

SCIENCE FUSION

New Energy
for Science!



Power up with Science Fusion!

This best-in-class program fuses...



...to generate new science energy
for today's science learner

Preview Now!

Experience our
interactive and
engaging online
resources today!

1. Go to thinkcentral.com and click on **Science & Health**
2. Click **Evaluators Click Here** then **Register** (for New Users)
3. Enter the access word: **68fusion17**
4. Enter the required information, click the check box for **Terms of Use** and **Privacy Policy**, then click **Next**
5. Select a role to preview (teacher, student, or administrator), then click **Login**
6. Select a **grade** and a **resource shortcut** on the dashboard or click the **Resources** link to see other options

Energize Your Classroom!

ScienceFusion's innovative and award-winning print and digital curriculum encourages inquiry and scientific thinking in all students. This state-of-the-art science program incorporates multimodal learning, support for STEM and 21st-century skills acquisition, and a vast set of unique and engaging online resources. ScienceFusion can be accessed in the classroom or at home, on a laptop or tablet, or through the print write-in textbook. The digital and print pathways develop important critical-thinking skills that prepare students for success in future science courses and in the workplace.

Two unique learning pathways, one complete classroom solution

More than a science textbook with companion technology,

ScienceFusion is like having two science programs in one. That's because we designed the program to give you two unique learning pathways—one print and one digital—combining to create one complete classroom solution.

Use the digital path independently to cover units, lessons, or parts of lessons. Or mix the print and digital paths together.

That's part of ScienceFusion's built-in flexibility.



Discover What Makes ScienceFusion Best in Class!



1. Scientific Literacy: With a strong focus on developing literacy skills, the **ScienceFusion Write-In Student Edition Worktext** encourages **active reading** and interaction with content. Add the **ScienceSaurus® Student Handbook**'s dynamic visuals and clear explanations of key scientific concepts to further build students' literacy and vocabulary abilities.



Module H Interactive Write-In Student Worktext

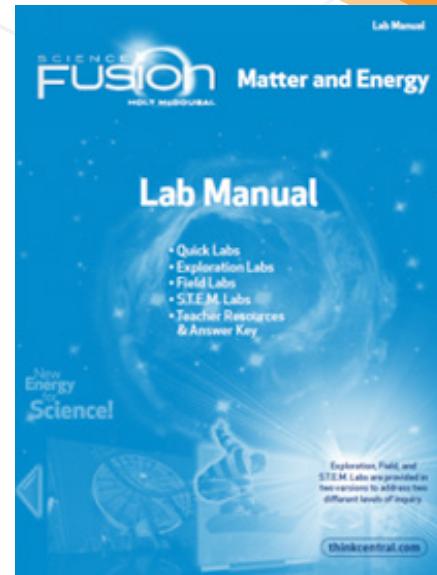
A screenshot of a virtual lab interface for "Module B Virtual Lab". The title is "Similarities in Animals". On the left, there's a sidebar with icons for "Forelimbs", "Bodies", "Eyes", and "Leg Bones". The main area shows a close-up of a human forelimb bone being held by a hand. A callout box says "Forelimbs of human, cat, frog and wing of bat". Below the image is a table with columns for "Observations", "Observations", and "Homologous or analogous?". The first row has the text "Forelimbs of human, cat, frog and wing of bat". At the bottom, there's a progress bar showing "7 of 13" and various control buttons.

Module B Virtual Lab

2. Engaging Technology: Innovative eLearning allows students to conduct **Virtual Labs**, complete **Video-Based Projects**, and reinforce concepts with unique **Digital Lessons**. With access to **Google Expeditions**, students can experience and explore **virtual worlds** to understand how science is all around them.

New Energy for Science!

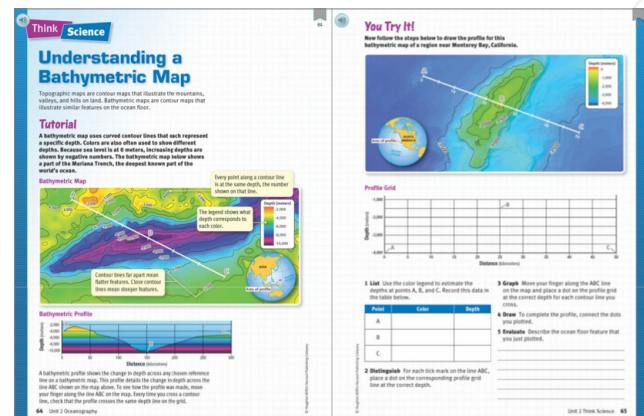
3. Hands-on Exploration: Science is all about **doing**. With the **Lab Manual** and **Equipment Kits**, students learn the excitement of investigating, asking questions, and drawing conclusions. Engaging investigations for every lesson allow students to test their ideas and share what they learn.



21st-Century Skills Technology and Coding Curriculum

4. 21st-Century Skills: The emphasis on **STEM**, found in the **STEM lessons and labs**, **People in Science**, and **Careers in Science** features, and in a **NEW “Technology and Coding”** curriculum, help to prepare students for college and science-based careers.

5. 360° of Inquiry: **ScienceFusion** was developed to create an inquiry-based approach in every component of the program. This is 360° of inquiry—a fusion of all program components to develop science skills, concepts, and vocabulary through **inquiry** and **application**. The **Think Science** feature included in each module encourages students to further develop critical-thinking skills.

