Nurturing dialogue with children about Earth’s climate goes beyond The Lorax. Exploring books on climate change may be crucial to the future of the planet.

Here’s an imaginary scenario to consider: Mrs. Smith’s second-grade class voted to start a countdown to Earth Day, April 22. They engaged in classroom community discussions about Earth’s climate changes and how children’s simple efforts can support environmental stewardship. Mrs. Smith wanted to use quality children’s literature, yet she wondered how to judge whether an environmental text’s information was sensitively presented and not unduly anxiety-provoking for her students. In addition, she needed to judge whether the text was culturally appropriate and inclusive of the diverse cultures represented by her students. Keeping in mind daily literacy instruction, Mrs. Smith needed to teach figurative language, visual imagery, and content vocabulary; thus, she sought books with high-quality writing and illustrations. Lastly, she wanted to ensure that information was accurate and presented in a way that would promote her students’ understanding of scientific concepts.

Once she found the right books, Mrs. Smith was astonished, delighted, and occasionally distressed by introspective questions students asked about their world and how it is changing. Together, they were moving beyond the books themselves to authentic inquiry and critical, responsible thinking.

This article aims to facilitate the selection of quality literature that stimulates children’s contextualized understanding of Earth’s changing climate. We present criteria for examining books that will support teachers’ and students’ responses to and understanding of the difficulties humans face today and in the future. Children’s literature can help us think and act in new ways, but controversial and pressing issues such as climate change require careful consideration of what a text may offer. Works of literature can help young readers integrate everyday and scientific knowledge into robust concepts. We see children’s literature about climate change as an important part of a larger system of assistance (Gallimore & Tharp, 1990) that engages teachers, administrators, peers, and family in the development of children’s active, thoughtful participation in the world.

Climate change has been a growing concern for decades, and each year more and more voices across geographical and political boundaries call for meaningful decisions and actions to limit the destructive consequences of anthropogenic, or human-caused, climate change (see Kolbert, 2015). U.S. participation in the international adoption of the Paris Agreement in December 2015 illustrates how policy debates at home and abroad are moving from whether human-caused climate change is a concern to how it might be addressed. Article 12 of the Paris Agreement focuses on education: “Parties shall cooperate in taking measures, as appropriate, to enhance climate change...
BEYOND THE LORAX: EXAMINING CHILDREN’S BOOKS ON CLIMATE CHANGE

Pause and Ponder

- What local factors should teachers keep in mind as they consider approaches to climate education?
- What scientific knowledge about climate and the natural world can children explore and produce that will help them make decisions about the environment?
- What role should children’s books play in shaping children’s thinking about their world, their choices, and their reactions to climate change?
- What children’s literature is available for stimulating children’s thinking about Earth’s climate?
- How can your text selection and your facilitation of class discussions support students’ emotional responses as they think about climate change?

Background Information on Climate Change

Many of the pressing issues facing the world today—education, water quality, immigration, and economic stability—threaten children especially (Xu et al., 2012). Changes in the Earth’s climate are also affecting animal and plant life. To a great extent, they are happening because resources on Earth are being converted into gases that amplify the insulating effect of Earth’s atmosphere. The U.S. Department of Defense (2014) is investing millions of dollars to understand what’s happening and to prepare. In a major report, the department announced that climate change poses another significant challenge for the United States and the world at large. As greenhouse gas emissions increase, sea levels are rising, average global temperatures are increasing, and severe weather patterns are accelerating. These changes...will devastate homes, land, and infrastructure.

The pressures caused by climate change will influence resource competition while placing additional burdens on economies, societies, and governance institutions around the world. (p. 8)

In other words, the climate is changing enough to matter to everyone—including children.

Mining, drilling, the consumption of fossil fuels, and worldwide changes in agriculture have added to the Earth’s insulating blanket so much that crucial balancing acts for life are under threat. The most obvious are Arctic sea ice, the geographic location of plant and animal species, extreme weather, desertification, ocean levels, and acidification, prompting some people to use the term “climate disruption” (Dumanoski, 2009, pp. 71–72).

