

KEY

- ** Denotes especially relevant and/or useful resources.
- T Software resources.
- V Video/DVD resources.
- I Resources that can be used to integrate science with another subject.
- S Resources that can be used to support the instruction of particular student populations, such as English-language learners or gifted students.

Resources for *Issues and Earth Science Unit B: Rocks and Minerals*

- V ** *The Diamond Deception*. (Video). NOVA (BBC/WGBH Boston), February 1, 2000. South Burlington, VT: WGBH Educational Foundation, 2000.

A 60-minute video that can be used to introduce Activity 23, “Making Minerals.” this was one of the resources used to create Activity 23 It contains fascinating information as well as footage on the development of synthetic diamonds. Available for about \$20 from WGBH Boston Video, 1-800-949-8670, www.wgbh.org.

- I Christian, Peggy and Barbara H. Lember. *If You Find a Rock*. New York: Harcourt, Inc., 2000.

This picture book describes a variety of rocks from a child’s perspective (e.g. skipping rock, worry rock) and can be used to integrate science with language arts. The text is in the form of poems, with such lines as, “If you find a rock – a great rock – that towers over you, then you have found a climbing rock.” There are dreamlike photographs of children interacting with each type of rock being described.

- S Gans, Roma and Holly Keller. *Let’s Go Rock Collecting*. New York: Harper Collins Publishers, 1997.

Intended for primary school students, this picture book can be used to aid students who are having difficulty with the reading level or the concepts

of rock types and hardness, which are presented in Unit B. The excellent illustrations provide a context for understanding igneous, sedimentary, and metamorphic rocks, while the text does a good job of describing these complicated ideas simply. Several rock types are shown in labeled photographs.

Ricciuti, Edward and Margaret W. Carruthers. *National Audubon Society First Field Guide: Rocks and Minerals*. New York: Scholastic Inc., 1998.

An excellent field guide on rocks and minerals that can be used by either students or teachers. While the first 40 pages provide background information on rocks and minerals, the majority of the book contains two-page spreads on common rocks and minerals. There is a photo of each mineral or rock, as well as a description of its properties and the environment in which it is commonly found.

Symes, R. F. and R.R. Harding. *DK Eyewitness Book: Crystal & Gem*. New York: Dorling Kindersley, Inc., 1991.

This is a fact- and photograph-filled book for students or teachers who want more information on minerals and their histories as gemstones.

Resources for *Issues and Earth Science Unit D: Plate Tectonics*

I *Map: Satellite* (Resource). DK Publishers, 2007.

This book contains amazing satellite images of earth. The geology and geography of many regions and cities are shown. Geographic features such as coastlines, mountain ranges, fault systems, rivers, lakes, and other landscape can be seen in this book as well as Arctic ice anomalies, ozone depletion, and seasonal changes.

I Collier, Michael. *Over the Mountains: An Aerial View of Geology*. Mikaya Press, 2007

This is a book of fantastic aerial photographs of landscapes such as Denali, the San Andreas Fault, and Shenandoah. Colorful diagrams and descriptions explain the photos for the reader.

I Gallant, Roy. *Dance of the Continents*. Tarrytown, NY: Benchmark Books, 2000.

This 80-page book for middle school students on plate tectonics could be used to integrate science with social studies. Although Gallant has since published another book on this topic (*Plates: Restless Earth*, 2003), this book is unusual in its approach, which describes in detail the historical evolution of Western ideas about earth and events such volcanoes. The theory of plate tectonics is not introduced until the sixth of the eight chapters. The book includes illustrations, historical photographs, glossary, and index.

S Johnson, Rebecca, L. *Plate Tectonics*. Twenty-First Century Books/Lerner Publishing Group, 2005.

This book is from the Great Ideas in Science series. Written for advanced readers, this book is an excellent example showing how a hypothesis becomes a theory. The evidence that led to the theory of plate tectonics is detailed as is the chronology of the theory's development

Lindop, Laurie. *Probing Volcanoes (Science on the Edge)*. Twenty-First Century Books/Millbrook Publishers, 2003.

This book is from the Science on the Edge Series. In this book, students follow scientists as they explore volcanic craters. The careers of geologists and geochemists are highlighted as the scientists work to uncover the secrets of volcanoes. Includes Internet Resources.

- ** McNulty, Faith and Marc Simont. *How to Dig a Hole to the Other Side of the World*. New York: Harper Trophy Publishers, 1990.

With lots of (slightly dated) illustrations and a terrific description of digging down through layers of the earth, this early middle-grade book can be an excellent read-aloud supplement to Activity 38, "Beneath the Earth's Surface," to help students visualize layers of the earth.

