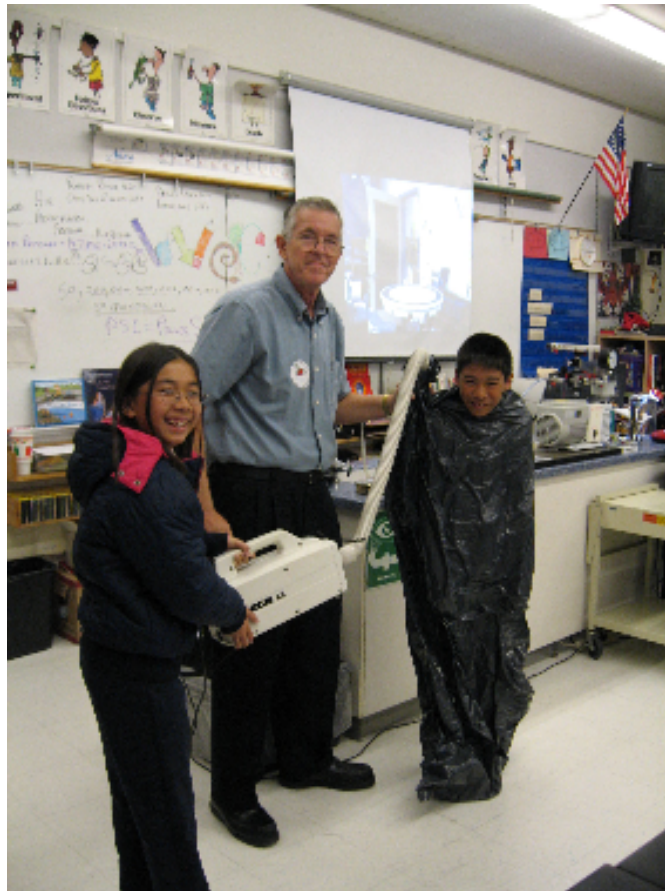


Trash Bag Hug



*Science Class students sharing a
"Trash Bag Hug".
Burnett Elementary School, Milpitas, California.*

Procedure

1. Have a student remove their shoes and step inside a heavy duty garbage bag (see figure 1).*

Make sure the student sits down with arms crossed.

After the hose from a vacuum cleaner is inserted in the top of the bag, the student should hold the neck of the bag tightly around their throat so as to form a tight seal.

You can have the student stand as well. (see figure 2)

(Note: this demo should never be done with the bag covering the head.)

2. Once the student is inside the garbage bag, use the hand vacuum cleaner or Shop Vac® to remove the air from inside the bag. Removing air from the bag essentially vacuum seals the student.

The external air pressure is often so great that the occupant of the bag is completely immobilized.

Safety dictates that a spotter be prepared to catch the encased student should tipping occur.

3. The trash bag may plug up the vacuum hose connection. You might try a hose brush attachment . This may allow more air to flow into the hose end.

Equipment Required:

hand vacuum cleaner or Shop Vac®

heavy duty garbage bag

** shoes may tear into the plastic bag*

Trash Bag Hug

How much force is at work?

At sea level, the Earth's atmosphere presses against each square inch of an object with a force of approximately 14.7 pounds per square inch.

If we measure the vacuum level of the vacuum cleaner we get a pressure of 860 Mbar. (*see figures 3 & 4*)

Converting 860 Mbar to PSI we get 12.47.

So, the pressure inside the trash bag is 12.47 and the pressure outside the bag (atmospheric pressure) is 14.7. The difference is 2.23 PSI. We have more pressure on the outside pushing in.

The force on 1,000 square centimeters (a little larger than a square foot) is about a ton! We generally go about our daily business unaware of this persistent pressure.

The Trash Bag Hug just might change all that!

Figure 1 Sitting Position



Above students of physics teacher Shannon Hughes are shown here sharing a "Garbage Bag Hug". Barrington High School ~ Barrington IL.



Figure 2 Standing Position



Figure 3
Vacuum Measurement

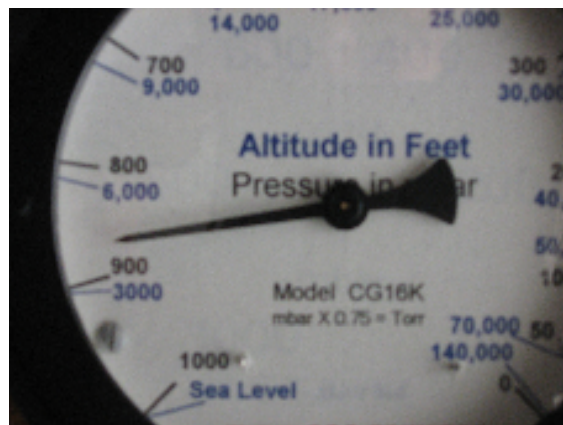


Figure 4
Vacuum Reading

Author: Tom Stec
NCCAVS Education Committee Member
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Trash Bag Hug 1



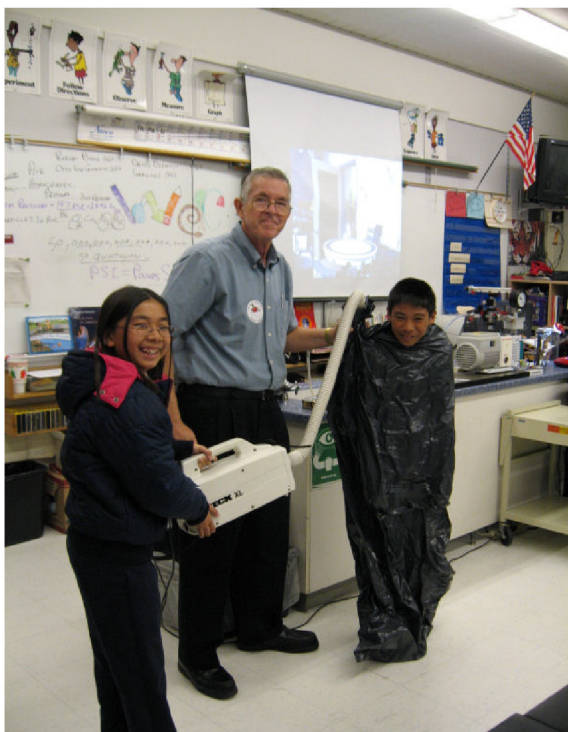
This won't hurt.

Trash Bag Hug 2



Turn on the Vacuum.

Trash Bag Hug 3



Let's remove some air.

Trash Bag Hug 4



He can't move his hands or feet!