3-3 The student will demonstrate an understanding of Earth's composition and the changes that occur to the features of Earth's surface. (Earth Science)

Key Concepts:
Types of Rocks: igneous, sedimentary, metamorphic
Types of Soil: humus, clay, sand, silt ; loam, potting soil and topsoil
Mineral properties: hardness, color, luster, acid test
Fossils: molds, casts, preserved parts
Water features: glaciers, saltwater, oceans, seas, freshwater, rivers, lakes, ponds, streams
Land features: volcanoes, mountains, valleys, canyons, caverns, islands
Useful Earth materials: fuels, minerals and rocks, soil
Earth changes – slow processes: weathering, erosion, deposition
Earth changes – rapid processes: landslides, volcanic eruptions, floods, earthquakes
Tools: models, pictures, diagrams, maps

Supporting Content Web Sites

Rock Smart / Rock Hound
http://www.fi.edu/fellows/payton/rocks/index2.html
Students can identify formation and classifications of rocks. A self-check quiz is included.
3-3.1

Rock Type Jigsaw Puzzle
http://www.fi.edu/fellows/payton/rocks/puzzles/layers/layer1.htm
Students are given pieces of a puzzle to manipulate to form a volcano with the different rock types.
3-3.1

Rock Hound
http://www.fi.edu/fellows/payton/rocks/expert/index.html
Students click on a rock word to view the rock and learn how it is formed. They can then take a quiz to become a Rock Hound expert.
3-3.1

How Rocks are Formed
http://www.fi.edu/fellows/payton/rocks/create/index.html
Students watch animations of how igneous, sedimentary, and metamorphic rocks are formed. It also gives real world pictures of examples of each type of rock with a written description of how they are formed.
3-3.1

Fossil Webquest
http://www.lapeerschools.net/projects/kathy/webquest.html
A mystery fossil has been found. The students have to do some online research in order to identify it.
3-3.3

Rocks and Minerals WebQuest
http://www.coe.unt.edu/TeacherTools/webquests/rocks/vey-student.html
This webquest integrates rocks, minerals, fossils. The students are young scientists from outer space that has just landed on Earth. Their mission is to study rocks and minerals that they find to discover as much as they can about the environment in the United States and the ways that Earthlings use these rocks and minerals. It will soon become apparent that rocks and minerals are great gifts of nature. The students will determine how people benefit from rocks and minerals in the Earth's environment, and how these rocks and minerals were formed.
3-3.1; 3-3.2; 3-3.7

Volcanoes!
http://volcano.und.edu/volcanoes.html
This site provides information on current eruptions, locations of volcanoes, and video clips of eruptions.
3-3.8

How Volcanoes Work
http://www.geology.sdsu.edu/how_volcanoes_work/
This site provides information on the types of volcanoes and how they work. It includes real world images of volcanoes. (Note: Too advanced for students – use as teacher reference)

Rock & Mineral Uses
http://www.rocksandminerals.com/uses.htm
A listing of rocks and minerals and their uses.
3-3.7

Suggested Literature

Thomas, Rick (2005). *Amazing Science: Rising Waters – A Book About Floods.* Minneapolis, MN: Picture Window Books.
ISBN: 1404809260
The author explains the causes of rising waters as well as the precautions that people can take to protect themselves from flooding. A website is included that will help students link to useful sites about floods.
3-3.8

Olien, Becky (2002). *Erosion.* Manheto, MN: Capstone Press.
ISBN: 0736809503
Erosion is one of a series of Earth science books that primary students will love because they are easy to read and well-organized. Large photographs illustrate the topics and large type provides text that young children can understand. Teachers will appreciate these books because they support content at just the right developmental level.
3-3.8

Olien, Becky (2002). *Fossils.* Manheto, MN: Capstone Press.
ISBN: 0736809511
Fossils is one of a series of Earth science books that primary students will love because they are easy to read and well-organized. Large photographs illustrate the topics and large type provides text that young children can understand. Teachers will appreciate these books because they support content at just the right developmental level. The book ends with a lesson on conservation.
3-3.3; 3-3.4

Richardson, Adele (2002). *Minerals.* Manheto, MN: Capstone Press
ISBN: 073680952X
Minerals features large photographs and large type. A table of contents encourages young children to develop their literacy skills and learn how to find information in nonfiction books. There is a short glossary and a list of other books for further reading. Each title in the series has a hands-on activity to extend learning, relevant Internet sites, and places to write for further information.
3-3.2

Richardson, Adele (2002). *Rocks.* Manheto, MN: Capstone Press
ISBN: 0736809538
Rocks has large type and photographs. There is a table of contents to encourage children to learn how to find information in nonfiction books. A hands-on activity and relevant Internet sites are featured.
3-3.1

Nault, Jennifer (2005). *Science Matters: Earthquakes.* New York: Weigl Publishers, Inc.
ISBN: 1590362489
This book integrates content and processes of science learning with simple yet engaging activities. Many other appealing features make this book a good choice: vivid color pictures, clear and informative graphics, information about people and careers in this field of science, a two-page spread of review questions and answers, websites and other related sources. Fascinating facts are also included to pique further interest in the topic.
3-3.8

