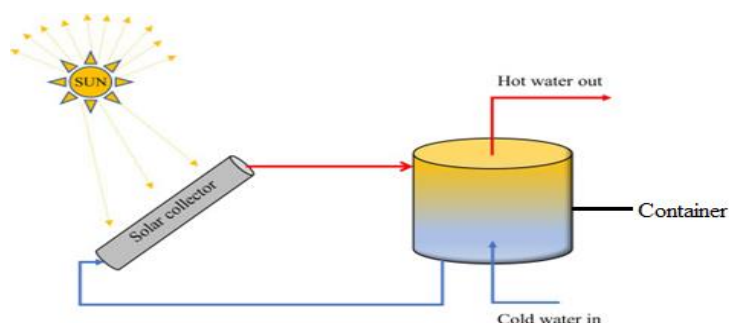


Workshop 4. Writing a Detailed IMRaD Plan for a Scientific Research Topic

IMRaD is a standard structure used in scientific writing: **I**: Introduction (presents the problem and objectives), **M**: Methods (explains how the study is conducted), **R**: Results (shows findings: data and observations) and **D**: Discussion (interprets results)

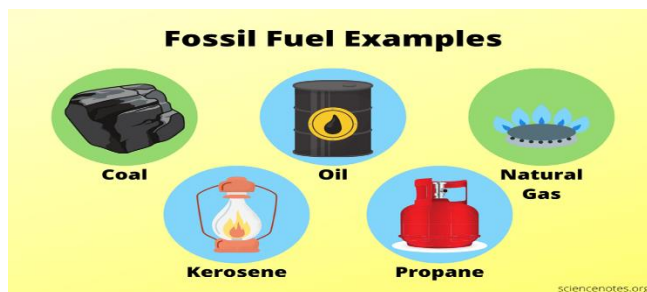
Example: Solar water heating using a basic solar collector



1. Introduction

Key ideas: Energy consumption for heating water, Environmental impact of electricity and gas, Solar energy as a clean solution, Objective of the study

Example: Heating water requires a lot of energy, Fossil fuels cause pollution, Solar heaters are simple and eco-friendly, Objective: Evaluate how effective a solar heater is



2. Methods

Key ideas: Materials used (container, water, solar collector), Experimental setup, Measurement parameters

Example: Fill a container with water, Expose it to sunlight, Measure temperature every 10 minutes, Compare with water in shade

3. Results

Key ideas: Temperature variation, Comparison between heated and non-heated water

Example: Water temperature increases over time, Higher temperature compared to shaded water,
Graph of temperature vs time

4. Discussion

Key ideas: Interpretation of results, Efficiency of solar heating, Advantages and limitations

Example: Solar energy effectively heats water, Efficiency depends on sunlight intensity,
Limitations: weather conditions, Suggest improvements (insulation,)

Exercise

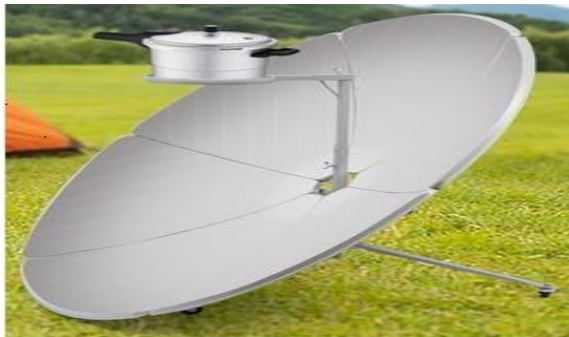
Students work in small groups (3 or 4 students)

Uses a similar simple one and Writes a detailed IMRaD plan

- ✓ Solar drying of clothes



- ✓ Solar cooking



- ✓ Small solar charger

