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The following lessons were created by **Robin L. McNutt-Garcia**, a teacher participating in a National Endowment for the Humanities Summer Institute for Teachers entitled Touch the Past: Archaeology of the Upper Mississippi River Region.

### **Introduction to Garcia's Earth Science Class**

**Grade Level** 9th and 10th graders

**Subjects** Earth Science

**Objectives** Student will learn what the climate was like in past decades in various regions in North American by analyzing trees from around the country. Further they will master the ability of reading tree rings to determine climates.

**Standards** AZ strand 6: Earth Science; Concept 3: origins of the universe

**Duration** First week of school; 1-2 class periods; to "hook" students' interest into Earth science

**Materials/Supplies** tree samples from Wisconsin, Arizona, Mexico  
Book: *Intrigue of the Past*  
student Lab notebook and pencil  
scissors, glue, magnify glass

**Vocabulary** dendrochronology, increment borer, tree-ring dating

**Setting the Stage** I will start this lesson by having the student open their lab notebooks and answer a "bellwork" question in a quick write format. How do you know what the earth was like in the past when there was nothing written down?

**Procedure**

1. After several minutes have students break into groups and discuss their quick write ideas. Then start a class discussion and create a class list on the board from all the group ideas.
2. Introduce the vocabulary to the students by reading excerpts from pages 56 & 57 of the book "*Intrigue of the Past*" and have student take notes in their lab notebooks.

3. Give each group the worksheet on pg. 60 "the stump" and as a class discuss and complete this sheet.
4. Next give each student handout on pg. 61, have them cut and glue this in their individual lab notebooks. As a group have them discuss and answer the questions. After several minutes resume a whole class discussion and go over results.
5. Next have each student create the attached table in their lab notebook.
6. In groups, each group would get a sample tree piece from Wisconsin, Arizona and Mexico. As a group they would analyze the tree rings on these samples and fill in their table.

**Closure** In the lab notebooks, under the table, I will have students write a paragraph summarizing their experience and how useful this procedure would be to determine past climates and predict future ones.

**Evaluation** As a class I will go over the final lab results of the actual trees the student analyzed and review their lab results of the tables.

**References** Book "Intrigue of the Past" by the United States Department of the Interior Bureau of Land Management.

Tree origin	Wisconsin	Arizona	Mexico
How old is this tree?			
List the # of dry cycles			
List the # of wet cycles			
Describe the climate in each area based on the rings			
Is there a climate pattern in these areas?			
Can you predict next year's climate and if so what would your prediction be?			