Science never completely answers its own questions, much less the questions people may want to ask about climate change. It is not the role of scientists, politicians, or classroom teachers to tell human beings how to live, but all of us are making important choices every day about the Earth’s climate. These choices depend on how people learn about their physical environment. Well-written texts encourage students to develop understanding by proposing ideas, negotiating meaning, and debating issues (Pappas, Várelas, Barry, & Rife, 2004).

Children’s Books on Climate Change

Questions facing the world today regarding climate and human activity reach from our neighborhoods to all parts of the world, and children will inevitably play an important role in the next generations’ biggest decisions. Children’s books on climate change invite students to expand their understanding of difficult scientific concepts that affect their day-to-day lives. As students engage with these texts, they...
can learn how they can make a difference in the world. For teachers, the task of choosing classroom texts is a multidimensional process that must combine the characteristics of high-quality children’s literature with a focus on the quality of the climate change message.

Examining Climate Change Texts for Quality
High-quality literature, as defined by Galda, Cullinan, and Sipe (2010), is “books that use interesting language in creative ways, develop important ideas, are potentially interesting to children, and contain artistically excellent illustrations” (p. 23). When searching for literature on climate change, additional challenges arise from assuring that the information is based on scientific knowledge, is presented sensitively, and authentically represents diverse cultures. This process includes an analysis of the writing and illustrations. The first step to analyzing a book’s literary quality is to consider the genre (see Table 1). Genre refers to the structure of the text—whether meaning is presented using story, factual statements, or a combination. Books related to climate change can be placed under the genres identified by Donovan and Smolkin (2002) for science-oriented trade books: storybooks, informational (narrative or nonnarrative) texts, and dual-purpose books. Students benefit from classrooms where a range of texts is available.

Storybooks can use imaginative characters to tell a story about our role in protecting the environment. Narrative informational texts are books that provide accounts of actual events and factual information by employing a narrative structure (initiating event, rising action, climax, falling action, resolution). When analyzing the writing in storybooks and narrative informational texts, we must consider the story, characters, and setting. Seeds of Change: Planting a Path to Peace by Jen Cullerton Johnson and Sonia Lynn Sadler (2013) shows how the true story of Wangari Maathai’s life can illustrate the effect that planting trees can have on the environment (see Figure 1).

Nonnarrative informational texts present facts and concepts for readers without placing them into a story. A Cool Kid’s Field Guide to Global Warming by Karen Farrington and Sue Woollett (2009) illustrates how a question/answer format can be used to present explanations. Another example of this genre is a collaboration between Lynne Cherry, an award-winning author of many picture books, and photojournalist Gary Braasch: How We Know What We Know About Our Changing Climate: Scientists and Kids Explore Global Warming (2008; see Figure 2).

The third genre, dual-purpose books, is exemplified by The Magic School Bus and the Climate Challenge by Joanna Cole and Bruce Degen (2010), where story and information go hand in hand.

After analyzing the writing style, review the book’s illustrations, which provide a different dimension to the text: They help to present key information. The analysis should include visual elements, design, artistic style, and accuracy (Norton & Norton, 2011). Teachers consider photography, graphics, tables, and charts as well as paintings, drawings, and so on. When examining picture books in digital formats, Yokota and Teale (2014) pinpointed additional criteria, such as the quality of interactive and supplementary features. Then, the next step is to analyze the quality of the climate change message.

Examining Climate Change Books for a Depth of Scientific Thinking
It is important to look beyond the general considerations of quality to consider specifically the presentation of scientific knowledge. Jean Karl, in her work published in The Horn Book in 1987, maintained that mediocre books overemphasize their messages or they oversimplify. The points they make are too obvious, encouraging readers to push aside the ideas (as cited in Norton & Norton, 2011, p. 75). More generally, then, we should pay attention to how texts model socioculturally mediated processes like fairness, justice, and reason.

