A Guide to Choosing *and Using* the Best Books for Children

Teachers: Share this with colleagues and parents!

Think back to your earliest memories about 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 make 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 to build literacy skills while learning science content. Well-selected books deliver information about daily life, about children's interests and curiosities, and about the world in general.

The downfall with some science trade books is that—even though they have vivid illustrations and appealing characters—the books can foster misconceptions about science that are planted, take root, and then persist through the lessons that might follow.

For 45 years the National Science Teachers Association and the Children's Book Council have worked together to select and recommend the best in trade books about science for young readers.

The entire list of Outstanding Science Trade Books can be found on our website at *www.nsta.org/publications/ostb*

NSTA National Science Teachers Association

Suggestions for Selecting Books

And here are some ideas and questions to keep in mind when looking for the right books to fill your child's mind--with both memories and the seeds of exploration.

#1: Think Active and Interactive

As tempting as it may seem, you can't pour knowledge into children. They must construct it themselves. *Look for books that coach, or have children ask their own questions as they engage with the text.*

Today's science teachers talk about "practices" and the skills of exploration. For young children, the first skill is observation. *The pictures and text in a quality science trade book will provide opportunities for students to stop and make observations about what they see on the page.*

"Questioning" is another science practice that needs nurturing. Any parent can attest to the fact that most preschoolers ask countless questions each day, although sometimes the endless stream of "why" questions may simply be a way to extend 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 move from the pages of the story and into the real world.

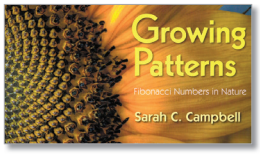
Connecting the text to real life—called Text to World connections—*asks students to take something they read or hear in the text and connect it to a larger example they may have experienced*. Questions such as "How is this the same as/like/different from something you've seen" allow the young child to expand on his or her 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.

When questioning is reversed, the special science practice called "argumentation" can begin. After all, turnabout is fair play. Four-year-olds are famous for their tendency to argue with others--especially adults—about the reasons they "believe" or "think" something is true. Since the development of questioning skills and process thinking is important, the adult can provide guidance for 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

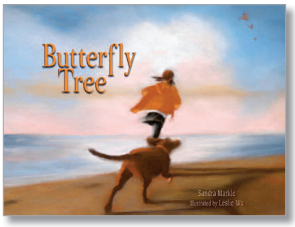
In the book ***Next Time You See a Sunset***, there are spots that ask questions, such as "What colors do you see? Or "What words would you use to describe the sunset?" By encouraging students to make observations and explain them, such books help build vocabulary skills, speaking skills, and thinking skills. All of these skills have been shown to be important to successful school experiences as children get older.

Developing Questioning Skills



Growing Patterns can be utilized with young children to move toward asking deeper questions. The book naturally leads to a nature walk with a purpose--counting petals, tracing spirals, and looking for other patterns in nature. While the book focuses on a specific scientific concept (on Fibonacci numbers), the pictures can engage young students by having them make observations such as the different types of flowers that have different numbers of petals. After making observations—first using the pictures in the book and then in the outdoors—children can move into asking questions such as "How many petals does that flower have?" or "How many flowers can you count?"

Swirl by Swirl, Spirals in Nature allows students to focus not only on a number but also on a shape. In ***Butterfly Tree***, there are many different opportunities where a question can allow students to answer what they think happened and then explain why.



#2: Keep It Real

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

Children's books that are authentic are real, credible, and not contrived—and cover a wide range of both fiction and nonfiction topics. More narrowly: Authentic nonfiction books often help to expand a young learner's knowledge or answer their questions on a specific topic.

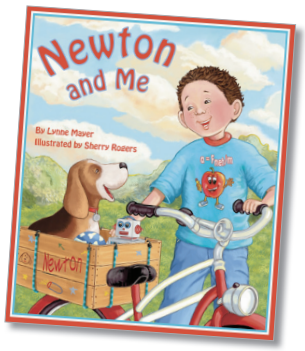
When choosing authentic literature, choose a book about the things in your young reader's world that can be seen, touched, played with, and challenged, instead of stories about things that can only be found in the imagination.

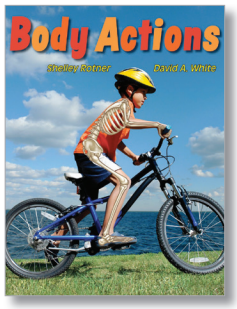
As an extra bonus, buy a toy or safe tool—like a simple wagon, or a magnifier, or a sieve—that the child can use to continue exploring when the book is done. Drawing pencils and a big pad make the experience complete and can encourage your favorite reader to try illustrating a story.

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. It's important that children have a balance of both authentic literature and fantasy literature.

Authentic Literature for Young Readers

Newton and Me is a story about a boy and his dog. While the two play, the young boy discovers the laws of force and motion in activities such as throwing a ball, pulling a wagon, and riding a bike. This book is authentic in that these experiences are things that most kids can engage in on their own and experience by participating in similar activities.





