TRT: Stephanie Massaro

Original LP in Ed Portal: <http://www.nps.gov/waca/forteachers/classrooms/layers-of-time.htm>

**\*\*Park Name**

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| [Walnut Canyon National Monument](http://www.nps.gov/waca/index.htm), [Wupatki National Monument](http://www.nps.gov/wupa/index.htm) |

**\*\*Lesson Plan Title (255 characters maximum)**

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| **Layers of Time** |

**\*\*Essential Question and Quick Lesson Description**

**This should include the lesson’s objective or what question the students should be able to answer at the end of the lesson. This section should also include a quick description of what the students will experience in the lesson. (100 characters maximum)**

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| **Guiding Questions:** What is stratigraphy? What is the law of superposition? How can archaeologists study stratigraphy to determine the age of archaeological objects?  **Lesson Objectives:** Students will...   * Explain what stratigraphy is. * Describe the law of superposition. * Understand how stratigraphy can be used to determine the age of archaeological objects. |

**\*\*Lesson Grade Level: (Check One of the following)**

\_\_\_ Lower Elementary: Pre-Kindergarten through 2nd Grade

\_X Upper Elementary: 3rd Grade Through Sixth Grade

\_\_\_ Middle School: Sixth Grade Through Eighth Grade

\_\_\_ High School: Ninth Grade through Twelfth Grade

\_\_\_ College Undergraduate Level

\_\_\_ Graduate Level (Masters, PhD)

\_\_\_ Adult Education

**\*\*Lesson Subject: (Check As Many as Apply)**

\_\_\_ Social Studies

\_\_\_ Math

\_X Science

\_\_\_ Literacy and Language Arts

\_\_\_ Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Feature Image for Lesson**

**This will be shown next to your lesson on the Education Portal. Provide filename and location below.**

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| http://www.nps.gov/common/uploads/teachers/assets/images/imr/park/waca/73D99DDA-155D-451F-676525F0201D11A5/73D99DDA-155D-451F-676525F0201D11A5.jpg |

**Alt Text for Feature Image**

**If the image does not display, what description do you want to appear in its place?**

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| Illustration of deer by Brian Crosby |

**\*\*Common Core Standards:**

**Want more information about Common Core? Go to** [**http://www.corestandards.org/**](http://www.corestandards.org/)

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Grade Level: 4 Subject Area: English Language Arts**  **Common Core Standards:**   |  |  | | --- | --- | |  | | | [**RI.4.1**](http://www.corestandards.org/ELA-Literacy/RI/4) | Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. | | [**RI.4.7**](http://www.corestandards.org/ELA-Literacy/RI/4) | Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears. | | [**RI.4.9**](http://www.corestandards.org/ELA-Literacy/RI/4) | Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. | |
| **Grade Level: 4 Subject Area: Writing**  **Common Core Standards:**   |  |  | | --- | --- | | [**W.4.7**](http://www.corestandards.org/ELA-Literacy/W/4) | Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears. | | [**W.4.8**](http://www.corestandards.org/ELA-Literacy/W/4) | Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information, and provide a list of sources. | | [**W.4.9**](http://www.corestandards.org/ELA-Literacy/W/4) | Draw evidence from literary or informational texts to support analysis, reflection, and research. | |

**\*\*State Standards:**

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| **State: Arizona Subject: Science Grade Level: 4-5**  **State Standards:**  SS03-S1C1-02: Recognize how archaeological research adds to the understanding of our past.  SS04-S1C1-04: Describe how archaeological research adds to our understanding of the past.  SC04-S1C4-01: Communicate verbally or in writing the results of an inquiry.  SS05-S1C1-05: Describe how archaeological research adds to our understanding of the past.  SC05-S1C4-01: Communicate verbally or in writing the results of an inquiry. |

**Additional Standards(s) (255 characters maximum): Does this lesson meet additional standards?**

**e.g. Next Generation Science Standards, National Council for Social Studies Standards, Advanced Placement (AP) Courses, International Baccalaureate (IB) Courses, Next Generation Science Standards**

|  |  |  |
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| Next Generation Science Standard  4-ESS1-1: Identify evidence from patterns in rock formations and fossils in rock layers for changes in a landscape over time to support an explanation for changes in a landscape over time. [Clarification Statement: Examples of evidence from patterns could include rock layers with marine shell fossils above rock layers with plant fossils and no shells, indicating a change from land to water over time; and, a canyon with different rock layers in the walls and a river in the bottom, indicating that over time a river cut through the rock.] [*Assessment Boundary: Assessment does not include specific knowledge of the mechanism of rock formation or memorization of specific rock formations and layers. Assessment is limited to relative time.*] 4-[ESS1.C: The History of Planet Earth](http://www.nap.edu/openbook.php?record_id=13165&page=177): [Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed. (4-ESS1-1)](http://www.nap.edu/openbook.php?record_id=13165&page=177) 4-ESS2-2:   |  |  | | --- | --- | |  | Analyze and interpret data from maps to describe patterns of Earth’s features.  [Clarification Statement: Maps can include topographic maps of Earth’s land and ocean floor, as well as maps of the locations of mountains, continental boundaries, volcanoes, and earthquakes.] | |

**Thinking Skills (Check As Many as Apply)**

The thinking skills listed below are based on Bloom’s Taxonomy. Consider your lesson procedure and activities. Then check off the thinking skills that students will experience through your lesson.

\_\_X\_ **Knowledge** – Recalling or recognizing information ideas, and principles

\_\_X **Comprehension** – Understand the main idea of material heard, viewed, or read. Interpret or

summarize the ideas in own words.

