Puppets & Prose

Using puppets and children's literature in the science classroom.

By Joy L. Lowe and Kathryn I. Matthew

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Children are fascinated by and relate to puppets, books, animals, and insects. They view puppets as toys, and toys equal fun. Adding puppets and children's literature to the science classroom makes learning entertaining and motivating. Realistic puppets hold children's attention and actively engage their natural curiosity as they learn about animals and insects. Puppets bring students' imaginations to life as they recreate stories and learn the parts of the animals while using the puppets.

Bridges Between Trade Books and Science

Walpole (1999) highlights the importance of building bridges between science textbooks and children's prior knowledge to foster comprehension of science content. Using science trade books can help build these bridges by extending and enhancing the science concepts presented in textbooks (see *Science and Children's* Web site, http://www.nsta.org/sc, for lists of outstanding science trade books). These informational books often present material in a different format than the textbook and on a variety of reading levels. Trade books' colorful illustrations, photographs, diagrams, charts, and short blocks of text can make science concepts more understandable and easier to read than textbooks. Additionally, science trade books enable students to see science as part of their everyday lives (Stiffler, 1992).

Dixey and Baird (1996) contend that using children's literature to teach science can enliven instruction, stimulate children's learning, and excite them about learning. Further, Dreher (1999) stresses the importance of engaging children in reading a diverse selection of fiction and nonfiction books to enhance their reading achievement.

Some books contain incorrect science concepts, both explicit and implicit (Mayer, 1995; Rice and Rainsford, 1996; Rice and Snipes, 1997). These inaccuracies are often found in trade books and realistic fiction. Teachers must be aware of possible inaccuracies in books and the negative impact these books have on student learning.

To identify books with incorrect science concepts, teachers must be familiar with the science content presented in the books. By becoming familiar with the authors of children's books, teachers can learn which authors are noted for writing accurately about science concepts. Such authors as Gail Gibbons, Jean Craighead George, and Dorothy Hinshaw Patent write science books for children and are known for the thorough research and attention to detail found in their books. Reading reviews of science trade books is another way for teachers to become familiar with books that contain accurate science concepts. Recently published books are more likely than older books to have science concepts presented accurately.

Puppets and Stories

Piazza (1999) suggests using realistic puppets as props to narrate stories, try out ideas, and examine curriculum content. Puppets encourage children to try out ideas and investigate on their own. Seeing a video of chickens hatching from eggs or watching chickens hatch in the classroom provides students with opportunities to observe this natural phenomenon. However, putting a hand inside an egg puppet and pushing a chick through the hole to make it hatch enables children to experience this idea again and again as they seek understanding.

Puppets encourage children to examine curriculum content in ways not possible with live animals. For example, snakes' sideways or rectilinear movements can be explored through the use of puppets. Explaining to students about endangered animals and the need to preserve their environments can be made more personal by the introduction of realistic puppets. Students can more easily relate to the animals if they can hold, touch, and snuggle with a realistic puppet of the animal.

Colorful characters in storybooks come to life in teachers' hands as the teachers retell favorite stories in their own words. Storytelling does not re-

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quire memorization of the story; storytellers read the story several times to become familiar with it and remember the sequence of events. Once familiar with the story, they practice retelling the story in their own words using puppets, gestures, expressions, and voice inflections to entrance their listeners. Storytelling with puppets is not a puppet show with a puppet for each character; rather, storytellers manipulate a puppet of the main character and one or two lesser characters.

Favorite books such as Facklam's (1996) *Creepy, Crawly Caterpillars* can be accompanied by a caterpillar puppet and used to introduce students to the cycle of metamorphosis. Listening to a familiar story stimulates children's prior knowledge, encourages them to participate in the storytelling, and provides them with a basis for learning new content. A realistic puppet encourages children to make connections with the science concept and their personal life experiences. In this story, children move from the familiar to the unfamiliar as they learn more details about metamorphosis.

Realistic animal puppets can be used to introduce children to a variety of animals and encourage them to learn more about real animals. In any given classroom students will be reading on different levels, so a variety of books have been included. Once the teacher has shared the puppets and books with the students, both puppets and books should be placed in a science center for students' independent explorations. Therefore it is imperative that every book used in this activity contains accurate science.

