



DATA COLLECTION WORKBOOK  
FOR  
ENVIRONMENTAL JUSTICE PROJECT

Name: \_\_\_\_\_

Class: \_\_\_\_\_

Date: \_\_\_\_\_



## DATA COLLECTION WORKBOOK FOR ENVIRONMENTAL JUSTICE PROJECT

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## Introduction:

Environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. This includes the same degree of protection from environmental and health hazards, and equal access to the decision-making process to have a healthy environment in which to live, learn, and work (US Environmental Protection Agency, EPA). There are some areas with more tree cover, access to green spaces like parks, air or water pollution, and this often correlates with the income of the area.

It's important to collect data and understand the differences that people experience so that we can advocate for better conditions. It's difficult to solve a problem when we don't have an idea of where it is and how big it is. You are going to collect data on some aspect of your environment- you can count trees along your street, count pieces of trash, measure the temperature, or use a tool such as the EPA's EJScreen to check measurements of air quality, location of garbage dumps, and wastewater plants.

Once we have this information, we can share it with our neighborhoods and elected officials. We can advocate for more trees, better traffic control, and funds for clean-up efforts. You can use your new knowledge to make a difference in your community!



## Procedures:

Once we have the data, we will produce brief written pieces, presentations, and videos.

You can

- Present in your classroom
- Write op-eds
- Attend local city or county commission meetings

There will be a writing guide in this workbook to help you analyze your data and use it to support your claims, so you can explain your findings and highlight the equity issues based on where the data was collected.

You will also be writing a letter and email to local state and federal elected officials asking them to take immediate action on making changes through legislation and funding.



# Data Collection and Chart:

Please fill this out by adding the dates of collection, and your location at each time (school, home, work, park, etc.). It's also important to include qualitative data, which comprises words and descriptions. What kinds of people are at those locations? (children, workers, residents) How much time do they spend there?

\*\* See sample - June 12 - in the chart: Yellow highlight

DATE	TIME	LOCATION #	TIME	LOCATION #	TIME	LOCATION #	NOTES
June 12	8:00 AM	#1	2:00 PM	#4	6:00 PM	#2	Levels are higher around downtown Tallahassee
	#1	North Lake Jackson					
	#2	South Lake Jackson					
	#3	J Lee Vause Park					
	#4	Governor's Square Mall					
	#5	Old Bainbridge Rd					



## Data Analysis:

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What are the trends in your data?

Which locations in your neighborhood have \_\_\_\_\_?

What factors might be contributing to this?

What sources of \_\_\_\_\_ can you identify in your area?

Is there a pattern during the day/night that you noticed?



## Claim-Evidence-Reasoning:

CLAIM

EVIDENCE

REASONING

The [claim-evidence-reasoning model](#) is used in science to structure a scientific argument.

When you run an experiment, you draw a conclusion to explain your data. This was an observational study, where the researchers (you're the researcher here!) collect data and take measurements without changing any of the parameters.



## How to Communicate Data and Evidence?

In order to communicate your findings to others, you need to make sure that you use solid evidence to back them up. A major part of science is connecting the dots between what we observe in the natural world and the underlying explanations.



The claim is a conclusion statement that answers a specific question. You will use the measurements from your Data Chart to answer these questions, and the last important step is to be sure to make the connection.

What can you conclude?

Was the hypothesis proven correct or incorrect?

Are there patterns of \_\_\_\_\_, and do they correspond to social and environmental factors?

Are the evidence and data supporting the claim? (tables, charts, graphs, observations)

What facts led you to make the claim?

This is where you'll use specific numbers from your chart. Including exact data points makes your argument more convincing.

Telling an elected official that the air quality was higher in one area than another is more easily dismissed than a clear reading that "Opa-Locka has 40% more ozone than Coral Gables" (as a possible example).



## C-E-R Outline

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Question/problem:

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CLAIM

Does the claim answer the question?

Is the claim more than a “yes” or “no” answer?

