



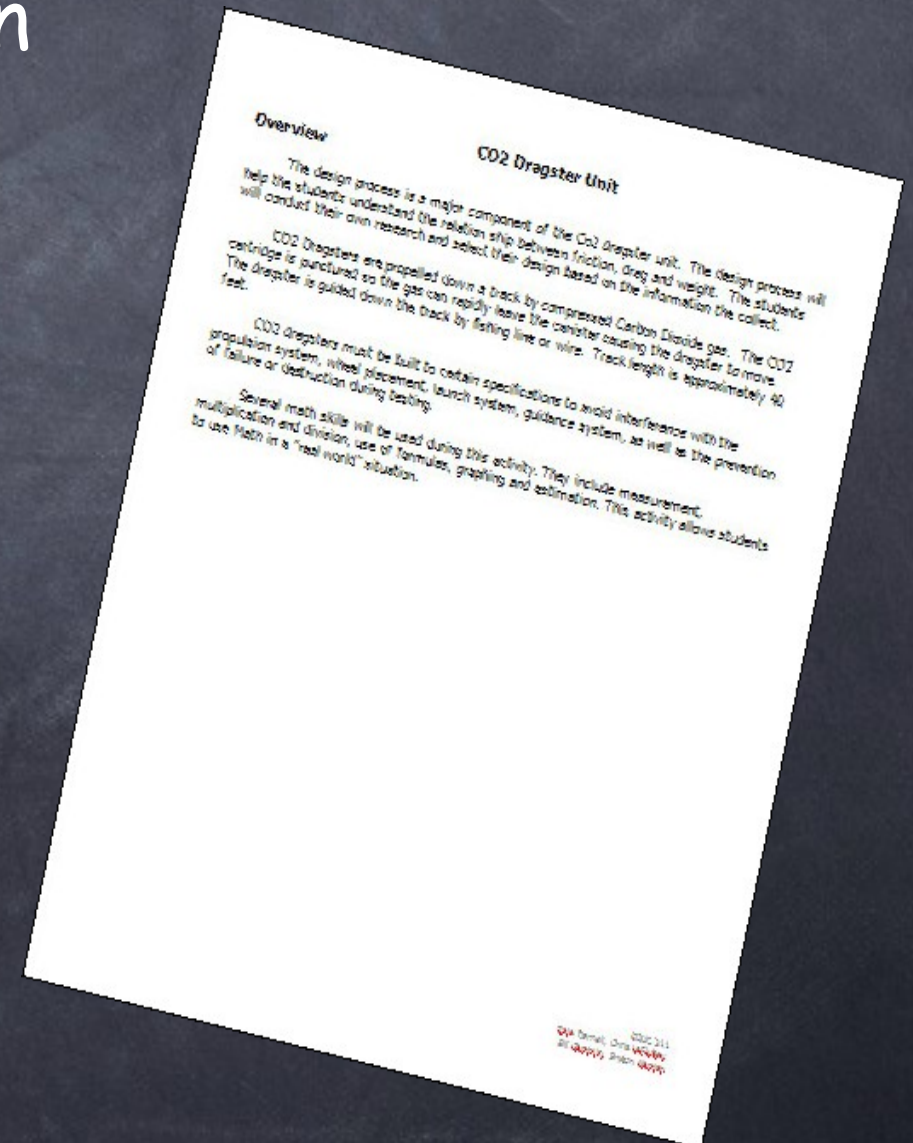
9/10 Technology Education
Co2 Dragster Unit Plan

CO2 Drag Cars

- Overview
- Student Objectives
- IRP Objectives
- Worksheets
- Lesson Plans
- Outline