Where to Get Realistic Puppets

Internet sites provide access to an array of realistic animal puppets and ideas for using them. The award-winning, realistic Folkmanis puppets (1219 Park Ave., Emeryville, CA 94608) come in a variety of sizes and include finger and glove puppets. Their Web site, http://folkmanis.com/Menu.html, includes a regional map of the United States showing local retailers who carry the puppets. The Acorn Naturalists site (17821 East 17th St., #103, Tustin, CA 92780), http://www.acorn-group.com/p1417.htm, sells animal puppets and has information on using the puppets to teach animal diversity, the food chain, anatomy, and the care of live animals. Another online source for animal puppets is Chuckles' Emporium of Puppets (3138 South 3200 West, Salt Lake City, UT 84119), which categorizes the puppets for easy selection, http://aros.net/~chuckles/index.htm.

Puppets hold a magical attraction for children. Students' eyes grow wide and they become entranced when stories are told with puppets. Puppets are nonthreatening, approachable objects that come to life through the skillful manipulations of a puppeteer. The animation of the puppets hold children's attention and appeal to their sense of wonder. They help students relate to their world and enable them to examine animals they may not otherwise be able to approach.

Articulate children respond animatedly to puppets, and quiet children are emboldened by the puppets. After finishing a storytelling session an author was approached by a very quiet child in the class. The storyteller placed the puppet on the child's hand, and the child began talking to the puppet. She asked why the puppet was not responding, and the storyteller told her that she had to respond for the puppet. So the child began conversing with the puppet, providing both voices. Realistic puppets provide children a creative way to interact with and investigate their world.

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Integrating Science & Literature

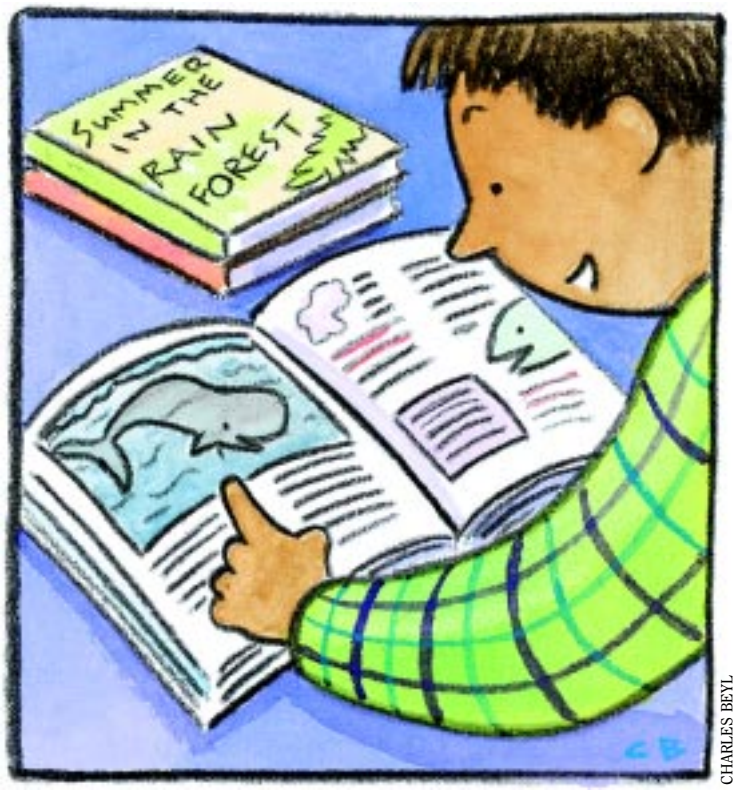
Caterpillars wiggle and crawl and tickle your hand as they move. They also eat lots of leaves. This is what children will tell you when you show them a caterpillar puppet and ask them what they know about caterpillars. They have often observed caterpillars and investigated them in their own backyards.

Prior to reading *Creepy Crawly Caterpillars,* explain to students that they are going to hear a story about caterpillars and ask them what they think the caterpillars will eat. Hold up poster-board cutouts of the different foods a caterpillar eats. Ask the students to name the foods. Students bring the food up to the caterpillar puppet manipulated by the teacher. As the story is told, the storyteller turns the puppet inside out to change it from a caterpillar to a butterfly.

