

Science Libraries in the Classroom

*Having access to a comfortable classroom science library
can turn kids on to science and reading at the same time*

by **Rebecca Grant**

METAMORPHOSIS. Photosynthesis. Hypothesis. A major part of a science educator's life is spent helping students discover the meaning of big scary words such as these. Ironically, science educators rarely receive training in the teaching of reading and often do not consider explicit reading instruction a necessity in a science classroom. Since so much of science involves reading, it simply makes good educational sense to utilize reading as a strategy for helping students to understand scientific concepts. An emphasis on reading strategies in the science classroom can help students learn to make sense of difficult texts and tough vocabulary. When science educators see themselves as reading teachers, they increase the size of their teaching toolkit and help to make science that much easier for students to learn. As a science teacher, I believe that the more reading students do in my classroom, the better equipped they will be to understand and use science in their lives.

Science libraries

A primary step to making reading a special focus in a science classroom is to build up a science library. A science library is just what it sounds like: shelves of books all geared toward science, whether the topic is animals, the human body, or scientific experiments. While many school libraries have science sections that are well stocked and well organized, the logistics of taking an entire class to the library on a regular basis can be complicated. A classroom

science library makes science books constantly accessible to students and makes it easier for the science teacher to build an effective reading component into the curriculum. Another advantage to having a science library in the classroom is that teachers get to know the books in their library and can make book suggestions based on what they know of students' individual interests. In addition, they can have deeper, more intelligent discussions with the students about

the books they read. One final advantage is that these libraries are excellent resources for students working on research projects.

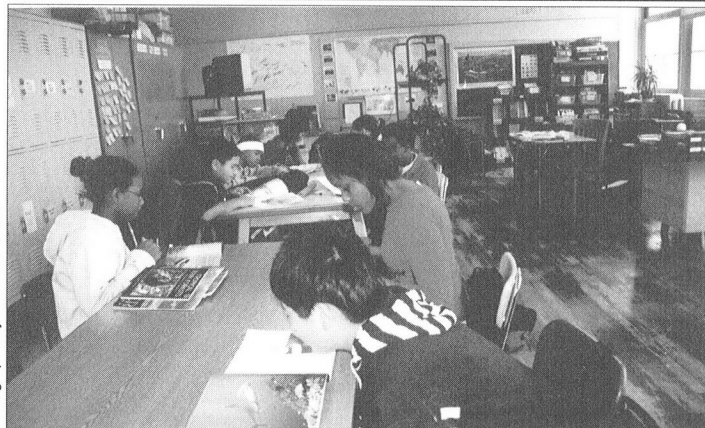
It has taken me several years to build a library in my middle school science classroom. Although it took both time and money to reach fruition, the library has had an enormous payoff. Looking around the classroom and seeing every student engaged in and enjoying reading — reading *science* for that matter! — I now have difficulty picturing a science classroom without this scene at least once in a while.

Building the science library

The first step to building a science library is to find a slew of good texts. Good texts are everywhere!

Many booksellers offer 20

percent off to teachers, but also check out bargains at used book stores: that was where I made my first big purchase to jump-start the library. Look in sections for young readers, children, and teens, as well as in science and nature sections. Also, look for castoffs in other teachers' rooms or hidden away in book closets in the school. Scholastic Books is an invaluable source for nonfiction books (see <www.scholastic.com>).



Photographs by Rebecca Grant

Teacher Rebecca Grant's science library is a comfortable, quiet nook furnished with old auditorium seats, plants, and a rug.

Organizing the library

The next step is to organize the books according to genre or topic. My nonfiction science library is organized into the following categories:

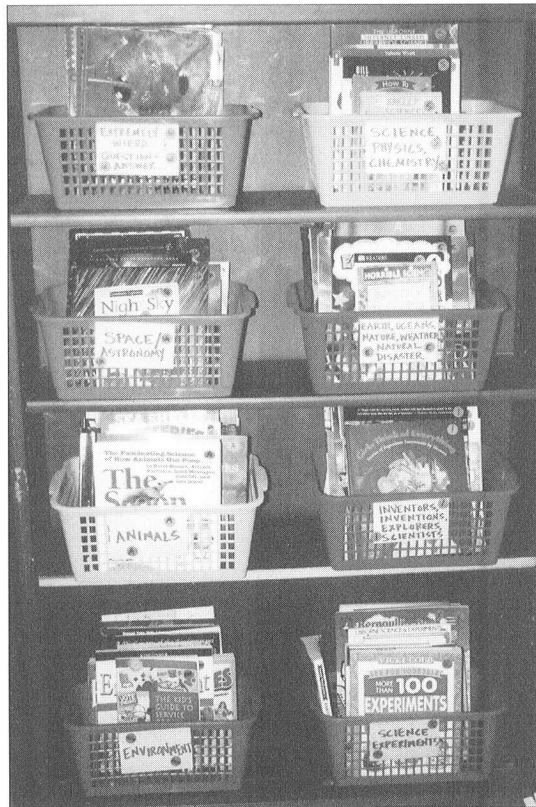
- Human Body
- Plants and Trees
- Animals
- Space and Astronomy
- Environment
- Science Experiments
- Science and Physical Science
- Question and Answer books
- "Extremely Weird" series books
- Scientists and Explorers
- Inventions and Inventors
- Earth, Oceans, and Natural Disasters
- Big Books (i.e., picture books)
- Magazines (e.g., *National Geographic*, *National Geographic for Kids*, *Science News*)
- Eyewitness Books
- Field Guides (e.g., National Audubon Society, Peterson)
- Resource Books and Science Texts

I also have an entire bookshelf dedicated to fiction. The genres on the fiction bookshelf include science fiction, fantasy, nature and wilderness, Native American literature, and young readers' novels. I also keep dictionaries, thesauruses, and world atlases on the shelves.

Making the library attractive and user-friendly is essential. Books should be organized according to genre in bins so that students can easily flip through them and see their covers (usually a great lure). Make sure that each genre is well marked and that you have a number, letter, and/or color-coding system for returning books to their bins. Write your name and classroom on each book, and set up a sign-out sheet system so that books do not leave without a trace. My library is in an area that is sectioned off from the rest of my classroom. It contains three bookcases, auditorium-style chairs, and a rug. Pillows and soft carpet are also great additions. If the library is appealing and comfy, students will immediately be drawn to it.

Using the library

The ways you choose to use your science library obviously depend on the age of the students you teach, the curriculum, and—most importantly—the needs of the students. Last year I began to incorporate the reading library into my classes slowly with occasional independent reading periods.



Books are organized by genre or theme in open bins that allow students to flip through them easily. Colored stickers on books indicate the bin they belong in.

When science educators see themselves as reading teachers, they increase the size of their teaching toolkit and help to make science that much easier for students to learn.

These are sometimes referred to as Drop Everything and Read (DEAR) or Silent Sustained Reading (SSR). I introduced the library to students through brief "book talks" or book-of-the-week discussions. I also read aloud to students short works such as picture books and Native American stories. I even read one novel to and with the students: we read *Countdown* by Ben Mikaelson, a stimulating story about a 12-year-old boy who goes into space. In these ways, I gradually made it known to students that reading is an important part of learning science. In independent reading periods, I saw students getting excited about the nonfiction texts and enjoying the time to explore on their own as well as share with others.

This year, two days of the week are dedicated to a reading workshop in my science classes. Each reading workshop begins with a 10- to 15-minute mini-lesson about a reading strategy, a genre of books, or a specific book. Then the students read science books independently for

20 to 30 minutes in a quiet, structured environment. Students select their book from the science library on their way in to class and return it as they leave. During independent reading time, I hold reading conferences with individual students. Each reading workshop concludes with a 10-minute session in which students discuss what they read that day or describe how they used one of the reading strategies taught in a mini-lesson. The benefits of such reading workshops in a science classroom are far-reaching. They allow teachers time to discuss with individual students what they are reading, thereby providing a structure for teachers to work closely and personally with students for assessment, guidance, and one-on-one help. This approach to teaching and learning also provides a secure

environment in which students can make choices, practice reading, and explore and pursue their own science-related interests.

If your situation does not allow for this amount of time to be given to reading, a science library can be used in other ways. Doing a brief book talk each week and letting students know that the classroom library is a lending library are effective ways to get kids interested in reading nonfiction science books. Students will soon discover that these books are chock-full of fun facts and excellent photographs that spark ideas and offer insights into the natural world.

