“Mrs. Bircher, do we have a story today?” This is not a question that a high school science teacher typically expects from her sophomore biology students, but I have been asked this question often since I began reading juvenile trade books with my students.

We may assume that high school students are too “old” to enjoy simple, juvenile reading—but why? Even as an adult, I enjoy hearing a story read aloud, especially by someone with a flair for reading. High school students also enjoy being read to, especially when the reading is fun and engaging, which
is the case in most high-quality juvenile literature. Reading these simple books with students not only captures their attention, but also allows them to focus on larger science concepts and can introduce them to new science content (Madrazo 1997; Cerullo 1997). In addition, reading aloud helps students develop better fluency and prosody, which may lead to improved comprehension of difficult science concepts (Brassell 2006).

This article presents suggestions for incorporating juvenile trade books into instruction and for selecting appropriate books for each science class. I offer instructions for reading aloud based on my own experience teaching high school biology students.

**Engaging students**

Many resources for science teachers recommend reading books aloud to students (McKee and Ogle 2005; Douglas

**Weather**


**Physical science**

**Atoms**


**The periodic table**


**Chemicals**


**Newton’s laws**


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**FIGURE 1**

**Suggested reading list.**

The following is a list of juvenile trade books that may be used to introduce various topics in Earth and space, physical, and biology high school science classes. **(Note:** The * symbol denotes a book from the *Let’s-Read-and-Find-Out Science Books* series.)

**Earth and space science**

**The rock cycle**


**Plate tectonics**


**Astronomy**


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**Weather**


**Physical science**

**Atoms**


**The periodic table**


**Chemicals**


**Newton’s laws**


et al. 2006; Matthews 2006; Madrazo 1997; Brassell 2006); however, most of them target elementary and middle school levels. High school students can also benefit from being read aloud to or even reading text aloud to their classmates (Delo 2008; Cerullo 1997). The practice of reading aloud fits well into the first stage of the 5-E instruction model: It is a springboard to engage students in scientific inquiry (Vasquez 2008; NRC 2000).

The 5-E instructional model—engage, explore, explain, extend, and evaluate—is a mechanism to draw students into deeper learning about a concept. In the engagement phase, the teacher initiates the learning, determines what students already know about the topic, and provides motivation for learning about the scientific concept (Vasquez 2008). During this first phase, reading a short juvenile text aloud can be a unique way to pique students’

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**Waves**

**Electricity**

**Inventors and scientists**

**Biology**
**Cells**

**Genetics**

**Evolution**

**Ecology**

**Plant life**
interest, which is especially helpful when beginning a new unit; it can also motivate students to learn more sophisticated content about topics as diverse as plate tectonics, genetics, or atomic theory.

The Library of Congress considers materials “juvenile” if they are intended for children through age 15 or grade 9 by the author or publisher—in fact, the terms children’s literature and juvenile literature are often used interchangeably (Fountain 2006). A number of juvenile trade books allow teachers to introduce complex topics in a minimum amount of classroom time (Figure 1, pp. 30–31). Reading juvenile books aloud in the classroom allows students to improve reading fluency (the ability to read quickly, effortlessly, and with the desired expression); prosody (reading aloud with proper stress, pitch, phrasing, and rate) (Rasinski and Fawcett 2008); and comprehension.

These books also require a lower reading level and therefore can engender confidence in reluctant readers. Research has shown that by middle school, students are able to decode individual words but may have difficulty putting it all together, or comprehending what is read (Thier and Daviss 2002). Therefore, it makes sense to present lower-level reading material to students who struggle with reading comprehension before they are required to read a higher-level textbook. In this way, students are prepared for the difficult reading in the textbook after having the opportunity to read something less arduous. Furthermore, reading aloud can benefit diverse types of learners; for example, low-reading level students, English language learners, and auditory learners may understand more of what they hear than what they read (Delo 2008). It also provides a common experience with sophisticated science concepts that students can refer back to later in their inquiry processes.

**Selecting books**

There are a number of biology, Earth and space, and physical science books that are appropriate for reading aloud in the high school science classroom. I have created a list of books in these categories that weave a story with science content and can be read aloud in a limited amount of classroom time (Figure 1). These books are engaging, accurate, clearly written, up-to-date, well-organized, and avoid stereotypes (Cerullo 1997). Students are often eager to read these books aloud to their classmates.

