

The Learner Express collection currently includes *Mathematics: Common Core Standards* professional development modules and *STEM: Earth and Space Science* content modules.



STEM: EARTH AND SPACE SCIENCE CONTENT MODULES

The *STEM: Earth and Space Science* modules are useful in a STEM-based curriculum. Aimed at grades 4–8, these modules are focused on Earth and space science topics from rock composition to how the moon was formed. Take your students on a virtual field trip to a volcano or show them evidence for giant asteroid collisions with Earth. *Produced by the Science Media Group at the Harvard-Smithsonian Center for Astrophysics. 2012.*

✓ **Content modules for elementary and middle school teachers**

MODULE TOPICS

Soil Formation • 6 modules / 19:01 minutes

Topics include: climate, soil composition, soil types, weathering

Rock Composition • 4 modules / 11:31 minutes

Topics include: formation, fossils, minerals, radiometric dating

Plate Tectonics • 9 modules / 31:34 minutes ▶

Topics include: continental drift, effects of temperature and pressure, plate movement, seismic wave demo

Volcanoes • 9 modules / 36:03 minutes ▶

Topics include: gases, Hawaii, lava, volcano types

Landforms, Part 1 • 5 modules / 27:27 minutes

Topics include: metamorphic rock, mountain formation, seashells on Mt. Everest

Landforms, Part 2 • 8 modules / 31:50 minutes

Topics include: Appalachian Mts. age, beach sediment, Cape Cod formation, rock movement in streams

The Moon • 3 modules / 5:04 minutes

Topics include: craters, how the moon formed

Earth in the Solar System ▶

2 modules / 5:00 minutes

Topics include: Solar System formation, planet formation

PRICE

- DVD [XPSDVD] = \$39.95
46 programs of varying lengths on 2 discs, module description booklet

WEBSITE

www.learner.org/series/modules/express

Classroom Exploration of Flowing Solids

Using hybrid solid-liquid materials in Keedar Whittle's 6th grade classroom at the Epiphany School in Dorchester, MA, students explore the concept of a flowing solid. Students explore the properties and behavior of a fluid solid, and observe how it behaves in response to rapid and slow deformation pressure. ▼



Volcanic Gases

Scientists believe that our atmosphere was formed as a result of gases released from ancient volcanic eruptions. Geoscientist Chuck Blay, of Teok Investigations, explains that the force of gravity causes gases released during eruptions to cling relatively close to the Earth's surface. In fact, 80% of the Earth's atmosphere is within 15 km of the Earth's surface. Although it is true that some atmospheric gases are continually lost into space, there is enough gas released during present-day volcanic activity to make up for this loss. ▶



Solar System Formation ▲

Teacher Joe Reilly asks the question, "How did our solar system form?" In 1755, a renowned German philosopher, Immanuel Kant, developed the currently-accepted "Solar Nebula" theory. He described how a solar system can develop from clouds of dust and gas that collapse into a flat spinning disk. Dr. R. Hank Donnelly, from the Harvard-Smithsonian Center for Astrophysics in Cambridge, MA, describes in more detail how clouds of dust and gas produced in protosolar nebulae coalesced under the force of gravity to form our solar system.





REDISCOVERING BIOLOGY: MOLECULAR TO GLOBAL PERSPECTIVES

Rediscovering Biology: Molecular to Global Perspectives explains recent advances in the field to high school biology teachers to update their content knowledge and understanding. The multimedia course materials will help new and veteran biology teachers become familiar with current research methods and tools. The video programs feature interviews with expert scientists involved in groundbreaking research, such as Eric Lander of the MIT Genomics Center and Nobel laureate Leland Hartwell. Animations provide a micro-level view of biological processes and techniques such as mass spectrometry and microarray analysis. The course guide and interactive website provide a detailed online text, learning activities, a detailed glossary, annotated animations, and case studies that invite teachers to run their own mini research projects. *Produced by Oregon Public Broadcasting, 2003.*

✓ **A professional development series for high school, college, and adult learners**

+ **3 graduate credits**

30-MINUTE PROGRAMS

1. **Genomics** ▶
2. **Proteins and Proteomics**
3. **Evolution and Phylogenetics**
4. **Microbial Diversity**
5. **Emerging Infectious Diseases**
6. **HIV and AIDS**
7. **Genetics of Development**
8. **Cell Biology and Cancer**
9. **Human Evolution** ▶
10. **Neurobiology**
11. **Biology of Sex and Gender** ▶
12. **Biodiversity** ▶
13. **Genetically Modified Organisms** ▶

For individual program descriptions, visit www.learner.org/resources/series187.html

PRICES

- DVD [RBDVDK] = \$375.00
13 half-hour programs on 4 discs, 1 guide
- **ADDITIONAL PROFESSIONAL DEVELOPMENT SERIES GUIDE** [RBSGF] = \$39.95

WEBSITE

www.learner.org/courses/biology

Genomics

Today's research has shifted from DNA nucleotide sequencing to identifying genes and determining their functions. This program reviews the techniques used in BLAST searches, microarray experiments, and other genomics tools.

Human Evolution

Homo sapiens is now the only living representative of the hominid species. This program examines mitochondrial Eve and other fossil clues that increasingly point to Africa as the point of origin of our species. How did humans replace their hominid cousins, including Neanderthal?

Biology of Sex and Gender

Several genes help determine what makes a human embryo develop female or male sexual anatomy. This program examines recent findings about the roles of anatomy, environment, and genetics in the determination of gender and the evolution of sexual determination.

Biodiversity

Many biodiversity studies focus on efforts to count the Earth's species before they are lost to extinction. This program explores current field experiments studying complex ecosystems and how environmental and biodiversity changes might affect the ecosystems' functions.



