

Minutes for the PhysTEC TAG Meeting of October 18th, 2005 at the Science Discovery Center on CU east campus.

Attendance: Elliot Chase, Michael Dubson, Rob Fatland, Mary Fehrs, Noah Finkelstein, Mike Fuchs, Stephan Graham, Ted Hodapp, Steve Iona, Amy Jordan, Chris Keller, Linda Koch, Victoria Kwasiborski, Trish Loeblein, Karen Lunn, Carol McLaren, Paul Miller, Valerie Otero, Helen Petach, Steve Pollock, Elias Quinn, Steve Reeves, Bud Talbot, Ed Taylor, Chandra Turpen, Tari Wood

The meeting started at about 4:40 pm.

Noah Finkelstein explained what PhysTEC is and how CU got the grant. He mentioned the shortage of new, qualified physics teachers and also talked about resources that CU has and can supply to teachers. STEM-TP was also mentioned. "We are most interested in hearing from everybody and what would be useful for you."

Ted Hodapp (Director of Outreach for the American Physical Society): "We are trying to help physics departments value their role in developing teachers." He asked for ideas from teachers about "what we need to know" to value this.

Carol McLaren talked about the Science Discovery Program, history of building, classes for kids, and programs. She asked for input from CU people to augment the programs. She said that the Engineering Department has an inquiry based teaching program. She talked about the GK-12 program and that it is good for teachers in that the grad students lend a hand teaching, etc.

Valerie Otero mentioned the deep underground science lab opportunity for teachers and distributed a handout.

Michael Fuchs talked about being a TIR (Teacher in Residence) and mentioned some of the things that he's been working on, including his involvement in Noah's class "Teaching and Learning Physics". Noah offers for teachers to take his class and said "we'll try to pay your tuition".

Trish Loeblein talked about her work with the Phet simulations and gave a demonstration of a few. She also mentioned her mentoring of Amy Jordan, who is currently teaching at Evergreen High.

Valerie Otero talked about recruiting teachers and developing coalitions which allow for good mentor relationships of prospective teachers with established teachers.

Mike Dubson talked about upcoming CU wizards shows.

Carol McLaren talked about the "Physics for Fun" curriculum.

Mike Fuchs demonstrated MVT (Math Visualization Toolkit) and the "Teaching Physics" book by Redish.

Noah Finkelstein asked the question, "What can we do for you?" CU has resources, students, Lego mindstorms, JILA resources through Linda, etc...

Linda Koch talked about getting grad students and post docs to go to schools and present. She also talked about the Physics and Film series at CU.

Noah Finkelstein emphasized the desire to develop a partnership. "We (CU) do not have all of the answers."

Steve Iona summarized the summer STEMTP meeting.

And finally a survey was filled out (the results are below) and we had some mingle time.

The meeting adjourned at 6:30 pm.

Survey Responses

(1) Something about your environment you wish us to know / share???
(E.g., what innovations are you using in your class? Or do you have to buy your own pencils? Do you mentor other / future teachers, etc...)

I have been building up a tech/computer lab that incorporates a fair amount of technology (probes) to introduce various topics and increase understanding of concepts. I have also developed some Phet simulation activities independently of CU and the STEM program.

My school has 2 basic levels of physics – regular h.s. physics and AP Physics. Students are allowed (encouraged) to take AP as a first year student – which crams a lot of physics into a year. I mentor a couple of teachers – both in AP Physics and teaching physics to Honors 9th grade students.

Money is tight, technology is not widely available. Ideas are always appreciated!

I'm trying to mentor my replacement teacher back at Boulder High. It's been a pretty tough year for her.

I incorporate a whole-language / cross-curricular approach to my physics curriculum (I design my own curricula for Phys. and Chem). I mentor teachers (science) as part of PEBC (Public Ed and Business Coalition).

We have extremely diverse classrooms in many senses of the word – income, race, skill level... So one of our innovations has been learning ways to differentiate to such a high

degree. We are also fortunate to have great technology resources – each student has a wireless laptop.

