

CMP2012 Fermilab Oct.11-13

Education & Outreach: Students 5-16

Topics for discussion

5-12: Students' attitude towards science

- Mobile shows: Purdue, Wisconsin, UI Physics Van (19y!) **disseminate?**
- Classrooms – **APS speaker list, coordinator, fellowships?**
- Youth Programs: KIPC BrothersSisters4Science, UI Illinois Elites
- how to identify existing programs to collaborate ?
- Saturday Physics at labs, universities, other
- Mobile teaching: NYC BioBus science at underfunded schools **add physics?**

13-16 (college) Challenges: retain, attract, educate

- Outreach: Physics Van – benefits participating college students
- RESEARCH: REU summers; during academic year; student: “classes did not motivate me to do research, research made me want to study physics”
- Multiple curriculum options for physics majors (engineering, teaching)
- Physics for Education majors
- Introductory Physics Courses: new teaching practices.

Physics for Education majors

UI Physics123 in collaboration with Education College has trained 800 Ed majors in 8 yrs; affects tens of thousands of k-5 students.

An in-service version. **Talk, w/ movie+alumni ?**

How to collaborate with Education departments

Physics majors & engineers: new teaching practices in preparing students to learn.

Flipped (Inverted) classroom- big component is having students see prelecture activities to see concepts at their own pace, so in the lecture they see applications. This approach is taking off dramatically in high schools and universities (Smart Physics). At U of Illinois 7000 students take intro physics classes - big impact where already introduced.

Examples:

80% -> 40% rate E&M as most difficult

40% -> 80% end with positive attitude towards physics

40%-> 80% rate lecture as important

APS 2013 Excellence in Education Award to Gladding, Selen, Stelzer:

Lecture, workshop ?

Extra slides

<http://van.physics.illinois.edu>

<http://sparktruck.org/about>

Columbia–Pittsburgh-QuarkNet-S.Africa The Physics on the Move:

http://www.columbia.edu/cu/record/archives/vol28/vol28_iss5/Pg4-2805.pdf

<http://www.src.wits.ac.za/groups/outreach/2004/Mobile-lab-2004.html>

<http://biobus.org>

<http://www.labinalorry.org.uk>

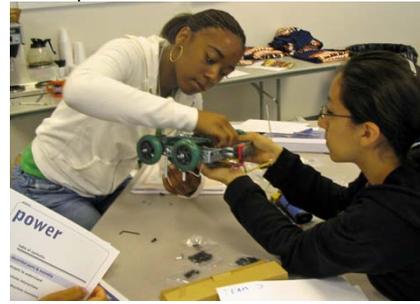
Illinois ELITES

in Chicago, for Chicago students

Engaging Learners in Technology,
Engineering, and Science

Commit to Math and Science Achievement and College Readiness

Illinois ELITES creates a fun learning environment that helps students explore how math and science are meaningful to their daily lives. Students learn with ALEKS, a proven math program based on the same program that designs the math placement exam for all incoming University of Illinois, Urbana-Champaign freshmen.



Commit to Illinois ELITES`

Saturdays for 16 weeks
9 a.m.-noon. Begins Oct. 18th
Marine Military Academy, Chicago
145 South Campbell Avenue
(Three blocks from the Blue Line,
one block west of Western Avenue)

Enrollment is limited to **9th and 10th grade students**. Students must meet program criteria.

For more information, or to download an application and instructions, please go to engineering.illinois.edu/wie/elites or contact

Eve Earles at email: earles@illinois.edu

or call 312-624-8562 *This free Chicago-based Saturday program is sponsored by the College of Engineering at the University of Illinois at Urbana-Champaign and by Motorola Foundation. Chicago Public School teachers will lead classes in collaboration with faculty, graduate students, and engineers from the sponsoring organizations.*



ENGINEERING AT ILLINOIS

Excellence in Physics Education Award to Gladding, Selen, Stelzer

For the creative application of physics education research results with components of modern technology to create a new pedagogy for an introductory physics curriculum that substantially changes the roles of the instructors and students and, as measured through research, provides significant and nationally recognized learning benefits.