

Title of Session: NanoSense

Moderator: Patti Schank, Anders Rosenquist, Alyssa Wise, Tina Stanford

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Room: NanoSense Group

BJB2: Welcome to the NanoSense Project!

BJB2: We'll get started in a couple minutes

BJB2: a suggestion if you are new to Tapped In to go to the ACTIONS menu in the top right of the chat window and click on DETACH

BJB2: this will make your chat window larger and easier to read

AlyssaW waves and smiles

BJB2: I've been looking forward to this discussion for ages!

PattiS feels detached

BJB2 . o O (I might not understand it, but it sounds really interesting)

TinaS: Thanks, that's great. Do you have any questions?

PattiS: think should we start?

BJB2 nods to Patti

BJB2 . o O (I don't know enough to ask any questions yet)

TinaS: Do any of you guys do anything with nanotechnology in classes or with students?

PattiS . o O (we should start)

BJB2: I'm interested in learning what nanosense/nanotechnology is

PattiS: So since this session is about nano

PattiS: have you seen the iPod nano? <http://www.apple.com/>

ChrisA: no not yet

PattiS drools

TinaS: Nanosense is about developing curriculum about nanoscience for students in high school

EmilyW: I am interested about learning about nanosense/nanotech too

PattiS: Let's start with introductions

PattiS: Can everyone say who they are, what they teach, and if they ever taught a nanoscience topic before?

PattiS: I'm Patti, and I co-lead the NanoSense project, and am a developer/designer of Tapped In

AlyssaW: I'm Alyssa, a former HS physics teacher and current grad student in education at Indiana University. I'm also working to help develop some of the NanoSense units.

TinaS: I am a former high school chemistry teacher (mostly) and am now co-PI for this NSF project. Last year, I didn't know what nanotechnology was-

ChrisA: I am the director of CTE for the Kodiak Island School district and we do not currently teach anything about nanoscience in our science Curriculum

AndersR joined the room.

PattiS looks to Anders to introduce himself

DavidWe joined the room.

TinaS: Wow! Kodiak! As in Alaska Chris?

DavidWe waves

PattiS waves to David

EmilyW: I am Emily, I am on helpdesk at Tapped In, and web designer. I graduated college a year ago from Indiana.

PattiS: to David we're introducing ourselves

ChrisA: yes

BJB2: I'm an art teacher in Pennsylvania and a helpdesk volunteer for Tapped In

AlyssaW smiling - yay Indiana

DavidWe: I'm David Weksler. I work with math and science teachers and help them learn more about technology like TappedIn.

AndersR: Hi there - my name is Anders and I work on the nanosense project with Patti, Tina, and Alyssa

TinaS: what does CTE stand for?

DavidWe: . o O (I'm in Edgewater, NJ, at the moment, at Panera)

ChrisA: career and technology education

PattiS: So it looks like nobody here has taught nanoscience topics? Anything close to that?

DavidWe: Not me

PattiS: . o O (it is a new field!)

PattiS: We can start with some show-and tell about the NanoSense project

PattiS: and this group room

PattiS: then we'll have some discussion questions

TinaS: Cool! Looks like most folks are interested in using technology in science education. We have a bunch of stuff on our web site <http://www.nanosense.org>

PattiS: And I want to invite everyone who is interested to join this group (the room we're in) so we can continue our discussion

DavidWe: Thanks, Patti

BJB2: Chris, do you remember how to join a group?

PattiS: So we'll be talking about the nanosense project, see <http://nanosense.org>

PattiS: We're 1 year into a 4 year project to develop nanoscience curriculum activities for high school

PattiS: We have a pretty complete introductory unit at this point, one that we've tested in a few classrooms locally

PattiS: you can see our curriculum here: <http://nanosense.org/activities.html>

PattiS: The first one, Size Matters, is one we can say the most about

AndersR: The nanosense project is a follow on to our 6 year (two 3-year NSF funded periods) ChemSense project

AndersR: see chemsense.org

PattiS: Alyssa (here) is developing the Clear Sunscreen unit

AndersR: sorry, "ChemSense"

PattiS: let's all look at the size matters unit, to start

PattiS: <http://nanosense.org/activities/sizematters/index.html>

AlyssaW: If anyone is teaching anything to do with the interaction of light and matter (in chem, physics or interdisciplinary science) the Sunscreen unit does some pretty neat stuff

TinaS: there are several introductory readings that might help you understand what nanotechnology is all about

PattiS: Does anyone here want to teach nanoscience, or are you not sure what it's about yet?