- S Miller, Debbie, S. *Big Alaska: Journey Across America's Most Amazing State*. Walker Books for Young Readers, Walker and Company, 2006.

Some of Alaska's greatest environmental and geological treasures are depicted in this book from the perspective of a bald eagle. Colorful illustrations and short descriptions of different landscape features make this 40 page book, easy to read.

- S Sattler, Helen R. and Giulio Maestro. *Our Patchwork Planet*. New York: Lothrop, Lee and Shepard Books, 1995.

A book for middle school students on plate tectonics. A lot of scientific information is accompanied by colorful illustrations as well as remote sensing images. Because the reading can be challenging, the book can be used to extend the unit for those students interested in more detailed information on plate tectonics.

- T, S Tarbuck, Ed and Lutgens, Fred. *The Theory of Plate Tectonics* CD-ROM. Taos, NM: Tasa Graphic Arts, Inc., 2003.

This CD-ROM can be used with students in grade 7 or higher to supplement the study of plate tectonics. The program contains computer animations as well as activities in which students gather or analyze evidence on continental drift and plate tectonics. Available for use on a single computer for approximately \$100 from Tasa Graphic Arts Inc., 1-800-293-2725, www.TasaGraphicArts.com.

I, V Verne, Jules. *A Journey to the Center of the Earth*.

This 250-page novel from 1871 integrates science and literature. Verne imagines the adventures of a young man and his uncle as they attempt to journey to the center of the earth. Roughly 250 pages long, many editions by various publishers are available, as is a free, searchable online version at www.online-literature.com/verne/journey_center_earth/14/

Resources for Science and Life Issues Unit B, "BodyWorks"

V, T *Cut to the Heart*. (Video). NOVA (BBC/WGBH Boston), April 8, 1997. South Burlington, VT: WGBH Educational Foundation, 1997.

The leading cause of death in the world today is heart disease. When people refuse to change their lifestyle, people turn to surgery as a last resort. In this 60 minute video, a new form of heart surgery is explored along with the results. On-line video and a supplemental website are also available.

Brynie, Faith Hickman. *101 Questions About Sex and Sexuality: With Answers for the Curious, Cautious, and Confused*. Twenty-First Century Books/Millbrook Publishers, 2003.

Written for young teens through adults, this book answers questions about sex and sexuality that young people have. By using a question and answer format this book addresses misconceptions and myths about sex and sexuality. Additional websites provided.

** Davidson, Sue and Morgan, Ben. *Human Body Revealed*, DK Publishing, 2002.

This is a picture book designed for middle school students. Transparent templates show images of the various systems in the human body. As the reader adds or takes away templates, the interactions among body systems can be seen. Along with the images on the templates, microscopic photographs of some of the structures help describe each system.

Hopping, Lorraine Jean. *Bone Detective: The Story of Forensic Anthropologist Diane France*. Franklin Watts/Scholastic Library Publishers, 2005.

This book is a biographical account of Diane France, a forensic anthropologist. It traces her life from her childhood in Walden, Colorado, to her life as a forensic anthropologist. This book gives a glimpse of what a career in forensic anthropology is like.

S** Macnair, Patricia. *Bodyscope: Movers and Shapers*, Kingfisher/Houghton Mifflin Company, 2004.

This easy to read book uses photographs, x-rays and other graphics to explore the human body. Fifteen different topics including skeletal support, the function of muscles, and how broken bones heal are addressed in this 40 page book.

McClafferty, Carla Killough. *The Head Bone's Connected to the Neck Bone: The Weird, Wacky, and Wonderful X-Ray*. Farrar, Straus and Giroux Books for Young Readers, 2001.

This book looks at x-rays from a historical perspective. It begins with Roentgen's radiation experiments detailing the early development, use and even misuse of x-rays. It ends by discussing the future technology of the x-ray. Includes references to websites.

McClellan, Marilyn. *Organ and Tissue Transplants: Medical Miracles and Challenges* (Issues in Focus) Enslow Publishers, 2003.

The recipient of an organ transplant considers the transplant a medical miracle, but what about the donor's family? The decision to donate a loved one's organs for transplantation is difficult. This book explores some of the emotions of the donor's family as well as how medical advancements have improved the quality of life for the organ and tissue recipients. Photos, diagrams and statistics pertaining to transplants are included.

Newquist, H.P. and Kasnot, Keith. *The Great Brain Book: An Inside Look at the Inside of Your Head*. Scholastic Nonfiction, 2005.