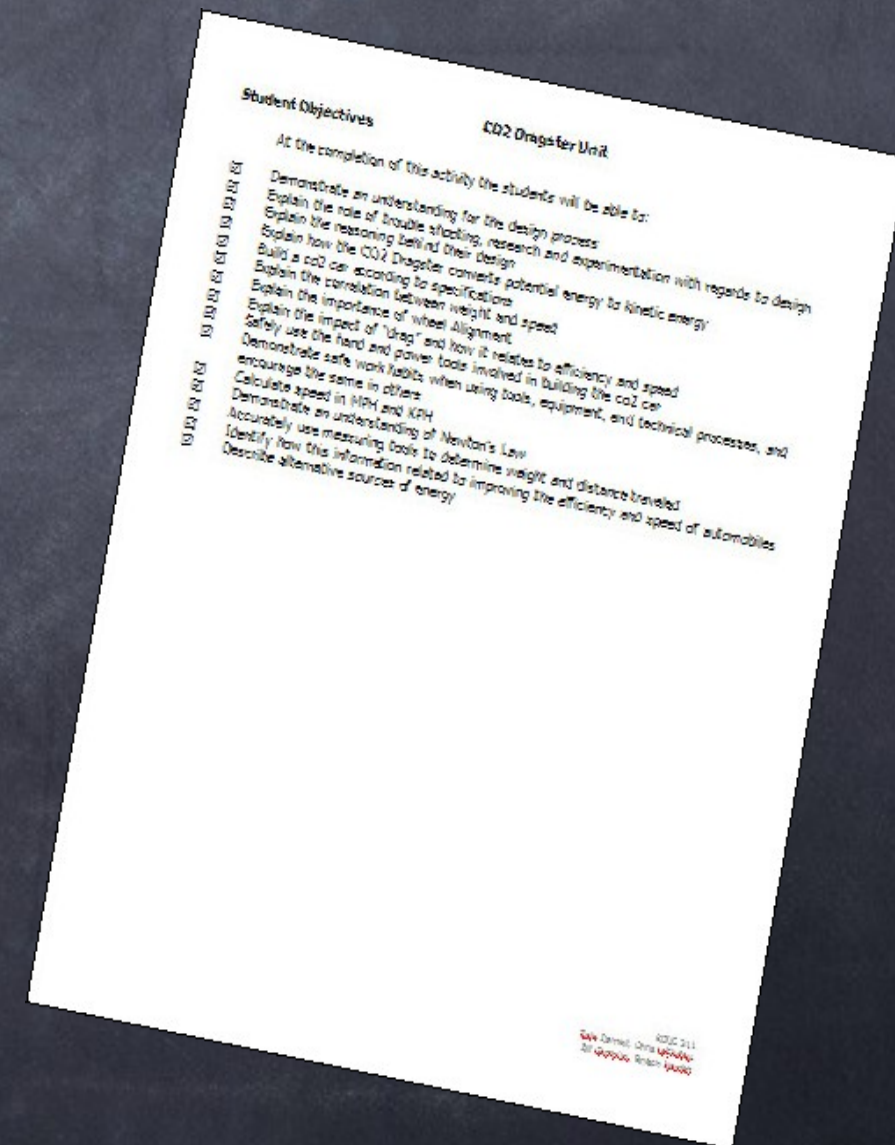
Overview

- Research process will help the students understand the relationship between friction, drag and weight.
- Design Process to produce an aerodynamic dragster
- CO2 dragsters must be built to certain specifications
- Several math skills will be used during this activity



Student Objectives

- Demonstrate an understanding for the design process
- Explain the reasoning behind their design
- Build a CO₂ car according to specification
- Safely use the hand and power tools involved in building the CO₂ car
- Calculate speed in MPH and KPH
- Describe alternative sources of energy



IRP Objectives

- **Grade 9 - Energy and Power**
- **PRESCRIBED LEARNING OUTCOMES**
It is expected that students will:
 - ☑ Explain how systems convert potential energy to kinetic energy, and assess their environmental and social implications
 - ☑ Construct devices that convert and transmit various forms of energy
 - ☑ Describe alternative sources of energy
 - ☑ Incorporate selected devices in the design of energy transmission and conversion systems