Another book that helps to demonstrate the reality of science would be ***Body Actions***--which shows young students engaged in everyday events, from blowing up a balloon to riding a bike to smiling. Throughout the book, the systems of the body are introduced in a developmentally appropriate way such as "Muscles are the body's motors. They help you to move." Real-life photos of children engaging in the different actions are graphically enhanced through illustrations that provide a very basic look inside the body.

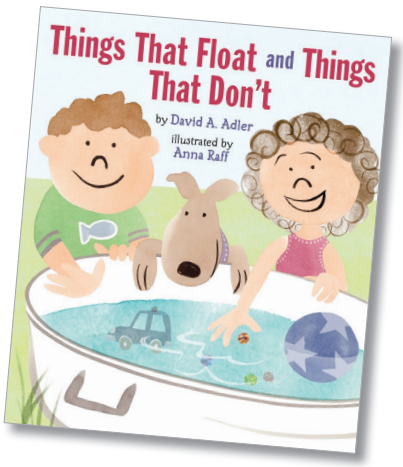
#3: Find Books That Will Continue to Engage the Child

Books should be bridges to other activities that expand on what the young reader heard, observed, questioned, or thought about during the story. Ask yourself "What will the child do when he or she puts the book down?" A book about leaves or rocks might lead to outdoor adventure. Pictures of shadows might force you to get out the flashlight and play. Other books suggest counting or collecting. Specific directions may not be needed, but extension questions are always the sign that an author doesn't expect the message to end on the last page.

When a book offers activities or experiences, make sure you examine them for safety. Experiments with chemicals or projectiles might seem exciting, but there are so many other activities that are much safer and equally valuable.

Is the Book Extendable?

Things That Float and Things That Don't is a great book that allows options to extend learning. Taking a variety of objects and posing the question "Will it float?" allows a child to make a prediction and then test that prediction by tossing the object into a tub of water.



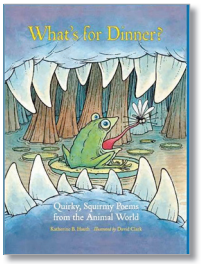
#4: Is It Fun to Read?

Remember Pooh going "Bumpety, Bumpety down the stairs?" That's not just fun to listen to, it's gravity.

Listen to the language of the book. Does it sing to you? It might be prose or poetry, but it can still be science. 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. Finding books that allow students to not only listen to language that is descriptive and fun but that also introduces them to new science content is a win-win for the reader.

Fun to Read

What's for Dinner? Quirky, Squirmy Poems from the Animal World **brings the fun of words and the rhyming sounds of the text together in a poem format and introduces the reader to food chains.**



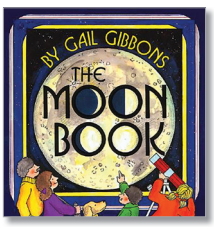
#5: Is the Book Durable?

Young children's first exposure to learning is likely a book with pictures they follow while someone else reads the text. In the best of books, there may be keys or thumbprint collections so that children can inquire on their own as to what is in those pictures. Books may have several levels of text, as well--a very simple one with large print and carefully-limited vocabulary for the first read, and more details (on the main pages or in the back) for another time when skills are higher. Books that have a young reader coming back time and time again—not only because they like (and perhaps have memorized) the story but also because they continue to find new information, a hidden picture, or a different experience as their own personal and real-world experiences have grown—are books that are durable and time-tested.

The best signs of a high-quality science trade book that has seen a little use are dog-eared pages and chocolate stains. You won't see them when you buy the book, but when a child keeps a book as a treasured companion, that sort of visual evidence helps confirm that you've made the right choice.

Durable Books

Possible books that provide more information as students get older include ***The Cloud Book*** **by Tomie dePaola as well as** ***The Moon Book*** **by Gail Gibbons.**



Here are some additional resources to consider when selecting science books and other science-related materials for children:

The 2014 list of Outstanding Science Trade Books for Students K–12 (books published in 2013)

www.nsta.org/publications/ostb/ostb2014.aspx

The NSTA Recommends review service provides thoughtful, objective recommendations of the best science-teaching materials, reviewed by top teachers and other outstanding science educators.

www.nsta.org/recommends

The Children's Book Council 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.ecarfoundation.org***

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 (PTA 1999; Henderson and Mapp 2002; Pate and Andrews 2006). The NSTA position statement on **Parent Involvement in Science Learning** also finds 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 (Cotton and Wikelund 2001)." Read more at

www.nsta.org/about/positions/parents.aspx

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." Read more at

www.nsta.org/about/positions/earlychildhood.aspx

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

They also have a list of recommended books about nature:

www.naeyc.org/files/yc/file/200801/BTJRecommendedNatureBooks.pdf