\_\_\_ **Application** – Apply an abstract idea in a concrete situation to solve a problem or relate it to a

prior experience.

\_X\_ **Analysis** – Break down a concept or idea into parts and show the relationships among the parts.

\_\_\_ **Creation** – Bring together parts (elements, compounds) of knowledge to form a whole and build

relationships for NEW situations.

\_\_\_ **Evaluation** – Make informed judgments about the value of ideas or materials. Use standards and

criteria to support opinions and views.

**Complete Lesson File**

**Is there a downloadable file (or PDF) for this lesson plan? If yes, provide filename and location:**

**Be sure your PDF or other file meets universal accessibility requirements, most PDFs do not.**

|  |
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| http://www.nps.gov/waca/forteachers/classrooms/loader.cfm?csModule=security/getfile&pageID=752899 |

**Lesson Duration**

**Time to complete this lesson plan in minutes (25 characters maximum)**

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| 30-40 minutes |

**\*\*Background Information for Teacher**

**What important content, contextual, or practical information and background knowledge does the teacher need to successfully implement this lesson?**

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**\*\*Important Vocabulary and Terms with Definitions:**

**What terms and academic language will students have to know to participate in the lesson? Lessons typically include 5 to 15 terms and definitions.**

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**\*\*Lesson Preparation: What preparation does the teacher need to do before the lesson? What supplies or materials should be gathered?**

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| Print copy of background materials and the activity sheet for each student. |

**\*\*Lesson Hook or Preview: What activity, video, song, or other experience could get the students excited about the lesson and thinking about the topic? Is there a way to make the lesson important to their lives or link the lesson content to what they already know?**

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**\*\*Procedure: List the instructions the teacher should follow as Step One, Step Two, Step Three, etc.**

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| 1. Have students look at the drawing on the Background Information/reading. Have the students make a prediction about what they might be learning about. Does it relate to anything you might have learned before? (Example: layers of the earth, such as crust, mantle, inner and outer core.) 2. State objective and go over vocabulary and ask for connections or prior knowledge of stratigraphy or archeology/archeologist. 3. Read the background information with students. 4. Complete problems 1 and 2 with students. Have students complete the rest of the worksheet individually, with a partner, or in a small group. 5. Go over correct answers by mixing groups or have students pair with a NEW partner. |

**\*\*Assessment: How can teachers tell that each individual student has met the objective? How will teachers see if each student knows the answer to the essential questions or has mastered the skills? Below, include below a brief description of how to use the assessment. Later in this template you are provided with the opportunity to upload a digital copy of the assessment for teachers to print and use.**

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**Lesson Materials: Any worksheets, photos, primary source, scientific data, maps, graphic organizers, or PowerPoint ‘s should be described and attached using the template below. Please create additional materials boxes if necessary.**

**Material #1**

**Title (255 characters maximum):**

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| Background Information |

**Summary (how does the material function in the lesson?):**

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**Downloadable file of this material in original format if possible, such as Microsoft word or PowerPoint (Provide filename and location)**

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| http://www.nps.gov/waca/forteachers/classrooms/loader.cfm?csModule=security/getfile&pageID=752900 |

**Material #2**

**Title (255 characters maximum):**

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| Activity – Student Worksheet |

**Summary (how does the material function in the lesson?):**

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**Downloadable file of this material in original format if possible, such as Microsoft word or PowerPoint (Provide filename and location)**

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| http://www.nps.gov/waca/forteachers/classrooms/loader.cfm?csModule=security/getfile&pageID=752902 |

**Material #3**

**Title (255 characters maximum):**

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| Answer Key |

**Summary (how does the material function in the lesson?):**

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**Downloadable file of this material in original format if possible, such as Microsoft word or PowerPoint (Provide filename and location)**

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| http://www.nps.gov/waca/forteachers/classrooms/loader.cfm?csModule=security/getfile&pageID=753906 |

**Assessment Materials**

**How can teachers tell that each individual student has met the objective? How will teachers see if each student knows the answer to the essential questions or has mastered the skills? Attach below the assessment and, if applicable, a rubric or answer key.**

**Assessment**

**Title (255 characters maximum):**

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| Exit Slip |

**Summary (how does the material function in the lesson?):**

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| Exit Slip:  Have students list 2 things they learned about stratigraphy using appropriate vocabulary. |

**Downloadable file of this material in original format if possible, such as Microsoft word or PowerPoint (Provide filename and location)**

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**Assessment Rubric or Answer Key**

**Title (255 characters maximum):**

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**Summary (how does the material function in the lesson?):**

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**Downloadable file of this material in original format if possible, such as Microsoft word or PowerPoint (Provide filename and location)**

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**Supports for Struggling Learners**

**If a learner is struggling to understand the objective, essential question, or skills presented in the lesson, what can be done to help this learner? Is there a lower reading level version of text? Is there a more image heavy or simplified version of content? Can supportive devices be provided such as calculators?**

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| Use tactile motion, using finger tracking on the layers moving down means moving back in time, older layers of the earth. |

**Extensions for Excelling Learners**

**If a learner is really excelling at the objective and skills presented in the lesson, what can be done to continue to challenge this learner? Can the student create a product or learn more in depth about the content?**

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| Have students write a paragraph about how the objects in the activity sheet (jar, projective point, etc) got to that layer of earth. Who left it there? When did they live? Remember the further down, the further back you must go in time. |

**Additional Resources**

**Please list websites, references, or other materials for further research by interested students that is not already provided within the lesson.**

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**Related Lessons or Educational Materials**

**Is this lesson connected to other lessons within a unit? Is this lesson related to a field trip guide or activity? If so, list the website address or titled of these other materials below.**

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