Examining books from the basis of scientific accuracy helps teachers ensure that the book represents research and the current knowledge base of the field. The National Science
# Table 1  Comparison of Two Climate Change Books

<table>
<thead>
<tr>
<th>I. Writing Style</th>
<th>Who Turned up the Heat? Eco-Pig Explains Global Warming</th>
<th>Our House Is Round: A Kid’s Book About Why Protecting Our Earth Matters</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is the genre: storybook, narrative informational text, nonnarrative informational text, or dual-purpose book?</td>
<td>Dual-purpose book</td>
<td>Nonnarrative informational text</td>
</tr>
<tr>
<td>How is the purpose achieved?</td>
<td>Story of Eco-Pig, who gives facts about climate change</td>
<td>Question/answer format to give readers information about climate change</td>
</tr>
<tr>
<td>Is the purpose consistent?</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Note: If the book is dual-purpose, answer the questions in sections A and B.

A. If it is a storybook or narrative informational text, does the story follow the key elements of a good story with well-developed characters and a good setting?

1. **Story**
   - Is this a good story? Timeline is sped up
   - Is the plot believable? No
   - How are the conflicts presented? Are they resolved in a natural and interesting manner? Resolved by asking readers to make changes to their lives
   - Does the author use literary tools, such as rhythm, refrains, personification, and imagery, in a variety of ways to engage the reader? Personification, imagery, rhythm
   - Does the language sound natural? No

2. **Characters**
   - Did the characters seem real? Did I understand the characters’ personalities and the reasons for their actions? No
   - Did the characters have both strengths and weaknesses? No
   - Did the characters represent diverse cultural groups? Not applicable
   - Are the characters portrayed as individuals instead of as representatives of a group? Not applicable

3. **Setting**
   - Did the characters fit into the setting? Not applicable
   - Did I feel that I was really in that time and place? No

B. If it is a nonnarrative informational text, consider the following questions:

- Is the technical vocabulary explained? Yes; Yes
- Is the information clear and up to date? Yes; Yes
- Are the facts presented clearly and not oversimplified? Oversimplified (e.g., “If Earth’s temperature rises by just one small degree, that means really big changes for the land and the sea!”; p. 17); Yes; although in child-friendly language, the text is clear (e.g., “Cars, trucks, and factories make pollution, a kind of dirty gas or liquid that goes out into the air and into our rivers, lakes, and oceans”; p. 10)
- Are generalizations supported by facts? No references presented in the text; No references presented in the text

II. Illustrations

- Did the design of the illustrations convey a sense of unity with the text? Both are oversimplified; Yes
- Do the illustrations reinforce, elaborate, or embellish the text? Embellish; Reinforce
- Did the artistic style match the author’s literary style? Yes; Yes
- Are the illustrations accurate in historical, cultural, and geographical detail? Not applicable; Not applicable
- Are the illustrations authentic and not stereotypical? Not applicable; Not applicable
- If there are captions, do they help focus the reader’s attention and extend understanding of the topic? Not applicable; Not applicable
The science of climate change confronts adult and child readers with anxiety-inducing problems. Readers wonder about their personal effect on the climate and how one individual can make a difference when the problem is so large. Literature can mediate anxiety by providing safe settings in which to consider frightening possibilities. Literature can also describe real-life actions—planting
“In supporting students’ emotional responses to the text, we are aiming to help students think critically about climate change.”

trees, building windmills, conserving resources—that young people have instituted throughout the world (see Wilson, 2010). The complicated, high-stakes choices presented by climate change call for literary support to help children and adults develop lasting and appropriate responses rather than knee-jerk and reactionary ones.

Selecting texts with realistic didactic value should begin with an acknowledgment that readers’ responses are not always predictable and that children may respond differently than adults. We can strive to understand the characteristics of texts likely to help children transition from fear- or anger-based reactions to science- and justice-based choices. In Vygotskian terms, we should select literature likely to mediate the transition from “affectively oriented processes associated with the child’s biomechanical experience (e.g., hunger, anger, fear) to higher level, socioculturally mediated ones (e.g., taste, justice, respect)” (Kellogg, 2010, p. 77). Moving beyond a text means supporting children’s development of prosocial processes.