IRP Objectives

- Grade 9 - Production

PRESCRIBED LEARNING OUTCOMES

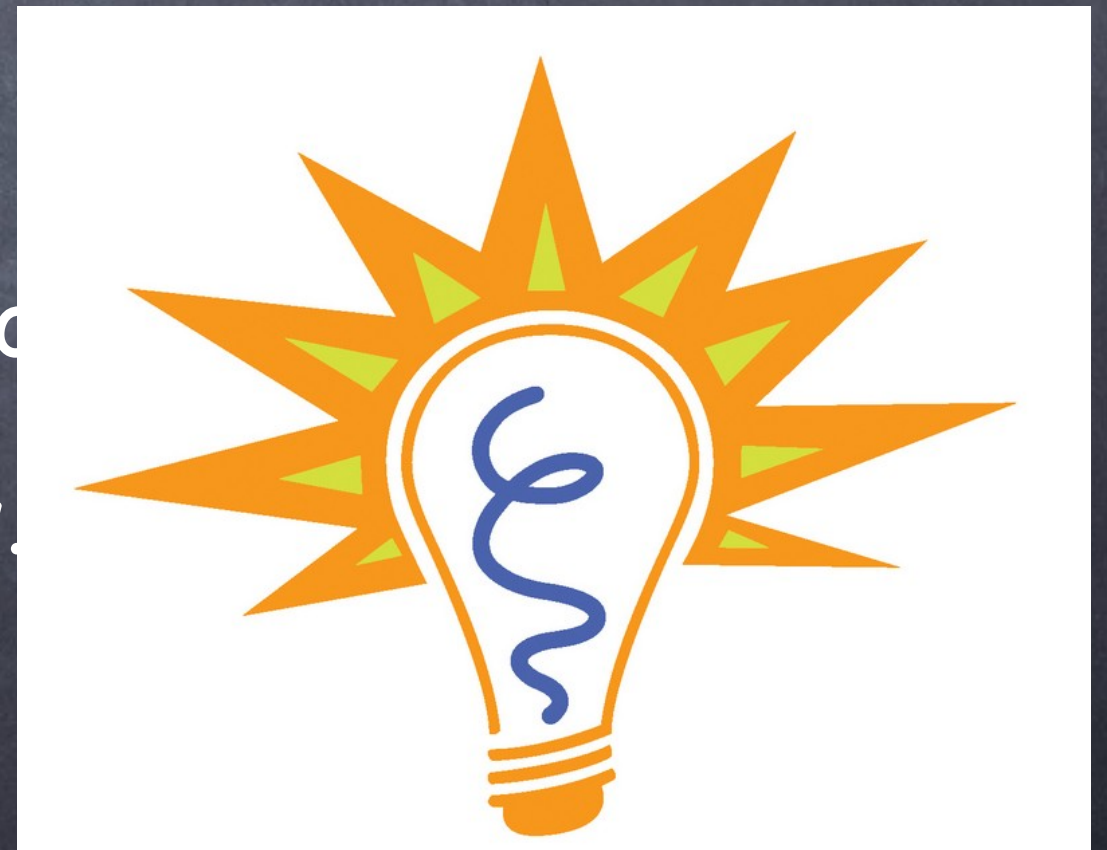
It is expected that students will:

- Use a design process to modify products to improve their appearance, usefulness, and function
- Select and safely use hand and power tools in the manufacture of products
- Demonstrate safe work habits when using tools, equipment, and technical processes, and encourage the same in others

Pre-Test

Lets Find Out:

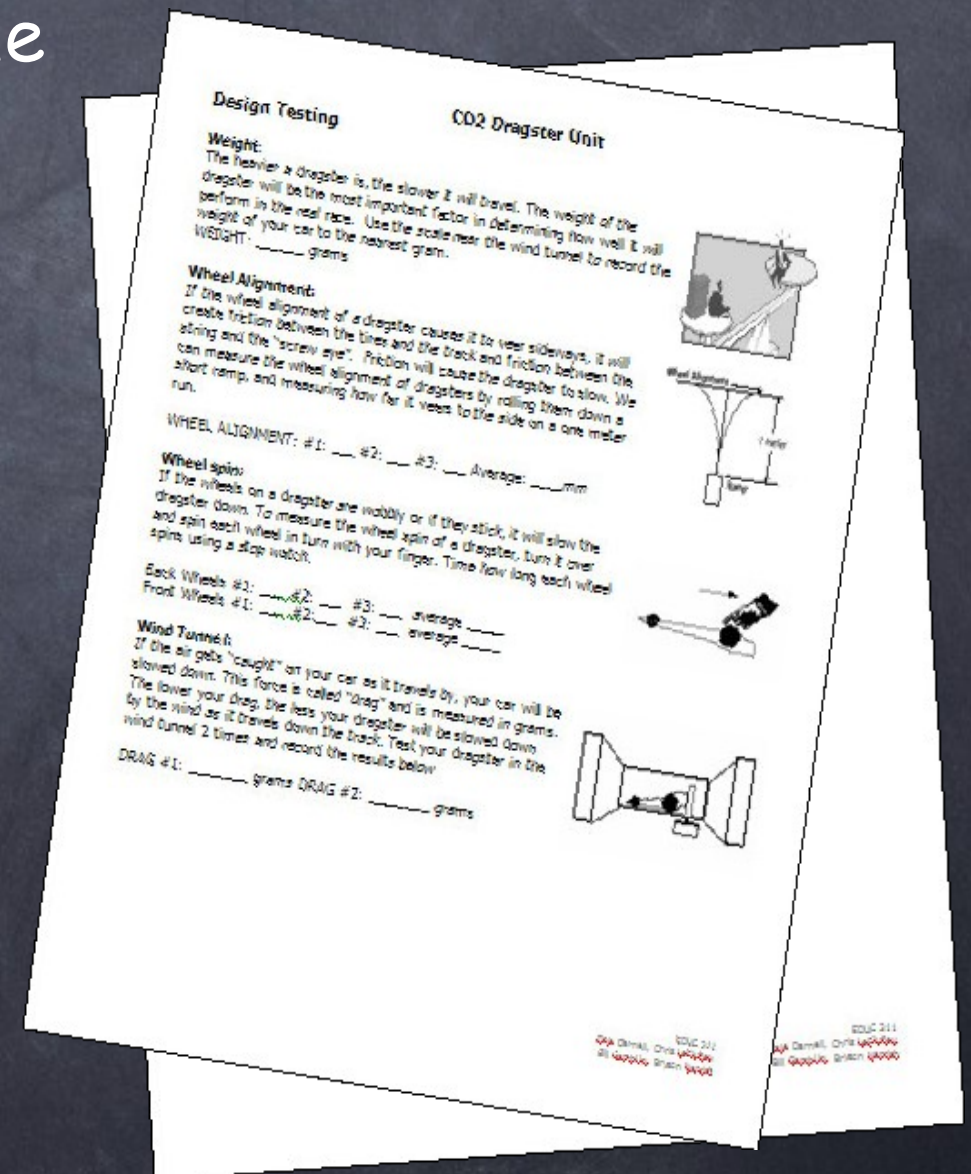
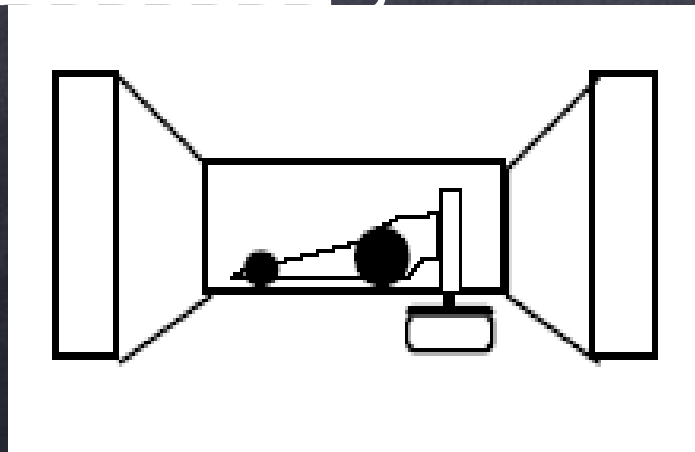
- What the students know
- What they don't know.
- What they will learn.