Many books on my list are from the *Let’s-Read-and-Find-Out Science Books* series. I have found that these books, many of which are written by series originator Franklyn M. Branley, are succinct but also advanced enough to appeal to high school students. The classroom time needed to read them aloud may only amount to 15–20 minutes—time well invested if it engages students in learning about complex science concepts.

The list in Figure 1 also includes a few books from the *Magic School Bus* series by Joanna Cole. However, I would caution teachers who have students read aloud: The many dialogue and other text boxes may make the books challenging reading for students, although they do present high-quality science concepts.

Books written and illustrated by Gail Gibbons have also been a delight for my class. These children’s books cover a wide variety of topics about science, and the text is economical without being patronizing; the illustrations are also well done. Many of her books work well for reading aloud in the science classroom. The Outstanding Science Trade Books for Students K–12 lists compiled by NSTA and the Children’s Book Council (CBC) each year also provide many good options—lists from 1996 on are available online (see “On the web”).

Another way to find appropriate books for your classroom is to spend some time talking with your school or public librarian about juvenile literature and how you want to use it in your class. Librarians can be your greatest resource because, unlike the average high school science teacher, they are aware of the excellent trade books that are available and have the time and ability to obtain them. I was amazed at the diversity and quality of books my local librarian was able to find for my classroom.

**Reading aloud**

The first book that I read aloud with my biology class was Cheryl Bardoe’s *Gregor Mendel: The Friar Who Grew Peas* (2006). Students sat in a circle and passed the book around as they took turns reading aloud in “round robin” fashion; however, I felt that my students were missing out on the artwork in the text when we read aloud like this. To address this problem, it would be helpful to obtain a classroom set or have students read aloud in small groups so that everyone has the opportunity to see the text and the artwork while reading. This helps keep students on-task and enables them to experience the trade book as it was meant to be read.

Some teachers may be hesitant to read aloud in the science classroom because they think it is not the best use of precious classroom time. However, as a teaching strategy in the engage phase of the 5-E model, it has been suggested that the teacher determine students’ prior knowledge as well as any misconceptions they may hold (Vasquez 2008). The interactive read-aloud may be one way to accomplish this before the teacher allows students to explore, explain, extend,
and evaluate as part of the scientific inquiry cycle. Inquiry is an essential part of the science classroom, and reading aloud provides one tool to engage students in inquiry that is meaningful.

I have found student reaction to this activity quite remarkable. Some students that are reluctant to read aloud from the textbook are not reluctant to read aloud from a juvenile trade book. At my parent-teacher conferences, many parents were pleasantly surprised to learn that their children were eager to read aloud from these books in front of the class, and I was pleased to have found a way to make eager readers out of reluctant ones.

On several occasions, students who were absent on the day we read the trade books aloud in class were more than willing to read the book when they returned to school. One student had to leave school for an appointment and insisted on taking the actual text home to read. Other students have commented that they cannot believe there is so much science to read and learn about in children’s books. (Editor’s note: For suggestions on how to organize and maintain a classroom library, see “Start a Classroom Library!” by Terence Cavanaugh in the Idea Bank on p. 60 of this issue.)

Conclusion

The National Science Education Standards state: “Science content must be embedded in a variety of curriculum patterns that are developmentally appropriate, interesting, and relevant to students’ lives” (NRC 1996). Reading juvenile science books aloud can serve as a springboard to inquiry and higher-level investigation and study; it can also be an invaluable way to introduce a new science concept or unit and spark students’ interest in learning about a particular topic. It is important to note that this technique is intended to initiate the 5-E instructional model for meaningful scientific inquiry, not to serve as a replacement for rigorous science content teaching.

Using juvenile literature in the classroom has allowed my students to become interested in difficult concepts from the first day of study and has provided greater incentive to engage in scientific inquiry. Even my honors students continue to reference the trade books as they move through their inquiry on any given topic. One student told me that “reading aloud is the best way to hear and understand what we are trying to learn about.” It is a great way to provide a teachable moment that will lead to more meaningful inquiry.

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On the web


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