An adult who tries to affect children’s psychology will, under the impression that real feelings are too difficult for children, present a sugarcoated version of events and heroes that are clumsily unskilfully made up; feelings are replaced with sentiment. (Vygotsky, 1926/1992, Ch. 13, para. 6)

In supporting students’ emotional responses to the text, we are aiming to help students think critically about climate change.

**Focusing on Climate Change Texts**

Looking closely at texts on climate change, we can see how a complicated issue can be presented to readers in an oversimplified manner. *The Lorax* by Dr. Seuss (1971), a well-known picture book, was published one year after the first Earth Day. This beloved text, however, simplifies the message of saving the environment by creating a dichotomy between business and the environment. *The Lorax* follows a familiar archetypal pattern in which evil is complex while good is simple. Readers are invited to have simple emotional responses alongside protagonists: to feel angry at the Once-ler, to feel relief from trouble at the prospect that the hero and the world might escape certain death. In *The Lorax*, the Once-ler and Thneeds neatly symbolize (for adults) consumer capitalism, industrialization, and their effects on the environment. For children, restoration of the Earth’s fertility is a responsibility falling upon one child in the form of a single seed. The solution is simply to put saving the environment in the hands of the child who must repair the environmental disaster created by adults. This solution is dated; children are not the only ones who should be responsible for addressing issues of climate change.

A more modern text that presents the complicated issue of climate change in a simplified manner is *Who Turned Up the Heat? Eco-Pig Explains Global Warming* by Lisa S. French and Barry Gott (2010). This text presents a straightforward look at global warming. Readers are invited to view cartoon-like illustrations to represent complex issues such as pollution and drought. The author strives to build empathy about the issue through the illustrations. The scientific message of the book is provided through explanations of global warming and its effect on the land and sea. In *Who Turned Up the Heat?*, Eco-Pig is presented as the guardian of the Earth. Cars, electricity, and airplanes are represented as threats. Readers may be urged to feel responsible for saving the world through changes in their day-to-day actions. This could cause anxiety about how readers live their lives, so a teacher will need to be prepared to help youngsters look at small actions that might build momentum for positive change.

In *The Lorax* and *Who Turned Up the Heat?*, learning and action are depicted as closed processes. Characters are motivated by a clear and uncomplicated understanding of equally clear circumstances. In both texts, the characters can change the state of their world by taking simple actions—planting a truffula seed and using less electricity.

In preparing this article, George (first author) interviewed two science educators and a media specialist about the criteria they use for selecting texts related to environmental problems. The consensus view was that students need information and situations presented in such a way that they must make meaningful decisions. In both *The Lorax* and *Who Turned Up the Heat?*, children are invited to make decisions based on low-level feelings. They are passive recipients of the
awful story of adults’ colossal failure of stewardship. They solve enormous yet seemingly simple problems through a process of scapegoating an oversimplified villain.

We do not underestimate the polemic value of such texts. However, as educators, we want students to engage with texts that develop complex thinking about the issue of climate change. Thus, we want to demonstrate how one might choose a text likely to mediate prosocial development around the climate change issue. Table 1 uses a series of questions to show how an oversimplified text such as *Who Turned Up the Heat?* looks when analyzed carefully in comparison with *Our House Is Round: A Kid’s Book About Why Protecting Our Earth Matters* by Yolanda Kondonassis and Joan Brush (2012; see Figure 3).

We encourage educators to make their own decisions about how to use particular texts in instructional settings. We hope that the books listed in the next section stimulate children to develop sophisticated affective and intellectual stances toward climate change.

### Climate Change Books for Children: Information and Inspiration

Books in the following list are placed alphabetically into categories suggested by Donovan and Smolkin (2002) for science-oriented trade books: storybooks, informational books (narrative and nonnarrative), and dual-purpose books.

