**Introductory Statement**:

Introduction to Environmental Sustainability (BY 115) is a course that is intended for non-science majors which provides a foundation in environmental science and sustainability. One of my goals for this course is for students to leave the course with a greater understanding of climate change, both natural and anthropogenic in origin. Many students have a basic understanding of climate change, but do not truly grasp the complexities. In this course, we begin with an overview of climate change, which allows students to relate it to other concepts presented thereafter (i.e. biogeochemical cycles, renewable energy, etc.). We then conclude the semester with a more in depth examination of climate change, which includes how it is monitored, long and short term climate variability, and impacts. This is the point in the semester when the **Climate of Change** module was implemented.

**Inspiration Quote**:

“The Climate of Change module increased student engagement and created a more active learning environment for my students.”

**My Experiences:**

Units 1-4 were used in class over a two-week time period. Unit 6 was assigned as an out of class activity, and also provided an opportunity for me to assess how students felt about the module and what they had learned. For the units with multiple case studies, we did the first case studies but not the second due to time constraints.

**Relationship of the Module to Your Course:**

Introduction to Environmental Sustainability is a 15-week course. The Climate of Change module was implemented during the last quarter of the course. This module concluded the lecture aspect of the course, as the only remaining work after the module was group project presentations. Students were introduced to climate change in the beginning of the semester, and other environmental science concepts.

**Unit By Unit Breakdown:**

**April 3: Unit 1 Historical Climate Forecasting and Adaptation Through Ages**

* Assigned Reading Completed Prior to Coming to Class

**Class Flow**:

* Attendance, Powerpoint, Announcements (10 minutes)
* Split Into Groups & Go to Posters (5 minutes)
* Gallery Walk (25 minutes)
* Class Discussion – Review Gallery Walk Questions (15 minutes)
* Article Discussion (20 minutes – assigned prior to adopting **this module)**

**April 5 Unit 2 Deciphering Short Term Climate Variability**

* Attendance, Return Exams, Powerpoint (25 minutes)
* Split Into Groups (5 minutes)
* Work Through Case Study 2.1 (30 minutes)
* Enter Data on the Board & Class Discussion (15 minutes)

**April 10 Unit 3 Anomalous Behavior**

* Attendance & Announcements (5 minutes)
* Review Slides from 2.1 (15 minutes)
* Students work through case study 3.1 (30 minutes)
* Class Discussion (25 minutes)

**April 12 Unit 4 Slow & Steady**

* Attendance & Announcements (5 minutes)
* Introductory Powerpoint (15 minutes)
* Students work through case study 4.1 (20 minutes)
* Class Discussion (15 minutes)
* Article Discussion (20 minutes)

**April 17 Unit 6 Adapting to a Changing World**

* Assigned as an out of class activity
* Students have the choice of three different case studies (heat waves, insurance, and flooding)
* Students email answers to Instructor

**Assessments**

On the first day of the module we did a gallery walk, that was based on an out of class reading assignment. Students really enjoyed this learning activity. Specifically, they enjoyed reading answers that other groups provided and expanding upon them. I also assigned Unit 6 as an out of class activity. Students performed well on this activity. Additionally, I assigned an option extra credit assignment that asked students to provide feedback on the Climate of Change module. All feedback was positive. Students enjoyed small group work and discussions, as opposed to working in the larger class environment. Finally, the final exam was a take home exam that was solely based on the Climate of Change module. Students needed to interpret real data and answer questions related to the module. Overall, the entire class did very well on the exam. One change I would make is emphasizing systems concepts more, specifically positive and negative feedback loops. I realized on the final exam, that students didn’t grasp this as well as I would have liked.

**Outcomes:**

My main goal was for my students to leave the course with a greater understanding of climate change, and its complexities. I believe that this goal was achieved. Instead of covering a wide range of concepts that would typically done in a course of this kind, at this point in the semester, we went into more depth on a few key concepts. Many students reported on the assessments, that they thought they understood climate change but realized that they didn’t know as much as they thought they did. Also, they were familiar with El Nino and La Nina, but didn’t understand the science behind these phenomena. Many reported understanding these concepts better after the completion of the course.