Genetically Modified Organisms

Scientists now have the tools to insert specific genes from one organism into cells of unrelated species. This program illustrates the processes used and how such genetically transformed organisms are increasingly common, and introduces the ethical considerations of GMO research.



For current pricing and to order: 1-800-LEARNER® or www.learner.org

UNSEEN LIFE ON EARTH: AN INTRODUCTION TO MICROBIOLOGY

Peer into the microbial world with this comprehensive microbiology series. The series explains basic microbial functions and how microorganisms affect everything from medicine to environmental issues to global politics. The field of microbiology is seen through the eyes of scientists carrying on their investigations in the lab and in the field. Designed for general microbiology courses for majors and allied health students, it is also useful as a resource for life science courses in college and high school. *Produced by Oregon Public Broadcasting in association with Baker & Simon Associates and the American Society for Microbiology. 1999.*

- ✓ An instructional series for high school, college, and adult learners
- ✓ Distance learning course

30-MINUTE PROGRAMS

Microbial Cell Biology

1. The Microbial Universe
2. The Unity of Living Systems
3. Metabolism

Microbial Genetics

4. Reading the Code of Life
5. Genetic Transfer

Integrating Themes

6. Microbial Evolution
7. Microbial Diversity

Microorganisms and the Environment

8. Microbial Ecology
9. Microbial Control

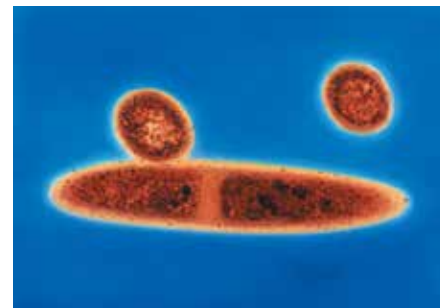
Microorganisms and Human Life

10. Microbial Interactions
11. Human Defenses
12. Microbes and Human Diseases

For individual program descriptions, visit www.learner.org/resources/series121.html

PRICE

- DVD-R [ULDVD] = \$499.00
12 half-hour programs on 3 discs
- Coordinated books and guides are also available. For more information, call 1-800-Learner or visit www.learner.org.



INTIMATE STRANGERS: UNSEEN LIFE ON EARTH*

This PBS documentary provides an overview of the microbial world and offers a clear and exciting picture of the field of microbiology. Meet scientists across the globe investigating microbial worlds everywhere—in a termite's stomach, in a hospital operating room, in an African village, and even in outer space. These programs help increase the microbial awareness of younger students, the general public, and biotechnology workers. *Produced by Baker & Simon Associates in association with Oregon Public Broadcasting and the American Society for Microbiology. 1999.*

* Distribution of Intimate Strangers through Annenberg Learner is for educational use only.

- ✓ A documentary for all audiences

60-MINUTE PROGRAMS

1. The Tree of Life
2. Keepers of the Biosphere
3. Dangerous Friends and Friendly Enemies
4. Creators of the Future

For individual program descriptions, visit www.learner.org/resources/series147.html

For current pricing and to order: 1-800-LEARNER® or www.learner.org

PRICE

- DVD-R [IIDVDR] = \$99.00
4 one-hour programs on 2 discs



Essential Science for Teachers

LIFE SCIENCE



Part of the *Essential Science for Teachers* series, this course provides a foundation in key concepts needed to teach standards-based curricula. Using real-world examples, demonstrations, animations, still graphics, and commentary by scientists, the programs provide content in each topic, intertwined with in-depth interviews with children revealing their ideas. Each program also features an elementary school teacher and his or her students working with exemplary science curricula. Use the complete course for teacher education or professional development, or individual programs for content review. *Produced by the Harvard-Smithsonian Center for Astrophysics. 2003.*

- ✓ A professional development course for K–6 teachers
- + 3 graduate credits
- + 2.5 CEUs
- ✓ Distance learning course

60-MINUTE PROGRAMS

1. What Is Life? ▶
2. Classifying Living Things
3. Animal Life Cycles ▶
4. Plant Life Cycles
5. Variation, Adaptation, and Natural Selection
6. Evolution and the Tree of Life
7. Energy Flow in Communities
8. Material Cycles in Ecosystems ▶

For individual program descriptions, visit www.learner.org/resources/series179.html

PRICES

- DVD-R [ESDVDRK] ■ \$220.00
8 one-hour programs on 4 discs, 1 guide
- ADDITIONAL PROFESSIONAL DEVELOPMENT COURSE GUIDE [ESSGF] ■ \$39.95

WEBSITE

www.learner.org/courses/essential/life

Essential Science for Teachers courses are designed to help K–6 teachers gain an understanding of some of the bedrock science concepts they need to teach today's standards-based curricula. The series of courses includes *Life Science*, *Earth and Space Science*, and *Physical Science*.



Students explore the characteristics of organisms that are “living,” “dead,” or “never living.”

What Is Life?

What distinguishes living things from dead and nonliving things? No single characteristic is enough to define what is meant by “life.” In this session, five characteristics are introduced as unifying themes in the living world.

Animal Life Cycles

One characteristic of all life forms is a life cycle—from reproduction in one generation to reproduction in the next. This session introduces life cycles by focusing on continuity of life in the Animal Kingdom. In addition to considering what aspects of life cycles can be observed directly, the underlying role of DNA as the hereditary material is explored.



Material Cycles in Ecosystems

Studying an ecosystem involves looking at interactions between living things and the nonliving environment that surrounds them. Life depends upon the nonliving world for habitat, as well as energy and materials. In this session, material cycles will be explored as critical processes that sustain life in an ecosystem.



