

Books for Children

My Place in My World: Literature for Place-Based Environmental Education

Rachael Wells¹ and Pauline Davey Zeece^{1,2}

This article explores how children can learn about environmental sciences through place-based education and children's literature. Recent studies suggest that there is a lack of environmental science knowledge among citizens of all ages. Scholars and educators recommend introducing young children to the places in which they live to create an impact on how they will view and respect the natural world as adults. Selection and use of developmentally appropriate and scientifically accurate literature can be an effective tool to help children understand their place in and connections to the natural world. Guidelines for selecting place-based literature are presented using the Midwest United States as an example. Twelve children's books are recommended and reviewed.

KEY WORDS: Children's literature; environmental science; place-based education; young children; nature-deficit children.

INTRODUCTION

If a child saw a picture of a Hitmonchan, Dewgong or a Wigglytuff, would she be able to correctly identify each? What if she was shown a picture of an otter, beetle, or an oak tree? It may be surprising to learn that according to a British study, eight-year-olds were more familiar with a name such as Wigglytuff, which is a character from the Japanese game Pokemon, than they were with common names of species from their own community (Louv, 2005).

In Richard Louv's (2005) book, *Last Child in the Woods*, the topic of nature-deficit children is explored. Reporting and reviewing information that spanned a decade, Louv concluded that many people know very little of the natural world, including current environmental problems. American fourth- and

eighth-graders score lower in mathematics and science than students in many other countries (National Bureau of Economic Research, 2004; Rule, 2007). Only 14% of people surveyed understand that runoff can be attributed to water pollution. Forty-five million Americans reported thinking that freshwater comes from the ocean, and 130 million reported believing that hydropower is the country's top energy source, when in reality it only accounts for 10% of the total energy produced in the United States (Coyle, 2005).

The education and science communities are concerned about a lack of knowledge and interest in the sciences and there is fear that the United States will lose its competitive edge in the global community (Coyle, 2005). The shrinking interest in science-related professions is apparent in reports that indicate that the number of U.S. born graduating science PhD students had significantly decreased since 1966, while the number of foreign born PhD students has increased during the same time period (National Bureau of Economic Research, 2004). The deficiency of environmental knowledge, especially in this time when challenging environmental choices arise, is a "wake-up call to the environmental education

¹Department of Family and Consumer Sciences/College of Education and Human Sciences, University of Nebraska-Lincoln, 135 HE, Lincoln, NE 68583-0801, USA.

²Correspondence should be directed to Pauline Davey Zeece, Department of Family and Consumer Sciences/College of Education and Human Sciences, University of Nebraska-Lincoln, 135 HE, Lincoln, NE 68583-0801, USA., e-mail: pzeecel@unl.edu

community, to community leaders, and to influential specialists ranging from physicians to weathercasters”(Coyle, 2005, p. ii).

What then is the Wake-up Call?

Allen (2005) and Wilson (1996) describe the critical importance of fostering young children’s connection to the natural environment in their immediate worlds. Orr (1994) cautions that without rich and meaningful opportunities to bond with nature, young children may develop an aversion to, rather than infinity for their natural surroundings. Rule (2007) posits that, in addition to intellectual skills, science attitudes include emotional components like curiosity and openness to new experiences. As such, young children’s emerging attitudes toward science-including natural and environmental science foster feelings that influence lifelong attitudes and behaviors.

How Can This Call be Heeded?

The commitment to and interest in science is decided long before the college years. By high school, 80% of U.S. students are not interested in careers based in physical and biological sciences, mathematics, or engineering (Pfirman & Advisory Committee for Environmental Research Education, 2003). To increase interest in science, the National Science Federation Advisory Committee on Environmental Research suggests that environmental education should be integrated at all levels of education, including early childhood (Coyle, 2005). Through Ecological Education in Action (Smith & Williams, 1999), educators in North America present ecological issues in school and non-school settings and suggest ways to reshape the thinking of children and adults to affirm the value of accurate and timely environmental information.

Will This be Enough?

Courses in environmental education frequently focus on scientific analysis and social policy. Children are often exposed to information regarding environmental problems (Coyle, 2005), but many of these activities and resources may lack relevance for very young children who are just beginning to understand the world beyond themselves and their family context. Thus, environmental science and the development of an appreciation of nature in early childhood education require a cognitive and attitudinal trans-

formation (Strong, 1998). Part of this transformation includes a heightened understanding and appreciation of the natural environments or places in which children live and interact on a daily basis. This understanding has been termed by some as “place-based” knowledge.

