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):

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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