This book examines brain structure and function, neurons, learning and memory. It looks at brain imaging, brain diseases, and what technology holds for future treatment. Written at a level that is appropriate for middle school students, there are photographs and illustrations to complement the reading.

Silverstein, Alvin, Virginia, and Laura. *The Breast Cancer Update*. Enslow Publishers, 2007

Written for middle school students, this book portrays breast cancer survivors and their stories as it describes the latest research on diagnosis, treatment and patient survival. Note: There is graphic content and illustrations

S** Simon, Seymour. *Guts: Our Digestive System*. HarperCollins Children's Books, 2005.

Intended for primary school students, this picture book can be used to help students who are having difficulty with grade level reading or the structure and function of the digestive system. This book uses outstanding photographs showing of every step of the digestive system, starting with food entering the mouth, traveling through the major organs and even eliminating waste.

Tilden, Thomasine E. Lewis. *Belly-Busting Worm Invasions! Parasites That Love Your Insides!* Franklin Watts/Scholastic Library Publishers, 2007.

This book is part of the 24/7 Science Behind the Scenes Medical Files series. It uses actual case studies such as a four foot guinea worm in a person's leg and a tapeworm in the brain to describe the effects of parasites on the body. The book includes career opportunities and historical information about parasites.

Resources for *Science and Life Issues Unit D, "Our Genes, Our Selves"*

T** BioLogica. <http://biologica.concord.org/> The Concord Consortium, 2000

This interactive software allows students to explore genetics at many different levels from DNA to chromosome to population. Built in animations make meiosis and fertilization visible at the level of the chromosome. Students manipulate the mechanisms of genetics with

various populations and observe the results. The program runs on both Windows and Macintosh computers.

V, T *Cracking the Code of Life*. (Video). NOVA (BBC/WGBH Boston), April 17, 2001. South Burlington, VT: WGBH Educational Foundation, 2001.

In this two-hour program, students learn about the race to complete the mapping of the human genome. They see how the knowledge that has been gained by the mapping of the genome is already changing medicine and hear about prediction for the future. The program is hosted by ABC "Nightline" correspondent Robert Krulwich. On-line video and supplemental website are also available.

Fridell, Ron. *Decoding Life: Unraveling the Mysteries of the Genome*, Lerner Publishing Group, 2004.

This book, written at the middle school level, provides an overview of modern genetics. The book looks at Gregor Mendel's work with plants, genetic engineering and finally the completion of the Human Genome Project. The Project is examined for its potential to improve human life as well as the possible unpredicted consequences.

I Phelan, Glen. *Double Helix: The Quest to Uncover the Structure of DNA* (National Geographic Science Quest), National Geographic Children's Books, 2006.

This book traces the historical steps in the discovery of DNA's structure. It describes how Watson and Crick used Mendel's experiments with pea plants along with Wilkins' and Franklin's x-ray photos to develop a model of the double-helix structure of DNA.

S Walker, Richard, *Genes and DNA* (Kingfisher Knowledge). Kingfisher Publishers, 2003.

This is a resource book that covers genes and inheritance, DNA and genetic technology. There are beautiful, full-color illustrations and photographs. The figures and graphics will help low readers understand the complex concepts of DNA and genetics.

Resources for *Science and Life Issues Unit F, "Evolution"*

Arnold, Caroline. *Giant Sea Reptiles of the Dinosaur Age*. Clarion Books, 2007.

The Mesozoic Era is the setting for this 40 page book with beautiful watercolor illustrations. The book describes the giant sea reptiles that lived during this time and tells how scientists use their physical characteristics to predict how they might have behaved.

Dingus, Lowell, Chiappe, Luis M and Coria, Rodolfo. *Dinosaur Eggs Discovered! Unscrambling the Clues*, Twenty-First Century Books, Lerner Publishing Group, 2007.

This book details the experiences of a group of paleontologists in Patagonia, Argentina. While looking for dinosaur fossils, they find one of the largest dinosaur egg discoveries in history. The book discusses their research of the dinosaurs that laid the eggs - their identity, their age, and what caused their extinction.

Holmes, Thom and Laurie. *Great Dinosaur Expeditions and Discoveries: Adventures with the Fossil Hunters*. The Dinosaur Library, 2003

Students will read about the most famous dinosaur expeditions in history. They will compare how dinosaur hunting in the past differs from

dinosaur hunting today as they follow the dinosaur hunters on their expeditions.

