Authentic National Geographic Experience

Welcome!

Will you explore the world?

I am a scientist.

I study living things.

Science begins with asking questions.

I have questions about how plants grow.

I want to find ways to change how people grow plants on farms.

You can learn how scientists answer questions.

What is a question you have about how the world works?

Exploring Science California connects students to real-world science and to real National Geographic Explorers, scientists, and engineers. Students learn Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts from real scientists and Explorers who use those skills every day to make new discoveries and to solve problems.

Exploring Science California:

» Real Scientists

» In the Real World

» Doing Science Right Now

Case Studies featuring Explorers introduce real-world problems and show how scientists and engineers solve them.

Videos of Explorers introduce students to phenomena.

National Geographic Explorers

A National Geographic Explorer hosts each grade level of Exploring Science California, introducing students to the practices and skills scientists and engineers use to do their work.

Each grade includes other Explorers and scientists who:

» Are role models for students and encourage them to act and think like real scientists

» Demonstrate how and why students will use their Science Notebooks

» Introduce the phenomena and concepts of each unit

Kindergarten

Leonard Emery
Environmental Science
National Geographic Emerging Explorer

Grade 1

Nalin Badkeri
Health Sciences
National Geographic Emerging Explorer

Grade 2

Alex de Vos
Oceanography
National Geographic Emerging Explorer

Grade 3 & 5

Andy Flores
Geology
National Geographic Young Explorer

Grade 4

David MacKinnon
Astronomy
National Geographic Young Explorer

Grade 6

Zulfin Tuckus
Innovation and Engineering National Geographic Emerging Explorer


Diverse Science Role Models

Exploring Science California includes Explorers and scientists from all backgrounds. Students see many paths to becoming a scientist or engineer to prove that any student of any ability can be a scientist or Explorer.

Gabby Schazer is a nature photographer. She works to help protect plants and animals. Gabby also enjoys teaching photography to children.

Albert Yu-Min Lin is a research scientist at the University of California, San Diego. His quest for Gonghe’s Arc, a rare tundra habitat, features a documentary called The Arendal Tundra of Gonghe Basin and has taken him to some of the most isolated areas in the world. Albert also enjoys public speaking, mountain climbing, surfing, and photography.

Authentic National Geographic Experience

NGL.Cengage.com/California
Explorers model for students how they use their notebooks. Students will then apply this knowledge while they create and develop their own Science Notebook.

Science Notebooks to Practice Real Science

Students demonstrate their knowledge by writing, drawing, and documenting their science experience.

Science Notebooks offer students the opportunity to practice science and record data like real scientists.

Data sheets for collecting data can be completed and inserted into the Science Notebook.

Student rubrics are provided for each hands-on activity for students to assess their own ability and knowledge.

STEM Projects encourage students to use their Science Notebooks as they solve real-world problems through engineering challenges.

Students practice real science and record data in their Science Notebooks through Citizen Science projects.
Variety of Lessons Support 3-Dimensional Instruction

Each unit introduces the 3-Dimensions of the CA NGSS from different perspectives through a variety of lesson types.

Disciplinary Core Ideas (DCI) and Crosscutting Concepts (CCC) are supported in Stories in Science lessons which feature scientists from all backgrounds (culture, gender, ability) along with their scientific contributions and discoveries.

Science and Engineering Practices (SEP) are applied in hands-on Investigate activities where students explore aspects of specific DCI’s.

DCI’s and SEP’s are supported with STEM Projects that engage students in defining real world problems and developing and refining solutions.

Performance Expectation activities are presented in Think Like a Scientist and Think Like an Engineer lessons that engage students in applying all 3 Dimensions in one hands-on performance task.

Lesson Sequences Target Performance Expectations

Anchoring Phenomenon for the unit

These lessons focus on preparing students for the Performance Expectation

MindTap Digital Resources include videos and Virtual Labs

Assessment overview for the unit

Every lesson builds towards a specific Performance Expectation

MindTap Digital Lesson Enhancements

DCI’s and SEP’s come to life even more in the MindTap interactive lessons, Virtual Labs, and Explorer videos. Students experience the 3-Dimensions digitally to further prepare them for mastering the Performance Expectations.
Assessments in a Variety of Formats

Exploring Science California provides teachers with a variety of self-assessments, formative assessments, and summative assessments to support instruction and to assess student progress.

**Student Self-Assessment**

Science Notebooks help students monitor their own learning and reflect on their thinking and understanding of key concepts and practices.

**Student Rubrics** for each type of hands-on lesson are available in the Science Notebook Companion. Students monitor their progress and record comments and questions in their notebooks.

