier, or a sieve—that the child can use to continue exploring when the book is done. When students have the chance to explore questions they have or events presented in the book, they have the added benefit of making connections between the text they are reading and the investigations they are doing.

That's not to say there isn't a role for fantasy. Nurturing a child's imagination is vital! Fantasy literature is appealing, and most parents tend to purchase these types of books. Children must have a balance of both authentic literature and fantasy literature.

Authentic Literature Examples

Curious About Fish presents clear information about fish for the youngest of readers. Illustrations help generate questions that complement the text.



Readers are introduced to different foods they eat and how those foods get to their plate in *Now You Know What You Eat*. Questions such as “What ingredients go into macaroni and cheese?” are sure to create interest.

An example fiction book that helps create an interest in science is *Maxine and the Greatest Garden Ever!* Maxine decides to plant a garden, and friends and family will help. Information about what one needs to plant a garden is shared throughout this fictional tale.



#3: Find Books That Inspire Children to Learn More

Books should be bridges to other activities that expand on what young readers heard, observed, questioned, or thought about during the story. When the book is put down, the questioning and learning should continue. Does the story create an interest to try the investigation? To go outside and look for bugs or rocks? Or even to use their senses to learn more about the world around them? Questions are often provided by authors that generate interest and inspire the students to pursue more information. Active nonfiction books might even provide the directions for different activities. Listening to students talk can provide some insight into books that will help them extend their learning through connections to text or between the text and their world or an activity. When selecting a book that will provide activities or experiences, the adult sharing the book with the child should always consider safety.



Never Stop Wondering is a book that helps generate curiosity in children. The text uses a rhyming format and whimsical illustrations that will help create questions. Recommendations are found at the end of the story to help readers engage in activities that put them in the role of exploring their surroundings and asking similar questions to what scientists do.

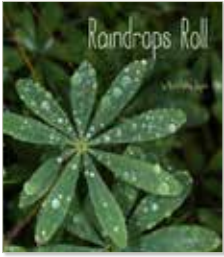
Another book that helps make connections between the text in the pages and what elementary children might experience in their world asks them to consider how human-made things similar to items found in nature. *Mimic Makers: Biomimicry Inventors Inspired by Nature* presents inventions with the ideas that helped make them successful. Did you know the bullet train has a front nose shaped like that of a bird's beak to help it move quietly and efficiently?



Additional Resources

Here are some additional resources to consider when considering choosing and using a good book:

#4: Select Books With Descriptive Language



Raindrops drop. They plop. They patter. They spatter. Language such as this helps students use descriptive words. Descriptive words such as these are found in *Raindrops Roll*. The book's words and vibrant photos provide opportunities to pair language and images.

Remember that language is also developed through the use of books, and language can help students describe what is happening as well. Listen to the words of the book. Does it help the reader visualize what is happening? Whether it is prose, poetry, fiction, or nonfiction, science can still be found.

Science and delightful sounds are great partners for early learners. Many books of poetry have earned awards as outstanding science books—and they may be the best choices for the youngest listeners because of children's love of repetition. In contrast, students in intermediate grades can use the language found in the book to help build a mental picture. Finding books that allow readers to listen to language that is descriptive and fun and at the same time introduces children to new science content is a win-win for the reader.

Descriptive Books

Hello Earth! Poems to Our Planet describes Earth through a variety of narrative prose accompanied by creative illustrations.

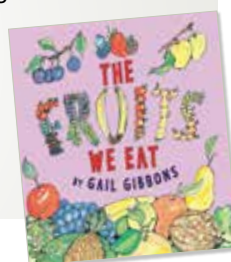
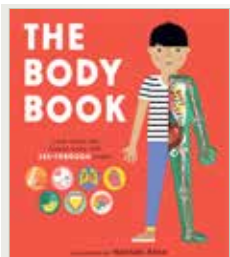


#5: Choose Books That Students Will Want to Return to Time and Time Again

Young children's first exposure to sharing a book is likely through a book with pictures they follow while someone else reads the text. These books introduce students to different words, levels of text, and vocabulary. As students start to use books on their own, whether to look at the pictures or retell the story on their own, they often return to their favorite book. When choosing a book, consider if the book adds new opportunities for children to learn with each visit. Do students find something new from the pictures or the text each time they pick it up? Are they engaged, and do they make connections to their own experiences? Do they return to answer a question they have? These are books that stand the test of time and are durable.

Books such as *The Body Book* provide appropriate information for young children that answer questions such as "How do muscles help us move?" This book features interactive pages that allow the student to "look inside" the body.

The Fruits We Eat helps students think about all of the different types of fruits they might try. Illustrations, side text, and experiences such as going to a market help them find new ways to make connections.



The Outstanding Science Trade Books for Students K–12 is published each year as a joint effort between the Children's Book Council (CBC) and NSTA.
www.nsta.org/outstanding-science-trade-books-students-k-12

The Best STEM Books K–12 is an additional effort between CBC and NSTA.
www.nsta.org/best-stem-books-k-12

CBC is dedicated to supporting and informing children's book publishers and fostering literacy in partnership with Every Child a Reader (ECAR)—a literacy nonprofit dedicated to instilling a lifelong love of reading in children.
www.cbcbooks.org/about and www.cbcbooks.org/about/every-child-a-reader

The NSTA Position Statement on Parent Involvement in Science Learning notes that "research shows that when parents play an active role, children achieve greater success as learners, regardless of socioeconomic status, ethnic/racial background, or the parents' own level of education." It also notes that "the more intensely parents are involved, the more confident and engaged their children are as learners and the more beneficial the effects on their achievement."
www.nsta.org/nstas-official-positions/parent-involvement-science-learning

The NSTA Position Statement on Early Childhood Science Education states that "learning science and engineering practices in the early years can foster children's curiosity and enjoyment in exploring the world around them and lay the foundation for a progression of science learning in K–12 settings and throughout their entire lives."
www.nsta.org/nstas-official-positions/early-childhood-science-education

The National Association for the Education of Young Children (NAEYC) provides recommended books, including science-related books, to be read aloud to young children.
<http://families.naeyc.org/learning-and-development/reading-writing/great-books-read-infants-and-toddlers>

Share this resource with fellow educators, colleagues, informal program coordinators, and parents!