What is Place-Based Education?

Woodhouse and Knapp (2000) provide a succinct overview of the historical beginnings of this movement. From John Dewey’s (1915) experiential approach to student learning in the local environment, Paul Theobald’s (1997, 2000) use of the immediate locale, Traina and Darley-Hill’s (1995) extension of the term “locale” to include “bioregional education”, Thomashow’s (1995) message about achieving ecological identity, and Smith and Williams’ (1999) ecological education approach, the underlying assumption remains apparent. Educators need to “provide meaningful contextual experiences – in both natural and constructed environments – that complement and expand classroom instruction” (Knapp, 1996, p. ix) Table 1.

What Role Can Literature Play in This Process?

Literature is a valuable way to introduce young children to environmental science and place-based education. Literature-related activities can be incorporated into existing program curricula because they span all areas (Butzow & Butzow, 2006). Books and stories can serve as an effective tool for inspiring social changes, such as environmental protection (McCall & Ford, 1998), and explorations of science-related topics that connect directly to a child’s life (Barclay, Benellis & Schoon, 1999). Monhardt and Monhardt (2006) suggest that children’s literature has the potential to teach in the context of what is familiar to children, thereby helping them to make connections to the real world. Through well chosen and sensitively delivered books and stories, children are able to observe a mutual relationship between their culture and the ecosystem by learning about places they encounter every day. These are the places in which the young children live and learn (Gruenwald, 2003).

How are Picture Books Selected for Use in Environmental Education?

In selecting picture books for teaching environmental education, there are several points to consider about the audience and the purpose of an activity.

Table I. Other Sources of Information about Environmental and Placed-Based Education for Young Children

Hooked on Nature is a non-profit organization whose mission is to offer inspiration, training, workshops, and resource materials for adults who wish to help children develop loving relations with the Earth and all people. The organization website (<http://www.hookedonnature.org/resources.html#children>) provides a chronologically organized bibliography of age-appropriate books for children.

The **National Science Teachers Association** (NSTA), founded in 1944 and headquartered in Arlington, Virginia, is the largest organization in the world committed to promoting excellence and innovation in science teaching. To address subjects of critical interest to science educators, the Association publishes a professional journal for each level of science teaching; a 52-page newspaper, *NSTA Reports*; and many other educational books and professional publications. In addition to its three major initiatives (i.e., Building a Presence for Science, SciLinks, and NSTA Institute), the organization compiles a yearly updated list of recommended outstanding trade books for students K-12 that may be found on its websites (<http://www.nsta.org/ostbc>).

The **Giverny Award** is an annual award established in 1998 by Dr. James H. Wandersee and Dr. Elisabeth Schussler for the 15 Degree Laboratory, currently based at Louisiana State University. The Laboratory performs research on visual cognition in biology, visual approaches to learning biology, and the graphic representation of biological knowledge. The Giverny Award is presented to the author and the illustrator of a children's science picture book written in the English language and published within 5 years of the award date. The book must teach its young reader at least one important scientific principle, or encourage the reader toward specific science-related pursuits or inquiry. The book's artwork, illustrations, photographs, or graphics must work in harmony with the text to tell an important story well and must contain a story with a plot and characters. All other factors being equal, books about plants and/or plant science will have preference. Information about current and past award winners may be found on the 15 Degree Laboratory link (<http://www.15degreeclub.com/award06.html>).

The **National Arbor Day Foundation** is a non-profit organization founded to inspire people to plant, nurture, and celebrate trees. Through mass-media communications, by providing low-cost trees for planting, and by producing high-quality, easy-to-use educational materials, the foundation works to make tree planting and care something in which nearly everyone can be involved. Mechanisms are created through which the average individual can directly support positive tree conservation and education projects. Within the Youth Education section of the foundation's website (<http://www.arborday.org/kids/>) a wide variety of resources are available for preschool through third grade, and fourth grade and up.

Children's literature may use a variety of ways to explain the world (Glandon, 2000; Marriott, 2002). If an adult presents the world's workings exclusively through scientific or realistic explanations, younger children may become confused (Butzow & Butzow, 2006). For children to learn environmental science through literature, facts must be presented in a way that relates to the child's world and way of thinking.

