

# How to Invade a High School



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# How to Invade a High School:

- Find motivated administrators, university faculty, teachers and graduate students.
- Pay the students significant amounts of money and call them “fellows.”
- Send the fellows to the high school.
- Wait in order to see what happens.

# Activities:

- Answer “out of the box” questions as a scientist.
- Check exams, lab assignments, review packets, and lectures for content.
- Develop lab activities.
- Teach class (occasionally).
- Develop and perform gas demos.



# Gas Demos

- Goal: Make use of the unique opportunities at a technical high school to perform demonstrations that are logistically difficult at other high schools.
- Use cryogenic and compressed gases to provide compelling examples of density and phase change.
- These demonstrations resulted in increased student interest in science as well as educational benefit.

# Results (Enthusiasm):

$\text{CO}_2 + \text{H}_2\text{O}$



$\text{SF}_6$



A “tight” demonstration.



# Results (Enthusiasm):



Regarded by some as the “best ... class ... ever” ...



# Results (Enthusiasm):

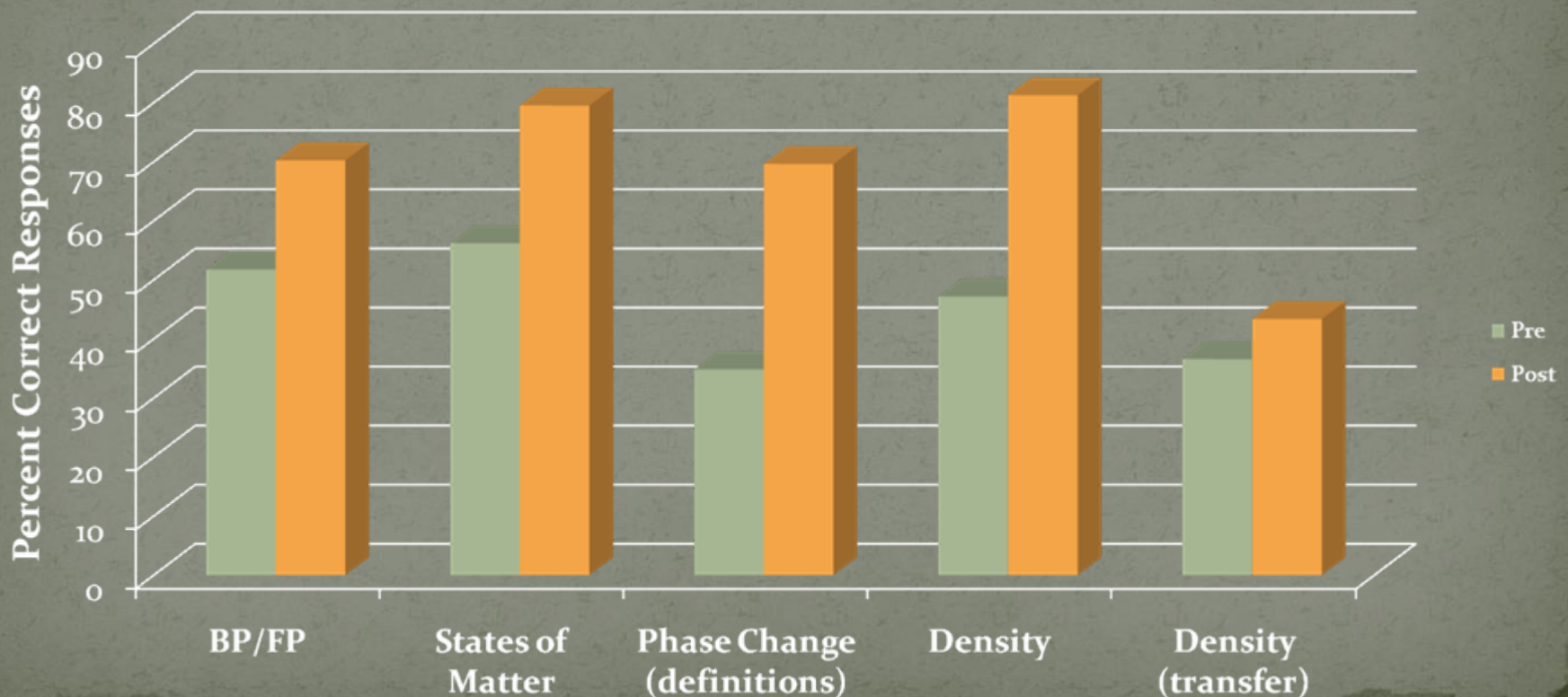


... although some couldn't bear to look

# Results (Assessment):

- Identical thirty question pre- and post-assessments were administered (61 students):

Correct Responses vs. Category





# Lessons Learned (the Activity):

- Hit the ground running. Plan your activity as much as possible over the summer.
- Craft questions to avoid tautological responses:
  - Ex. “Different materials have different freezing and boiling points because they are made of different stuff.”
- The vocabulary gap is significant!
  - Ex. “I would freeze the gas until it condenses.”

# Lessons Learned (Teaching):

- A tightly-knit teaching community allows for remarkable progress:
  - Greatly facilitates planning.
  - Resulted in collaboration between fellows, as well.
- Get the students' attention early. Maintain that attention if at all possible.
- Since every class is different, irreverence can actually be a valid technique for maintaining that attention.



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