Elicit comments from the children about what happened to the caterpillar. Ask if they have ever eaten a big meal and then fallen asleep. Are they changed when they wake up? Why did the caterpillar change?

This story serves as an introduction to metamorphosis and addresses science Content Standard C: Life cycles of organisms (National Research Council, 1996). Encourage students to think about and then discuss which foods a caterpillar would eat. Have a bulletin board divided into three sections: 1) foods a caterpillar would eat 2) foods a caterpillar would not eat and 3) foods a caterpillar might eat. The class decides together where to place the cardboard cutouts of the foods. As the students continue their investigation of caterpillars, they return to the bulletin board to move the foods into the correct categories. This activity addresses Content Standard A as students develop their abilities to do scientific inquiry.

Recommended Puppets and Prose Books



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Alligators

Arnosky, J. (1994). *All About Alligators*. New York: Scholastic. 32pp. 0-590-46788-3. $14.95. Recommended for Grades K–3.

Limited text and large, detailed drawings introduce young readers to the fascinating world of alligators. Readers are invited to the swamp for a close-up look at alligators.

Bats

Arnold, C. (1996). *Bat*. New York: William Morrow. 48pp. 0-688-13726-1. $15.93. Grades 1–3.

This photo essay of the life and behavior of bats dispels superstitions about bats and provides interesting information. Because bats spend most of their lives upside down, their bodies are adapted to this position. These nocturnal mammals use their large ears and their keen sense of hearing to locate prey.

Stuart, D. (1994). *Bats: Mysterious Flyers of the Night*. Minneapolis, MN: Carolrhoda Books. 47pp. 0-87614-814-3. $19.95. Grades 2–5.

These shy, gentle mammals are vital to our environment because they pollinate flowers, disperse seeds, and control the insect population. Color photographs capture the fascinating variety of ears, noses, and wings found on bats. The book covers bats' remarkable navigation system, their protective coloring, their benefits to man, and the superstitions surrounding them.

Bears

Murphy, J. (1993). *Backyard Bear*. New York: Scholastic. 0-590-44375-5. $15.95. Grades 2–4.

As older bears force younger bears out of their territory, the younger bears show up in backyards across America looking for food. In search of food, a young bear makes his way through a sleeping neighborhood. The bear's scary journey is seen through his eyes and the eyes of the families he awakens.

Patent, D.H. (1994). *Looking at Bears.* New York: Holiday House. 40pp. 0-8234-1139-7. $15.95. Grades 1–3.

Bears are powerful, intriguing animals. The evolution of bears; physical characteristics; habitats; and behaviors, including hibernation, are presented in this book.

Caterpillars

Facklam, M. (1996). *Creepy, Crawly Caterpillars.* Boston: Little, Brown. 32pp. 0-316-27391-0. $4.95. Grades 2–4.

Detailed colorful drawings portray metamorphosis and show which caterpillars become moths and butterflies. Caterpillars spend much of their short lives eating and growing. Their appearance, habits, habitats, and food preferences are discussed.

Foxes

Arnold, C. (1996). *Fox*. New York: Morrow Junior Books. 48pp. 0-688-13728-8. $16. Grades 2–5.

With their sharp senses, quick reflexes, and innate cunning, foxes are one of the most successful predators in the world. They are also among the most adaptable—living in habitats from the arid deserts of North Africa to the frozen tundra of the Arctic Circle. This book focuses on the tiny kit fox found the United States.

George, J.C. (1992). *The Moon of the Fox Pups*. New York: Harper Collins. 48pp. 0-06-022859-8. $14.89. Grades 3–7.

June is the "growing up" moon, when fox pups emerge from the safety of their den and begin to explore the world. This is when adult foxes teach their pups everything from the mysteries of a box turtle to the wily ploys of a woodchuck to the unexpected behavior of the bullfrog.

Frogs

Gibbons, G. (1993). *Frogs.* New York: Holiday House. 32pp. 0-8234-1052-8. $15.95. Grades PreK–3.

There are more than 38,000 types of frogs. This book describes how their bodies change as they grow from tadpoles into frogs, how they make sounds that mean different things, how they hibernate, and how they differ from toads.