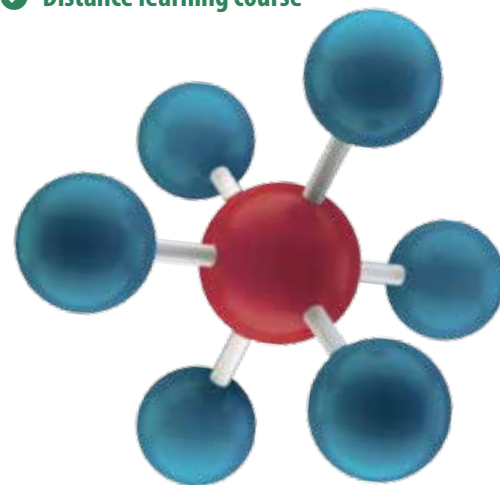
★ More on DNA at www.learner.org/interactives/dna

For current pricing and to order: 1-800-LEARNER® or www.learner.org

CHEMISTRY: CHALLENGES AND SOLUTIONS

Chemistry: Challenges and Solutions teaches general concepts using real-life challenges in energy, materials development, biochemistry, and the environment. The course zeros in on essential topics that are generally taught in introductory chemistry, providing a strong foundation for learners to pursue further study in science or a liberal education. Videos include lab demonstrations of key principles, interviews with scientists about their related research and explanatory animations. Each video is hosted by a different working chemist—underscoring the range of opportunities available in chemistry. The online text covers key concepts with clear text and illustrations, while interactive labs provide simulations of chemical processes. *Produced by the Science Media Group at the Harvard-Smithsonian Center for Astrophysics. 2014.*

- ✔ **A multimedia course for high school teachers and college-level instruction**
- ✔ **Distance learning course**



30-MINUTE PROGRAMS

1. **Matter and the Rise of Atomic Theory:** The Art of the Meticulous
 2. **The Behavior of Atoms:** Phases of Matter and the Properties of Gases
 3. **Atoms and Light:** Exploring Atomic and Electronic Structure
 4. **Organizing Atoms and Electrons:** The Periodic Table
 5. **Making Molecules:** Lewis Structures and Molecular Geometries
 6. **Quantifying Chemical Reactions:** Stoichiometry and Moles
 7. **The Energy in Chemical Reactions:** Thermodynamics and Enthalpy ▶
 8. **When Chemicals Meet Water:** The Properties of Solutions ▶
 9. **Equilibrium and Advanced Thermodynamics:** Balance in Chemical Reactions
 10. **Acids and Bases:** The Voyage of the Proton
 11. **The Metallic World:** Electrochemistry and Coordination Compounds
 12. **Kinetics and Nuclear Chemistry:** Rates of Reaction
 13. **Modern Materials and the Solid State:** Crystals, Polymers, and Alloys
- Bonus disc: Chemistry Lab Demonstrations**
27 demos from the series

For individual program descriptions, visit www.learner.org/resources/series218.html

PRICES

- **DVD** [CHDVD] = \$375.00
13 half-hour programs plus lab demos on 4 discs, 1 guide
- **ADDITIONAL COURSE GUIDES** = \$39.95

WEBSITE

www.learner.org/courses/chemistry

The Energy in Chemical Reactions:

Thermodynamics and Enthalpy

Thermodynamics—the study of how and why energy moves—governs what can happen in a chemical reaction. This program applies thermodynamics to research into making cleaner-burning rocket fuels and more efficient engines.



At a coffee bar we learn how the concentration of a solute, pressure, and temperature come into play in making a great cup of java.

When Chemicals Meet Water:

The Properties of Solutions

While solutions don't have to be liquids, they are fundamental to life and common in inorganic chemistry: the majority of biochemical reactions happen in aqueous solutions. The formation of a solution involves a solute (the substance that gets dissolved) and the solvent (the substance that does the dissolving).



Dan Rosenber provides informative and dramatic demonstrations not feasible in the average classroom.

For current pricing and to order: 1-800-LEARNER® or www.learner.org

REACTIONS IN CHEMISTRY

Reactions in Chemistry is a professional development workshop for high school chemistry and physical science teachers. The workshop blends chemistry content, history, and technological applications with a range of classroom lessons to provide teachers with updated knowledge and new instructional approaches. Teachers will see diverse classes doing hands-on lessons and labs and will hear teachers reflect on their own practice. The programs also present the work of industrial and forensic chemists and researchers. *Produced by Hadassah College, Jerusalem, in collaboration with the Educational Film Center (EFC). 2003.*



- ✓ A professional development workshop for high school teachers
- + 2 graduate credits
- ✓ Distance learning course

60-MINUTE PROGRAMS

1. Atoms and Molecules
2. Macro to Micro Structures
3. Energetics and Dynamics
4. Theory and Practice in Chemical Systems
5. Chemical Design
6. The Chemistry of Life
7. Chemistry and the Environment
8. Chemistry at the Interface

For individual program descriptions, visit www.learner.org/resources/series168.html

PRICES

- DVD-R [RCDVDRK] = \$220.00
8 one-hour programs on 4 discs, 1 guide
- ADDITIONAL PROFESSIONAL DEVELOPMENT WORKSHOP GUIDE [RCSGF] = \$39.95

WEBSITE

www.learner.org/workshops/chemistry



- ★ More on the Periodic Table at www.learner.org/interactives/periodic

THE WORLD OF CHEMISTRY

This classic series presents a unified view of the science and practice of chemistry. Footage of industrial processes illustrates the application of chemical reactions, while computer animations reveal changes at the molecular level. *The World of Chemistry* is appropriate for students taking high school or college chemistry, from introductory to advanced levels, and is applicable to different teaching approaches. It includes physics and Earth science components and is also valuable for teachers seeking to review the subject matter. *Produced by the University of Maryland and the Educational Film Center. 1990.*