**Formative Assessment**

Formative assessment is available in the student book Wrap It Up! questions for each lesson and in the Assessment Handbook. The Assessment Handbook includes:

- **Unit Pre-Assessments** help assess student prior knowledge of the DCIs for the unit.
- **Unit Opening Activities** provide additional insight into student thinking about DCIs and their readiness to apply one or more of the SEPs targeted in the unit.
- **Quizzes** provide a formative check of students’ learning at the end of each lesson sequence.

**Summative Assessment**

The Assessment Handbook provides multiple summative assessment components to measure student progress and mastery of the 3-Dimensions.

- **Unit Performance Tasks** use a variety of formats that require students to demonstrate at least two of the three Dimensions associated with particular Performance Expectations.
- **Rubrics** for all Investigate activities, STEM Projects, Think Like a Scientist, and Think Like an Engineer activities align with the CA NGSS.
- **Unit Tests** use a combination of constructed response and selected response items to assess student mastery of the targeted Performance Expectation.

**MindTap Digital Gradebook**

The MindTap Gradebook and its analytics tools allow teachers to track and analyze an individual student’s progress and view the class grades for each activity. Teachers can view assignment details such as the distribution of answers by item, view the scores and answers for each individual student, and categorize assignments for different assessments.

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Integrated Literacy

ELD Support
The Teacher’s Editions include support for the three CA levels of instruction: Emerging, Expanding, and Bridging. These strategies aid all students in improving academic vocabulary and their understanding of science content.

Writing for Science
Writing is incorporated throughout Exploring Science California as students interact with their Science Notebooks for each lesson. Grades K–2 use Write About Science Big Books for writing practice.

STEM Research Projects for grades K–6 include report writing and shared media such as posters, booklets, or slide presentations.

Literacy Support for Teachers
The Teacher’s Editions provide additional Literacy Connection and Academic Vocabulary supports throughout the unit.

MindTap Digital Literacy Support
The MindTap digital platform includes pop-up definitions for vocabulary words as well as a built-in text reader for extra audio support. Students can also highlight key content and take notes digitally.

Exploring Science Through Literacy
Exploring Science Through Literacy is an optional library of leveled readers that enriches the science curriculum by providing access for all students to a wide variety of informational texts.

» Support Disciplinary Core Ideas
» Differentiate content for three reading levels
» Extend the National Geographic experience

Optional sets of readers for each grade present the same content and vocabulary at three reading levels. This allows students of all abilities to equally access Disciplinary Core Idea concepts and vocabulary.

Grade 3 example, from the title Hidden Discoveries

The content and vocabulary is the same for each leveled reader, but the text complexity and length vary.
Balanced Instruction to Meet the Needs of Your Classroom

Exploring Science California is smartly designed to fit the needs of any school or classroom with flexible components and a broad range of content lessons, hands-on investigations, and literacy options.

Flexible Print and Digital Paths

Print

- Big Books for Kindergarten
- Hard cover student books for Grades 1–6
- Science Notebook Companion

Print and Digital

- Big Books for Kindergarten
- Hard cover student books for Grades 1–6
- Science Notebook Companion
- MindTap digital platform for students and teachers with interactive eBook, Virtual Labs, Explorer videos, and digital assessment

Digital Path

- MindTap digital platform for students and teachers with interactive eBook, Virtual Labs, Explorer videos, and digital assessment

Investigation Kits Available

Integrated Hands-on Activities Balanced with Content

National Geographic-quality lessons targeting the Disciplinary Core Idea content are supported by a variety of hands-on investigations and activities.

100% English and Spanish

All student resources and assessments are available in English and Spanish.
Investigation Kits are available for each grade which include all materials needed to conduct each Investigate activity, STEM Project, Think Like a Scientist, Think Like an Engineer, and Science in a Snap lesson.

Leveled science readers provide additional opportunities to extend access to science informational texts.

Exploring Science Through Literacy

Includes Quizzes, Unit Pre-Assessments, Opening Activities, Performance Tasks, and Tests, as well as Teacher Rubrics for each type of hands-on lesson.

Includes scaffolded activities and more activities to develop literacy in science.

Includes an overview of each lesson and graphic organizer masters.
Exploring Science

- Authentic National Geographic experience with Explorers doing real science right now
- Science Notebooks to practice real science
- Variety of lessons support 3-Dimensional instruction
- Integrated literacy combines science content and literacy skills development
- Balanced instruction to meet the needs of your classroom

### YOUR CALIFORNIA TEAM  GRADES K–6

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