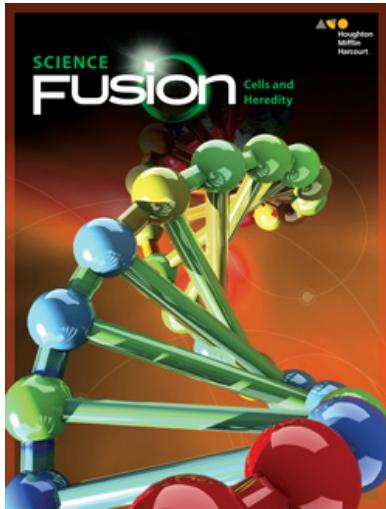


Module F Student Edition, Think Science

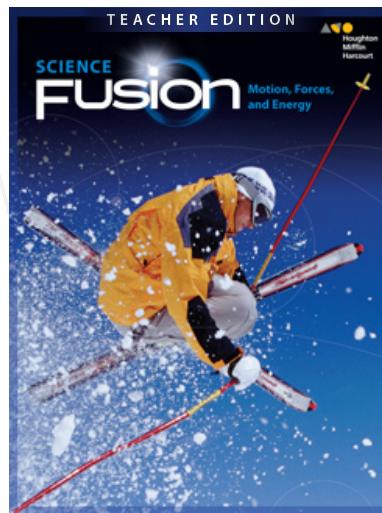
Program Components

Multimodal Learning for Today's Students!

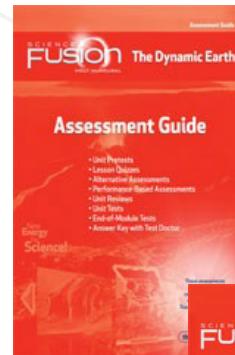
In order to maximize flexibility, **ScienceFusion** 6–8 is organized by topics in the form of discrete modules, both in print and online. These 11 modules consist of all the life, Earth, and physical science topics needed for any 6–8 curriculum.



Write-In Student Edition
Interactive Worktext
Module A Student Edition



Teacher Edition
Module I Teacher Edition



Assessment Guide

- Unit Plans
- Lesson Quizzes
- Performance Assessments
- Performance-Based Assessments
- Unit Reviews
- Unit Tests
- End-of-Module Tests
- Answer Key with Test Doctor

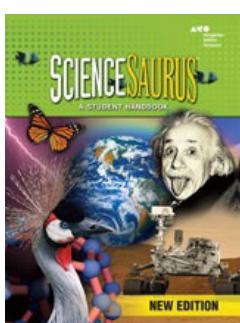
Teacher Assessment Guide
Module E



Lab Manual

- STEM Labs
- Classroom Lab
- Experimentation Lab
- Project Resources
- Teacher Resources & Answer Key

Teacher Lab Manual
Module F



ScienceSaurus
Student Handbook
Grades 6–8



Student Interactive
Digital Curriculum
Module C
Student Online Access



Teacher Online
Management Center
Module C
Teacher Online Access



Equipment
and Safety Kits
Non-Consumable
Equipment Kit

Student Interactive Digital Curriculum

ScienceFusion's Interactive Digital Curriculum is an award-winning, **research-proven** way to teach science in a familiar, engaging, online environment. Through continuous interaction via simulations, animations, videos, virtual labs, video-based projects, and assessments, students are active participants in the learning process. Teachers can assign the lessons and resources to students, or use them on an interactive whiteboard for whole-class or small-group instruction.

All resources available in both English and Spanish!

The **Interactive Online Student Edition** provides students with anytime access to the Student Edition. The **ScienceFusion** eBooks are now based on the HTML standard so they can be accessed from any compatible platform or device. In addition, powerful personalization functions like note-taking, highlighting, bookmarking, and searching are supported and saved. There is a direct **audio read** in both English and Spanish for those students who need reading support.

Astronauts are weightless in space. True or false?

True False

True or false?

3 of 11

Module I Digital Lesson

Digital Lessons provide an alternative online experience for every write-in textbook lesson. These **highly engaging** and **colorful** lessons teach the same content, vocabulary, and inquiry skills, but in a completely different way. **ScienceFusion** now supports the ability for students to bookmark their location in a lesson and return to that same point at a later time. In addition, students' work is saved between sessions. The **Digital Lesson Tracker** shows how much time students spent on each screen, their number of attempts, and the answers they selected, so teachers can identify areas where students need to improve.



Module D Spanish and English Interactive Online Student Edition



Student Interactive Digital Curriculum

sciencefusion How Are Materials Selected for Use in Technology?

Plan your work

Mass Water Resistance Wind Resistance

Make a plan.

How will you investigate the characteristics of materials intended for use in sleeping bag shells?

OK

Test results

Material	Mass (kg)	Water permeability (mL)	Wind permeability (km/h)
1			
2			
3			

What is your plan for investigating the characteristics of materials intended for use in sleeping bag shells?

7 of 12

SCIENCE FUSION VIDEO BASED PROJECTS

Tornado Warning

Home Video

Modules A B C D E F G H I J K

When the Wind Blows

Tornado Warning

Module K Virtual Lab

Virtual Labs review important concepts developed in the lessons and provide students with the opportunity to **apply** what they are learning in the digital lessons. Using **simulated equipment**, students are immersed in a scenario in which they collect data and draw conclusions following a rigorous scientific investigation process. Student progress can be tracked using the **Virtual Lab Data Sheets**, which can be saved and emailed or printed for assignment purposes.

sciencefusion People In Science

K-2 3-5 6-8/IEP Careers All Search by name...

Steve Okamoto

PDF

Have you ever been on a roller coaster? Twisting and turning upside down, zooming at speeds of upwards of 100 mph! After your stomach has settled and your feet are on the ground again, did you look back at the loops and turns and wonder just how that was done? Some of the largest and fastest roller coasters in the world were designed by Steve Okamoto. The rides that Steve designs are so high, so long, and so fast they are called hypercoasters.

Steve remembers riding the roller coaster at Disneyland as a kid. He became fascinated with the way that the machines at Disneyland worked and spent a lot of his time looking at the gears and other mechanisms that make the machines go.

Related Careers Roller Coaster Designer

People in Science Gallery

The **People in Science Gallery** contains a collection of multimedia biographies of scientists from past and present with descriptions of **scientific careers** found at point of use in each unit.

sciencefusion Unit 1: Introduction to Waves

Welcome to the Unit 1 QUIZ

Welcome to the Unit Quiz. Test yourself to see how much you have learned.

Click the bubbles to release the questions.

Module J Online Unit Self-Check

The **Online Unit Self-Checks** are a **fun, interactive assessment** that will give students a view of their strengths and weaknesses in a given unit. The design of these online quizzes has been improved to maximize learning effectiveness by giving students more opportunities to arrive at the correct answer.