Worksheets

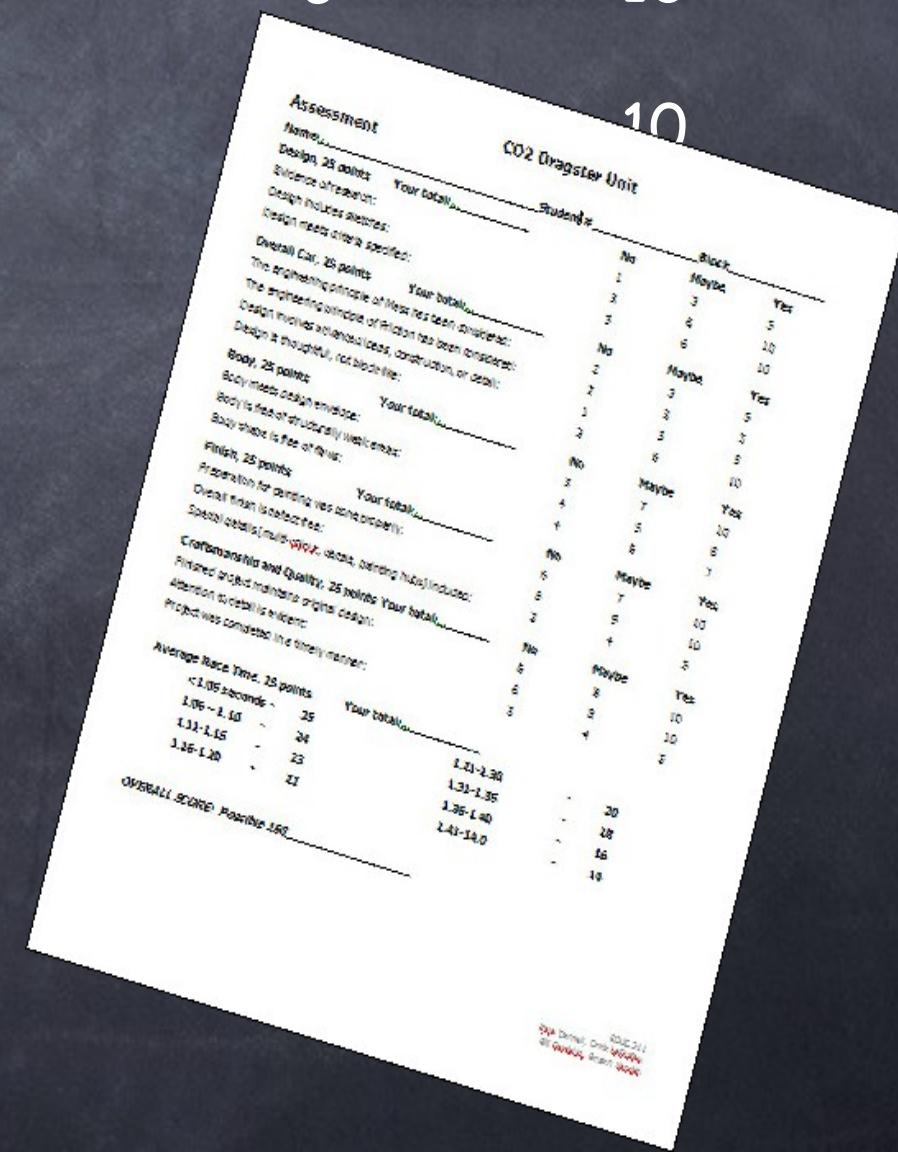
- **Wind Tunnel:**
- If the air gets "caught" on your car as it travels by, your car will be slowed down. This force is called drag and is measured in grams. The lower your drag, the less your dragster will be slowed down by the wind as it travels down the track. Test your dragster in the wind tunnel 2 times and record the results below