Holtz, Thomas R. Jr. *Dinosaurs: The Most Complete, Up-to-Date Encyclopedia for Dinosaur Lovers of All Ages*. Random House Children's Books, 2007.

This book contains 33 Expert-in-the-Field Vignettes, a dinosaur genus list, and a glossary. The 432 pages of descriptions and illustrations show the great variety of dinosaurs that have lived on earth. The book covers dinosaurs from the earliest dinosaurs, through their existence for 178 million years, and finally to their extinction 65 million years ago.

I Lawson, Kristan Lawson. *Darwin and Evolution for Kids: His Life and Ideas with 21 Activities*, Chicago Review, 2003.

This is a biography of Charles Darwin written for middle school students. Illustrations enhance the description of struggles and successes that led to his development of the theory of evolution. Included in the books are 21 different activities that can be used to model Darwin's ideas.

T Malam, John, Woodward, John and Benton, Michael Benton. *Dinosaur Atlas: An Amazing Journey Through a Lost World*. DK Publishers, 2006.

As an atlas, this book provides maps of the continents. It also presents dinosaurs found on those continents with details from the fossil record, a geologic timeline, climate, and the anatomy of many of the species. Some fossil excavations are described as well as a brief discussion of current evolutionary theory explaining the disappearance of the dinosaurs. There is a CD included which shows the three dimensional structure and movement of six species of dinosaurs.

Marrin, Albert. *Secrets from the Rocks: Dinosaur Hunting with Roy Chapman Andrews*. Dutton, 2002.

The nature of science is explored in this book as it tells about a paleontologist team's discovery of dinosaur eggs. It explores the way scientists' thinking changed about dinosaurs.

S Serano, Paul and Lunis, Natalie. *SuperCroc: Paul Sereno's Dinosaur Eater*. Bearport Publishing, 2007.

While searching in Niger for dinosaur bones, paleontologist Paul Sereno and his team instead find a giant dinosaur-eating crocodile fossil. This 32 page, easy to read book describes this creature and its environment. This book is a good choice for struggling readers.

S Sheldon, David. *Barnum Brown: Dinosaur Hunter*. Walker Books for Young Readers, 2006.

This 32 page book is about the greatest "dinosaur hunter" of the 20th century, Barnum Brown. Using events in Brown's life, students will learn about the work that a paleontologist does uncovering ancient organisms. Its readability makes it appropriate for students who have difficulty with typical middle school reading levels.

Silverstein, Alvin, Virginia and Laura. *Adaptation*. Twenty-First Century Books, a division of Lerner Publishing Group, 2007

Written for the middle school students, this book discusses many facets of adaptation such as evolution, extreme habitats, seasonal changes, night life, and predator/prey relationships. Human adaptations humans discussed as well.

Sloan, Christopher. *How Dinosaurs Took Flight: Fossils, Science, What We Think We Know, and Mysteries Yet Unsolved*. National Geographic Children's Books, 2005.

This book traces the evidence for the hypothesis that birds are descended from dinosaurs. Most of the support for this idea comes from feathered dinosaurs discovered in China. This book also alludes to many unsolved mysteries that are waiting for additional fossil discoveries.

Sloan, Christopher. *The Human Story: Our Evolution from Prehistoric Ancestors to Today*, National Geographic Society. 2004.

This book explores the evolution of hominins from African origins to present-day *Homo sapiens*. Many photographs and drawings of transitional fossils included as evidence. There is also current information about genetics and taxonomy. The dating procedures for artifacts and timelines chronicling the discovery of supporting evidence combine to present the information very clearly.

S Sís, Peter, Farrar, Straus and Giroux. *The Tree of Life: Charles Darwin*, Walker Books Ltd., 2003.

This book examines Darwin's public and private life, chronologically. There are many watercolor illustrations based on what he saw and recorded during his research. These include diary pages, maps, charts, and a foldout spread of *On the Origin of Species*. Its readability makes it appropriate for students who have difficulty with typical middle school reading levels. A Teachers Guide may be found at www.petersis.com/content/tree_teachers_guide.html.

S Tanaka, Shelley. *New Dinos: The Latest Finds! The Coolest Dinosaur Discoveries!* Atheneum: Simon Schuster, 2003.

This easy to read book describes how scientists have used technology such as high-powered electron microscopes, CT scans, and computer models to study dinosaurs. The book talks about how technology is used to discover new dinosaur species and reexamine accepted ideas about dinosaur behavior. Includes a map of new dinosaur finds.