Typically before the age of eight, preschool children are considered to be in the preoperational period. They often cannot make clear or unequivocal distinctions between realities and fantasy (Robson, 2006; Temple, Naylor, Martinez, & Yokota, 1998) and view animals as having anthropomorphic characteristics and feelings (Bettleheim, 1976). Around the age of eight, children transition into the concrete operational stage and begin to realize the rationale behind many of the world's workings. Magic can be explained and stories can often be recognized as fictitious (Temple et al., 1998). Environmental science literature selections for the young reader do not always need to be fictitious. A book can anthropomorphize an animal character (e.g., giving it a name) and also teach about the ecology of its habitat in an accurate way. Developmentally appropriate literature selections should not give a false sense of the real world. Books will, therefore, be most effective in

environmental learning and place-based education if these present accurate information in both the text and illustrations (Pringle, 2005).

Some educators and authors wish to instill a sense of wonder for the environment in order to help protect it (Singer, 2003). For environmental educational lessons, it is inappropriate to use scare tactics as a way to teach young children to respect and preserve nature. If adults hope to see children develop a greater appreciation of environmental protection, children are best taught to love the natural surrounding world before being asked to heal its wounds (Sobel, 1996, 2004). If ecological destruction is highlighted in a story, the literature should not have a depressing overtone, condescend to children, or give them little hope for the future. Instead, books should be shared that instill a sense of hope and a feeling that the child, though small, can create a big difference (Singer, 2003).

In conclusion, the following questions may be considered when selecting environmental based literature for young children.

- What are the learning goals and objectives to be met through use of the book, story, or related activity?
- Is the storyline developmentally appropriate?
- Does the book present factual and accurate information?
- Do the illustrations show correct information and correspond with the text?

- Is the tone positive?
- Does the book or story present an environmental theme relating to the area being studied?

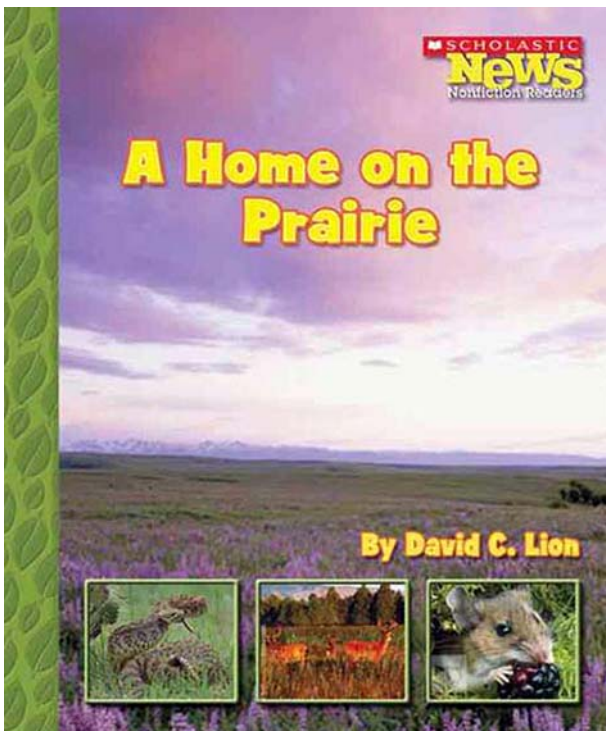
Developing a Place-Based Literature Collection: The Midwestern United States

To provide an example of the kinds of literature that can be included in an environmental science/place-based collection, the following books are recommended for learning more about the Midwestern United States. Similar titles can be assembled for other regions of the country and the world.

Learning About Ecosystems

Lion, Daniel C. *A Home on the Prairie.* Danbury, CN: Children's Press/Scholastic Inc., 2007. 24 pp., \$18.00. Ages 6 to 7 years.

What does a snake do in a day on the prairie? This is one of the questions answered in an easy-to-read introductory book for young children learning about the prairie ecosystem. Using photography, it explores the interactions between the animals who call the prairie home. Some words may be new for young readers, but each one is explained through simple words and pictures.



Taylor-Butler, Christine. *The Missouri River.* Danbury, CN: Children's Press/Scholastic Inc., 2006. 32 pp., \$5.95 (pb). Ages 6 to 7 years.