- DRAG #1: _____ grams
DRAG #2: _____ grams



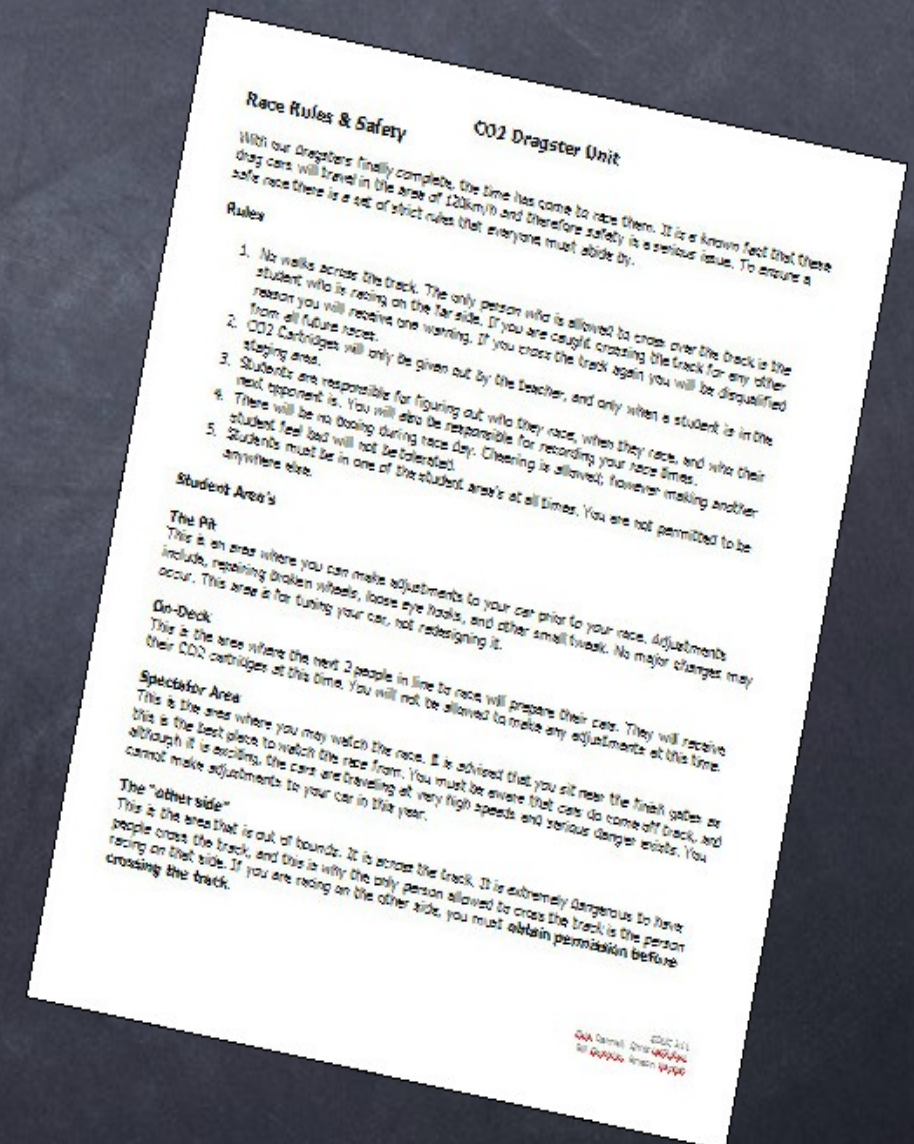
Rubric

• Design, 25 points	Your total: _____	No	Maybe	Yes
• Evidence of research:		1	3	5
• Design includes sketches:		3	6	10
• Design meets criteria specified:		3		10



Race Day

- Utmost importance is safety
- Discuss a strategy for managing the class to enforce where they stand
 - 4 Student Areas
 - The Pit
 - On-Deck
 - Spectator Area
 - The Other Side



Lesson Plans

- Topic
Content
Goals: Aims/Outcomes
Objectives
Materials
Procedures/Methods
- Introduction
Development
Practice
Independent Practice
Accommodations
Checking for Understanding
Closure

Lesson Plan Form:

Date: October 8, 2007 Grade: 9/10
Teacher Name: Subject: Technology

1. Topic-
Design Envelope:
CO2 powered drag cars.

2. Content-
This lesson is based on the design aspect while utilizing research, development and experimentation.

3. Goals: Aims/Outcomes-
1. The students will learn how to use the internet for specific research.
2. The students will begin to learn CAD programs.
3. The students will identify and understand the benefits of pre-planning and basic design.

