**Classroom Implementation Strategy**

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| **Title** | Paleoclimatology | |
| **Subject** | Science | |
| **Grade Level** | 8 | |
| **“Big Ideas”** | We can learn about past climates and understand current climate by using proxy data. | |
| **Overview of National Standards** | |  |  | | --- | --- | | MS-ESS2-2 | Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. | | MS-ESS3-5. | Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.  CCSS.ELA-LITERACY.W.8.1  Write arguments to support claims with clear reasons and relevant evidence | | |
| **Your State’s Performance Standards** | Same as above, Next Generation Science Standards and Common Core State Standards | |
| **Internet Links/Resources** | http://www.ei.lehigh.edu/eli/cc/resources/video/proxies.mov | |
| **Major Events or Activities: “The Learning Plan”** | 1. Video- Why is it important to reconstruct the long history of the Earth's climate, and how can we do that? 2. Introduction/lesson to paleoclimatology and multiple methods for collecting proxy data. 3. Tree ring exploration activity 4. Lab Activity- Study of “sediment cores” (stacked petri dishes with beads). Diatom count and graphing activity. Analysis of temperature/diatom data and conclusions about past temperatures. 5. Watch documentary “Chasing Ice”- includes ice core analysis, causes and effects of climate change. Students prepare written summary supporting claims with clear reasoning and supporting evidence. 6. Presentation/interview with geoscientists and question/answer period. | |
| **Essential Questions** | 1. What is a proxy? 2. How does using proxy data to understand past climate help us to understand current climate? 3. What factors have caused the rise in global temperatures over the past century? | |
| **Safety Considerations** | None | |
| **Assessment** | **Assessment Plan:** Students are assessed through:   1. The conclusions they make and explanation of past climate after graphing and analyzing data from sediment cores 2. Their writing and ability to support climate change claims with clear reasoning and supporting evidence. 3. The depth of understanding presented through their ability to ask relevant questions. | |
| **5 E Inquiry Model** | **Engage** | Video- Why is it important to reconstruct the long history of the Earth's climate, and how can we do that? |
| **Explore** | Introduction/lesson to paleoclimatology and multiple methods for collecting proxy data.  Tree ring exploration activity |
| **Explain** | Lab Activity- Study of “sediment cores” (stacked petri dishes with beads). Diatom count and graphing activity. Analysis of temperature/diatom data and conclusions about past temperatures. |
| **Extend** | Watch documentary “Chasing Ice”- includes ice core analysis, causes and effects of climate change. |
| **Evaluate** | Students prepare written summary supporting claims with clear reasoning and supporting evidence. |
| **Documentation of Resources** |  | |