Lappi, Megan (2005). *Science Matters: Fossils.* New York: Weigl Publishers, Inc.
ISBN: 1590362497
This book integrates content and processes of science learning with simple yet engaging activities. Many other appealing features make this book a good choice: vivid color pictures, clear and informative graphics, information about people and careers in this field of science, a two-page spread of review questions and answers, websites and other related sources. Fascinating facts are also included to pique further interest in the topic.
3-3.3; 3-3.4

Miller-Schroeder, Patricia (2005) *Science Matters: Minerals.* New York: Weigl Publishers, Inc,
ISBN: 1590362500
This book integrates content and processes of science learning with simple yet engaging activities. Many other appealing features make this book a good choice: vivid color pictures, clear and informative graphics, information about people and careers in this field of science, a two-page spread of review questions and answers, websites and other related sources. Fascinating facts are also included to pique further interest in the topic.
3-3.2

Ostopowich, Melanie (2005). *Science Matters: Rocks.* New York: Weigl Publishers, Inc.
ISBN: 1590362527
This book integrates content and processes of science learning with simple yet engaging activities. Many other appealing features make this book a good choice: vivid color pictures, clear and informative graphics, information about people and careers in this field of science, a two-page spread of review questions and answers, websites and other related sources. Fascinating facts are also included to pique further interest in the topic.
3-3.1

Nault, Jennifer (2005). *Science Matters: Volcanoes.* New York: Weigl Publishers, Inc.
ISBN: 1590362535
This book integrates content and processes of science learning with simple yet engaging activities. Many other appealing features make this book a good choice: vivid color pictures, clear and informative graphics, information about people and careers in this field of science, a two-page spread of review questions and answers, websites and other related sources. Fascinating facts are also included to pique further interest in the topic.
3-3.8

Richardson, Adele (2002). *Soil.* Manheto, MN: Capstone Press.
ISBN: 0736809546
Soil is one of a series of Earth science books that primary students will love because they are easy to read and well organized. Large photographs illustrate the topics and large type provides text that young children can understand.
3-3.1

Wermund, Jerry (2003). *Earthscapes: Landforms Sculpted by Water, Wind, and Ice.* Buda, TX: Rockon Publishing.
ISBN: 097262550X
In this unique book, author Jerry Wurmond crafts poetic descriptions of landforms such as glaciers, canyons, and alluvial fans as well as the forces and events that shape them, including volcanic eruptions, erosion, and gravity. This book will assist teachers as they lead young scientists on a trek across Earth's vast surface---over frozen mountains, beyond parched deserts, and along streams, rivers, and seashores---all the while celebrating children's amazement at what they discover along the way.
3-3.8

Suggested Streaming Video

Geologist's Notebook: How to Make a Mud Pie
ETV StreamlineSC
This show explains how soil is formed through the pretext of making a mud pie nature's way and includes both organic and inorganic matter.
11:00
3-3.1

Geologist's Notebook: The Biggest Treasure Chest – Our Natural Resources
ETV Streamline SC
This program is a good introduction into the many ways we depend on resources from Earth in order to live the way we do.
11:00
3-3.7

Geologist's Notebook: Three Rocks
ETV Streamline SC
This show looks at three stones - a piece of igneous, a piece of sedimentary, and a piece of metamorphic rock - and investigates how they formed, and how they relate to one another through the rock cycle.
11:00
3-3.1

Geologist's Notebook: What Exactly Are Minerals?
ETV Streamline SC
This show explains in depth the structure of minerals, and looks at properties geologists use to identify them, such as color, hardness, and luster. The show also explains the relationship between minerals and rocks. Parts 1, 2, and 3.
5:00
3-3.2

Junior Geologist: Rocks and Minerals
ETV Streamline SC
Students are introduced to a basic explanation of minerals, the rock cycle, fossils, and rock identification. 8:28 3-3.1

Fossil Life: An Introduction
What Are Fossils?
ETV Streamline SC
Students are introduced to a basic description of fossils.
2:20
3-3.3

Fossil Life: An Introduction
Three Major Ecosystems on Earth: Connections Between Ancient Species and Those Alive Today
ETV Streamline SC
Students compare the connections with the past and today using fossils.
12:38
3-3.4

Junior Oceanographer: The Lure of the Sea
Is It an Ocean or a Sea?
ETV Streamline SC
Students discover the difference between an ocean and a sea.
00:39
3-3.5

Geologist's Notebook: Why Land Goes Up and Down
Erosion: Wind Water, and Ice
ETV Streamline SC
This show looks at the process of erosion and how it carves our landscape.
3:33
3-3.8

Earth: A First Look
ETV Streamline SC
Oceans, mountains, rivers and volcanoes are major features of the earth. This program describes these features and explains how water, air and land provide valuable resources.
(Not Beneath the Surface and Continental Drift)
20:00
3-3.6

Career Connections

Geologist
A person who studies rocks and minerals is called a geologist. Geologists can work for a variety of corporations. Some are gas companies, architectural firms, environment consulting firms.

Mining Consultant
Mining Consultants assist in discovering the location of natural resources and finding the best ways to retrieve these resources.

Road Construction
The development of roads and tunnels requires a knowledge of the rocks, soils, and other resources of the area.

Energy Policy Manager
Energy Policy Managers assist corporations in the most environmentally friendly way to conduct their business. These managers understand the needs of the companies and their effects on the earth and its resources.