4. Objectives-
1. The students will develop an understanding of the role of troubleshooting.
2. The students will learn to problem solve using research, development and experimentation.
3. The students will design, build and test a CO2 powered drag car.

5. Materials and Aids-
The students can utilize the internet for research. They will also be shown videos in class and given design briefs.

6. Procedures/Methods-

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Lesson Plans

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4. Objectives-

Lesson Plans

A. Introduction-

Students will be given the opportunity to:

1. Break out rough stock.
2. Use different shop tools.
3. Begin construction on their CO2 drag cars.

B. Development-

Students will develop their skill in the shop setting.

C. Practice-

The students will gain experience with the shop tools.

D. Independent Practice-

The students are expected to:

1. Demonstrate safe work habits.

Post Test

This will determine whether or not the desired learning outcomes were obtained.



Outline

- 22 Classes
- Example for Class 1:
Class 1:
 - Introduction to CO₂
 - Dragsters vs. SSC's
 - Newton's Third Law
 - Partial Video, Extreme Machines: SSC
- **Notes:**
The purpose of this introduction is to get students to base their thinking on "fast" rather than "dragster" in their design. The video gives students a good idea of what they will be designing, only at a smaller scale. It also effectively demonstrates technology's impact on our society both culturally, politically, and historically.

Examples

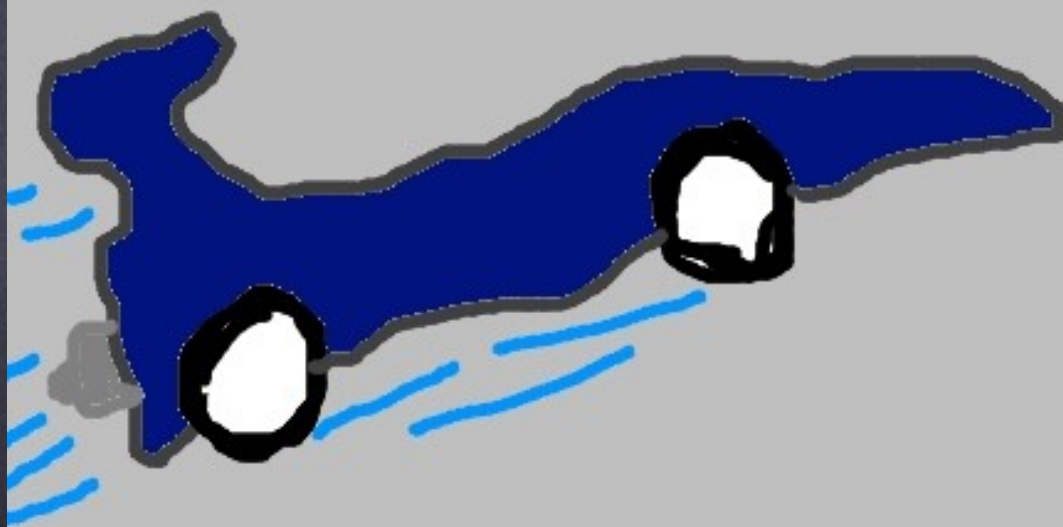






Pictures from:
www.inglewoodschoools.org

ARTISTS
RENDITION



Sample Video

The End



www.icsd.k12.ny.us/dewitt/teched/co2.html

Resources

Reference:

http://en.wikipedia.org/wiki/CO2_dragster

<http://clozure.trainingo2.net/mobiletopic.php?s=CO2dragster>

Images:

www.inglewoodschoools.org

www.icsd.k12.ny.us/dewitt/teched/co2.html

Video:

<http://www.youtube.com/watch?v=69KAn5syY10>

Special Thanks to:

Gavin and Chris

for...

Being Awesome!!!