PattiS wonders what folks think nanoscience is

DavidWe thinks nanoscience is WAY cool

PattiS: our first unit focuses on issues of size, unique properties at the nanoscale, and applications of nanoscience

PattiS: our later units will pick a specific topic (like clear sunscreen) and dive into depth. The intro unit is more of a survey (though a long one--well over a week's worth of classroom material to choose from!)

TinaS: It looks to me, with the advent of the new family of probing microscopes, that we might add to our knowledge of how things work scientifically-

AlyssaW thinks that nanoscience offers some great opportunities for kids to see science "in-the-making"

PattiS: Feel free to download and look through the introductory materials

PattiS: are there any in particular that anyone would like to know more about?

PattiS: generally, we have readings, slides, lab activities, worksheets, quizzes... typical curriculum materials

PattiS: we've found it really challenging to develop materials for nanoscience education

TinaS: Those that work with teachers, do any of your teachers want to introduce their students to nanotechnology? Would online materials be of interest to them?

ChrisA: Yes and yes

EmilyW: What do you mean by online materials?

TinaS: Outa sight! What can we do to help you help them?

AlyssaW: materials that they can download and print and use with their students

PattiS: we're putting all of our materials online (at the URL I listed above)

PattiS: so that anyone can use them

EmilyW: so not materials on the site, like interactivity or videos or anything like that?

PattiS: we're testing the materials with classrooms that are near us (in the San Francisco Bay Area) but want the materials available to everyone

DavidWe has some ideas

EmilyW: what grades level is this for?

ChrisA: well I checked out the link you posted and that is a great start I will turn them on to this group as a COP the join in and share their work on the subject I have instructors in rural places that are always looking for subjects that allow them to wrap other topics inside them

AlyssaW: If you go to <http://nanosense.org/activities/sizematters/index.html> you can look at some of them - check out the powerpoints, they give a nice example of the stuff we have up there

PattiS: this is mainly for high school

ChrisA: I think I will start there and move on from that point

PattiS: we have some animations

DavidWe . o O (yippee)

TinaS: There are powerpoints, readings, activities, teacher notes, etc. No videos or interactive stuff yet other than some activities developed with ChemSense which you can download.

PattiS: and our later units will have more use of a tool called ChemSense that students can use to create animations

AlyssaW: Chris - These are great for linking with other subjects b/c they touch on chem, bio and physics all in one. Materials science too!

PattiS: (NanoSense is a child of the ChemSense project, <http://chemsense.org>)

DavidW: wants interactive stuff

ChrisA: I would love to find some kind of collaborative problem that we could hook a group of students up with

PattiS: From this group room, we are also linking to other educational materials, and some have interactive parts

AlyssaW: What kind of interactive stuff are you thinking of?

ChrisA: Thank you Alyssa we agree we see the ties too and feel this is strong fit for some of the things we can be doing across multiple schools in our district

EmilyW: games, animated movies, quizzes

TinaS: Chris, we have a project at the end of the intro unit for students to investigate applications (in groups) and report to fellow students

EmilyW: links to other sites

EmilyW: virtual field trips

ChrisA: that sounds great

ChrisA: any chance there is anything set up that puts students in touch with scientist working in nanoscience

PattiS: that would be nice. there is a project that does some interactive (virtual) control of scanning probe microscopes

AlyssaW: That's a neat idea Chris!

PattiS: tries to remember what that was

PattiS: the NanoManipulator tool has been used virtually

PattiS looks it up

AlyssaW: A neat idea to link students up w/ scientists

PattiS: that would be a good one to add to our "nanoscience education" folder in the Featured Items note in this room

TinaS: I like that idea-

PattiS: this is the nanomanipulator project: <http://www.cs.unc.edu/Research/nano/>

PattiS: it has been used with kids virtually, I believe. The kids interact with a surface using the tool

TinaS: There is some program that hooks students up to viewing the output of an AFM microscope, but I am having a hard time remembering what it is called

TinaS: There are problems with this though, because kids can't understand what they see-

PattiS: this is a better url: <http://www.cs.unc.edu/Research/nano/ed/index.html>

ChrisA: from our point of view putting students in direct contact with scientist transcend the distance and isolation that we encounter being island

PattiS: from that page:

PattiS: "We are exploring ways for students to explore nanotechnology along side of scientists."