- ✓ An instructional series for high school, college, and adult learners
- ✓ Distance learning course

30-MINUTE PROGRAMS

1. The World of Chemistry
2. Color
3. Measurement:
The Foundation of Chemistry
4. Modeling the Unseen
5. A Matter of State
6. The Atom
7. The Periodic Table
8. Chemical Bonds
9. Molecular Architecture
10. Signals From Within
11. The Mole
12. Water
13. The Driving Forces
14. Molecules in Action
15. The Busy Electron
16. The Proton in Chemistry
17. The Precious Envelope
18. The Chemistry of the Earth
19. Metals
20. On the Surface
21. Carbon
22. The Age of Polymers
23. Proteins: Structure and Function
24. The Genetic Code
25. Chemistry and the Environment
26. Futures

For individual program descriptions, visit www.learner.org/resources/series61.html

PRICES

- DVD [WCDVD] = \$389.00
26 half-hour programs on 4 discs
- TEXTBOOK [WCST] = \$140.95
World of Chemistry, 4th ed., by Joesten et al., Harcourt College Publishers, 2007
- STUDY GUIDE [WCSGS] = \$56.95
World of Chemistry, 2nd ed., Harcourt College Publishers, 1996
- TEACHER'S GUIDE [WCSGT] = \$15.00
The World of Chemistry in the Classroom, The Annenberg/CPB Project, 1996



PHYSICS FOR THE 21ST CENTURY

Dark matter, string theory, particle accelerators, and other big topics in modern physics come together in this 11-part multimedia course for high school physics teachers, undergraduate students, and all adults who are fascinated by physics and the cosmos. The course covers a broad scale, from sub-atomic particle physics, through atomic and molecular physics, to cosmology. The 11 video programs feature 22 case studies of researchers from leading research labs and universities who are breaking new ground in their fields. An extensive companion website provides background information and concepts found in a printable online textbook, interactive simulations, a course facilitator's guide, and multiple other resources. *Produced by the Harvard-Smithsonian Center for Astrophysics Science Media Group in association with the Harvard University Department of Physics. 2010.*

- ✓ **A professional development series for high school, college, and adult learners**
- + **3 graduate credits**
- ✓ **Distance learning course**

30-MINUTE PROGRAMS

1. **The Basic Building Blocks of Matter**
2. **The Fundamental Interactions**
3. **Gravity**
4. **String Theory and Extra Dimensions**
5. **The Quantum World**
6. **Macroscopic Quantum Mechanics**
7. **Manipulating Light** ▶
8. **Emergent Behavior in Quantum Matter**
9. **Biophysics** ▶
10. **Dark Matter** ▶
11. **Dark Energy** ▶

Video Demonstrations (short physics demonstrations related to program topics):

- Tabletop Cavendish Experiment**
- NIST Atomic Clocks**
- The Meissner Effect**
- The Cyclotron**
- Pencil Beam Scanning**

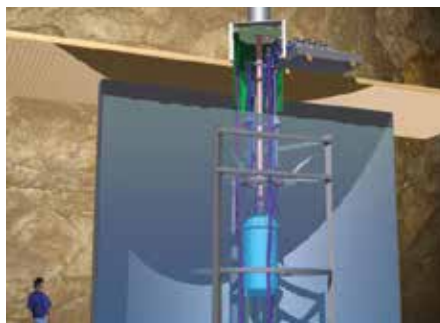
For individual program descriptions, visit www.learner.org/resources/series213.html

PRICES

- **DVD-R** [PHDVDRK] = \$375.00
11 half-hour programs and 5 video demonstrations on 3 discs
- **ADDITIONAL PROFESSIONAL DEVELOPMENT WORKSHOP GUIDE** [PHSGF] = \$39.95

WEBSITE

www.learner.org/courses/physics/



Model of LUX detector, which searches for evidence of dark matter.

Manipulating Light

Physicist Lene Vestergaard Hau stopped a pulse of light in a cloud of atoms and then released it, along with the information it contained. Paul Kwiat is creating photons “to order” by carefully manipulating their quantum properties. Explore how light interacts with matter at the quantum level, and learn about the concepts of entanglement and action at a distance.

Biophysics

Biophysics brings together many disciplines. Molecular biophysics (Vinothan Manoharan of Harvard) opens the possibility of manipulating DNA and proteins, perhaps leading to nanofabrication of biologically active molecules. And medical physics (Harald Paganetti at Mass General Hospital) is already providing novel ways of imaging living tissues as well as curing disease with proton radiation therapy.

Dark Matter

Swiss astrophysicist Fritz Zwicky first inferred the existence of dark matter in 1933. Today, astrophysicists are seeking evidence for dark matter at the center of the Milky Way galaxy (Doug Finkbeiner of Harvard). The LUX detector almost a mile underground is looking for dark matter particles within the Earth (Rick Gaitskell of Brown).



© X-ray: NASA, CXO, CFA, M. Markevitch et al.; Optical: NASA, STScI; Magellan, U. Arizona, D. Clowe et al.; Lensing Map: NASA, STScI; ESO WFI; Magellan, U. Arizona, D. Clowe et al.

Dark Energy

Cosmologists have known since the 1920s that the universe is expanding in all directions. Recent measurements have shown that the cosmic expansion has been speeding up, attributed to dark energy. Robert Kirshner measures the history of cosmic expansion more precisely, and Princeton's David Spergel looks at the cosmic microwave background for new clues about the nature of dark energy.

