Objective:

Build a working engine. The goals of this project are:

1. To learn the basics of engine-building technology.
2. To build a car engine using an existing design.
3. To invent a new or improved engine design.

Research Questions:

- What is an engine?
- How do engines work?
- How are engines made?

An engine, also known as a motor, is a device that is designed to convert energy into motion. Typical engines are powered by heat, compressed air or elasticity. Building your first car engine requires time, effort and the guidance of an experienced mechanic. This project is not suitable for the mechanically disinclined.

Materials:

- Computer with Internet access
- Color printer
- Digital camera
- Typical office/hobby/hardware/craft supplies (paper, poster board, glue, etc.)
- See link #3 below for a list of materials and tools needed to build the engine.

All materials can be found in your home, at local stores, or on ebay.

Experimental Procedure:

1. Read overview of relevant topics (see bibliography below and terms listed above)
2. Address all of the above terms and research questions.
3. Search and print out interesting images relevant to your topic.
4. Take photographs throughout the course of the experiment.
5. Consult local mechanics and automotive specialists for advice, supervision and other assistance.
6. OPTION 1: Build a real engine by following instructions provided in the links below. If possible, test your engine on an actual car, or on some other mechanical device.
7. OPTION 2 (easier): Build a scale model of an engine, with removable parts. Use it to demonstrate an engine’s mechanical properties in your presentation.
8. Research automotive companies to determine which car make has the most efficient engine. Efficiency might be measured in terms of horse power, cost and durability.
9. Write up your findings in a detailed report.
10. Create a clear and colorful display that illustrates how engines work.
11. Include photos, diagrams and your homemade engine in your science fair display.

Terms/Concepts: Energy; Engine; Heat; Motor

References:

- http://www.animatedengines.com/ (moving illustrations of working engines)
- http://www.ehow.com/how_4702429_build-car-engine-scratch.html (How to build a car engine from
Internet searches of your choosing. Search words or terms listed here, or make up your own phrases. Click on any results you find interesting. Have fun surfing the net!