ChrisA: that is a great idea

PattiS: they have kids "feel" viruses

PattiS: the nanomanipulator gives feedback

AlyssaW: Having scientists involved could also help kids to interpret the data....

BJB2 wonders if the group has considered holding a discussion in one of the SAC studios for students?

PattiS: which group (us? or the nanomanipulator folks?)

BJB2: any scientist types

TinaS: how would you go about finding the nanoscientists that would be willing to work with a class of students?

ChrisA: I have no clue

PattiS: this would be a great forum for virtual field trips about nano!

BJB2: . o O (remember when ErikW was doing sessions in TI, Patti?)

PattiS nods

BJB2: he used to do Ask a Scientist

PattiS: can you say more about that, BJ

DavidWe remembers

TinaS: Maybe we develop this potential connection with scientists- we will have to give it some thought

PattiS: I'd like to hear more about Ask a Scientist

BJB2: he would schedule a time when people could log in and ask questions...he was so cool. He didn't schedule in the SAC, but that would be a perfect place to meet with the kids

ChrisA waves goodbye to everyone and says thank you

PattiS waves bye to Chris

PattiS: thanks for coming, Chris

AndersR: bye Chris - thanks for hanging out

TinaS: Bye Chris. Good luck.

PattiS: join the group if you want to hear more

PattiS: it's open to anyone

BJB2: we talked about all kinds of science stuff.

AlyssaW: Bj- do you know how he got scientists to take the time to do that?

BJB2: Erik led the man vs machine event during our first TI festival

BJB2 . o O (people vs search engines)

BJB2: Alyssa, Erik was a scientist

AlyssaW grins sheepishly

PattiS: oh, Erik was the one who answered the questions

BJB2: but you could invite guest speakers to talk

AlyssaW: Ah - so he only had to convince himself then

BJB2 nods to Patti

BJB2: he had a tough crowd...and a wonderful sense of humor

PattiS: We might have enough content knowledge to do an Ask a Scientist session

PattiS: if we kept it at an intro level

EmilyW: have you been to this site? <http://www.thenanotechnologygroup.org/>

PattiS: no "plasmon resonance" questions :)_

AlyssaW: But would that defeat the purpose of hooking into someone who works in the scientific community on a daily basis

AlyssaW: That's a new one for us Emily, thanks!

PattiS skims the site

PattiS: how did you find that, Emily?

DavidWe knows a little bit about buckminsterfullerene - soccer ball shaped carbon molecules

DavidWe . o O (Google?)

EmilyW: not google this time

DavidWe smiles

PattiS: did you just find it in a random search, or had anyone recommended it?

EmilyW: I am on a networking site and I did a search to see if anyone was involved with nanoscience

DavidWe . o O (way to go, Em!)

EmilyW: and one of my connections is and had the site listed

EmilyW: (and others too)

PattiS: it says it has virtual classrooms and virtual labs

PattiS: just what folks were asking about

PattiS adds it to our nanoeducation folder in the room

PattiS: They mention nanoengineer on this site

PattiS: We've talked to the nanoengineer folks about doing another project that focusses on computer modeling at the nanoscale

DavidWe: That sounds neat

TinaS: Seems that they are mostly reporting from a conference as well as planning on the developing the site a bit more. Not a great collection quite yet. Business connections there

PattiS: One difference might be that they are selling things, and we are giving our materials away

AlyssaW: The Nanotechnology group site looks like it is a business - they have products that they are trying to sell - not sure what that means...

EmilyW: right

PattiS: I recognize a lot of the materials they mention, though

PattiS: invsee, nanoengineer, etc

EmilyW: but the people involved would know a lot about nanoscience

JeffC joined the room.

DavidWe waves to Jeff

PattiS: these are all good things that we've looked at

JeffC waves

TinaS: Hi Jeff

PattiS waves to Jeff

EmilyW: the nanonews that they have is interesting

PattiS: Jeff, we are looking at <http://www.thenanotechnologygroup.org/>

PattiS: We briefly talked about our materials at <http://nanosense.org> and folks wanted to hear more about interactive materials (virtual labs, etc.) so we started looking at other sites

PattiS: I've posted some of the things we've found in the nanoeducation folder (see the Features Items note)

AlyssaW: Yes, seems like an interesting resource

JeffC: Thanks Patti

PattiS: Jeff, can you introduce yourself and say what you teach?

PattiS: Are you interested in teaching anything related to nanoscience?