★ **More on physics at**
www.learner.org/interactives/parkphysics

For current pricing and to order: 1-800-LEARNER® or www.learner.org

Science in Focus

FORCE AND MOTION

Explore science concepts in force and motion and come away with a deeper understanding—key to engaging your students in their own explorations. With science and education experts as guides, learn more about gravity, friction, air resistance, magnetism, and tension through activities, discussions, and demonstrations. Extensive footage shot in real classrooms shows students learning and building on ideas as they explore the relationships among motion, force, size, mass, and speed. Observe how students develop understanding through activities that connect science concepts to real-world phenomena. *Produced by the Harvard-Smithsonian Center for Astrophysics. 2001.*

60-MINUTE PROGRAMS

1. Making an Impact
2. Drag Races
3. When Rubber Meets the Road
4. On a Roll
5. Keep On Rolling
6. Force Against Force
7. The Lure of Magnetism
8. Bend and Stretch

For individual program descriptions, visit www.learner.org/resources/series136.html

PRICES

- DVD-R [SMDVDRK] = \$220.00
8 one-hour programs on 4 discs, 1 guide
- ADDITIONAL PROFESSIONAL DEVELOPMENT WORKSHOP GUIDE [SMSGF] = \$39.95

WEBSITE

www.learner.org/workshops/force



- ✓ A professional development workshop for K–6 teachers
- + 2 graduate credits
- ✓ Distance learning course



Seventh-graders measure the impact of a ball dropped to form a crater.

Essential Science for Teachers

PHYSICAL SCIENCE

By exploring topics that range from the essential properties of aluminum foil to the plasma that makes up the sun, this professional development course helps teachers enhance their understanding of science content and connect the science to elementary and middle school classroom curricula. Each program includes real examples, demonstrations, animations and graphics, and interviews with science experts. Also featured are elementary science classes which reveal students' deeply held ideas about the topics presented. *Produced by the Harvard-Smithsonian Center for Astrophysics. 2004.*

60-MINUTE PROGRAMS

1. What Is Matter? Properties and Classification of Matter
2. The Particle Nature of Matter: Solids, Liquids, and Gases
3. Physical Changes and Conservation of Matter
4. Chemical Changes and Conservation of Matter
5. Density and Pressure
6. Rising and Sinking
7. Heat and Temperature
8. Extending the Particle Model of Matter

For individual program descriptions, visit www.learner.org/resources/series200.html

PRICES

- DVD-R [PSDVDRK] = \$220.00
8 one-hour programs on 4 discs, 1 guide
- ADDITIONAL PROFESSIONAL DEVELOPMENT COURSE GUIDE [PSSGF] = \$39.95

WEBSITE

www.learner.org/courses/essential/physicalsci



- ✓ A professional development course for elementary and middle school teachers
- + 3 graduate credits
- + 2.5 CEUs
- ✓ Distance learning course



For current pricing and to order: 1-800-LEARNER® or www.learner.org



JOURNEY NORTH

Journey North is an Internet-based adventure that engages students in investigations of wildlife migration and seasonal change. Each year, thousands of students and their teachers across North America come together to experience the annual cycle through observation, inquiry, research, and the sharing of data. This professional development video resource shows how to use *Journey North* in the classroom. Second- through seventh-grade classes participate in *Journey North* investigations. *Produced by Twin Cities Public Television, Inc. 2001.*

✓ **Professional development video for K–8 teachers**

15-MINUTE VIDEO MODULES

1. Introduction
2. Seasonal Migrations: Monarch Butterflies ▶
3. Plants and the Seasons: Tulip Gardens ▶
4. Sunlight and the Seasons: Mystery Class

For individual program descriptions, visit www.learner.org/resources/series127.html

PRICES

- **DVD-R** [JNDVDRK] = \$39.95
4 modules on 1 disc, 1 guide
- **ADDITIONAL GUIDES** [JNSGF] = \$15.00

Seasonal Migrations: Monarch Butterflies

One of *Journey North's* most popular migrations—that of the monarch butterflies—is featured in this program.

Plants and the Seasons: Tulip Gardens ▶

Join several *Journey North* classrooms as they become engaged in the study of tulip bulbs, and track their growth from fall to spring.



Students record data on their tulip gardens.

www.learner.org/jnorth

✓ **A web-based learning adventure for K–12 classrooms**

Journey North engages K–12 students in a global study of wildlife migration and seasonal change. Students share their own field observations with peers across North America. They track the coming of spring through the migration patterns of monarch butterflies, robins, hummingbirds, whooping cranes, gray whales, bald eagles, and other species; the budding of plants; changing sunlight; and other natural events. Find migration maps, pictures, standards-based lesson plans, activities, and information to help students make local observations and fit them into a global context. *Produced by Journey North.*

Take *Journey North* outdoors with a new mobile app!

