



SCIENCE



Project 1: Research Study Analysis

In this project, you will explore the field of science by analyzing research studies and scientific investigations. You will examine how scientists ask questions, collect data, and draw conclusions to better understand the world. Using your research, you will identify trends and evaluate the effectiveness of scientific methods.

Step 1: Review Scientific Studies (4–5 hours)

Review 5–8 scientific studies or experiments from areas such as biology, chemistry, physics, environmental science, or health science.

Record the following for each:

- Study title/topic
- Research question or purpose
- Methods used
- Data collected
- Conclusions or findings

Step 2: Organize Your Data

- Create a comparison chart or table (Excel or Google Sheets)
- Clearly display all studies and their details
- Group or sort in a meaningful way (by scientific field, method, or topic)

Step 3: Analyze Bias and Style

Identify patterns such as:

- Common research methods
- Types of data collection
- Trends in scientific discoveries
- Challenges or limitations in studies

Answer:

- What trends do you notice in scientific research?
- What makes a study reliable and effective?
- What challenges do scientists face during investigations?

Step 4: Make Recommendations

Based on your findings, answer:

• What should scientists focus on to improve research quality and accuracy? Provide 2–3 specific, realistic suggestions and explain them.

Examples might include:

- Increasing sample sizes
- Improving data collection methods
- Repeating experiments for reliability

Final Deliverables (2 Completed Projects)

1) Comparison Chart (Required)

A clear chart or table showing your 5–8 studies and their details

2) Summary of Findings (Required)

Choose one format:

- 1–2 page written summary OR
- 10–12 slide presentation

Your analysis must include:

- Overview of studies reviewed
- Key scientific trends or findings
- Explanation of effective research methods
- Your recommendations for improvement



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Project 2: Mini Experiment Design

In this project, you will take on the role of a scientist by designing your own experiment. You will apply the scientific method to investigate a question and predict possible outcomes.

Step 1: Choose a Scientific Question

Select a question that can be explored through experimentation.

Examples:

- How does light affect plant growth?
- Which materials insulate heat best?
- How does exercise affect heart rate?

Step 2: Develop a Hypothesis

Create a hypothesis that predicts the outcome of your experiment.

Your hypothesis should include:

- Independent variable
- Dependent variable
- Expected relationship between variables

Step 3: Design the Procedure

Create a step-by-step procedure that includes:

- Materials needed
- Variables and controls
- Data collection methods
- Safety considerations

Step 4: Predict Expected Results

Explain:

- What results you expect to see
- Why you expect those results
- How the results would support or reject your hypothesis

Final Deliverables (2 Completed Projects) ★

1) Procedure (Required)

A complete experimental design with materials and steps

2) Hypothesis + Expected Results (Required)

A written explanation of your process and journalistic decisions

3) Extension Activities (Optional)

- Conduct the experiment and collect data
- Create graphs or visual data displays
- Present findings in a mock scientific conference