



Connecting FOSS to Northern Arizona

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Overview:

Pg. 1 Introduction: Explains the project "Connecting FOSS to Northern Arizona"

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Contact Sheet: Important names, numbers, e-mails and websites for reference information, guest speakers, and program possibilities

Possible Field Trips: Local field trip sites and programs that would be appropriate and place-based

Book List: A list of both reference and literature books that might be helpful for use with this kit

Web Resources: A list of websites that are informative for both teachers and students

Activity 1:

Pg. 1 Note: Contact RCEE 520-779-1745 Earth Science Mineral Sets, Mystery Mineral Kit, Rock Talk

Pg. 2 Note: Teacher reference material for earth science from Ten Minute Field Trips, p. 118-120

Pg. 4 Note: Museum of Northern Arizona, 520-773-5213 Rock specimens for teacher's use

Note: RCEE Field trips: 520-779-1745 Sunset Crater National Monument, Old Caves Crater ESA

Note: The Old Caves Crater Kit from the RCEE 520-779-1745 has great materials for exploring viscosity

Note: The Old Caves Crater Kit from the RCEE 520-779-1745 has rock collections

Pg. 7 Note: Mark's suggestion: Add some pumice that floats, it is mined locally to produce stone-washed jeans

Pg. 8 Note: RCEE 520-779-1745 classroom activity: Rock Talk, great intro for this whole investigation

Pg. 12 Note: Read: "The River Shares It's Secrets" Good for introducing geologic time and rocks



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Activity 1 cont'd:

Pg. 13 Extension 1: "Rock Outcroppings" Explore local rock outcroppings.

Extension 2: "Rock Picking" Collect rocks from the school grounds, sort and identify them.

Activity 2:

Pg. 1 Extension 3: "Mount Elden" Field Trip
Suggestion: Mnt. Elden E.S.A.

Pg. 2 Note: Contact Grand Canyon Field Institute: 520-638-2481 for Primary Traveling Trunk
Note: RCEE 520-779-1745 classroom activity
"Introducing the Grand Canyon"

Pg. 4 Extension 4: "Archeology" Elden Pueblo/Field trip.

Pg. 4 Extension 5: "Observing Waterways" This activity combines the following disciplines of history and science by discussing the scientific processes that have affected past generations. For example, flooding of the Colorado River in the past and the hardships faced by towns that were flooded.

Pg. 9 Note: Field trip idea: Lake Mary Water Treatment Plant 520-556-1301 watch particulate settle during treatment

Pg. 10 Extension 6: "Differential Weathering" This activity combines the disciplines of history and science by discussing the scientific processes and effects of differential weathering upon weather changes in the environment and past building materials. It also explores why certain materials must be used in order to prevent differential weathering and possible disasters.

Pg. 11 Extension 7: "Mimic Flagstaff Rock Layering" Constructing simple models of stratification from pictures or real-life out of several different types of clay. Observe rock layering, create model of layering and take core sample.

Pg. 12 Note: Read: "Erosion" (see book list) Connects well to all concepts

Note: Watch: Video "Fossils/Erosion" (see book list) Bill Nye the Science Guy



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Activity 3:

- Pg. 1** **Note:** Field trip idea: Elden Pueblo Project 520-523-8797: Rocks as homes and tools used by people
- Pg. 2** **Note:** RCEE 520-779-1745 "Pottery Puzzlers" & "Images on Stone"
- Pg. 5** **Extension 8:** "Rock Paint" Kids can make rock rubbings and create and use paint made from crushed rock. Many types of local rock could be used.
- Pg. 6** **Extension 9:** "Mud Mural"
- Pg. 7** **Supplement 1:** "Tap Water from Sandstone" Coconino Sandstone is the stone that holds flagstaff's aquifer. It is highly porous, and often can erode quickly. There is a lot readily available in Oak Creek Canyon and could be collected with permits. It is great for showing how rocks wear down, erode and are often made up of smaller pieces.
- Pg. 8** **Note:** Use RCEE's "Pottery Patterns" from their Cultural Resources Kit here
- Pg. 9** **Note:** Read "This House is Made of Mud" (see book list) Clay used as local material for building homes
Note: Contact your school's Native American counselor: can find local artisans to speak
Note: The Artist's Gallery: 520*773-0958: Local potters might be able to visit your class
- Pg. 10** **Extension 10:** "Stones in Schools" This activity combines the disciplines of English and science by having the students do a short write up on what they have observed. Students will observe different building materials used in construction and conclude why they were chosen.
- Pg. 13** **Note:** USGS speaker 520-556-7148: request "Rocks in the Home"



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Activity 4:

- Pg. 1** **Note:** RCEE 520-779-1745 Classroom program: "Sifting Sands," "Intro to the Grand Canyon"
- Pg. 2** **Note:** Read "The Soil that Feeds Us" (see book list) Good resource information
- Pg. 4** **Note:** Watch "I Dig Dirt" (see book list)
Extension 11: "The Power to Move: Examples of Erosion" Examination of local runoff and erosion. Examine local instances (on the school grounds) of water runoff and subsequent erosion and deposition of rock and other dissolved substances. Construct a model of how water moves particles. Have students show big and small particles can flow in water that is either fast-moving or slow.
- Pg. 4** **Extension 12:** "Dramatic Deposits" Analyze composition of local rock strata through representative rock fragments found on school grounds. Have students draw what can happen if different strata are deposited and then worn away unevenly. For a more concrete example of strata, and if the season permits, look at areas of snow. Compare snow drifts to rock formations.
Extension 13: "Plants Eat Topsoil?!" Learn all about topsoil.
Supplement 2: "I Love Layers" Learn how geologists tell geologic time.
- Pg. 9** **Note:** Read "A Shovel Full of Earth" (see book list) Info on soil composition, structure & stratification
Note: Field Trip: Mt. Elden ESA and Old Caves Crater (Can be led by RCEE) request focus on soil, erosion
Extension 14: "Erosion with Speedy Water" The speed of running water affects erosion. Observe how increasing the inclination or slope of running water increases erosion and give examples around Flagstaff where this can be seen
- Pg. 11** **Note:** Watch "The Earth Beneath Your Feet" (see book list) Intro to surface of the earth changes.



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Activity 4 cont'd:

Pg. 13 Note: Read "Mountains and Valleys" How erosion effects mountains and valleys, etc.

Pg. 14 Extension 15: "Soil Scrutiny" Discuss the different properties of different soils. Make clay pots in a fashion that is similar to the way Native Americans of the Colorado Plateau make pottery using clay found in nature. Discuss the texture of clay. Explain why it is so fine and smooth. Discuss the effects different soil types have on agriculture and vegetation.