Learn more at:
www.learner.org/jnorth/mobile

EXPLORE.ORG ANIMAL CAMERAS SAFELY BRING THE WILD INDOORS

Take your young citizen scientists into the field without the need for a travel budget or hazard insurance. Now, your students can observe nature from the classroom with one of many Explore.org animal cams. Students can observe puffins and osprey in Maine and brown bears in Alaska. Also, use selected Explore.org animal cams on the *Journey North* website to observe how animals respond to seasonal change.

www.learner.org/jnorth/livecam/

explore[™]
explore.org



For current pricing and to order: 1-800-LEARNER® or www.learner.org



Essential Science for Teachers

EARTH AND SPACE SCIENCE

Part of the *Essential Science for Teachers* series, this course provides teachers with the background needed to teach standards-based curricula. Real-world examples, demonstrations, animations, still graphics, and interviews with scientists make up content segments, which are intertwined with in-depth interviews with children that uncover their ideas about each topic. Each program also features an elementary school teacher and his or her students using exemplary science curricula. Use the complete course for teacher education or professional development, or individual programs for content review. *Produced by the Harvard-Smithsonian Center for Astrophysics. 2004.*

- ✓ A professional development course for elementary and middle school teachers
- + 3 graduate credits or 2.5 CEUs
- ✓ Distance learning course

60-MINUTE PROGRAMS

1. Earth's Solid Membrane: Soil
2. Every Rock Tells a Story
3. Journey to the Earth's Interior ▶
4. The Engine That Drives the Earth ▶
5. When Continents Collide ▶
6. Restless Landscapes ▶
7. Our Nearest Neighbor: The Moon
8. Order Out of Chaos: Our Solar System

For individual program descriptions, visit www.learner.org/resources/series195.html

PRICES

- DVD-R [EBDVDK] = \$220.00
8 one-hour programs on 4 discs, 1 guide
- ADDITIONAL PROFESSIONAL DEVELOPMENT COURSE GUIDE [EBSGF] = \$39.95

WEBSITE

www.learner.org/courses/essential/earthspace



The course website includes detailed explanations of scientific phenomena.

Journey to the Earth's Interior

How do we know what the interior of the Earth is like if we've never been there? In this session, participants learn about the internal structure of the Earth and learn how it is possible for entire continents to move across its surface.

The Engine That Drives the Earth

What drives the movement of tectonic plates? In this session, participants learn how plates interact at plate margins, how volcanoes work, and the story of Hawaii's formation.

When Continents Collide

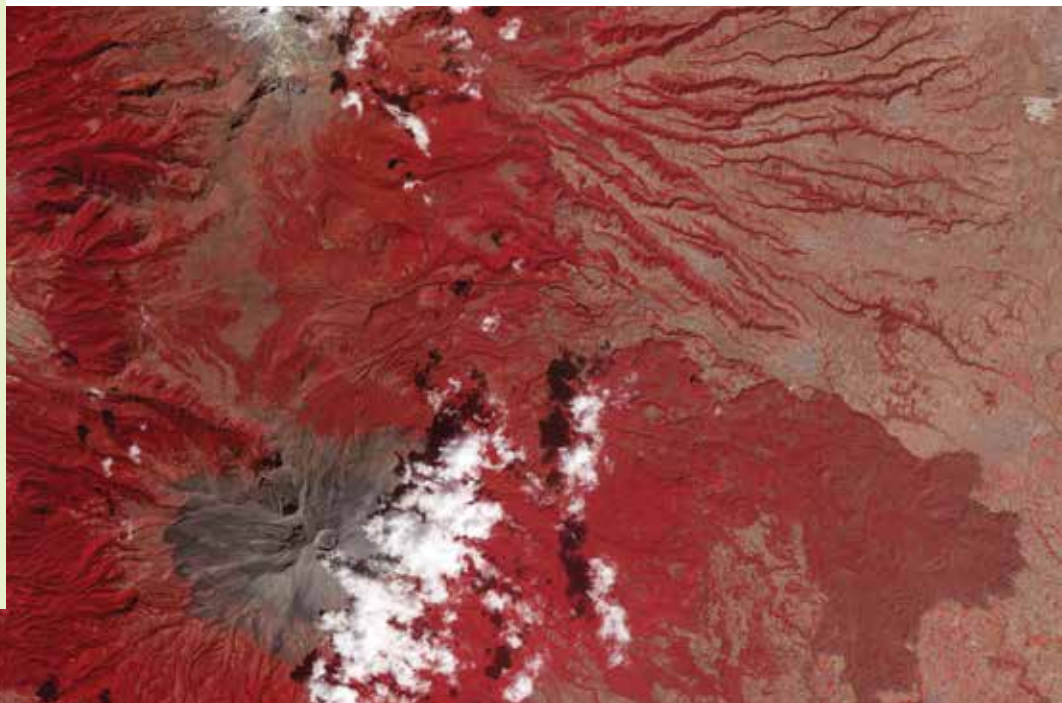
How is it possible that marine fossils are found on Mount Everest, the world's highest continental mountain? In this session, participants learn what happens when continents collide and how this process shapes the surface of the Earth.



Students explore Earth science concepts using exemplary science curriculum materials.

Restless Landscapes

If almost all mountains are formed the same way, why do they look so different? In this session, participants learn about the forces continually at work on the surface of the Earth that sculpt the ever-changing landscape.



NASA Earth Observatory image by Jesse Allen and Robert Simmon, using NASA/GSFC/METI/ERSDAC/JAROS, and U.S./Japan ASTER Science Team data. Found at Visible Earth (<http://visibleearth.nasa.gov>).