S Walker, Sally M. *Fossil Fish Found Alive: Discovering the Coelacanth*. Carolrhoda: Lerner Publishing, 2002

Although this book is only 64 pages, it is written for the advanced reader. It begins with the discovery of the coelacanth, a prehistoric fish thought to be long extinct. Subsequent discoveries of these fish have raised many questions, some of which are answered in this book and some remain.

S Wenzel, Gregory. *Feathered Dinosaurs of China*. Charlesbridge Publishers, 2004.

This easy to read book describes feathered dinosaur fossils that paleontologists have found in China. The unique site where the fossils were found preserved feathers, fine hairs, and soft body parts.. The connection between birds and dinosaurs is presented.

Williams, Judith. *The Discovery and Mystery of a Dinosaur Named Jane*. Enslow Publishers, 2007.

A paleontology team from the Burbee Museum, discover a young dinosaur that they name Jane. In this book, students follow the team's efforts as they work to identify this dinosaur fossil and research what life was like on earth when Jane lived.

Resources for Issues and Physical Science Unit E, "Force

and Motion”

- V** *Cars that Think*. (Video or DVD). Scientific American Frontiers, The Public Broadcasting System, 2005.

A car that can think is not available yet, but could be in the near future. This car will be able to protect its occupants from hazards. It will be able to listen to the driver, read the driver’s lips and even tell when the driver is distracted! Available for about \$20 from PBS, www.pbs.org.

- V, S** *Newton’s Laws*. (Video) California Institute of Technology and Intelcom. 1985.

This 30 minute video, one segment of the 52 part series, *The Mechanical Universe* is designed to meet different students’ needs. Because the language level and content can be challenging for some students, it can be used to extend learning for those students interested in more information on Newton’s Laws. Computer graphics illustrate Newton’s Laws while his studies are looked at from a historical perspective. <http://www.learner.org/resources/series42.html>

- V, T** *Secrets of Easter Island* (Video). NOVA (BBC/WGBH Boston), February 15, 2000. South Burlington, VT: WGBH Educational Foundation, 2000.

This is the story of a team of archaeologists and a 75-person crew who combined to solve one of the mysteries of Easter Island: how hundreds of giant stone statues that dominate the island's coast were moved and erected. To simulate what the former residents of Easter Island did, the team struggled to raise a 10-ton moai, using only the tools and materials available to the ancient Easter Islanders. They spent a month on the project. On-line video and supplemental website are also available.

V, T *Supersonic Dream*. (Video). NOVA (BBC/WGBH Boston), January 18, 2005. South Burlington, VT: WGBH Educational Foundation, 2005.

The Concorde's design is innovative and unusual. It was built to be fast but the forces that affect the Concorde at the speeds which it travels, provided many design problems. Its elegant shape, while beautiful, was the result of the engineering demands of supersonic flight. Its long, narrow body reduces drag, as does the cone-shaped nose, which can be tilted down during takeoff and landing allowing the pilots to see well. The wing shape allows the Concorde to perform well across a wide range of speeds. On-line video and supplemental website are also available.

V ** *Understanding Car Crashes: It's Basic Physics*. (Video or DVD). Arlington, VA: Insurance Institute for Highway Safety, 2000.

An excellent 22-minute video that includes many concepts from this unit. Available for about \$35 from the Insurance Institute for Highway Safety, 1-703-247-1500, <http://www.iihs.org/brochures/default.html>.

S Busby, Peter. *First to Fly: How Wilbur and Orville Wright Invented the Airplane*. Crown Publishers, 2003.

This easy to read book gives a biographical account of Orville and Wilbur Wright. The book talks about how a flying toy given to them by their father, when they were boys, launched their interest in flying. It details their trials as the first people to fly an airplane.

Hulls, John. *Rider in the Sky: How an American Cowboy Built England's First Airplane*. Crown Publishers, 2003.

Samuel Cody went to England in the early 1900's as a Wild West performer and ended up inventing England's first airplane. This illustrated book describes his development of a controllable man-lifting kite, and then a lighter-than-air craft.

S Pipe, Jim and Moore, Jo. *What Does a Wheel Do?* Copper Beech Books/Millbrook, 2002.

This book, designed for primary students, can help students who are having difficulty with grade level reading, master the principles of force and motion. A series of questions are posed about how and why things move. Simple investigations of shapes, surfaces, and slopes using ordinary materials provide answers to the questions.

Steele, Phillip. *Isaac Newton: The Scientist Who Changed Everything*. National Geographic Society, 2007

This book begins by describing Newton as a child and his struggles at home, in school, and with bullies. It goes on to describe his life and work through adulthood. The nature of science is stressed throughout this book.