Module F Video-Based Project

Video-Based Projects are **captivating inquiry-based projects** introduced by one of our authors, Dr. Michael Heithaus or Michael DiSpezio. With the help of a video, teacher support pages, and student activity worksheets, students solve problems or tackle engineering challenges. There are one to two projects for each module, focusing on STEM, ecology, and biotechnology topics.

Media Gallery and Cell Image

sciencefusion Media Gallery

Nature of Science Life

Open Download

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A large collection of **key images** has been compiled in the **Media Gallery**. These files are in PowerPoint® format and can be used by the teacher or student to create their own presentations. These can be displayed with an interactive whiteboard as well.



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The screenshot shows a search results page for 'waves (SPM02)'. It includes a sidebar with search filters like 'Subject' and 'Grade Level'. The main content area lists several resources, each with a title, a brief description, and a 'Rating'. One resource is highlighted: 'Wave on a String' from SOFIA Science Center, rated 3.7/5.

NSTA SciLINKS



Module B HISTORY Channel video

As part of an exclusive partnership with the **HISTORY® Channel**, videos have been included in select modules. These short videos relate to the unit content and include **cross-curricular connections** to social studies.

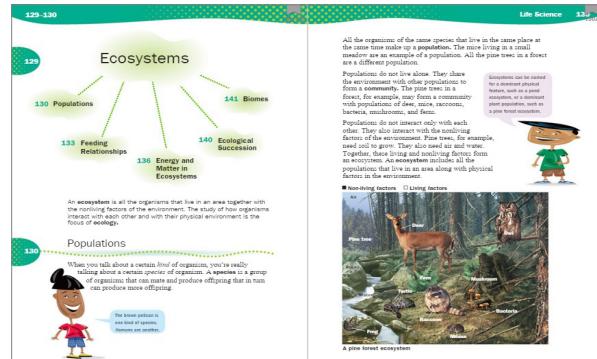


Through its alliance with Google®, HMH is developing content for **Google Expeditions**. Using a simple Google Cardboard™ device and a smartphone, students are swept away into **immersive virtual worlds** where learning and engagement are maximized. These virtual field trips are 3D, 360-degree experiences in fascinating locations, directly tied to science content!

A Teacher Guide provides ideas on ways to incorporate the Expeditions into the curriculum.

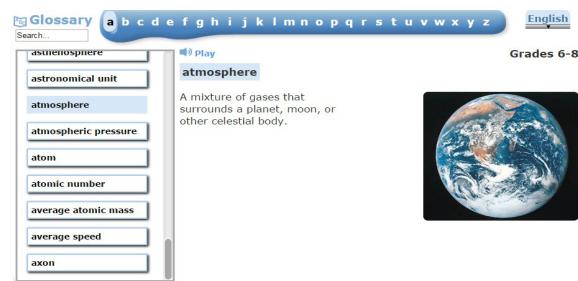
National Science Teachers Association (NSTA) SciLINKS®

are found at point of use in each unit to extend your students' understanding of unit concepts and skills. These resources are vetted by scientific experts at NSTA, so you can be assured they are **exemplary resources** and "safe surfing" for students.



ScienceSaurus

Online access to **ScienceSaurus** is included with **ScienceFusion** © 2017. This convenient handbook covers life, Earth, physical, and environmental science, as well as engineering and technology. Clear explanations with dynamic visuals can be used for **presentation**, **review**, or **reinforcement** of science concepts. In addition, powerful personalization functions like highlighting, bookmarking, and searching are supported and saved.



Interactive Glossary

These components are also available online, as part of the Student Interactive Digital Curriculum:

- **Multi-Language Glossary** A glossary of key terms and definitions in English, Spanish, Chinese, Vietnamese, Khmer, Laotian, Arabic, Haitian Creole, Russian, and Portuguese
- **Interactive Glossary** Provides program vocabulary and definitions with either visuals or video and audio
- **Lab Datasheets** All lesson labs with worksheets available to students in PDF format
- **Student Edition Audio** Full audio of the textbook accessible to students via their mobile devices
- **Student Handbook** Student Edition Resources section in the back of each module; includes Scientific Reference Materials, Reading and Study Skills, Science Skills, Math Refresher, and Glossary
- **Take It Home Worksheets** Student worksheets for the Engage and Explore activity suggestion found before each lesson in the Teacher Edition

Everything You Need—In One Place!

Teacher Online Management Center

The **Teacher Online Management Center** is designed to make it easier for you to access all of the program resources—for teacher and student—to assist in planning, teaching, assessing, and tracking student progress. Additionally, most student resources are assignable. **ScienceFusion** offers teachers **24/7 access** to effective, research-proven, targeted resources, which will never get lost or misplaced—giving you the flexibility to choose the right resources to meet your classroom needs.

The **Teacher Online Management Center** makes it easy to:

- **Preview** program resources
- Download editable resources to **customize** them for your classroom
- **Assign and schedule** resources online, so they will appear in your students' inboxes
- Automatically **score** all quizzes and tests taken online
- Automatically provide individual **remediation** plans based on test results
- Easily monitor and **track student progress**, and provide remediation for students who need it



New Energy for Science!

The screenshot shows the ScienceFusion Teacher Online Management Center. On the left, a sidebar lists 'Unit 1: Life over Time' with 'Lesson 1' through 'Lesson 5'. The main area displays 'Module Level Resources' and 'Unit Level Resources' for 'Unit 1: Life over Time', including 'Unit Teacher Support', 'Unit Assessment', and 'Unit Student Resources'. A 'Teacher Resource Bank' section is also visible.

Module B Teacher Online Management Center

From your custom-tailored **Dashboard**, see all your **ScienceFusion** content, navigate to any grade, set up your daily schedule in **mySmartPlanner**, and view **Assignments** and **Reports**.



The **Teacher Online Management Center** incorporates **full access** to the Student Interactive Digital Curriculum, including the Student Edition, Student Edition Audio, Digital Lessons, Virtual Labs and Data Sheets, Video-Based Projects, HISTORY Channel videos, People in Science, Online Unit Self-Checks, and NSTA SciLINKS.