#### Storybook

- **The Promise** by Nicola Davies and Laura Carlin (2013): Illustrations in this thought-provoking book move from tans and grays to a full spectrum of color as a girl moves from despair to joy when she starts to plant seeds. “Green spread through the city like a song, breathing to the sky, drawing down the rain like a blessing” (p. 33). In one urban area after another, people take up the challenge to bring nature back to their surroundings.

#### Informational Books

##### Narrative Informational Books.

- **The Boy Who Harnessed the Wind** by William Kamkwamba and Bryan Mealer (2012): This biography tells the true story of Kamkwamba, who was 14 years old when a drought came to his small village in sub-Saharan Africa in 2001. His family had very little to eat and, without money for tuition, he was compelled to leave school. Kamkwamba visited a library and began reading about how simple machines are constructed. He collected parts from junk piles, melted a plastic pipe for propellers, erected a tower, and created a windmill. This picture book portrays the persistence and dreams that brought electricity, water, and hope to a dry land. A 290-page book by the same name gives full details.

- **Energy Island: How One Community Harnessed the Wind and Changed Their World** by Allan Drummond (2011): Based on a true story, this delightfully illustrated book explains how the residents of Samsø, an island in Denmark, were able to become energy independent in 2008 through the use of windmills, solar panels, and straw. It all started when a schoolteacher encouraged children and adults to take action (some small and some big). Sections on global warming, wind power, and renewable energy provide information that is accessible to young readers. Contact Samsø Energy Academy for more details.

- **Mon Île Blessée** [My Wounded Island] by Jacques Pasquet and Marion Arbona (2009): One of the first picture books to address the topic of climate refugees, this text is based on the challenges faced by the Inupiat people who live on small islands north of the Bering Strait near the Arctic Circle. The book, available in digital formats, can be found in French, Spanish, and Italian. The story is told by a girl from Sarichef Island who has come to view the sea as a creature devouring her homeland and forcing her community to relocate to the mainland (see Figure 4).
Seeds of Change: Planting a Path to Peace (Johnson & Sadler, 2013): The Nobel Peace Prize was given to Wangari Maathai in 2004 to honor her work as the Mama Miti, or Mother of Trees. The Green Belt Movement that she started in her native Kenya in 1977 has resulted in the planting of trees all over the world. This brilliantly illustrated book tells the story of how a young girl was supported in her desire to get an education and promote environmental healing.

Nonnarrative Informational Books.

- 10 Things I Can Do to Help My World: Fun and Easy Eco-Tips by Melanie Walsh (2008): Printed on 100% recycled card stock, this large-format book invites curious youngsters to turn the overlapping pages. The colorful, simple designs and clever use of wording might best be understood by this example: On one page, we see the words “I enjoy…” placed above apparent cut-outs of boxes, string, and paper. When we turn to the next page, we find a smiling cardboard robot next to the words “making toys from things around the house,” along with a curling message in smaller letters that says “We can reuse lots of things before we throw them away” (pp. 24–27).
- A Cool Kid’s Field Guide to Global Warming (Farrington & Woollett, 2009): “What’s the worst that can happen?” one section of this book asks. “Fresh water will be in short supply. This means that millions of people may have to move from parched homelands. Sometimes water shortages can lead to disputes and even wars” (p. 8). Detailed explanations of both the dire situations that we may encounter and the innovative solutions that we can institute are presented in this wonderfully illustrated book, formatted like a field guide with a spiral binding at its top edge.
- Global Warming by Cheryl Jakab (2010): Photographs of people and places all over the world help readers address five issues: a warmer world, declining ice cover, changing seasons, changing rainfall patterns, and environmental refugees. A section called “Toward a Sustainable Future” is included after each issue is presented. The text is very accessible, with informative headings, glossary words, and “fast facts” on nearly every page.
- How We Know What We Know About Our Changing Climate: Scientists and Kids Explore Global Warming (Cherry & Braasch, 2008): Stunning photos accompanied by flowing stories of perseverance, hope, and energy take us on journeys with scientists as they gather information and seek solutions. Woven throughout the book are examples of ways that people, young and old, have worked together to make significant changes to protect animals, clean up the environment, and reduce carbon footprints. A teacher’s guide is also available: www.dawnpub.com/our-books/teachers-guide-how-we-know-what-we-know-about-our-changing-climate/.
- Not a Drop to Drink: Water for a Thirsty World by Michael Burgan (2008): This 64-page book is filled with information and photographs. Scientists from all over the globe have added to our understanding of water as a fragile resource.
- Our Choice: How We Can Solve the Climate Crisis (young reader’s edition) by Al Gore (2009): This 208-page book, suggested by the publisher for ages 8–14, is filled with colorful graphics and photos accompanying text that is direct and easy to read. The explanations, suggestions, and messages are
“We wish to stimulate open-minded dialogues among teachers and children in classrooms.”