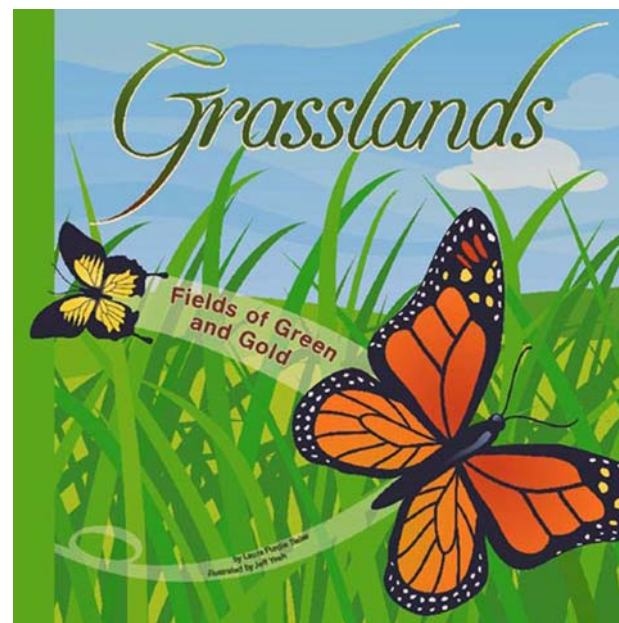
Knowing that water really is everywhere and is shared by many people is the theme throughout this book. Factual information is paired with photographs to show the many ways people use the river that runs through the Midwest. Young readers and listeners travel down the stream of time to see how the Missouri River has shaped the lives of Midwesterners throughout history.

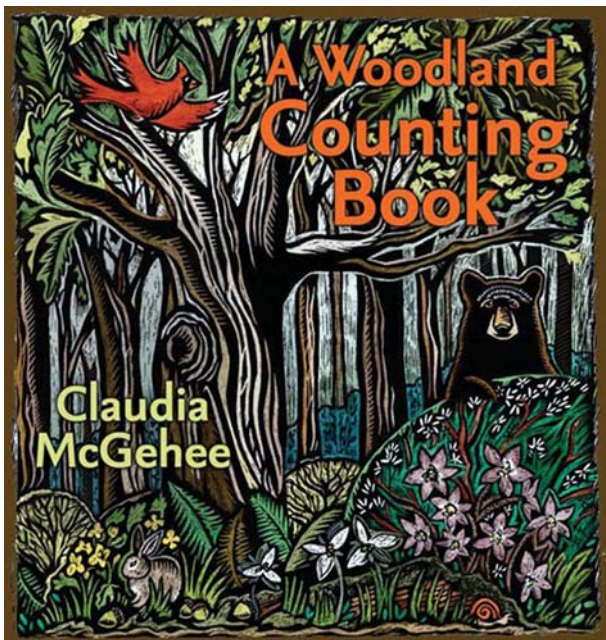
Salas, Laura Purdie. *Grasslands: Fields of Green and Gold.* Jeff Yesh, illustrator. Minneapolis, MN: Picture Window Books, 2007. 24 pp., \$23.95. Ages 5 to 9 years.

Grasslands (2007) factually explores many different grassland ecosystems around the world. This resource incorporates some animals that are not indigenous to Midwestern United States. When sharing with younger children, adults may need to explain, for example, that elephants do not live in Nebraska. Although the threats that humans make on these lands are included, children are provided with information about ways in which people are helping to reduce these threats.

McGehee, Claudia. *A Woodland Counting Book.* Iowa City, IA: University of Iowa Press, 2007. 32 pp., \$17.95. Ages 3 to 6 years.

Open this book to take an imaginary journey and find shelter from the wide open grasslands under the canopy of the woodland community. McGehee's





(2007) *A Woodland Counting Book* allows children to explore their counting, as well as animal names. With scratchboard illustrations, the plants and animals are beautifully represented and could easily be recognized in nature. Children, as well as adults, are sure to learn of a new neighbor.