Great Picks for a Science Library

Nonfiction Science and Reference

Melvin Berger and Gilda Berger. The Scholastic "Questions and Answers" series by Berger and Berger is excellent, e.g., *Do All Spiders Spin Webs?*, *Do Penguins Get Frostbite?*, *Do Stars Have Points?*, *Do Whales Have Belly Buttons?*, *How Do Flies Walk Upside Down?*

Yann Arthus-Bertrand. *Earth From Above for Young Readers*. Harry N. Abrams, 2002.

Francis R. Balkwill. *Cells Are Us (Cells and Things)*. Carolrhoda Books, 1994.

Mel Boring. *Caterpillars, Bugs, and Butterflies*. NorthWord Press, 1999.

Eyewitness Books published by Dorling Kindersley, e.g., *Arctic and Antarctic*, *Tree, Rocks and Minerals*, *Skeletons*, *Crime and Detection*, and many other science titles, see <www.dk.com>.

Anthony D. Fredericks. *Cannibal Animals: Animals that Eat Their Own Kind*. Franklin Watts, 1999.

Tim Friend. *Animal Talk: Breaking the Codes of Animal Language*. Free Press, 2004.

Rita Goldman Gelman. *Body Battles*. Scholastic, 1992.

Adele Glimm. *Rachel Carson: Protecting Our Earth*. McGraw Hill, 2000.

Ray Jayawardhana. *Star Factories: The Birth of Stars and Planets*. Steck-Vaughn, 2001.

David Lambert. *The Kingfisher Young People's Book of Oceans*. Larousse Kingfisher Chambers, Inc., 1998.

Christyna Laubach et al. *Raptor! A Kids' Guide to Birds of Prey*. Storey Books, 2003.

Elizabeth Levy. *Who Are You Calling A Woolly Mammoth?* Scholastic, 2001.

Sarah Lovett, Extremely Weird series, including *Animal Defenses*, *Animal Disguises*, *Animal Hunters*, *Bats*, *Birds*, *Endangered Species*, *Fishes*, *Frogs*, *Insects*, *Mammals*, *Micro Monsters*, *Primates*, *Reptiles*, *Sea Creatures*, *Snakes*, and *Spiders*. John Muir Publications and Avalon Travel Publishing.

Wayne Lynch. *The Scoop on Poop!* Fitzhenry and Whiteside, 2002.

Kenneth Mallory. *Swimming With Hammerhead Sharks*. Houghton Mifflin, 2002.

Charles Micucci. *Life and Times of the Peanut*. Houghton Mifflin, 1997.

Bill Nye (the Science Guy). *Consider the Following: A Way Cool Set of Science Questions*. New York: Hyperion Books for Children, 2000.

Seymour Simon, several books on weather, animals, earth systems, and natural disasters, see <www.seymoursimon.com>.

Art Sussman. *Dr. Art's Guide to Planet Earth*. Chelsea Green, 2000.

Diane Swanson. *Burp! The Most Interesting Book You'll Ever Read About Eating*. Kids Can Press, 2001; *Hmm? The Most Interesting Book You'll Ever Read About Memory*. Kids Can Press, 2001.

Stephen M. Tomecek, *What a Great Idea! Inventions that Changed the World*. Scholastic, 2003.

Usborne Publishing: illustrated science dictionaries, Internet-linked encyclopedia, *The Usborne Book of Science Experiments*, and many other illustrated books on a variety of science topics, see <www.usborne.com>.

Walter Wick. *A Drop of Water: A Book of Science and Wonder*. Scholastic, 1997; *Optical Tricks*. Scholastic, 1998.

Kathy Wollard. *How Come? Planet Earth*. Workman Publishing, 1999.

Valerie Wyatt. *The Science Book for Girls and Other Intelligent Beings*. Kids Can Press, 1993.

Fiction

Picture/Story Books

Lynne Cherry. *A River Ran Wild*. Harcourt Brace, 1995; *The Great Kapok Tree*. Harcourt Brace, 1990, <www.lynncherry.com>.

Theodor Seuss Geisel (Dr. Seuss). *The Lorax*. Random House, 1971.