Horizon HS – 4 sections of CP Physics, 1 section of AP Physics (Mech C). I share 2 of these classes w/ a 2nd year phys-teacher (Chem background) who I have been mentoring. I'm not sure what you would call innovations but... Our school doesn't have a population like Boulder's to draw on.

Galen O'Brien is visiting about 2 hrs/wk to help w/ prob solving sessions. Working to minimize lecture time and maximize other learning methods.

I use the Phet Simulations regularly. My classroom is very well-equipped with 15 computers & lots of materials, but e.g. copies are rationed. I am being mentored.

Research / STOL in classroom. Increased #'s / value of education in Physics Dept.

**(2) Something you would like to learn / change / coordinate around?
(e.g., send university students / activities to the classroom)**

I would very much like to have university students bring ideas (including demonstrations) to my classroom. Also, I would appreciate some review of current labs that I use with possible additions to improve / change the labs.

I would love to have people come in with activities lessons especially in the areas of thermodynamics and electricity. I honestly do not have much for these 2 areas – and some activities / connections for the students would really help.

Get more students from CU into my classroom for Labs for inquiry based learning.

reading & physics

How do we teach various topics

Working w/ 9th & 10th graders & physics

Life in classrooms to help university people understand issues

Changes in CU Labs

More about the latest in Physics Education Research especially things that directly affect practice.

I would love to have graduate students visit our school to share their college experiences and talk about how they chose their majors. We would also be willing to have them bring a lesson or teach one of our lessons. The lego activity looks really cool!

I am eager to bring univ students to the classroom and work w/ a challenging population of students (poor English language, low income, center-city kiddos) and strategies to work / motivate them

I'd be interested in learning more about potential graduate student involvement. It would be great to have grad. students take over part of the class so that we could more often split the class by levels.

Not sure... I am interested in the central purpose of getting a wider & deeper stream of physics students becoming physics teachers... I will have to think some more about this.

Talking w/ Linde Koch about having students bring demonstrations (not usually available at high school) to the classroom. Good experience for both CU students & H.S. learning.

Would really enjoy having university students present activities!

How best to build community that is self sustaining

Nexvabed

Out of self interest

Better lives for students - community

(3) What would you like to see at future TAG meetings? (E.g., what are the latest findings in Physics Education Research?)

This (the latest findings in Physics Education Research) would be beneficial. Specifically give examples of demos available to us. *More information on LEGO robot activities!

One thing I'm very interested in is how to prepare my students to be successful at the next level – so I would like some conversation on what college students do well & what they don't do well.

More on inquiry based learning Lab ideas.

PER would be okay

More about the latest in Physics Education Research especially things that directly affect practice. A Show & Tell of best / favorite practices /activities from the teachers.

That (the latest findings in Physics Education Research) is a great idea. I would like to see the grad students demonstrate something they would bring to school. Also I'd like to hear how they think we could help them.

Make-and-Take sessions... especially useful for non-veteran physics teachers.
-Focusing on teaching methodologies for certain concepts.

Maybe breaking up into small group discussions focused on a particular teaching problem or situation. It would be great to get feedback & share solutions with people coming from such different perspectives & backgrounds.

Not sure... I am interested in the central purpose of getting a wider & deeper stream of physics students becoming physics teachers... I will have to think some more about this.

Research findings are incredibly interesting especially – what works / what is not effective.

Not sure (even after this meeting's intro to PhysTEC/TAG) what falls under the scope of these organizations. But I would love to see lesson-specific ideas... like the legos or Phet sims s tuff.

More participant from teachers.

(4) Any other comments?

What specific skills can we give or help our students to develop before the leave high school.

Our school is very involved with CU engineering dept. Each term grad students from engineering teach an elective (organized by Jackie Sullivan & Mindy Zarske). It would be great to have more collaboration btwn the physics dept & our school!