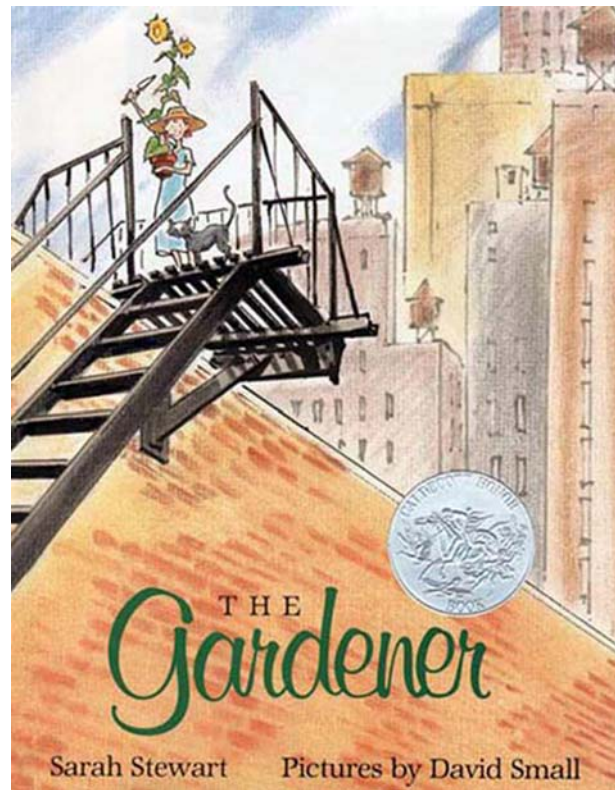
Backyard Adventures

Stein, David Ezra. *Leaves*. New York: Putnam Publishing Group, 2007. 32 pp., \$15.99. Ages 3 to 6.

Jumping in an enormous pile of crunchy leaves on a crisp autumn day is an honored part of many Midwestern children's fall. When little bear sees falling leaves for the first time, he tries gallantly to reattach them to no avail. Warily, the winsome creature curls into to large pile of leaves for a well earned nap. Children will nod knowingly at his spring awakening and his discovery of new spring foliage all around. A charming way to teach children about the ways in which simple pleasures and outdoor treasures are connected to many parts of the natural world.

Stewart, Sarah. *The Gardener*. David Small, illustrator. New York: Holtzbrinck Publishers, 2007. 40 pp., \$6.99 (pb). Ages 4 to 8.

When the Depression hits her family, Lydia Grace, 10, leaves her snug rural home and journeys to a nearby city to live with dour Uncle Jim. Letters



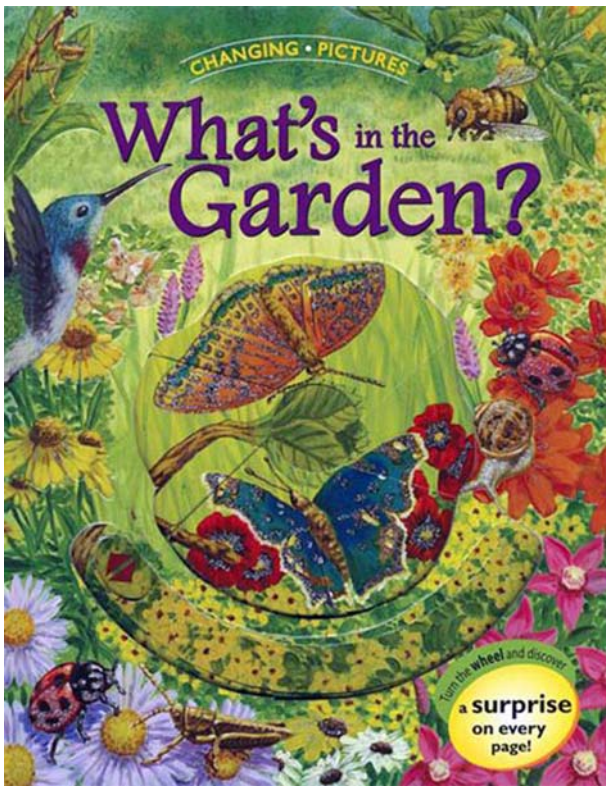
written first to Uncle Jim and then to Grandma unfold the tale of this tender transition. Will the young gardener be able to find a way and place to bring nature to the dreary city apartment? David Small's Caldecott Honor illustrations celebrate the efforts of one small child who uses her knowledge of nature and persistent personality to make a joyful difference.

Vanderhorst, Michael J. *Pictures and Poems: Introducing Young People to Nature in a Poetic Way!* Bloomington, IN: Author House, 2007. 60 pp., \$21.95. Readers of all ages.

Author Michael Vanderhorst's artistically written verses offer an alternative to textbook style readings and are sure to capture the interest of children. Information is presented about the wildlife, while photographs provide an easy key to learning the names of the birds, mammals, and insects found in any Midwestern backyard.

Zakarin, Debora Mostow. *What's in the Garden?* James Mravec, illustrator. San Diego, CA: Silver Dolphin Books, 2007. 10 pp., \$12.95. Ages 3 to 7 years.