The screenshot shows the 'mySmartPlanner' interface on a tablet. The top navigation bar includes 'HMH Suggests | Home | Log Out | Help Center | Settings'. Below is a 'Dashboard' section with a calendar for 'Tuesday, Mar 8 2016' and a 'View your daily schedule here.' button. To the right are sections for 'Resources' (Grade 5, 7, 8) and 'Assignments' and 'Reports' with score filters ('Under 50%', '50%–70%', 'Over 70%').

The screenshot shows the 'Module C Interactive Online Teacher Edition' for 'Unit 2 Lesson 1 - The Immune System'. The page includes a 'Contents' sidebar with 'Bookmarks', 'Page View', and 'Help'. The main content area shows 'Answers' for 'Lesson 1' and 'Opening Your Lesson'. The 'Playing DEFENSE' section features a video player showing a boy playing basketball. Other sections include 'Do the Math', 'Learning Alert', 'Barriers and Vaccines', 'Probing Questions', and 'Evaluating'.

Module C Interactive Online Teacher Edition

The **Interactive Online Teacher Edition** provides teachers with anytime access to their print TE. Teachers can easily navigate using the Table of Contents and Bookmarks. In addition, powerful personalization functions like note-taking, highlighting, bookmarking, and searching are supported and saved.

Teacher Online Management Center

The screenshot shows the ScienceFusion NGSS Correlation Tool. On the left, a sidebar lists 'Science, Grade 6-8' and 'Program Overview' with sections for MS-PS1, PE MS-PS1.1, DCI, SEP, CCC, and Scale, proportion, and quantity. The main content area is titled 'Standards and Resources' and shows 'ccc' under 'Scale, proportion, and quantity'. It includes links to 'Student Edition, pp. 156–167' and 'Teacher Edition, pp. 200–213' for Module H: Matter and Energy.

NGSS Correlation Tool

The screenshot shows the 'End-of-Module Test' for Science. It displays a table of questions with columns for 'Questions', 'Question Type', and 'Points'. The first question asks about blood types, and the second asks about motion and forces.

Questions	Question Type	Points
A. type A B. type B C. both type A and type B ✓ D. neither type A nor type B	Multiple Choice	1
5	Multiple Choice	1
6	Multiple Choice	1

Module A End-of-Module Test

End-of-Module Tests, Unit Pre-Tests, Unit Reviews, Unit Tests (Tests A and B), and **Lesson Quizzes** are available in both English and Spanish, along with the **Answer Keys**. Assessments are assignable and editable with individual and whole-class reporting and **automated grading** and **remediation** tied to test questions. Many of these same assessments are available as PDF files or in the printed **Assessment Guide**.

The screenshot shows the 'Professional Development Resources' section. It lists various resources from the NSTA Learning Center and NSTA SciLinks, including 'Classification', 'Evolution', 'Natural Selection', 'Extinction', and 'Classification' and 'Evolution' links.

The © 2017 edition of **ScienceFusion** includes a correlation tool for the **Next Generation Science Standards (NGSS)***. The online **NGSS Correlation Tool** provides links to actual curriculum material that supports the **Three Dimensions of Learning** that make up the NGSS. Correlations are also available in the print Teacher Edition. Depending on the package purchased, online access to content from additional grades may be included.



The screenshot shows the 'ExamView Testbank Download' for Module I. It lists 'Unit 1 - Motion and Forces', 'Unit 2 - Work, Energy, and Machines', and 'Unit 3 - Electricity and Magnetism'. It includes download buttons for PC and Mac, and links for 'Install Exam View' and 'ExamView Install Instructions'.

Module I ExamView

ExamView® Test Banks contain extra editable assessment items. You can **customize** an assessment by adding or deleting items, revising difficulty levels, changing formats, revising sequence, and editing items. Students can take customized quizzes and tests directly online.

HMH's partnership with NSTA provides custom **Professional Development Resources** for every unit. Materials are a mix of online interactive content modules, journal and book chapter materials, pre-recorded podcasts, and more. Teachers have 24/7 access to **quality professional development** from the science experts.

Module B Professional Development Resources

*Next Generation Science Standards and logo are registered trademarks of Achieve. Neither Achieve nor the lead states and partners that developed the Next Generation Science Standards was involved in the production of, and does not endorse, this product.

New Energy for Science!

Weathering

Screen	Number of Visits	Time on Screen	Number of Attempts
1. Introduction	0	00 : 00	NA
2. Green liberty	0	00 : 00	NA
3. Physical versus chemical	0	00 : 00	NA
4. Physical weathering	0	00 : 00	NA
5. Chemical weathering	0	00 : 00	NA
6.	0	00 : 00	NA
7. Match the examples!	0	00 : 00	NA
8. Sinkhole	0	00 : 00	NA
9. Summary	0	00 : 00	NA

Screen 7 : Match the examples!

Match each agent of **weathering** with its correct image.

Images: plant actions, acid precipitation, animal actions, rock, waterfall, person standing.

Module E Digital Lesson Tracker

The Teacher View of Digital Lessons includes a **Digital Lesson Tracker with Answers** that shows answers to the digital lesson interactivities. **Digital Lesson Formative Assessment** provides additional teacher questions and answers that can be used for **individual or whole-class instruction** using the digital lesson.