Is the claim a complete sentence?

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EVIDENCE

Does the data support the claim?

Is the evidence appropriate?

Does it match the claim?

Did you use three or more facts or observations?

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## REASONING

The reasoning is a detailed explanation for why the evidence led you to make the claim, and should not simply repeat the evidence. It must include an explanation of the scientific concepts that are relevant to the claim. This is where you add in any background research you've done on the topic. Why is this evidence important? Why do the facts support the statement? It's not enough to show a graph, you need to make the case explicitly that your claim is backed by the evidence.

Do my sentences explain how the evidence supports (matches) the claim?

Do they restate the claim?

Is there a link between the evidence and the claim provided?

Did you use a scientific theory or idea to make sense of your data?

Did you use logic or past experience to make sense of your data?



- Once you answer each of those questions, you will have a sound argument backed by evidence.
- Adding your personal experiences, advocating for solutions to the problem, and addressing the root causes will make your persuasive writing more personal.





## Writing to an Elected Official:



### Introduction:

Address the letter using the elected official's title (Ex.: Dear Commissioner Brown)  
Introduce yourself as a resident of the elected official's jurisdiction (Miami-Dade, Florida, or a congressional district).  
Directly reference the issue you are writing about.

### Narrative:

Describe why \_\_\_\_\_ matters to you. How does it affect you, and the people in your community? Do you have any stories you can share?  
Include your argument with data. How do you know this is a problem?

### Specific Ask:

Ask your elected official to take a concrete action. Are there any pieces of legislation addressing \_\_\_\_\_ being considered? If not, what solutions do you want to see?

### Closing:

If you'd like, request a return call or letter with information about the elected official's position on the issue or the result of how they voted. Is there a commission meeting or opportunity for public comment?



## Writing to an Elected Official: Sample Letter

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Example Letter:

Dear Congresswoman Gutierrez,

I am a resident of Miami-Dade County, a junior at Miami Jackson Senior High School, and a student-athlete. I am concerned about air pollution in my community, as it impacts the health and wellbeing of my friends, family, and classmates.

The air quality index in my neighborhood, Allapattah, is significantly worse than in other areas of the city and state. I am part of a citizen science project that has been measuring the concentrations of the five major pollutants regulated by the Clean Air Act, and we have noticed that (add data here).

The health impacts of the air pollutants measured by these monitors include higher rates of asthma, allergies, and other respiratory infections. Given that we are still dealing with COVID-19 and its effects on our community, it is especially important that we take measures to reduce pollution as a public health effort. This is also an issue of equity, as minorities and people of lower socioeconomic status are exposed to higher levels of pollution than those in wealthier neighborhoods.

I am urging you to (what solutions do you propose?)

Please call or write me back with information about your position on this issue.