teachers and parents encouraged them to take.

**Dual-Purpose Books**

- *Our Earth: How Kids Are Saving the Planet* by Janet Wilson (2010): The actions of 10 children from 7 to 17 years old, living on five different continents, are detailed in this book of hope and ideas. Saving rainforests, building windmills, rethinking plastic, and planting trees are worldwide efforts that can make a difference for young and old alike. This book is filled with links to websites and video clips that can inspire all of us.

- *Our House Is Round: A Kid's Book About Why Protecting Our Earth Matters* (Kondonassis & Brush, 2012): Imagine a painting of a girl on a bright green hillside looking down on a power plant that is pumping smoke into the air while a pipe spews yellow fluid into a blue river. Here are the words on that page: “It’s great to have the energy we need, but creating most kinds of energy makes pollution and uses up lots of natural resources. That’s why it’s important to use only the energy we really need and think of ways to use even less” (pp. 26–27). Kondonassis, a renowned harp player, wrote this book for her 7-year-old daughter so that she and her classmates could understand the reasons behind the actions their parents and teachers are taking.

- *Les Enfants de l’Eau [Children of Water]* by Angèle Delaunois (2006): Each double-page spread of this richly illustrated book brings us to a different part of the world, where a local child explains what water means. For example, a boy in the Amazon says, “To me, water is a massive forest” (p. 16). A girl in North Africa says, “To me, water is patience” (p. 26). A common phrase is presented in the languages of all locations—a phrase that means “Water is life.” Originally written in French, this book has been translated into Spanish, Catalan, Portuguese, and Italian. It could be used in English learner classrooms and in classrooms where additional languages are taught or explored. (It is also available in a digital format.)

- *The Magic School Bus and the Climate Challenge* (Cole & Degen, 2010): Anyone familiar with the style of the Magic School Bus books will not be disappointed to see that the bus becomes a plane to take Ms. Frizzle and her students all over the world in search of facts about greenhouse gases, melting ice, and efforts to recycle resources. The back cover of this book shows Ms. Frizzle as she is getting ready to turn off the power strip to her computer, printer, and speakers. Can we follow her lead?

- *The Polar Bears' Home: A Story About Global Warming* by Lara Bergen and Vincent Nguyen (2008): A girl and her father find two polar bear cubs adrift on thin ice. The father explains about the effects of global warming in the Arctic and responds to his daughter’s questions about things young people can do to help. The mother polar bear arrives to rescue her cubs in this beautifully illustrated story.

- *Who Turned Up the Heat? Eco-Pig Explains Global Warming* (French & Gott, 2010): Cartoon characters Eco-Pig and his friend Lou give youngsters the basics about global warming and then suggest ways to take action: “Let’s switch off and unplug / the things we don’t need. / We’ll reduce greenhouse gas. / On this we’re agreed” (p. 27). A short glossary and a simple list of ideas and information can prompt discussion with young audiences.

