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Methods of STEM Spring 2020

4/26/2020 Understanding Data Behind Climate Change.

Overview

This unit takes about seven days depending on how much the teacher wants the students to do and where the class (students and teacher) are starting from. The main feature of the lesson is flexibility. For an advanced class the teacher explains the deliverables for the work, hands out the rubrics, and then turns the students loose. The teacher monitors and redirects the class based on progress. For a basic class, the teacher walks through each step, letting students progress at a rate that keeps the class together. There is a delicate balance between freedom and letting the class get stuck.

Students are provided a blank lab report and starter spreadsheet and coached what goes in each section. The daily flow is based on the teacher setting the expectations and then the students making progress as best they can. Expectations can be posted on the front board so students can start as they walk in, or expectations can be presented when the class is assembled. The next day, the teacher picks up at a point necessary to pull the class together. After the lesson is used a few times, most problems can be avoided by applying the knowledge from the last semester. I have noticed my students get better as I get better.

Daily Learning Goals

1. Day 1 Engagement - Building a basic understanding of CO₂ and the climate.
2. Day 2 Exploration Review scatter plots and introduce linear regression in Google Sheets
3. Day 3 Exploration Using the LINEST() and the CORREL() functions in Google Sheets
4. Day 4 Exploration Using linear regression on the CO₂ NASA data.
5. Day 5 Explanation Understanding the process so far.
6. Day 6 Elaboration Using data and models for extrapolation and prediction.
7. Day 7 Evaluation - Checking for understanding by using rubrics.

All documents should allow comments.

(If you have trouble with permissions on the Project Folder, use the Individual links)

[Project Folder with all documents](#)

Links to individual documents

[Understanding Data Behind Climate Change 5E Lesson Plan](#)

[Understanding Data Behind Climate Change Exploration Completed Spreadsheet](#)

Select **Sheets Functions Exercise** for the first day.

Select **Annual CO₂ PPM** and **Annual Temp Change** to load initial NASA data

Select **CO₂ - Temp Correlation** to evaluate the Coefficient of Determination and Correlation Coefficient

Select **Temperature Extrapolation** to complete the Elaboration phase

[Student Starter Lab Report for Understanding Data](#)

Rubrics on next Page

Rubrics

[Understanding Data Behind Climate Change Spreadsheet Rubric](#)

[Graphing Global Temperature Rubric](#)

[Understanding Data Lab Report Rubric](#)

[Project Folder Rubric](#)