As the title implies, *What's in the Garden*, can be used to guide children as they interact with the



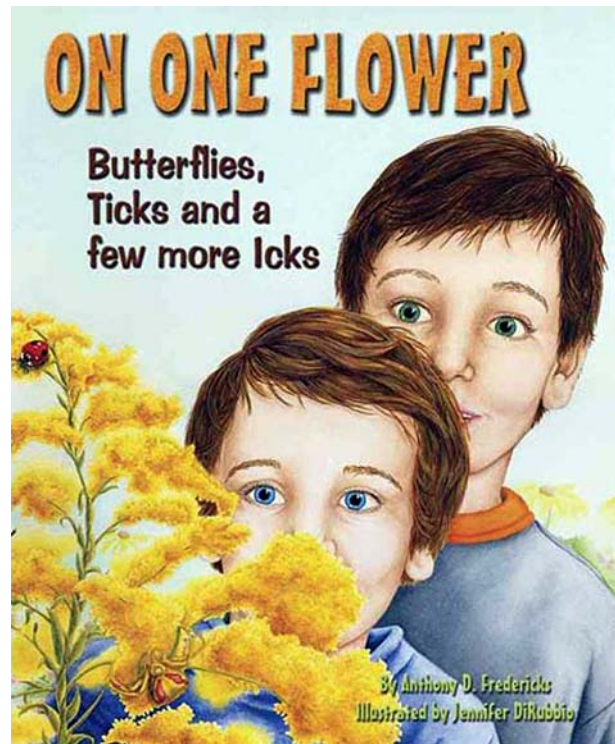
wildlife just outside their doorstep. With sparkling illustrations and interactive wheels on each page, young readers can learn about the lives of common insects, hummingbirds, and frogs. Suggestions for activities to augment learning are included.

If You are Bored, Go Outside!

Buczacki, Stefan. *Young Gardener*. Stefan and Beverly Buczacki, illustrators. London, UK: Frances Lincoln Publishers, 2007. 125 pp., \$16.95. Ages 5 to 8.

Children love nothing better than playing in the dirt, and gardening is a logical extension of this activity. Taking a green, organic, and environmentally friendly approach, this hands-on book combines information and tasks, some for children to do and appreciate alone, others to be shared with adults. One of the most innovative features of this resource involves the treatment of divisions within seasons (e.g., early summer, middle summer, late summer). A sure way to encourage the green thumb hiding in all children (and their adults)!

Fredericks, Anthony. *On One Flower: Butterflies, Ticks, and a Few More Icks*. Jennifer DiRubbio, illustrators. Nevada City, CA: Dawn Publications, 2007. 32 pp., \$16.95. Ages 4 to 8 years.



Two boys hiking through a field discover a thriving ecosystem on a single goldenrod flower in an informative, science-based, rhyming text. Through their eyes, young readers are cleverly introduced to the variety of insect life and activities and the interrelationships and interdependencies this Midwestern plant shares with the surrounding animal life.

Stanley, Tomm. *The Big Tree at George and Charlotte's House*. Paul Richardson and Tomm Stanley, illustrators. New Zealand: Stonefield Publishing, 2007. 26 pp., \$11.95 (pb). Ages 7 and up.

Young learners are introduced to two characters who discover fun in a backyard tree. The tale encourages children to learn by asking questions and observing and provides an excellent introduction to the scientific method. Though this story is not specific to the Midwest, it could be set in any area where trees grow. For more advanced learners, readers are given the option of reading a more advanced informational section on how a tree works with its surrounding environment. A glossary is appended at the end of the book.

Weller, Duncan. *The Boy from the Sun*. Verona, NJ: Simply Read Books, 2007. 36 pp., \$16.95. Ages 5 to 7 years.

This magical non-fiction story guides a pair of black-line, bored children to look within themselves

to find happiness and creativity and to look to nature for fun and beauty. The abstract pictures and setting are not exclusively Midwestern, but the content could apply to any place that has industrialized cities. Adults may need to help children understand that the floating illustrations represent animals and people from around the world. This simple story is important and included because it provides hope to young readers about how to create change from within in order to see changes in the larger world.

