Energy and the Environment: A Personal Impact Study

Overview

In small groups of 2–3, you will conduct a detailed analysis of your household energy use. This real-world project applies concepts of energy, power, and efficiency to assess your personal energy footprint, compare it among group members, and develop suggestions for practical improvements.

Learning Objectives

By the end of this project, you will be able to:

- Identify and categorize types of energy sources used in homes.
- Quantify the energy usage of household appliances and devices.
- Calculate operational costs based on local energy rates.
- Compare energy usage patterns and evaluate energy efficiency.
- Propose realistic strategies to reduce energy consumption.

Project Components

1. Local Energy Profile

- Determine your local utility provider(s).
- Identify the types of energy sources used (e.g., natural gas, nuclear, hydroelectric).
- Research where this energy originates and how it reaches your home.

2. Appliance and Device Audit

Each group member should:

- List major appliances and devices in their household.
- Identify high-energy appliances and frequently used electronics.
- Estimate usage times and record power ratings.

3. Energy and Cost Analysis

- Calculate energy use (kWh) for each device.
- Determine monthly operational costs using your local electricity rate.

4. Comparison Across Group Members

- Compare total household and per-person energy use.
- Discuss variations and explain differences.
- Highlight efficient or inefficient practices.

5. Recommendations for Reduction

- Propose 3–5 actionable ways to reduce energy use.
- Include potential savings and discuss feasibility.

Final Deliverables

- Group Report (4–6 pages) including data tables, calculations, analysis, and recommendations.
- 5–7-minute group presentation to share findings and ideas with the class.
- One-page individual reflection from each student.

Timeline

- Week 1: Group formation, initial research, and audit planning.
- Week 2: Data collection and calculations.
- Week 3: Comparative analysis and writing.
- Week 4: Submit final report and present in class.

Grading Criteria (Total 100 points)

Component	Points
Local energy sourcing research	10
Appliance/device audit	15
Energy and cost calculations	20
Comparative analysis	15
Recommendations & justification	20
Final report clarity & visuals	10
Presentation	5
Individual reflection	5