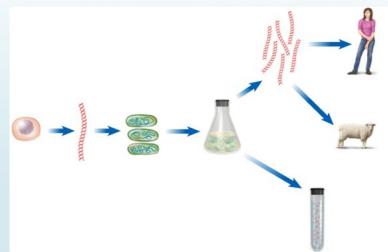
These components are also available online, as part of the Teacher Online Management Center:

- **Google Expeditions Teacher Guide** offering ideas on ways to incorporate the virtual field trips into your lessons and guide the experience
- **Lab Manual PDF files** including Virtual Lab Datasheets with Answers and blank Virtual Lab Data Sheets
- **Multi-Language Glossary** providing key terms and definitions in English, Spanish, Chinese, Vietnamese, Khmer, Laotian, Arabic, Haitian Creole, Russian, and Portuguese
- **Correlations to Common Core** bridging each module to the CCSS ELA and Mathematics standards
- **School-Home Connection Letters** offering families information on the current unit as well as activities that can be done at home
- **Take It Home Worksheets** presenting activities that can be done at home to extend classroom learning
- **Assessment Guide PDF files** for End-of-Module Tests with Answer Keys, Unit Pre-Tests, Unit Reviews, Unit Tests A and B with Answer Keys, Lesson Quizzes with Answer Keys; also available in Spanish
- **Lesson Differentiated Instruction** offering Teacher Edition strategies for differentiating instruction
- **ScienceSaurus** in the Interactive Online Edition
- **Teacher Resource Bank** including lessons for substitute teachers, science fair support, rubrics, graphic organizers, cooperative learning activities, and more

3 Lesson 5 Engineering and Life Science

What technology is used to change organisms or make new organisms?

- How do scientists modify DNA through genetic engineering?



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Module K PowerNotes Presentation

PowerNotes® Presentations are downloadable, editable PowerPoint® files with **lesson summaries, key vocabulary, and engaging visuals** for whole-class instruction.

Multi-Language Glossary Selection

English	Spanish
Chinese	Vietnamese
Khmer	Laotian
Arabic	Haitian Creole
Russian	Portuguese

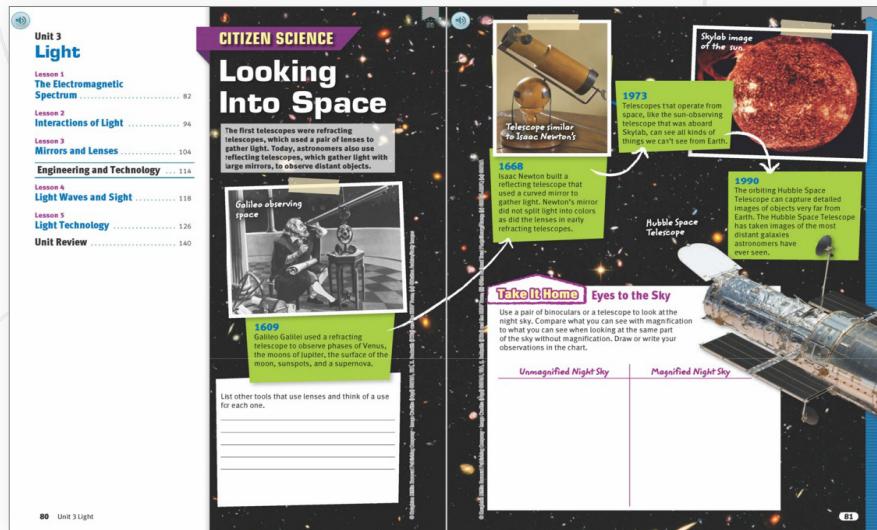
Multi-Language Glossary

Inspire Scientific Literacy!

Student Print Resources

ScienceFusion's print resources engage students in exciting, inquiry-based learning at every point of instruction. The effective, research-based program is **easy to implement**, **fun to teach**, and **enjoyable** for students to use. The program's innovative approach to print resources encourages students to become active participants in their own learning and encourages development of scientific and reading literacy. For teacher ease of use, all of the program's student print resources are located online at point of use.

The **Interactive Student Edition Worktext** has a **magazine-style layout** that matches the way today's students learn best—by actively engaging with the content they're reading. Students can write their ideas, answer questions, make notes, complete drawings, and record their observations right on the page.



Module J Student Edition



Resources available in both
English and
Spanish!

New Energy for Science!

How does blood move through the body?

Blood moves from the right side of the heart to the lungs. From the lungs it returns to the left side of the heart. The blood is then pumped from the left side of the heart to the body. It flows to the tiny capillaries around the body before returning to the right side of the heart. The veins that carry blood back to the heart is under great pressure because of the force from the pumping action of the heart. Blood in veins is under much less pressure than arterial blood because veins have larger internal diameters than arteries do. Veins carry larger volumes of blood more slowly.

Blood Moves in Circuits

Blood moves in two main circuits around the body. The heart moves blood to the lungs and also around the body. The flow of blood between the heart and the lungs is called the pulmonary circulation. The flow of blood through the lungs, carbon dioxide leaves the blood and oxygen is picked up. The oxygen-rich blood then flows back to the heart, where it is pumped around the body in the systemic circulation. The flow of blood between the heart and the rest of the body is called systemic circulation. Oxygen-poor blood returns to the heart from body cells in the systemic circulation.

Active Reading 16 Compare What is the difference between the pulmonary and systemic circulations?

How does circulation help maintain body temperature?

The circulation of blood also helps homeostasis. When the brain senses that body temperature is rising, it signals blood vessels in the skin to widen. As the vessels get wider, heat from the blood is transferred to the skin. This allows the skin to cool the body's temperature. When the brain senses that body temperature is normal, it signals the blood vessels to return to normal. When the brain senses that body temperature is getting too low, it signals the blood vessels near the skin to get narrower. This allows the blood to stay close to internal organs to keep them warm.

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Lesson 3 The Circulatory and Respiratory Systems 37

Module C Student Edition

Skills	Objectives
Identify risks	Analyze the life cycle of an aluminum can.
Identify benefits	Analyze the life cycle of a glass bottle.
Evaluate cost of technology	Evaluate the cost of recycling versus disposal of technology.
Evaluate environmental impact	Analyze the environmental impact of technology.
Propose improvements	
Propose risk reduction	
Compare technology	
Communicate results	

Skills

- ✓ Evaluate cost of technology
- ✓ Evaluate environmental impact
- ✓ Propose improvements
- ✓ Propose risk reduction
- ✓ Compare technology
- ✓ Communicate results

Objectives

- Analyze the life cycle of an aluminum can.
- Analyze the life cycle of a glass bottle.
- Evaluate the cost of recycling versus disposal of technology.
- Analyze the environmental impact of technology.