REFERENCES

- Allen, P. (2005). The elementary child's place in the natural world. *The North American Montessori Teachers' Association Journal*, 30(1), 106–113.
- Barclay, K., Benellis, C., & Schoon, S. (1999). Making the connection: Science and literacy. *Childhood Education*, 75, 146–152.
- Bettleheim, B. (1976). *The uses of enchantment: The meaning and importance of fairy tales*. New York: Alfred A. Knopf.
- Butzow, C. M., & Butzow, J. W. (2006). *The natural world through children's literature: An integrated approach*. Englewood, CO: Teacher Ideas Press.
- Coyle, K. (2005). *Environmental literacy in America*. Washington, DC: The National Environmental Education and Training Foundation.
- Dewey, J. (1915). *The school and society (Rev. Ed.)*. Chicago, IL: The University of Chicago Press.
- Glandon, S. (2000). *Caldecott connections to science*. Englewood, CO: Libraries Unlimited, Inc.
- Gruenwald, D. A. (2003). The best of both worlds: A critical pedagogy of place. *Educational Researcher*, 32(4), 3–12.
- Knapp, C. E. (1996). *Just beyond the classroom: Community adventures for interdisciplinary learning*. Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools (ERIC Document Reproduction Service No. ED 388 485).
- Louv, R. (2005). *Last child in the woods: saving our children from nature-deficit disorder*. Chapel Hill, NC: Algonquin Books.
- Marriott, S. (2002). Red in tooth and claw: Images of nature in modern picture books. *Children's Literature in Education*, 33(3), 175–183.
- McCall, A. L., & Ford, M. (1998). Why not do something? Literature as a catalyst for social action. *Childhood Education*, 74, 130–135.
- Monhardt, L., & Monhardt, R. (2006). Creating a context for the learning of science process skills through picture books. *Early Childhood Education Journal*, 43(1), 67–71.
- National Bureau of Economic Research. (2004). *Where do new US-trained science-engineering PhDs come from?* (Working Paper No. 10554). Cambridge, MA: Freeman, R.B., Jin, E., & Shen, C.
- Orr, D. (1994). *Earth in mind*. Washington, DC: Island Press.
- Pfirman, S., & Advisory Committee for Environmental Research Education. (2003). *Complex environmental systems: Synthesis for earth, life, and society in the 21st century*. Retrieved February 25, 2007 from http://www.nsf.gov/geo/ere/ereweb/acere_synthesis_rpt.cfm.
- Pringle, R. M. (2005). Using picture storybooks to support young children's science learning. *Reading Horizons*, 46, 1–15.
- Robson, S. (2006). *Developing thinking and understanding in young children*. New York: Routledge.
- Rule, A. (2007). A "tad" of science appreciation. *Early Childhood Education Journal*, 34(4), 297–300.
- Singer, M. (2003). Nurturing Wonder. *School Library Journal*, 49, 42–43.
- Smith, G., & Williams, D. (Eds.) (1999). *Ecological education in action: On weaving education, culture, and the environment*. Albany, NY: State University of New York Press.
- Sobel, D. (1996). *Beyond ecophobia: Reclaiming the heart in nature education*. Great Barrington, MA: The Orion Society and The Myrin Institute.
- Sobel, D. (2004). *Place-based education: Connecting classrooms and communities*. Great Barrington, MA: The Orion Society and The Myrin Institute.
- Strong, C. (1998). The impact of environmental education on children's knowledge and awareness of environmental concerns. *Marketing Intelligence & Planning*, 16, 349–355.
- Temple, C., Naylor, A., Martinez, M., & Yokota, J. (1998). *Children's books in children's hands: An introduction to their literature*. Needham Heights, MA: Allyn & Bacon.
- Theobald, P. (1997). *Teaching the commons: Place, pride, and the renewal of community*. Boulder, CO: Westview Press.
- Theobald, P., & Curtiss, J. (2000). Communities as curricula. Forum for *Applied Research and Public Policy*, 15(1), 106–111.
- Thomashow, M. (1995). *Ecological identity: Becoming a reflective environmentalist*. Cambridge, MA: MIT Press.
- Traina, F., & Darley-Hill, S. (Eds.) (1995). *Perspectives in bioregional education*. Troy, OH: North American Association for Environmental Education.
- Wilson, R. (1996). *Environmental education during the early years*. ERIC Clearing House for Science, Mathematics, and Environmental Education Digest, ED 402147.
- Woodhouse, J., & Knapp, J. (2000). *Place-based curriculum and instruction: Outdoor and environmental education approaches*. Charleston, WV: ERIC Clearinghouse on Rural Education and Small Schools (ERIC Document Reproduction Service No. ED 448012).

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