For current pricing and to order: 1-800-LEARNER® or www.learner.org

EARTH REVEALED

Earth Revealed shows the physical and scientific processes that shape our planet. From earthquakes and volcanoes to the creation of sea-floor crusts and shifting river courses, this series offers stunning visuals that explain plate tectonics and other geologic concepts and principles. Follow geologists in the field as they explore the primal forces of Earth. This series can also be used as a resource for teacher professional development. *Produced by Intelcom. 1992.*

- ✓ An instructional series for high school, college, and adult learners
- ✓ Distance learning course

30-MINUTE PROGRAMS

Introduction

1. Down to Earth
2. The Restless Planet

Plate Tectonics

3. Earth's Interior
4. The Sea Floor
5. The Birth of a Theory
6. Plate Dynamics
7. Mountain Building
8. Earth's Structures
9. Earthquakes

Geologic Time and Life

10. Geologic Time
11. Evolution Through Time

The Rock Cycle

12. Minerals: The Materials of Earth
13. Volcanism
14. Intrusive Igneous Rocks
15. Weathering and Soils
16. Mass Wasting
17. Sedimentary Rocks: The Key to Past Environments
18. Metamorphic Rocks
19. Running Water I: Rivers, Erosion, and Deposition
20. Running Water II: Landscape Evolution

Carving the Landscape

21. Groundwater
22. Wind, Dust, and Deserts
23. Glaciers
24. Waves, Beaches, and Coasts

Living With Earth

25. Living With Earth, Part I
26. Living With Earth, Part II

For individual program descriptions, visit www.learner.org/resources/series78.html

PRICE

- DVD [ERDVD] = \$389.00
26 half-hour programs on 5 discs
- Coordinated books and guides are also available. For more information, call 1-800-learner® or visit www.learner.org.

- ★ More on rock cycles at www.learner.org/interactives/rockcycle
- ★ More on volcanoes at www.learner.org/interactives/volcanoes

PLANET EARTH

This series presents visually spectacular tours of the seven continents as it makes connections between our solar system and Earth's oceans, climate, and mineral and energy sources. It unifies Earth science, astronomy, and comparative planetology into an integrated discipline that relies on common scientific methods. A flexible instructional resource, *Planet Earth* provides course material for nonscience students and science majors. *Produced by WQED/Pittsburgh in association with the National Academy of Sciences. 1986.*

60-MINUTE PROGRAMS

1. The Living Machine
2. The Blue Planet
3. The Climate Puzzle
4. Tales From Other Worlds
5. Gifts From the Earth
6. The Solar Sea
7. Fate of the Earth

For individual program descriptions, visit www.learner.org/resources/series49.html

PRICE

- DVD-R [PLDVDRK] = \$220.00
7 one-hour programs on 4 discs, 1 guide
- Coordinated books and guides are also available. For more information, call 1-800-learner® or visit www.learner.org.

- ✓ An instructional series for high school, college, and adult learners



For current pricing and to order: 1-800-LEARNER® or www.learner.org



LEARNING SCIENCE THROUGH INQUIRY

Inquiry-based teaching, central to the Next Generation Science Standards, should be a comprehensive and ongoing approach. To help teachers feel comfortable with this approach, the workshop shows inquiry teaching and learning in action, with real teachers and students. For teachers who have experimented with inquiry teaching and want to enhance their practice, or are new to the approach and want to know how to make it work, this workshop will show how to teach using inquiry and present effective strategies to try in the classroom. *Produced by Thirteen/WNET New York in collaboration with the Education Development Center (EDC). 2000.*

- ✓ A professional development workshop for elementary and middle school teachers
- ➕ 2 graduate credits or 1.5 CEUs
- ✓ Distance learning course

60-MINUTE PROGRAMS

1. **What Is Inquiry and Why Do It?**
2. **Setting the Stage: Creating a Learning Community**
3. **The Process Begins: Launching the Inquiry Exploration**
4. **Focus the Inquiry: Designing the Exploration**
5. **The Inquiry Continues: Collecting Data and Drawing Upon Resources**
6. **Bring It All Together: Processing for Meaning During Inquiry**
7. **Assessing Inquiry**
8. **Connecting Other Subjects to Inquiry**

For individual program descriptions, visit www.learner.org/resources/series129.html

PRICES

- DVD-R [I6DVDRK] = \$220.00
8 one-hour programs on 4 discs, 1 guide
- ADDITIONAL PROFESSIONAL DEVELOPMENT WORKSHOP GUIDE [I6SGF] = \$39.95

WEBSITE

www.learner.org/workshops/inquiry

TEACHING HIGH SCHOOL SCIENCE

This video library will help new and veteran science teachers integrate national science standards and inquiry learning into their curricula. Showing science classrooms around the country, the modules cover topics in life science, physical science, integrated science, and Earth and space science. They also show a range of teaching techniques and student/teacher interactions. *Produced by WGBH Boston. 2000.*

- ✓ A professional development library for high school teachers
- ✓ Distance learning course



PROGRAMS

1. **Introduction** (10 min.)
2. **Thinking Like Scientists** (27 min.) ▶
3. **Chemical Reactions** (46 min.) ▶
4. **Investigating Crickets** (54 min.) ▶
5. **Exploring Mars** (44 min.) ▶
6. **The Physics of Optics** (55 min.) ▶

For individual program descriptions, visit www.learner.org/resources/series126.html

PRICES

- DVD-R [THDVDRK] = \$275.00
6 video programs (varying lengths) on 3 discs, 1 guide
- ADDITIONAL PROFESSIONAL DEVELOPMENT LIBRARY GUIDE [THSGF] = \$39.95

Thinking Like Scientists

Footage of classrooms and of scientists in the field explain and illustrate the concept of inquiry.

Chemical Reactions

A ninth-grade principles of science and technology class formulates and explores their own questions about a chemical reaction.

Investigating Crickets

Biology students design and conduct experiments about crickets.

Exploring Mars

Students in an 11th-grade integrated science class explore how the Mars landscape may have formed.

The Physics of Optics

An 11th- and 12th-grade physics class looks at light, lenses, and the human eye.