Analyzing the Life Cycles of Aluminum and Glass

A life cycle analysis is a way to evaluate the real cost of a product. The analysis considers how much money an item costs to make. It also examines how making the product affects the economy and the environment through the life of the product. Engineers, scientists, and technicians use this information to improve processes and to compare products.

Costs of Production

Have you ever wondered where an aluminum soda can comes from? Have you wondered where the can goes when you are done with it? If so, you are ready to learn about the life cycle of the right questions. Aluminum is a metal found in a type of rock called **bauxite**. To get aluminum, first bauxite must be mined. The mined ore is then shipped to a refinery to be processed. There, the bauxite is melted to get aluminum in a process called **smelting**. After smelting, the aluminum is processed and shaped into bicycle parts or rolled into sheets to make cans. Every step in the production involves both financial costs and environmental costs that must be considered in a life cycle analysis.

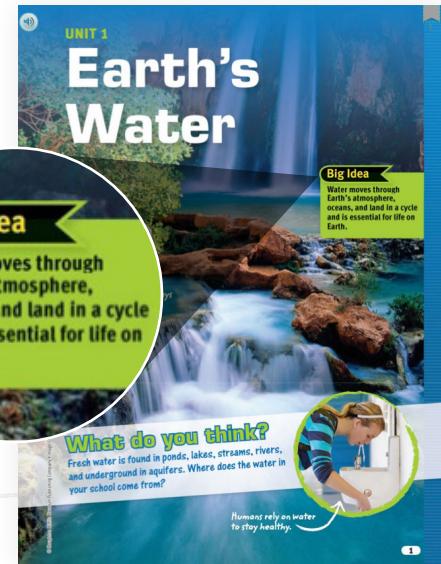
166 Unit 3 Minerals and Rocks

Module E Student Edition, STEM lesson

An important component of many **21st-century careers** is the meaningful understanding of the foundations of technology, engineering, and computer coding. A **NEW** spiraled curriculum on **"Technology and Coding"** has been added to address this need.

The write-in **Student Editions** promote a student-centered approach for:

- Learning and applying **critical-thinking** and **reading skills**
- Building inquiry, STEM, and 21st-century skills
- Developing attentive, energetic readers who reach a deep level of **comprehension**



Module F Student Edition, Big Idea

Up to <Code>

How is computer software created?

Imagine that you are using a computer at the library to learn more about the history of electronic music. You use the library's database application to search for books on electronic music. You find a book on rock and roll music recordings. Finally, you open a word processor to take notes on the computer. Perhaps without realizing it, you've used many different pieces of software. Have you ever wondered how computer software is created?

Computer software is designed to address a need

Computer software can help us to learn more about our world. It can be useful to business. Or, it can simply entertain us. Whatever its purpose, computer software is created to fill some human want or need. The first step in creating software is planning how it will work.

Computer software source code is written in a programming language

Sometimes, programmers make mistakes in their code. Programming mistakes have a feature that alerts the programmer to certain errors, such as spelling mistakes in variable names or punctuation marks. Logical errors in the sequence of instructions. However, many mistakes go undetected, such as when the computer fails to function incorrectly or not at all. When this happens, the programmer must identify the errors and fix them in the code again.

Identify if this source code contains an error

Refer to the source code below. What does this code tell the computer to do? Write your answer below.

```
13 # Scores are not tied, so check
14 # which player wins the round
15 if player1score > player2score:
16   print ("Player 1 wins!")
17 else:
18   print ("Player 2 wins!")
19
20
21 Syntax error, line 19
```

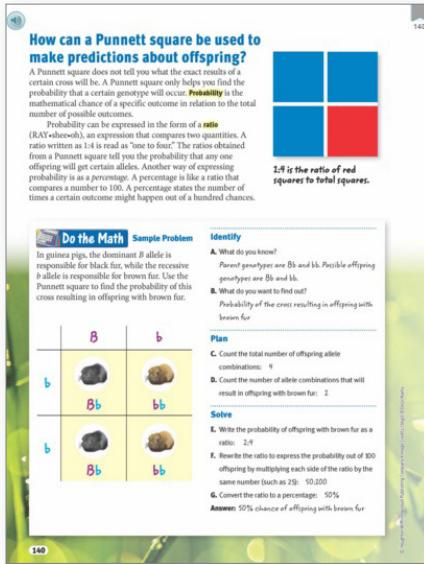


**NEW
for
© 2017!**

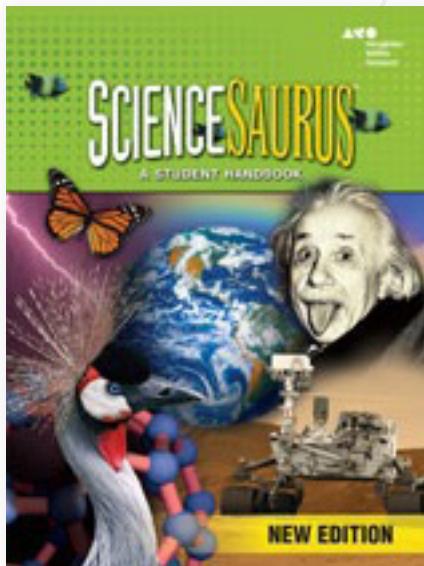


Student Edition, 21st-Century Skills Technology and Coding

New Energy for Science!



Module A Student Edition, Do the Math



ScienceSaurus
Student Handbook

Each module includes **People in Science** and **Think Science** features. **Think Science** focuses on developing **science skills** while the **People in Science** feature exposes students to the influence of science, engineering, and technology on society and inspires them to consider **careers** in science.