JeffC: I'm currently unemployed... but I facilitate the Science Resources K-20+ group here.

PattiS: Maybe we should talk about our resources at one of your meetings

JeffC: I'd love to spotlight nanosense at one of our meetings.

JeffC: Indeed... we can create a folder for discussions and links there as well.

PattiS: Does anyone here go to AERA?

PattiS: It's in San Francisco this year, and we hope to have a symposium on this topic

AndersR: we will have a symposium on our work

AlyssaW: I'm going!

PattiS: We'd be happy to do that, Jeff!

PattiS: We're testing our materials with teachers here in the bay area, but would love input from other teachers

PattiS: since our materials are available to anyone

PattiS: The clear sunscreen unit will be interesting

AndersR: AERA is April 7th through 11th in San Francisco

PattiS: Alyssa can you say a bit about that?

AlyssaW: So the clear sunscreen unit is really neat

AlyssaW: Remember the old zinc oxide sunscreens from the 70s and the lifegaurds w/ white noses?

EmilyW: I am confused, what is the purpose of this group? What information can we contribute or suggest? How can we be involved?

AlyssaW thinks someone must have seen this in an old TV show

PattiS: Emily, this is our first session, so we're just learning

AlyssaW: Well - it turns out that the white appearance is due to the scattering of light and when you make the Zinc Oxide particles really small, they don't scatter light anymore and thus appear clear

PattiS: We're developing materials to teach nanoscience to high school students. We'd love to have others use the materials, and to just more generally have folks contribute ideas, resources, and discussion about nanoscience education

PattiS: It's such a new area, people aren't sure how to teach it yet

AlyssaW: We're developing a unit that lets students explore how different sized particles scatter light differently and how this relates to their nano-ness

EmilyW: how are you spreading the word about it?

AlyssaW: Emily - that is one of our key challenges - how to spread the word and get teachers to take the time to use our materials!

AlyssaW smiles

TinaS: Google is one resource that links to our website

PattiS: We've developed materials, but it was very challenging, and we like to work closely with teacher (face-to-face, and we're hoping online, here) to make our materials more valuable and summarize other resources that are available

DavidWe: That sounds great, Patti

EmilyW: maybe there is a way to help with that?

TinaS: What are you thinking about Emily?

AlyssaW: Yes, I was curious at the networking group you mentioned earlier...

PattiS: I'd like to see folks join this group, have discussion, post resources

EmilyW: to both tapped In members and not tapped in members?

PattiS: post feedback on our materials if they use them (what worked, what didn't)

PattiS: recommend other materials

PattiS: and so on

PattiS: our materials are free to anyone

PattiS: one our web site (tapped in or not)

PattiS: but hopefully we can use tapped in for some discussion around them

EmilyW: I am not really sure what I have in mind yet

PattiS: perhaps we should post some evocative discussion questions

EmilyW: but I'll be brainstorming ideas

TinaS: Let us know when you give it a think

PattiS: have you tried any nano materials before or thought about using any?

EmilyW: no

EmilyW: I am just very interested in online research and spreading the word about stuff

PattiS: great!

BJB2 thinks that the evocative discussion questions should also be posted to Jeff's Science Resources group

EmilyW: be right back

BJB2 . o O (also invite people to join this group)

TinaS: Good idea BJ

JeffC: We have about 170 members in that group... if someone wants to join me there after this session... we could set up some folders... and a discussion thread inviting teachers to join this group.

PattiS: So next steps might be to have a session in Jeff's group

AlyssaW: Thanks Emily, we'll be interested in what you come up with

PattiS: that would be great, Jeff

PattiS: we can add a passageway to your group from our room, too

TinaS: you guys have contributed a lot of good ideas. Thank you!

AlyssaW: That sounds like a great idea connecting with the Sci Resources group

BJB2: another idea for the SAC...could you create a 'studio' type room for Science...including NanoSense...

BJB2: that teachers could bring their students to for a virtual field trip

PattiS makes the passageway to Jeff's group a featured one

PattiS: I think we're ending; Tina has to go

BJB2 . o O (lot of K-12 science teachers bring in students)

PattiS: Jeff, I can join you in your group room for about 15 minutes

JeffC: Sounds great Patti.

BJB2 waves goodnight. Thanks, everyone. Interesting discussion...very productive

AlyssaW waves

PattiS: Thanks to everyone for coming

AlyssaW: Thanks for all the helpful comments everyone!