

# TCI *Bring Science Alive!*<sup>®</sup>

TCI's mission is to provide a multi-faceted learning experience that blends the best technology with the best pedagogy. All materials are field tested to ensure their effectiveness for all students, from emerging readers to English learners to advanced learners.

TCI's *Bring Science Alive!* program was built around the Next Generation Science Standards. Some of the key features of the new framework are listed below.

NGSS Shifts	How TCI Supports
Phenomena-Driven, Three-Dimensional Learning	<p><b>Exploring Phenomena</b> Phenomenon-based unit storylines provide real-world problems for students to connect their learning with their own experiences. Investigations, reading notes, and key science concepts enable students to ask questions about, investigate, and make sense of phenomena.</p> <p><b>Three-Dimensional Learning</b> Each and every lesson focuses on at least one Science and Engineering Practice, one Disciplinary Core Idea, and one Crosscutting Concept. Each dimension is selected to support learning as it relates to the Performance Expectation.</p> <p><b>Designing Solutions</b> Engineering Challenges and investigations engage students to design solutions directly relating to Disciplinary Core Ideas.</p> <p><b>Performance Assessment</b> Students apply what they have learned in a hands-on Performance Assessment where they are evaluated across the three-dimensions.</p>
Coherent Instruction Across the Curriculum	<p><b>Developmental Progression in All Three Dimensions</b> TCI's program instruction provides vertical connections across grade levels and requires students to also connect ideas across disciplines.</p> <p><b>Integration of Math and ELA</b> The intersections between NGSS and Common Core teach students to analyze data, model concepts, and strategically use tools through productive talk and shared activity. <i>Bring Science Alive!</i> was built from the ground up to support NGSS and incorporates Math and ELA connections into the curriculum.</p>
Learning Relevant to Student Experience and Community Needs	<p><b>Connecting Locally and to Student Experiences</b> Students observe and explain local phenomena throughout investigations and performance assessments. Reading Furthers, Biographies, and Career Profiles spark students' interest in the world around them.</p>

	<p><b>Explicit Focus on Environmental Principles</b> Environmental concepts are woven throughout the program’s phenomena-based expository text and rich case studies, helping students understand the connections between people and the natural world.</p>
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## Program Components and Lesson Cycle

TCI’s *Bring Science Alive!* programs were designed with one primary goal—to help teachers implement the Next Generation Science Standards.

### Observing Phenomena

- **Integrated Phenomena** Each segment begins with an integrated phenomena that ties together multiple disciplines. Students create a rough model to explain the phenomenon and continue to revise it after each lesson.
- **Unit Anchoring Phenomenon** Every unit starts with a phenomenon students observe and are able to explain by the end of the unit.
- **Unit Storyline** Each unit has a storyline that allows students to dive into a real-world phenomenon. This story is laced throughout the unit.
- **Lesson Investigative Phenomenon** Students observe the phenomenon then ask related questions and write notes as they prepare for the lesson.

### Three-Dimensional Investigations

- **Lesson Guide** At the heart of the *Bring Science Alive!* program are three-dimensional lessons that provide access for all students to the NGSS standards and framework. Following the detailed instructions in the Lesson Guide, students have the opportunity to practice all three dimensions through hands-on investigations, engineering challenges, and formative assessments.
- **Materials Kits** *Bring Science Alive!* Materials Kits are prepared and organized to seamlessly integrate into each hands-on investigation, divided up per lesson for easy grab-and-go. Everything the teacher needs for an amazing lesson is in one box, delivered right to the school.
- **Student Text** Once students are engaged in the lesson phenomenon, they have a strong motivation to read. The Student Text features considerate and engaging text with engineering built right in. TCI text offers support with Text-to-Audio, Main Idea Viewer, Spanish Translations and more.
- **Interactive Tutorial** Students then have an opportunity to interact with the content online in a variety of game-like question formats.

## **Making Sense of Phenomena**

- **Interactive Student Notebook** As they read and conduct the investigations online and in class, students use the program's note-taking system to capture key information, building a comprehensive yet personal repository of three-dimensional learning.
- **Lesson Game** Following the lesson, students play the lesson game that will help them review key concepts and skills while providing formative assessment data to teachers.
- **Explaining the Lesson Phenomenon** Student tasks, including end-of-lesson and culminating exercises, are three-dimensional and build in complexity throughout the year and across years.

## **Three-Dimensional Assessments**

- **Lesson Assessments** Lesson Assessments include a variety of selected response and constructed response questions that incorporate the three dimensions within each lesson: Science and Engineering Practices, Crosscutting Concepts and Disciplinary Core Ideas. Analytical rubrics are available for the teacher.
- **Performance Assessment** Students apply what they have learned in a hands-on Performance Assessment where they are evaluated across the three-dimensions. The Performance Assessment not only allows teachers to assess student learning, but gives students a chance to demonstrate their learning in a meaningful way.

## **Our Process**

TCI's curriculum team is deeply rooted in NGSS and has worked with National Research Council since the development of the standards to ensure that our materials embody the philosophy and key shifts of the NGSS standards.

TCI has also assembled a Science Advisory Board that consist of top science educators from across the country. Our advisors are distinguished, nationally-known science education leaders, who guide us to make instructional decisions based on the latest and most solid research in their fields. Science Advisory Board members include:

- Marilyn Chambliss, Ph.D., Associate Professor of Education Emerita, University of Maryland
- Angelo Collins, Ph.D., Associate Dean School of Education and Counseling Psychology, Santa Clara University, Santa Clara, CA
- Ron Korenich, Ed.D., Educational Consultant, Retired Coordinator of Elementary Education, Fox Chapel Area School District, Pittsburgh, Pennsylvania
- Kathleen Peasley, Ph.D., Associate Superintendent and Science Consultant, Gratiot-Isabella Regional Education Service District, Ithaca, Michigan
- Steven A. Schneider, Ph.D., Senior Program Director, Science, Technology, Engineering, and Mathematics (STEM), WestEd

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- Jerome M. Shaw, Ph.D., Associate Professor of Science Education Emeritus, University of California, Santa Cruz, CA
- Andrew Shouse, Ph.D., Chief Program Officer, Washington STEM, Seattle, Washington
- Nancy Butler Songer, Ph.D., Dean and Distinguished University Professor, School of Education, Drexel University, Philadelphia, Pennsylvania
- Donald B. Young, Ed.D., Dean of the College of Education and Professor of Science Education, University of Hawaii at Manoa

To ensure our materials align to NGSS and maintain the highest standard of accuracy, TCI employs the following standards:

- Our writers and editors are science experts, many holding Ph.D.'s in the field of science for which they are developing content. They provide reputable sources for all their content.
- Each student text is reviewed by a university-level science content scholar, who is an expert in the field of science presented in that program.
- Our student text is reviewed by practicing middle school science teachers, who inform TCI of any content that might be misinterpreted by students.
- Professional fact checkers check every fact and reference.

In addition, TCI partners with leading science material vendors to provide high-quality materials for our science kits. Materials are tested by lesson developers, teachers, and third-party materials experts. Science kit materials are organized by lesson to ensure ease of use for teachers. Kits are also pre-built to allow for use in large-scale implementation.

TCI has used this expertise to create a program that was designed from the ground up for NGSS and that provides teachers with the materials they need for full-scale NGSS implementation.