Found in each unit, **Do the Math!**

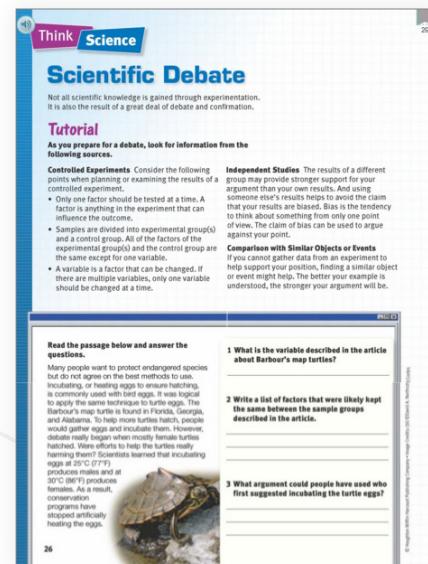
connects math and science

with sample problems, with a chance for students to try their own calculations. **Visualize It!** makes **abstract concepts** more concrete.

Additional features in the print Student Edition help students understand **how science relates to the world** around them. **Think Outside the Book** extends learning, asking students how they can apply unit concepts to their own lives.

Why It Matters makes content relevant and offers additional opportunities for **extension**.

ScienceSaurus hardcover or softcover print handbooks are a delightful way to present, review, or reinforce science content. Essential scientific concepts and vocabulary are organized in an **encyclopedic format**. Clear explanations with dynamic visuals help students master key science ideas. Online access to **ScienceSaurus** is included with **ScienceFusion** © 2017 and print copies are included with certain packages.



Module B Student Edition, Think Science



Module D Student Edition, Why It Matters

Designed for Ease of Use!

Teacher Print Resources

Teacher Edition

ScienceFusion's Teacher Editions for each module are designed with **middle school teachers** in mind. To match all teaching styles, the comprehensive, hardcover TE gives you the flexibility to pick and choose the resources you need. For ease of use, the targeted resources are located right at **point of use** in each unit and lesson.

The Teacher Edition includes all of the following features to enhance your instruction:

- Teacher support for each lesson that follows the **5E model**: Engage, Explore, Explain, Extend, and Evaluate.
- **Engage and Explore** include: Activities, Discussions, Labs, Demos
- **Explain** includes: Print and Digital Options, Differentiated Instruction, Lesson Vocabulary
- **Extend** includes: Reinforce and Review, Going Further
- **Evaluate** includes: Formative and Summative Assessment, Reteach

LESSON 1 Overview Engage and Explore Explain Extend Evaluate Student Pages 14

Engage and Explore

Activities and Discussion

Discussion: A Unique Planet

Solar System and Planets

Labs and Demos

Daily Demo Comparing Distances

Structure and Size of the Universe

PURPOSE To demonstrate distances in the solar system

MATERIALS

- roll of toilet paper
- 1 Mark the first square of toilet paper on the roll as the "sun" and the next two squares as "Mercury" and "Venus".
- 2 If a long room or corridor, carefully unroll part of the roll and ask students to predict the distance from the sun for each destination.
- 3 Then ask a student volunteer to mark the following scale distances on the paper: Mercury 1.5 (diameter), Venus 3.6, Earth 8.0, Mars 12.8, Jupiter 25.9, Saturn 38.8, Uranus 45.5, Neptune 30.3.
- 4 Repeat steps 2 and 3 for the gas giant planets: Jupiter 25.9, Saturn 38.8, Uranus 45.5, Neptune 30.3.
- 5 **Analyzing:** Discuss how the scale distances compare to the students' predictions. Ask: How do the distances from the sun affect the temperature of the planets? (Mercury is closest to the sun; Neptune is farthest from the sun.) Sample answer: The terminal planets are closer to the sun and are often cold.

Activity: Our Place in Space

Stars and Galaxies

Individuals or pairs

DIRECTED Inquiry

Quick Research Provide students with pictures of different types of galaxies. Tell them that Earth is part of our solar system is located in a spiral galaxy called the Milky Way galaxy. Have students find out about the other types of galaxies and how the Milky Way galaxy compares with the other galaxies.

Activity: Order in the Universe

Structure and Size of the Universe

Individuals

DIRECTED Inquiry

PURPOSE To demonstrate the order of the solar system

MATERIALS

- Students use a rubber band to model the expanding universe.
- To model how galaxies farther away from Earth are moving away more quickly than galaxies closer to Earth.

Procedure

- ballpoint pen
- scissors
- meter stick
- thick rubber band

14 UNIT 1 - The Universe

Module G Teacher Edition, Engage and Explore

Options for Instruction

Two parallel paths provide coverage of the Essential Questions, with a strong Inquiry strand woven into each. Follow the Print Path, the Digital Path, or your customized combination of print, digital, and inquiry.

Print Path Follow the Print Path options with the Student Pages.

Inquiry Labs and Activities

Digital Path Follow the Digital Path options.

Our Place in Space, SE pp. 6-7

- What makes up the universe?
- Stars
- Galaxies
- The Solar System

Field Lab Solar System Solar System

Activity Making the Connections

Start and Planets Interactive Image Comparing Sizes Interactive Graphics

Our Place in Space, SE pp. 8-9

- What makes up the universe?
- Stars
- Galaxies

Quick Lab Modeling Galaxies

Activity Our Place in Space

Solar System and Beyond Animation

How Big is Big?, SE pp. 10-11

- How are distances in the universe measured?
- What is the structure of the universe?

Quick Lab Modeling the Expanding Universe

Digital Demo Comparing Distances

Virtual Lab Distances in the Universe

Activity Order in the Universe

Solar System and Beyond Animation

Light-Years and Travel Interactive Graphics

Options for Assessment

See the Evaluate page for options, including Formative Assessment, Summative Assessment, and Unit Review.