Owls

Yolen, J. (1988). *Owl Moon*. New York: Philomel. 32pp. 0-399-21457-7. $16.95. Grades PreK–1.

This Caldecott Medal–winning book describes a very special winter evening of quiet, cold, and companionship as a father and child go "owling." This search for the elusive owl is filled with anticipation and excitement.

Arnosky, J. (1995). *All About Owls*. New York: Scholastic. 32pp. 0-590-46790-5. $14.95. Grades K–3.

These nocturnal birds use their superb night vision and acute sense of smell to keep the insect and rodent population under control. There are owl calls to practice and detailed illustrations depicting owl anatomy.

Sattler, H. (1995). *The Book of North American Owls*. New York: Clarion Books. 64pp. 0-395-60524-5. $15.95. Grades 4–7.

Colorful illustrations of owls and their body parts accompany informative text. A glossary includes drawings of different owls, facts about owls, and maps showing where they live in the United States.

Penguins

Paladino, C. (1991). *Pomona: The Birth of a Penguin*. Danbury, CT: Franklin Watts. 32pp. 0-531-15212-X. $19.60. Grades 2–4.

Follow the early life of a blackfooted penguin at the New England Aquarium as it is hatched from an egg and raised by scientists. Interspersed in the text and accompanying photographs is information about the habits and habitats of penguins. The plight of penguins in the wild is described at the end of the book.

Patent, D.H. (1993). *Looking at Penguins*. New York: Holiday House. 40pp. 0-8234-1037-4. $15.95. Grades 2–4.

Rather than fly through the air, these birds are "underwater flyers." Striking photographs provide a close-up look at these fascinating animals. This book describes penguins' hunting patterns, feeding habits, and breeding rituals.

Snakes

Ling, M., and Atkinson, M. (1997). *The Snake Book*. New York: Dorling Kindersley. 32pp. 0-7894-1526-7. $12.95. Grades 1 and up.

Two- and four-page spreads of color photographs make these snakes seem as though they will slither off the pages. Intertwined with the snakes is text that describes what the snakes eat, how they kill their prey, and where they live.

Souza, D. (1992). *Slinky Snakes*. Minneapolis, MN: Carolrhoda Books. 40pp. 0-87614-711-2. $19.95. Grades 1–4.

The easy-to-read text with bold keywords and definitions accompanied by photographs and illustrations make this a reader-friendly book. Young readers can relate to the text with passages such as comparing snakes shedding their skins to pulling off socks. Illustrations of snakes' movements including undulation, sideways, concertina, and rectilinear will have students wanting to imitate them.

Resources

Dixey, B.P., and Baird, K.A. (1996, December). *Students' Entry into Science Through Literature*. Paper presented at the Global Summit on Science and Science Education, San Francisco, CA. (ERIC Document Reproduction Service No. ED 408 159)

Dreher, M.J. (1999). Motivating children to read more nonfiction. *The Reading Teacher, 52*(4), 414–415, 417.

National Research Council. (1996). *National Science Education Standards*. Washington, DC: National Academy Press.

Piazza, C.L. (1999). *Multiple Forms of Literacy: Teaching Literacy and the Arts*. Upper Saddle River, NJ: Prentice-Hall.

Rice, D.C., and Rainsford, A.D. (1996, April). *Using Children's Tradebooks to Teach Science: Boon or Boondoggle?* Paper presented at the annual meeting of the National Association for Research in Science Teaching, St. Louis, MO. (ERIC Document Reproduction Service No. ED 393 700)

Rice, D.C., and Snipes, C. (1997, March). *Children's Trade Books: Do They Affect the Development of Science Concepts?* Paper presented at the annual meeting of the National Association for Research in Science Teaching, Oak Brook, IL. (ERIC Document Reproduction Service No. ED 406 170)

Stiffler, L.A. (1992). A solution in the shelves. *Science and Children, 29*(6), 17, 46.

Walpole, S. (1999). Changing texts, changing thinking: Comprehension demands of new science textbooks. *The Reading Teacher, 52*(4), 358–369.

Also in *S&C*

Mayer, D.A. (1995). How can we best use children's literature in teaching science concepts? *Science and Children, 32*(6), 16–19.

Thompson, T.E., and Gosch, A. (1984). Nonsense botany revisited. *Science and Children, 22*(1), 22–23.