

## 2024 Indiana Science Trade Book Annual Reading List (IN-STAR): Teaching Science Through Literature

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### Abstract

The 2024 IN-STAR List is a curated list of books elementary teachers can use to integrate children's literature and science. The titles align to the domains of the Disciplinary Core Ideas of the K-12 Science Indiana Academic Standards. Several nationally recognized lists are produced to help teachers identify books that can be used in elementary classrooms, but these lists don't align their selections to grade levels and Indiana's K-5 science standards. The IN-STAR list bridges that gap. The IN-STAR List ensures that the recommended books meet the specific science standards for each grade level in Indiana. This alignment helps teachers deliver targeted instruction and assess student learning effectively. All books were published in 2023 and there are two high-quality titles per grade level and three honorable mention selections for the primary and intermediate grade bands. A brief description and ISBN number are offered so that the reader may consider classroom connections and work with local libraries to acquire books.

The 2024 Indiana Science Trade Book Annual Reading List (IN-STAR) features unique selections which provide thought-provoking connections between rich literature and science content. The criteria and process to identify books has been previously described (Author, 2012). Selections meet the following criteria:

1. The book has substantial science content.
2. The information is clear, accurate, and up to date.
3. Theories and facts are clearly distinguished.
4. Facts are not oversimplified to the point where the information is misleading.
5. Generalizations are supported by facts and significant facts are not omitted.
6. Books are free of gender, ethnic, and socioeconomic bias.
7. Information can be connected to the Indiana Science Standards for grades K-5.
8. Books are readily available in public libraries or bookstores.
9. Books have received at least one positive review in one of the identified professional journals: *Booklist*, *Bulletin of the Center for Children's Books*, *Horn Book*, *Kirkus Reviews*, *Publishers Weekly*, *School Library Journal*, and *Science and Children*.

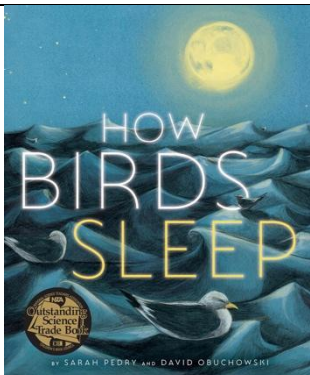
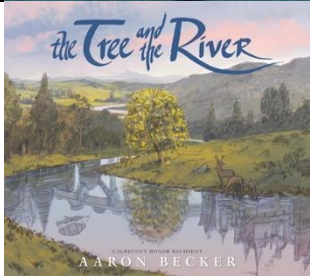
Items one through five are critical because they help teachers select quality science-focused books for classroom use. Item six ensures a teacher’s universal responsibility to promote classrooms and resources which promote a variety of populations and cultures. Items seven through nine ensure the selections are high quality and easily attainable by classroom teachers.

Chosen titles were published in the preceding year. Books are selected through a continuous review of resources highlighting new publications in children’s literature. As interesting and appropriate books are discovered, they are purchased or acquired through local libraries for review. Their content is assessed for the nine criteria and if they address the science content listed in the K-12 Science Indiana Academic Standards for each grade level. The reading level of books is considered when aligning them with grade levels.

The titles can certainly be used in other grade levels to help with readers at different levels that teachers have in their classroom. Additionally, read alouds make using some of the upper grades appropriate for the lower grades if the content aligns. And, of course, upper-level students can explore the deeper meaning in a simple image or part of the book. The authors anticipate that teachers will implement a variety of reading strategies while using these science-based books. Examples include highlighting character descriptions in biographies, demonstrating how to use text features to gain meaning from a text, and incorporating opportunities for retelling main ideas and key details of a text. Presented below are of this year’s selections.

**The 2024 Indiana Science Trade Book Annual Reading List (IN-STAR)**


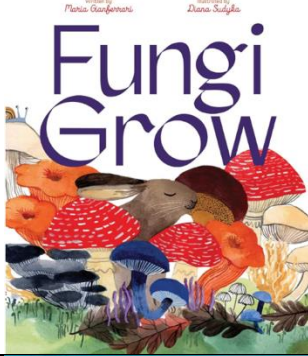
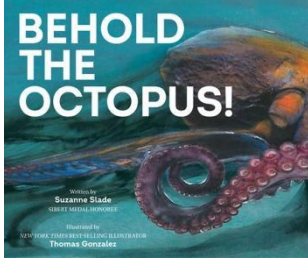
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<b>Kindergarten</b>	
	<p>HOW BIRDS SLEEP. 2023. David Obuchowski. Illus. Sarah Pedry. Minedition. 40 pp. ISBN-13: 978-1662650970. David Obuchowski's "How Birds Sleep" shares the way different birds catch their Zzzs. From parrots tucked in trees to ostriches napping on the ground, the book reveals birds sleep in all sorts of surprising places. This beautifully illustrated book is a great resource to spark curiosity about the hidden world of bird sleep. STANDARD: LIFE SCIENCE</p>
	<p>THE TREE AND THE RIVER. 2023. Aaron Becker. Candlewick. 32pp. ISBN-13: 978-1536223293. Told from the point of a tree and river, this wordless story shows humans impact on the ecosystem from homes to eventual cities. Despite the changes, the tree and the river endure, offering a message of nature’s resilience. STANDARD: EARTH AND SPACE SCIENCE and LIFE SCIENCE</p>
<b>First Grade</b>	