Lesson 1 - Structure of the Universe 13

Module G Teacher Edition, Options for Instruction



Teacher Print Resources

Differentiated Instruction

Basic Visualizing Types of Galaxies

Stars and Galaxies

Advanced Parts of the Universe

ELL Astronomical Terms

Four Square

Customize Your Core Lesson

Lesson Vocabulary

Previewing Vocabulary

Reinforcing Vocabulary

Lesson 1 Structure of the Universe

- **Differentiated Instruction** page to provide resources for **meeting the needs of all students**
- **Response to Intervention** page with ways to support **struggling students**

Content Refresher

Lesson 1

Essential Question

The Electromagnetic Spectrum

Observing and Detecting Electromagnetic Radiation

Using Images from Space

240 UNIT 4 Exploring Space

Module G Teacher Edition, Differentiated Instruction

Lesson 1

Images from Space

Answers

Opening Your Lesson

Assessing Prior Knowledge

Learning Alert

Learning Project

254 UNIT 4 Exploring Space

Module G Teacher Edition, Lesson Opener

Professional Development

Project-Based Learning

Citizen Science

PD 10 Professional Development

Module G Teacher Edition, Professional Development

- **Lesson Level Support features include:**
 - Probing Questions to build inquiry skills and discussion features to extend learning
 - Interpreting Visuals strategies
 - Skill-building features like Building Reading Skills, Building Math Skills, and Building Graphing SkillsDiscussion features to extend learning
 - Ongoing Formative Assessment strategies to check student comprehension

Module G Teacher Edition, Content Refresher

- **Content Refresher** pages provide **professional development** for teachers needing support in teaching concepts. These include **Common Misconceptions** to help identify regular stumbling blocks for students.

Citizen Science

Take It Home

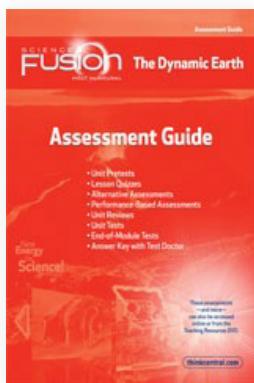
Advance Planning

Module G Teacher Edition, Citizen Science

- The **Citizen Science** feature provides support for **unit projects** while **Take It Home** supports this valuable school-home feature

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New Energy for Science!



Assessment Guide

The **ScienceFusion** formative and summative assessment options give you **maximum flexibility** in assessing what your students know and what they can do. The Assessment Guide includes a comprehensive overview of your assessment options and includes:

- Unit PreTests
- Lesson Quizzes
- Alternative Assessments
- Performance-Based Assessments
- Unit Reviews
- Unit Tests
- End-of-Module Tests
- Answer Key and explanations of answers

Module E Assessment Guide



Lab Manual

The **ScienceFusion** lab program is designed to include activities that address a variety of student levels and inquiry levels—**directed, guided, and independent**. Each lesson is supported by two to three short activities and each unit includes one to four additional labs that require one or more class periods to complete. Each student activity includes datasheets, Teacher Resources with safety notes, tips, modifications, and an answer key. There are **editable** versions of all labs online as well as suggestions for differentiating labs, such as turning a Directed Lab into an Independent Inquiry Lab.

Program Labs include:

- **Quick Labs** Short activities at point of use to help concept development
- **Exploration Labs** Traditional labs designed to be used with standard equipment and materials
- **Field Labs** Designed to be partly or completely performed outside the classroom
- **STEM Labs** Activities that focus on science, technology, engineering, and math skills



Non-Consumable Material Kits

These kits provide the non-consumable materials to complete all the labs in the Lab Manual for each module. The kits include enough materials for six groups of students.



Consumable Material Kits

These kits provide the consumable materials to complete all the labs in the Lab Manual for each module. The kits include enough materials for six groups of students.

It is recommended to purchase both the Non-Consumable Equipment Kit and the Consumable Equipment Kit to get started.



Common Material and Safety Kit

These two kits supply either common science lab equipment needed for many of the labs or the safety equipment necessary for any lab program.

Two parallel and unique curriculums in one comprehensive program!

Traditional science programs repeat the same content across multiple formats, but with **ScienceFusion** you get **two full curriculums**—digital and print lessons—each with unique content, providing multiple exposures to science concepts and skills.

The **interactive, multimodal learning model** truly sets **ScienceFusion** apart—it's easier to teach and reinforce concepts, to promote deeper understanding, and to reach all learners in their unique learning styles.

	Print **	Digital
Write-In Student Edition Interactive Worktext <ul style="list-style-type: none">• Visual Literacy• Big Ideas & Essential Questions• Graphic Organizers• Magazine Format• STEM Lessons• Scaffolding• Labs		
Student Interactive Digital Curriculum <ul style="list-style-type: none">• Digital Lessons• Virtual Labs with Data Sheets• Video-Based Projects• Interactive Online Student Edition with Audio• NSTA SciLINKS• People in Science Gallery• Media Gallery• Online Unit Self-Checks• Interactive Glossary• Student Vocabulary Cards• Extra Support for Vocabulary and Concepts		
Content to enrich HMH programs using  Google Expeditions		
ScienceSaurus		

**Some print components are only available with specific package purchases

New Energy for Science!

ScienceFusion © 2017 for Grades 6–8 is offered as modules in both Hybrid and Digital configurations where every fourth module purchased is available at a discount. The Hybrid bundle serves as the core offering, with both print and digital materials, while the Digital bundle offers a low-cost digital-only option. Common Cartridge® options are also available for purchase.

Teacher

	Print	Digital
Teacher Edition <ul style="list-style-type: none">• 5E Lesson Format• Build Inquiry and STEM Skills• Build Science Vocabulary• Professional Development	<ul style="list-style-type: none">• RTI, English Language Learners, and Differentiated Instruction support• Misconception Alerts• NGSS* and Common Core Correlations	 
Assessment Guide <ul style="list-style-type: none">• Unit Pre-Tests• Lesson Quizzes• Alternative Assessments• Performance-Based Assessments	<ul style="list-style-type: none">• Unit Reviews• Unit Tests• End-of-Module Tests• Answer Key and explanations of answers	 
Lab Manual <ul style="list-style-type: none">• Quick Labs• Exploration Labs	<ul style="list-style-type: none">• Field Labs• STEM Labs	 
Teacher Online Management Center <ul style="list-style-type: none">• Interactive Online Teacher Edition• Full access to Student Interactive Digital Curriculum• NGSS Correlation Tool• Professional Development Resources• Teacher View of Digital Lessons and Digital Lesson Tracker with Answers	<ul style="list-style-type: none">• PowerNotes Presentations• Assessment Guide and Online Assessments• Teacher Resource Bank• Google Expeditions Teacher Guide	 

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Notes

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