

Literacy in Science

The Next Generation Science Standards were developed to work in tandem with the Common Core State Standards to ensure that students develop literacy skills through learning science. *Bring Science Alive!* builds on this synergy by emphasizing reading, writing, speaking and listening, and language skills while guiding students in developing their science knowledge.



Key Points from the ELA Common Core

Bring Science Alive!

Reading

Informational and literary texts are balanced with at least 50% of reading time devoted to expository texts.

CCSS changes the emphasis in reading from being based primarily on literary texts to being balanced between literary and informational texts. *Bring Science Alive!* reflects this balance in its text. Each lesson has several sections of purely informational text that explains the content of that lesson. Each lesson is followed by a Reading Further, which blends literary and informational style text to engage students with the content even further.

Establishes a “staircase” of increasing complexity in what students must be able to read as they move throughout the grades.

Bring Science Alive! is written with close attention paid to the text complexity to make sure it fits into the “staircase” of increasingly sophisticated text that students should read as they progress through the grades. However, within each grade’s text, there is variation in the complexity to ensure that there is challenging text for all students.

Emphasizes the close reading of text to determine main ideas, supporting details, and evidence.

The digital Interactive Tutorials encourage close reading of the text. They require students to answer questions using evidence from the text. Answering the questions requires a clear understanding of the main ideas and other details provided in the section.

Writing

Three types of writing are emphasized from the earliest grades—writing to persuade, writing to inform/explain, and writing to convey experience.

NGSS and *Bring Science Alive!* require students to use all three types of writing emphasized by CCSS. In the investigations, students are often asked to construct written arguments to persuade their classmates of their explanation of a scientific concept. They also write accounts of their experiences in these activities and investigations, describing details of the experiment or design process. In the Interactive Student Notebook, students write explanations to demonstrate their understanding of the scientific concepts described in the text.

Effective use of evidence is central throughout the writing standards.

In all three types of writing, students are expected to use evidence appropriately to support their claims. They are given support in identifying key details which will serve most effectively as evidence. They also reflect on their use of evidence in various contexts to build an explicit understanding of the role evidence plays in science and argument in general.

Routine production of writing appropriate for a range of tasks, purposes, and audiences is emphasized.

Students routinely write in all of *Bring Science Alive!*’s curricula. The program emphasizes the flexibility and usefulness of writing to accomplish a variety of assignments. It also gives students exposure to the different expectations in writing for different purposes and audiences.



Key Points from the ELA Common Core

Bring Science Alive!

Speaking and Listening

Participation in rich, structured academic conversations in one-on-one, small-group, and whole class situations is emphasized in the standards.

Classrooms using *Bring Science Alive!* will regularly have structured science talks in which students reflect on their experiences and understanding of the investigations. They will also have regular discussions in smaller groups, ranging from discussions with a partner to groups of four or five students. These discussions are designed to build clear communication skills that are critical to success in science and all other fields of study.

Contributing accurate, relevant information; responding to and building on what others have said; and making comparisons and contrasts are important skills for productive conversations.

In all discussions, students are given support to help them learn to contribute relevant and accurate details and evidence. The cooperative tolerant classroom conventions emphasized throughout all of TCI's curricula encourage students to respond to and build on ideas and arguments presented by other students. *Bring Science Alive!* uses NGSS's crosscutting concepts to help students to compare and contrast relevant experiences across domains of science in discussions.



Language

Demonstrate command of the conventions of English when writing and speaking.

Throughout all the components of *Bring Science Alive!* students are expected to demonstrate command of the conventions of written and spoken English.

Acquire and use general academic and domain-specific words.

Bring Science Alive! has a progression of increasingly sophisticated vocabulary built into it with complexity suggested by the language used in NGSS. It is designed to emphasize key words used throughout a lesson or unit of study without overwhelming students with too many unfamiliar words. Every component of *Bring Science Alive!* makes use of the vocabulary and includes activities to help solidify comprehension.

Focus on developing skills to determine or clarify the meaning of unknown words or phrases.

Other science-related words which may be unfamiliar to students, but do not play a key role in the overall understanding of a concept, are put in italics and defined in context. This gives students ample opportunity and support in determining and clarifying the meaning of unfamiliar words using clues from the text.



English Language Arts & Literacy in Science

Bring Science Alive! is aligned with the Common Core State Standards for English Language Arts & Literacy (CCELA). Literacy instruction is built into the online Student Text, Interactive Student Notebook, and the Lesson Guides. The following six key points are from the grades 6–8 CCELA Standards for Literacy in History/Social Studies, Science, and Technical Subjects. They are particularly important in science instruction.

Reading Standards for Literacy



Main Ideas and Details

Identifying key ideas and details applies to reading science text, following multistep procedures for experiments, and using scientific tools and other technology.

When using the *Bring Science Alive!* online text, students have the option to see the main idea of each section highlighted. Additionally, every lesson includes one or more multistep investigations that students must follow to carry out science experiments, analyze data, and solve engineering problems.



Craft and Structure In the middle grades, mastering new vocabulary includes understanding the meaning of scientific and mathematical symbols as well as domain-specific terms, words, and phrases.

Learning of scientific symbols and mathematical representations is scaffolded in *Bring Science Alive!* First, the concept is presented in words and phrases. Next, symbols are shown alongside these words and phrases. Finally, the symbolic notation is shown on its own.



Integration of Knowledge and Ideas

Students should be able to integrate their learning on a topic using experiments, multimedia materials, and the text.

Each *Bring Science Alive!* lesson concludes with a processing task that requires students to demonstrate their understanding of science and engineering practices, crosscutting concepts, and disciplinary core ideas as a result of carrying out investigations, manipulating simulations, and reading the text.



Writing Standards for Literacy

- ✓ **Purposes for Writing** The writing standards stress the use of certain conventions of good writing, including the use of previews, supporting details, appropriate transitions, domain-specific vocabulary, and an objective tone.

Bring Science Alive! students write for different purposes, including to explain scientific concepts and to record investigation procedures and results so that others can replicate and test them. Students are asked to construct written arguments to persuade others to accept an engineering design solution. They also write accounts of their investigations using precise language, scientific vocabulary, and minimal bias.

- ✓ **Production and Distribution of Writing** Routine writing of clear and coherent content that is appropriate to its purpose is central throughout the writing standards.

Bring Science Alive! includes regular writing opportunities in the Lesson Guides and Interactive Student Notebook. Writing, peer review, and editing are essential tools in guiding students to develop arguments and explanations that result in three dimensional learning.

- ✓ **Research to Build and Present Knowledge** Short research projects, using a variety of print and digital sources appropriately, should be carried out to answer broad questions that generate more specific questions.

Students build research skills using print and digital sources, including the Internet. Unit problems require students to gather and assess relevant information and to integrate this information with what they learn during hands-on investigations.