**Conclusion**

This article was initiated through discussions about good stories and effective presentations of information on climate change (Danna, Grant, & Ackland, 2014). Books take us beyond what we see on the pages (and even beyond ourselves) because they help us engage in dialogue that expands our understanding. We wish to stimulate open-minded dialogues among teachers and children in classrooms and at home. Children’s literature "Books take us beyond what we see on the pages...because they help us engage in dialogue that expands our understanding."
TAKE ACTION!

1. Survey articles appearing in popular media to consider their messages about climate science.
2. Get to know local resources (e.g., media specialist, science educators, and parents) for discovering relevant literature for learning, and investigate local human and climate challenges (e.g., agricultural problems, pollution sources).
3. Check out children’s books online and from local sources that address climate and related questions.
4. Include online resources (e.g., games, quizzes, and other informational texts) in a growing compendium of climate science texts.
5. Model how to learn about complex problems that can be controversial:
   a. Show interest in alternative perspectives and demonstrate a willingness to listen.
   b. Present examples of healthy skepticism with a variety of claims.
   c. Affirm collaborative responses.
6. Choose resources that inspire hope, creative thinking, and ownership of complex climate challenges.
7. Investigate children’s knowledge and interest in climate issues.
8. Make it as fun and appealing as it is necessary.
9. Integrate opportunities to respond actively as children develop increasing awareness of their role in their environment.
10. Recognize challenges and focus on building positive relationships, even with people who may be unsure about how to talk about or respond to a changing climate.

about climate change offers visual and graphic support for these dialogues. Books and other media can help organize conversations about Earth’s climate without committing people to a particular viewpoint or course of action. We celebrate teachers’ roles as facilitators of students’ learning about the significance of human choices—past, present, and future. Teachers are the brokers of “beyond” in its many forms. We sympathize with those who face the challenges presented by science-related texts and texts about controversial topics, yet we have great confidence in teachers to help students move beyond knee-jerk responses to consideration of justice, care, and understanding.

Literature is a powerful tool in the hands of a teacher or child. Tools for choosing good literature, therefore, are very important. The criteria provided here can help teachers select quality reading materials even though pupils’ responses can be unpredictable. Developing scientific reasoning and decision making requires additional considerations, adding to the complexity. We encourage teachers to select and use more than one resource and to place those resources, together with students’ interpretations and ideas, into a kind of living dialogue. The controversial politics of climate change can prompt an open-ended approach focused on scientific inquiry and reason.

REFERENCES
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LITERATURE CITED


LITERATURE CITED


MORE TO EXPLORE

READWITHEXPLAN.ORG LESSON PLANS

- Students are guided through an informal exploration of nonfiction texts and child-oriented websites, learning browsing and skimming techniques for the purpose of gathering interesting information.
- Striking images can leave lasting impressions on viewers. In this lesson, students make self-text-world connections to a nature- or science-related topic as they collaboratively design a multimedia presentation.

BOOKS AND WEBSITES

- Munroe, R. (2015). Thing explainer: Complicated stuff in simple words. Chicago, IL: Houghton Mifflin Harcourt. Check out detailed schematics of “picture takers” (cameras), “hand computers” (smartphones), and more with descriptive annotations that explain how they work.
- Lynne Cherry’s website (www.lynneherry.com) highlights movies showing young people taking action to improve the natural environment and presents a range of Earth-friendly picture books for children of many ages.

Information on Climate Change

- Climate Access: Sharing What Works: www.climateaccess.org
- The Climate Reality Project: www.climaterealityproject.org
- A Student’s Guide to Global Climate Change: www.epa.gov/climatechange/kids/index.html
- Intergovernmental Panel on Climate Change: www.ipcc.ch
- Global Climate Change: Vital Signs of the Planet: climate.nasa.gov
- National Science Teachers Association: Climate Science Resources: www.nsta.org/climate/
- Scientists in the Field series: www.sciencemeetsadventure.com/series-overview/