	<p>WE ARE BRANCHES. 2023. Joyce Sidman. Illus. Beth Krommes. Clarion Books. 40. ISBN-13: 978-0358538189. The book’s beautiful illustrations and poetry engage young readers to show how the branching shape is everywhere in nature, not just on trees. From the veins in our bodies to the way lightning streaks across the sky, branches help things grow, spread out, and connect. STANDARD: EARTH AND SPACE SCIENCE and LIFE SCIENCE.</p>
	<p>CREEP LEAP CRUNCH. 2023. Jody Jensen Shaffer. Illus. Knopf Books for Young Readers. 48pp. ISBN-13: 978-0593565537. "Creep, Leap, Crunch!" is a vibrantly illustrated story that introduces young children to the concept of a food chain. It follows the journey of a tiny worm through the forest, who becomes food for a hungry cricket, then a darting mouse, and so on. Rhyming text and playful sounds ("creep," "leap," "crunch") keep students engaged. STANDARD: LIFE SCIENCE</p>
<p><b>Second Grade</b></p>	
	<p>ROOTING FOR PLANTS. 2023. Janice Harrington. Illus. Theodore Taylor III. Calkins Creek. 48pp. ISBN-13: 978-1662680199. A fascinating retell of Charles S. Parker, a Black scientist who loved exploring nature and learning about plants. Despite facing challenges, Charles became a botanist and collector, traveling the United States to discover new plant and fungi species. STANDARD: LIFE SCIENCE</p>
	<p>WHY DO ELEPHANTS HAVE BIG EARS? 2023. Steve Jenkins and Robin Page. Little, Brown Books for Young Readers. 40pp. ISBN-13: 978-0316456791. Elephants' giant ears aren't just for hearing! Young readers will enjoy another the collaged-based narrative to the form and function of how these big ears help them stay cool in hot environments. STANDARD: LIFE SCIENCE</p>
<p><b>Third Grade</b></p>	

	<p><b>WE ARE STARLINGS: INSIDE THE MESMERIZING MAGIC OF A MURMURATION.</b> 2023. Robert Furrow and Donna Jo Napoli. Illus. Marc Martin. Random House Studio. 40 pp. ISBN-13: 978-0593381632. This beautifully illustrated book succinctly presents how starlings benefit from being part of a group, such as protection from predators. Fold-out pages add to the reading engagement. <b>STANDARD: LIFE SCIENCE</b></p>
	<p><b>AT HOME WITH THE PRAIRIE DOG: THE STORY OF A KEYSTONE SPECIES.</b> 2023. Dorothy Hinshaw Patent. Illus. William Munoz. Web of Life Children’s Books. 34 pp. ISBN-13: 978-1970039061. The interactions of prairie dogs with other species and their habitat convey the interdependence of organisms and the importance of keystone species. Captioned up-close photos support the text and introduce readers to the variety of grassland species. <b>STANDARD: LIFE SCIENCE</b></p>
<p><b>Fourth Grade</b></p>	
	<p><b>SEW SISTER: THE UNTOLD STORY OF JEAN WRIGHT AND NASA'S SEAMSTRESSES.</b> 2023. Elise Matich. Tilbury House Publishers. 36 pp. ISBN-13: 978-0884489825. This biography of “Sew Sister” Jean Wright conveys the contributions she and other seamstresses made to the NASA space shuttle program. The text is presented in prose and supported by realistic painted illustrations and pops of stitch patterns. <b>STANDARD: ENGINEERING, TECHNOLOGY, AND APPLICATIONS OF SCIENCE</b></p>
	<p><b>TRANSPORTED: 50 VEHICLES THAT CHANGED THE WORLD.</b> 2023. Matt Ralphs. Illus. Rui Ricardo. Nosy Crow. 112 pp. ISBN-13: 979-8887770208. Presented in chronological fashion, each page spread of this oversized non-narrative informational book focuses on one type of vehicle, including a text box of facts and figures as well as a summary of what make the vehicle important. The variety of vehicles demonstrates the many ways that energy can be converted. <b>STANDARD: PHYSICAL SCIENCE</b></p>
<p><b>Fifth Grade</b></p>	
	<p><b>HOW TO SPACEWALK: STEP-BY-STEP WITH SHUTTLE ASTRONAUTS.</b> 2023. Kathryn D. Sullivan and Michael J. Rosen. Illus. Michael J. Rosen. MIT Kids Press. 48 pp. ISBN-13: 978-1536226218. Former shuttle astronaut Kathryn D. Sullivan shares her career pathway and compares experiences in Earth’s gravity with the weightlessness of space. Photos, cartoon-style illustrations, and labeled drawings support the text. <b>STANDARD: PHYSICAL SCIENCE</b></p>