Thank you,

Name

Address

Email or phone number

Name \_\_\_\_\_

## Science Explanation (CER) Student Rubric

	4 (Strong)	3 (Good)	2 (Fair)	1 (Weak)	0 (missing)
<b>Claim (Thesis or Topic Sentence)</b>	<ul style="list-style-type: none"> <li>The claim clearly and correctly answers the question.</li> <li>Claim does not include explanation.</li> </ul>	<ul style="list-style-type: none"> <li>The claim correctly answers the question but is not clear.</li> <li>The claim includes a brief explanation.</li> </ul>	<ul style="list-style-type: none"> <li>The claim is not completely correct.</li> <li>The claim includes a lengthy explanation.</li> </ul>	<ul style="list-style-type: none"> <li>The claim is incorrect or unclear.</li> <li>The claim seems to ramble on.</li> </ul>	No Claim
<b>Evidence</b>	<ul style="list-style-type: none"> <li>All evidence is relevant data or observations from an experiment or scientific investigation.</li> <li>Experiment is briefly described to provide context.</li> <li>Multiple pieces of evidence are used to back up the claim.</li> <li>All data are specific and accurate.</li> </ul>	<ul style="list-style-type: none"> <li>Most evidence is relevant data or observations from an experiment or scientific investigation.</li> <li>Experiment is described, but in too much detail.</li> <li>One piece of additional evidence is needed to back up the claim.</li> <li>Data are accurate but not specific.</li> </ul>	<ul style="list-style-type: none"> <li>Some evidence is relevant data or observations from an experiment or scientific investigation.</li> <li>Experiment is briefly described, but not in enough detail.</li> <li>More pieces of evidence are needed to back up the claim.</li> <li>Data are specific but not accurate.</li> </ul>	<ul style="list-style-type: none"> <li>Evidence is not relevant data or observations from an experiment or scientific investigation or not relevant.</li> <li>Experiment is not described.</li> <li>Many more pieces of evidence are needed to back up the claim.</li> <li>Data are neither specific nor accurate.</li> </ul>	No Evidence
<b>Reasoning (Analysis)</b>	<ul style="list-style-type: none"> <li>Explicit reasoning is provided that links all evidence to the claim.</li> <li>Scientific principles are correctly explained to show how and why the evidence supports the claim.</li> <li>The claim is clearly referenced throughout the reasoning.</li> </ul>	<ul style="list-style-type: none"> <li>Reasoning links most pieces of evidence to the claim.</li> <li>Scientific principles are correctly explained but need more detail.</li> <li>The claim is referenced, but not throughout the reasoning.</li> </ul>	<ul style="list-style-type: none"> <li>Reasoning links some evidence to the claim.</li> <li>Scientific principles are explained but slightly incorrect.</li> <li>The claim is referenced, but not clearly.</li> </ul>	<ul style="list-style-type: none"> <li>Reasoning is weak and does not make a connection between the evidence and the claim.</li> <li>Scientific principles are not explained or explained incorrectly.</li> <li>The claim is not referenced.</li> </ul>	No Reasoning
<b>Overall</b>	<ul style="list-style-type: none"> <li>All parts of the prompt are answered.</li> <li>Science vocabulary words are used appropriately and correctly.</li> <li>Appropriate Science tone (impersonal passive tone).</li> <li>The organization of the response is logical (claim comes first, then evidence and reasoning).</li> <li>Uses transitions to improve the flow of the writing.</li> <li>There are no spelling, grammar, or punctuation issues that hinder meaning.</li> </ul>	<ul style="list-style-type: none"> <li>Most parts of the prompt are answered.</li> <li>Science vocabulary words are used, but slightly incorrectly.</li> <li>Tone is mostly scientific.</li> <li>The order of the response is mostly logical.</li> <li>Uses some transitions to improve the flow of the writing.</li> <li>The paragraph is mostly free of spelling, grammar, and punctuation problems.</li> </ul>	<ul style="list-style-type: none"> <li>Some parts of the prompt are answered.</li> <li>Few science vocabulary words are used correctly.</li> <li>Tone is scientific except for pronouns like "we," "you," or "I."</li> <li>The order of the response is somewhat logical.</li> <li>Uses few transitions to improve the flow of the writing.</li> <li>The paragraph has several spelling, grammar, and punctuation problems.</li> </ul>	<ul style="list-style-type: none"> <li>Little of the prompt is answered.</li> <li>Science vocabulary words are not used or are used incorrectly.</li> <li>Tone is unscientific.</li> <li>The order of the response is not logical.</li> <li>The flow of the writing is choppy and needs transitions.</li> <li>Spelling and punctuation problems make it challenging to understand the paragraph.</li> </ul>	<ul style="list-style-type: none"> <li>The prompt is not answered.</li> <li>It is impossible to understand the response.</li> </ul>



NOTES:

A series of horizontal lines for taking notes, with a vertical line on the left side.

The CLEO Institute is a 501(c)(3) non-profit, non-partisan organization exclusively dedicated to climate crisis education and advocacy. Founded in 2010, we work with communities across Florida to build climate literacy and mobilize climate action for a just, resilient future.