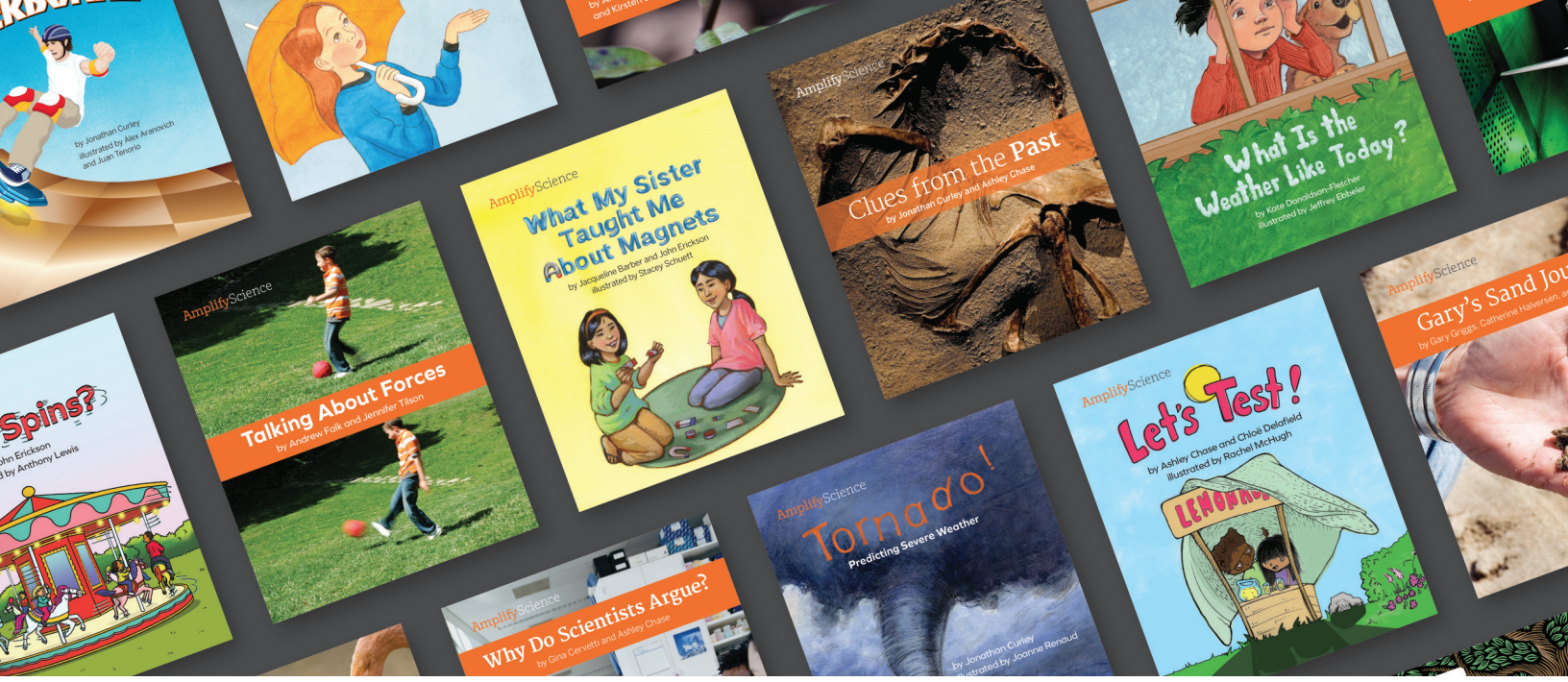

Integrated literacy and science instruction

Grades K–5

Instructional approach

The Amplify Science core instructional approach is based on the multimodal Do, Talk, Read, Write model initially developed for the Lawrence Hall of Science's *Seeds of Science/Roots of Reading*® program. This approach to instruction is highly congruent with research about effective science knowledge and literacy development. The program was carefully studied and has gold-standard evidence to show its efficacy.

Amplify Science follows these principles:

- Students acquire literacy expertise through the pursuit of science knowledge and by engaging in science and engineering practices.
- Attention to disciplinary literacy instruction begins as soon as students enter school and continues throughout each grade.
- Participation in a community is key to acquiring disciplinary expertise and literacy.
- Argumentation and explanation are the central enterprises of science and, thus, these practices are the focus of reading, writing, and talking during science instruction.

authored by THE LAWRENCE HALL OF SCIENCE UNIVERSITY OF CALIFORNIA, BERKELEY

Amplify Science

Supporting young readers

Beginning and young readers have unique developmental needs, and Amplify Science supports these students in reading more independently as they progress through sections of content, the school year, and each grade.

One way the program does this is by strategically deploying three different modes of reading within lessons and units of instruction: Read-Aloud, Shared Reading, and Partner Reading.

READ-ALOUD

In the **Read-Aloud mode**, the teacher reads the book while students listen. During a Read-Aloud, the teacher models fluent and expressive reading, demonstrates strategic reading, thinks aloud about the content of the book, introduces new vocabulary, and facilitates students' comprehension as the class gathers information to figure out a science idea.

SHARED READING

In the **Shared Reading mode**, the teacher and students interact with the book together. Shared Reading provides additional opportunities for students to observe the teacher as an expert reader, to actively join in the discussion about the book, and to practice using a focal comprehension strategy.

PARTNER READING

In **Partner Reading mode**, two students work together to read or gather information from a book. Partner Reading provides opportunities for each student in a pair to be the reader and the supporter while reading a text.

Vocabulary

To successfully demonstrate understanding, students need to gain active control over academic science vocabulary—that is, to be able to read, write, and speak using words such as *molecule*, *environment*, *evidence*, and *data* fluently and accurately, and to have a deep and nuanced understanding of what these words mean that goes beyond merely being able to define them.

Amplify Science supports vocabulary development by:

1. Targeting a small but powerful set of vocabulary words.
2. Designing multiple opportunities to use vocabulary words, in the context of learning science ideas.
3. Providing explicit instruction and practice.
4. Supporting productive as well as receptive language. Students should not only hear and read the words, but be encouraged, prompted, and reminded to use them in their discussions and written work.
5. Emphasizing use in varied contexts over definitions—knowing a word is much more than knowing its dictionary definition.
6. Highlighting academic language as part of science.

Writing

Amplify Science provides grade level-appropriate introductions to and practice with constructing explanations and making arguments from evidence. Students are regularly engaged in leveraging data and ideas in support of claims.

For younger students, Explanatory Language frames can help them begin to develop language to facilitate their learning of challenging concepts and support them in explaining their learning to others (both orally and through writing). By linking explanation language common in science to authentic learning contexts, students develop facility with causal language across the units of study. This is an example of an Explanatory Language frame:

[ ] started to move because [ ] exerted a force on it.

Following a gradual release of responsibility model, the Explanation Language frame expands in complexity through kindergarten and grades 1 and 2, scaffolding students' acquisition of scientific ways of speaking and thinking.

In grades 3–5, students begin to explicitly focus on oral and written argumentation. Special attention is paid to writing arguments and to highlighting how scientists make arguments in their field. While students are still engaging with the other science and engineering practices, instruction around argumentation becomes more explicit, more structured, and more frequent, giving students extensive practice with claims and evidence.