	<p><b>GEORGE WASHINGTON'S ENGINEER: HOW RUFUS PUTNAM WON THE SIEGE OF BOSTON WITHOUT FIRING A SHOT.</b> 2023. Darcy Pattison. Illus. Terry Kole. Mims House. 33 pp. ISBN-13: 978-1629442211. This narrative of the how the British occupation of Boston ended blends engineering and history seamlessly, making this book ideal for supporting not only science standards but also history-based social studies standards. Maps and parchment-looking text boxes add to the visual features. <b>STANDARD: ENGINEERING, TECHNOLOGY, AND APPLICATIONS OF SCIENCE</b></p>
<p><b>Primary Honorable Mention</b></p>	
	<p><b>A STONE IS A STORY.</b> 2023. Leslie Booth. Illus. Marc Martin. Margaret K. McElderry Books. 40pp. ISBN-13: 978-153449694. The book describes the remarkable journey of a “simple” stone on a grand adventure through time. During the journey which starts as hot, molten rock deep underground, the stone is shaped by glaciers, rivers, and travels through mountains and oceans. <b>STANDARD: EARTH AND SPACE SCIENCE</b></p>
	<p><b>IF THE RIVERS RUN FREE.</b> 2023. Andrea Debbink. Illus. Nicole Wong. Sleeping Bear Press. 40pp. ISBN-13: 978-1534112780. "If the Rivers Run Free" tells the story of how cities grew up alongside helpful rivers, providing water, transportation, and even power. But as cities got bigger, they sometimes hid the rivers underground, causing problems like pollution and flooding. Thankfully, clever people realized they could uncover these "buried rivers" and bring them back to life, making cities healthier and more beautiful places. <b>STANDARD: EARTH AND SPACE SCIENCE</b></p>
	<p><b>FIND ABOUT ANIMAL CAMOUFLAGE.</b> 2023. Martin Jenkins. Illus. Jane McGuinness. Candlewick. 32pp. ISBN-13: 978-1536228366. This vibrant picture book takes young explorers on an adventure to read about how animals use incredible disguises to outsmart predators or sneak up on prey. From desert lizards turning into living pebbles to butterflies that look just like leaves, the book bursts with amazing examples of how camouflage helps animals thrive and hide in plain sight. <b>STANDARD: LIFE SCIENCE</b></p>
<p><b>Intermediate Honorable Mention</b></p>	

	<p><b>Josephine and Her Dishwashing Machine: Josephine Cochrane's Bright Invention Makes a Splash.</b> 2023. Kate Hannigan. Illus. Sarah Green. Calkins Creek. 40 pp. ISBN-13: 978-1635926217. Any student who has the house chore of loading or unloading the dishwasher will appreciate this lively biography of inventor Josephine Cochrane. Pastel-hued illustrations and brief overviews of other inventions developed in the late 1800s augment the story. <b>STANDARD: ENGINEERING, TECHNOLOGY, AND APPLICATIONS OF SCIENCE</b></p>
	<p><b>FUNGI GROW.</b> 2023. Maria Gianferrari. Ilus. Diana Sudyka. Beach Lane Books. 48 pp. ISBN-13: 978-1665903653. Fungi structures and functions are described through the running text and additional layered text, both of which are supported through informative visual features. End pages include a glossary, fun facts, and an illustrated depiction of the mushroom's life cycle. <b>STANDARD: LIFE SCIENCE</b></p>
	<p><b>BEHOLD THE OCTOPUS.</b> 2023. Suzanne Slade. Illus. Thomas Gonzalez. Characteristics of octopuses and interactions with their environment are presented through limited text, additional sidebars, and end pages. Full-page realistic illustrations of a variety of octopus species enrich the science content. <b>STANDARD: LIFE SCIENCE.</b></p>

## References

Author. (2012). Spotlight on science: Introducing the Indiana science trade book annual reading list. *The Indiana Reading Journal*, 45(1), 31-35.

## Resources

Thomas, J., Gulley, G., & Rearden, K. (2023, October 28). *INSTAR booklist by year*. University of Southern Indiana. <https://www.usi.edu/science/southwest-indiana-stem/instar-book-list>

## Author Information

Jeff Thomas, Professor of Teacher Education, works with emerging and current elementary teachers to promote integration of inquiry-based science, children's literature, and technology.

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