For current pricing and to order: 1-800-LEARNER® or www.learner.org

Science in Focus

SHEDDING LIGHT ON SCIENCE

This workshop uses light as a theme to explore topics in physics, chemistry, biology, space science, and Earth science. A common thread through many areas of science, light lends itself to interdisciplinary science study. Make connections to real phenomena by exploring the transformation of energy, the behavior of light, and light's role in the weather, the seasons, and the production of food by plants. *Produced by the Harvard-Smithsonian Center for Astrophysics in partnership with the Association for Science Teacher Education (ASTE). 1999.*

60-MINUTE PROGRAMS

1. Shine and Shadow ▶
2. Laws of Light
3. Pigments, Paint, and Printing
4. Color, Cones, and Corneas
5. Sunlight to Starch
6. Energy and Ecosystems
7. Sun and Seasons
8. Wind and Weather

★ More on weather at www.learner.org/interactives

For individual program descriptions, visit www.learner.org/resources/series118.html

PRICES

- DVD-R [SHDVRK] = \$220.00
8 one-hour programs on 4 discs, 1 guide
- ADDITIONAL PROFESSIONAL DEVELOPMENT WORKSHOP GUIDE [SHSGF] = \$39.95

WEBSITE

www.learner.org/workshops/sheddinglight



- ✓ A professional development workshop for elementary school teachers
- + 2 graduate credits
- ✓ Distance learning course



Shine and Shadow

Light is a form of energy that affects all facets of our lives. This workshop explores how light travels and how shadows are formed.

Science in Focus

ENERGY

Understanding the concept of energy is crucial to the comprehension of many ideas in physical science, Earth and space science, and life science. The video programs, print guide, and website of this workshop provide a solid foundation, distinguishing clearly between the way “energy” is commonly understood and its meaning in science. Examine energy’s role in motion, machines, food, the human body, and the universe as a whole. Learn how energy can be converted from one form to another and transferred over space and time. And explore the notion of “conservation of energy”—the idea that energy can be neither created nor destroyed. Return to the classroom with a new focus on the important concept of energy. *Produced by the Harvard-Smithsonian Center for Astrophysics. 2002.*

60-MINUTE PROGRAMS

1. What Is Energy?
2. Force and Work
3. Transfer and Conversion of Energy ▶
4. Energy in Cycles
5. Energy in Food
6. Energy and Systems
7. Heat, Work, and Efficiency
8. Understanding Energy

For individual program descriptions, visit www.learner.org/resources/series160.html

PRICES

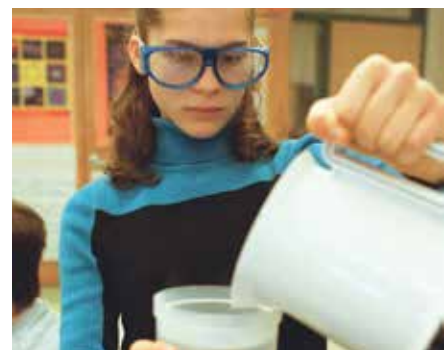
- DVD-R [SFEDVRK] = \$220.00
8 one-hour programs on 4 discs, 1 guide
- ADDITIONAL PROFESSIONAL DEVELOPMENT WORKSHOP GUIDE [SFESGF] = \$39.95

WEBSITE

www.learner.org/workshops/energy



- ✓ A professional development workshop for elementary and middle school teachers
- + 2 graduate credits or 1.5 CEUs
- ✓ Distance learning course



A student investigates what kind of container transfers heat best.



A PRIVATE UNIVERSE

From its famous opening scene at a Harvard graduation, this classic of education research brings into sharp focus the dilemma facing all educators: Why don't even the brightest students truly grasp basic science concepts? This award-winning program traces the problem through interviews with Harvard graduates and their professors, as well as with a bright ninth-grader who has some confused ideas about the orbits of the planets. Equally useful for education methods classes, teacher workshops, and presentations to the public, *A Private Universe* is an essential resource for science and methodology teachers. *Produced by the Harvard-Smithsonian Center for Astrophysics. 1989.*

- ✓ A documentary on education research for grades 5–12 educators

"This program has been the single most convincing argument for inquiry teaching that I know of."

—Don Yost, retired physics teacher and workshop leader

ONE 20-MINUTE PROGRAM

A Private Universe

Hear the backstory of the making of *A Private Universe* online at www.learner.org/resources/series28.html

PRICES

- DVD-R [PVDVDRK] = \$39.95
1 20-minute program on 1 disc, 1 guide
- ADDITIONAL PROFESSIONAL DEVELOPMENT GUIDE [PVSGT] = \$9.95

WEBSITE

www.learner.org/teacherslab/pup



MINDS OF OUR OWN

These video programs pick up on the questions asked in *A Private Universe* and further explore how children learn. Based on prominent research, as well as the pioneering work of Piaget and others, *Minds of Our Own* shows that many of the things we assume about how children learn are simply not true. For educators and parents, these programs bring new insight to debates about education reform. *Produced by the Harvard-Smithsonian Center for Astrophysics. 1995.*

- ✓ A documentary series for K–12 educators



60-MINUTE PROGRAMS

1. Can We Believe Our Eyes?
2. Lessons From Thin Air ▶
3. Under Construction ▶

For individual program descriptions, visit www.learner.org/resources/series26.html

PRICES

- DVD-R [MODVDRK] = \$109.00
3 one-hour programs on 2 discs, 1 guide
- ADDITIONAL PROFESSIONAL DEVELOPMENT GUIDE [MOSG] = \$9.95

Lessons From Thin Air

Despite the fact that photosynthesis is one of the most widely taught topics, few people really understand the central idea underlying this process. Program 2 explores why key concepts taught in school can go unlearned.

Under Construction

A series of portraits shows how six teachers from across the country are working to revamp their teaching and their schools and are struggling against a variety of obstacles that might thwart their efforts.



For current pricing and to order: 1-800-LEARNER® or www.learner.org