

Beyond Boulder 2/3/14

Teaching (non-academia, non-research)

Emily: Centaurus High School, PhD Physics

I don't like being bored, I teach AP Chem/Phys, regular Chem/Phys. In high school there is a broad range of people, many doors are open to you, my class did some astronomy and mars mission stuff

Noah Finkelstein: Physics Education here at CU

It is a challenging experience, the human experience is interacting with people, no matter what you do – you will end up teaching in some way (research presentations....). It is a rewarding experience and you are going to do it anyway, so just try it

- ~3000 new physics teachers in K-12 each year across the country

- ~ 400 are physics majors, the school boards want to raise that to about 1500

- Some physics majors teach other sciences and math along with physics

Emily Leveque: Post-Doc here at CU

Q: Qualifications/Certification

N: In practice it turns out you need a lot of certification and no knowledge to teach HS, where it is the opposite to teach higher education

E: HS/MS you don't know what your job will be, what classes you are going to end up teaching, qualifications vary state by state

N: Colorado's 6-12 science, you need an emphasis in science, not even a major, but there is also no teaching major here. Phys plan III, and passing the state exam will get you qualified.

There is a CU Teach program, and scholarships (1500 up to 3 years), there are masters programs (where you teach in a high need school), there is Teach for America. When you go to get a teaching position there is an interview process where you get up in front of a class and teach under review of the other staff. Any institution (other than maybe a national lab) will require some teaching aspect

Q: Professorship competition

EL: Very competitive, 1 position might have 300 applicants

N: Teaching experience will never hurt on an application anywhere

Martin Black: You should do it because if you ask someone who inspired them, most people will say a teacher, and the few really good experiences outweigh the bad ones

Q: Centaurus, what do you teach?

E: 4 different types of classes, AP chem/phys, regular chem/phys, independent study, tutoring. My biggest class is about 30, but they are all students that I have had for 3 years now.

N: You are supposed to do more work outside of class when in university, in HS they are doing more work in class than outside

E: You are teaching people how to be students, not just content, every student is different and sometimes you are just teaching study strategy

N: There are 100+ students per class at university and you are trying to teach them to be students in 3 hrs per week. If I could change one thing about the public's opinion of teaching, it is that it is not just the transfer of information, these people need to know how to grow up to be a physicist, astronomer....

E: It is not a list of content that you are teaching, it is how to think

N: How much research is bubbling in sheets? NONE

Q: LA Program

EL: get internships (LA Program)

N: Go find out what teaching is about, CU Teach program – go teach after school, CU Science Discovery has a summer and after school program on East Campus

EL: You will have to teach eventually – practice for grad school – looks better on a resume – do better on the GRE...

N: Science magazine did a study that students who TA publish more, and in the university's eyes publications are viewed as more income (advancement of knowledge)

E: Plus you get fun toys when you are a phys teacher (demos)

N: Plus everyone in the country is interested in astro – it is a natural hook

Q: Competition in general

N: There is competition in university, but people are looking to hire more phys majors in K-12

E: There is also a new field of Phys Education research

N: there are more positions than people in education research right now

E: It is a rewarding field

N: some branches of physics are dominated by politics

EL: Get into science policy if you think that is something you are interested in, \$, get people interested in science (teaching) – work on your communication skills

Q: Why do you think people don't like science?

N: sociological studies will be able to tell us after the fact, so we might know in 50yrs....

-History – funding post WWII, science won the war , federal gov't funding, public universities investment in tech

- really complicated – poorer countries are more interested in science because it might help them out of poverty

Next week: Careers in Acedemia