Anne Mazer. *The Salamander Room*. ill. Steve Johnson. Borzoi Books, 1991.

Deborah Lee Rose. *The People Who Hugged Trees: An Environmental Folk Tale*. Plymbridge, 1995.

Science Fiction and Fantasy

Douglas Adams. *The Hitchhiker's Guide to the Galaxy*. Ballantine Books, reissued 1995.

Nancy Farmer. *The Ear, the Eye, and the Arm*. Firebird, reissued 1995.

Brian Jacques. Redwall books (15 titles), <www.redwall.org>

Madeleine L'Engle. *A Wrinkle in Time*. Yearling Books, 1998.

Lois Lowry. *The Giver*. Houghton Mifflin, 1993.

Philip Pullman. His Dark Materials series: *The Golden Compass*. Knopf, 1998; *The Subtle Knife*, Del Rey, 2001; *The Amber Spyglass*. Yearling Books, 2003.

Wilderness/Nature and Native American

Forrest Carter, *The Education of Little Tree*. University of New Mexico Press, 2001 (25th anniversary edition).

Sharon Creech, *Walk Two Moons*. HarperTrophy, 1995.

Michael Dorris. *Sees Behind Trees*. Hyperion Books, 1996.

Farley Mowat. *Never Cry Wolf*. Bantam Books, 1983 (reprint)

Scott O'Dell. *Sing Down the Moon*. Laurel Leaf Books, reissued 1997; *Island of the Blue Dolphins*. Houghton Mifflin, 1990.

Gary Paulsen. *Hatchet*. Bradbury Press, 1987. A classic survival story with sequels: *The River*, *Brian's Winter*, *Brian's Return*, *Brian's Hunt*.

Young Readers' Novels

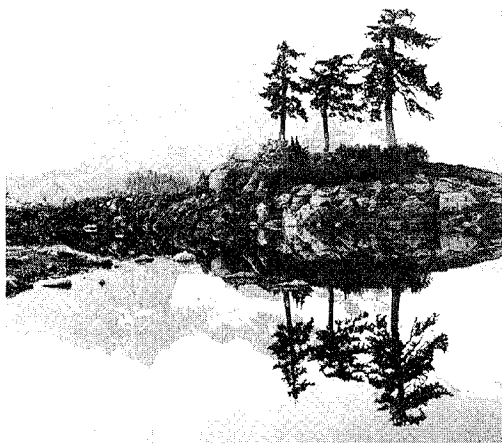
Edward Bloor. *Tangerine*. Scholastic Books, reissued 2001 (environmental theme).

Paul Fleishman. *Seedfolks*. HarperCollins, 1997 (gardening theme); *Joyful Noise: Poems for Two Voices*, HarperCollins, 1988 (poetry on insects).

Ben Mikaelson. *Countdown*. Hyperion, 1996 (space exploration theme).

— compiled by Rebecca Grant

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Even students in my homeroom (non-science) class often ask to borrow books.

“Build it and they will come.” Never underestimate the power of a good book — nor the power of reading to transform your science curriculum. A science library that contains both nonfiction and fiction books can complement any science curriculum at any grade level. The idea behind a science library is simple: turn kids on to reading, turn kids on to science, turn kids on to learning. A science library is one of the many tools that can inspire lifelong learning, and it can be an essential tool for promoting students’ growth in both science and literacy. Start small, with a few books. Talk about the books with a few students and gauge their reactions. The word will spread. The more excited you are about the books, the more inspired the students will be. As you continue to build your library, you will see the seeds of interest taking root among your students, and reading will likely grow to be an important part of your science lessons.

Rebecca Grant teaches seventh grade Science and Reading Workshop at East Side Community High School, a public school in New York City.

Resources for teaching reading

Books

Nanci Atwell. *In the Middle: New Understanding about Writing, Reading and Learning*. 2nd ed. Boynton/Cook. Center for Teaching and Learning, Maine. 1998. An excellent book about reading workshops.

Kylene Beers. *When Kids Can't Read -- What Teachers Can Do: A Guide for Teachers*. Heinemann. 2002.

Lucy McCormick Calkins. *The Art of Teaching Reading*. Allyn and Bacon, 2001.





Organizations

International Reading Association, see <www.reading.org>.

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