

Environmental Research Methods Workshop

Introduction to Environmental Research (15 minutes)

Today we'll become environmental researchers! Let's start by understanding what makes a good researcher.

Individual Brainstorm:

Write down what you think these research terms mean:

1. Quantitative Research:

2. Qualitative Research:

3. Data Collection:

Research Methods Comparison (20 minutes)

Complete the following table to understand different research approaches:

Research Method	Best For Studying	Tools Needed	Example Use
Observation			
Measurement			
Surveys			

Environmental Data Collection Practice (30 minutes)

Using the methods we've learned, let's collect real environmental data!

Field Research Exercise:

In groups of 3-4, collect the following data from three different locations in your school:

Location	Temperature (°C)	Light Level (1-5)	Plant Count	Noise Level (1-5)
Location 1:				
Location 2:				
Location 3:				

Data Analysis Questions:

1. What patterns do you notice in your data?
2. How might these environmental factors affect each other?
3. What might explain the differences between locations?

Creating Environmental Research Questions (25 minutes)

Learn to formulate effective research questions for environmental studies.

Research Question Development:

Transform these general topics into specific research questions:

Topic	Your Research Question
Air Pollution	
Water Conservation	
Biodiversity	

Question Quality Check:

Rate your questions using these criteria (1-5 scale):

- Is it specific enough to measure?
- Can it be answered through research?
- Is it relevant to environmental science?
- Is it appropriate for your resources?

Data Visualization Techniques (40 minutes)

Learn how to present environmental research data effectively.

Graph Creation Exercise:

Using the data collected earlier, create these three types of visualizations:

1. Bar Graph

Temperature (°C)
Location

2. Line Graph

Light Levels
Time of Day

Statistical Analysis Methods (35 minutes)

Introduction to basic statistical concepts for environmental research.

Statistical Measure	Formula	Your Calculation
Mean Temperature	Sum ÷ Count	
Range	Highest - Lowest	
Mode	Most Common Value	

Environmental Impact Assessment (45 minutes)

Learn to evaluate environmental impacts using scientific methods.

School Campus Case Study:

Conduct a mini environmental impact assessment of your school campus:

Environmental Factor	Current Status	Potential Impacts	Mitigation Strategies
Energy Use			
Waste Management			
Water Usage			

Research Project Planning (50 minutes)

Develop a complete environmental research project proposal.

Research Project Outline:

1. Project Title:

2. Research Question:

3. Methodology:

- Data Collection Methods:

- Required Equipment:

- Timeline:

Peer Review Workshop (30 minutes)

Learn to provide and receive constructive feedback on research projects.

Peer Review Form:

Review Criteria	Comments	Rating (1-5)
Research Question Clarity		
Methodology Appropriateness		
Feasibility		

Overall Recommendations:

Conclusion and Next Steps

Reflect on what you've learned and plan your next environmental research project.

Final Reflection:

1. What was the most important research skill you learned today?

2. How will you use these skills in future environmental projects?

3. What additional research methods would you like to learn about?

Next Steps Planning:

Outline your ideas for an environmental research project:

Project Element	Your Plans
Research Question	
Methods to Use	
Resources Needed	