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Subject: Physics Education Meeting 2.2.2021 - Summary and Action Items
Date: Tuesday, February 2, 2021 5:25:00 PM
Attachments: [image001.png](#)

Dear Randy and All,

Below are notes and action items from today's meeting.

Physics Education Meeting

Tuesday, February 2, 2021

1:00 PM – 2:30 PM EST

Attended: Randal Ruchti, Marge Bardeen, Chris Rosenzweig, Yining You, Vetri Velan, Sijbrand de Jong, Kenneth Cecire, Sudhir Malik, Breese Quinn, Olivia Bitter, Scott Kravitz, Erin V Hansen

Summary

- Chris Rosenzweig teaches AP Physics 1 and 2. He was invited to get involved with QuarkNet. Works in the community district where 2 middle schools feed into high school. They try and meet with middle school teachers often enough to get a sense of what they are teaching and make adjustments to their curriculum. It is not focused on a specific child which would be beneficial for high flying students, but this is not on anyone's radar. Instead they focus on the curriculum. This model is used in their district. They try to keep students engaged after classed by organizing extra curricula activities. It is not an aggressive push, but giving resources to those who are interested and passionate. Chris is available to participate in these calls during his lunch break, and is also available in summer.
- WP group formation process is still being determined. International colleagues and teachers who worked with international colleagues can be invited in order to benefit from their experience (mutual collaboration). Have potential collaborators from Japan, Taiwan, Hong Kong, Singapore. Sascha Schmeling, head of the CERN student and teach programs, could be invited (Sudhir can make an introduction). Need to bring in people to work on the WP, need to focus on using people's time wisely and getting the most out of them. High school teachers have especially limited availability.
- Teachers in Europe visit CERN for a week or so to learn new things. Something similar could be created for National Labs. QuarkNet could influence it through their good practices. We could have teachers from some radius. We could have a week (or 3 days etc.) when they visit and learn about what's going on. Pedro has been doing it in Portugal and Brazil. Some of these things work at CERN while they couldn't work at DOE labs. These programs are not funded directly from CERN budget. An example is US Embassy in Geneva that funded a similar program. They were able to make use of the funds leftover at the end of the fiscal year. It's not against regulations. Where do we find funding for this? How is HEP community going to come up with the resources? It is more than just one school or one district. Bringing in funding isn't easy. How can the entire community support it?
- Issue of getting young children coming through the pipeline in high schools. Need to understand the flow of how students are getting into high school, where they are coming from and how we can improve attracting students to classes like Chris's. Issue is that most

students are not exposed to science until grade 4-5. It's hard to keep kids engaged. Perhaps, if we can get science to a lower grade? But then we ask elementary school teachers to learn new curriculum, it is challenging, they are already multitasking. Very few districts put value on science. The ones that do, start at an earlier age and keep children on track. This is more typical for well-off towns and private schools that feed into each other. How do we keep students on track from an earlier age? Fermilab has programs for kids starting from small age. It's hard to go too early in the school level. We are talking particle physics here. Kids learn about atoms in 4th grade. That could be a starting point. Our group should not reform K-12 education. We need to focus on our goals.

- Kids from one middle school never get into a certain high school, because they don't get any opportunity for preparation due to school location, for example. Where do we start with the flow? Hard to start at elementary level, can start at middle school. Difficult to tackle that kind of flow from particle physics community. Easier to reach students via teachers. Teachers have to be motivated. Don't need to replace curriculum, but can help high school teachers to do something additional. High school students could make presentations and bring them to middle schools. On 'Teacher Days' (1 or 2) particle physics community could provide substitute teachers. Not sure if labs would be interested, other than Fermilab. We need buy-in from scientists. Need physicists to volunteer for those 1-2 days. We have more people in the community from universities than from the labs. There is no encouragement for scientists. Lab scientists can make a huge difference, but this would be pure charity. We can provide a list of suggestions, for example that scientists at labs could engage with people in their community and area to help promote the flow through the pipeline up to a level.
- Alternate Snowmass schedule was distributed to conveners recently. It has been decided to pause activities until the end of June. Wrapping up Snowmass in the middle of September 2022 with various deadlines in-between. Within CEF it will be a mix. Some Topical Groups will pause until end of summer, others will continue at a slower rate. But some groups will go full speed ahead. For the meeting this coming Friday, each Topical Group should have an idea of what their plans are moving forward. Frontier level activities and topical group level workshops should not take place during the pause. Individual work can continue. Working Groups focusing on writing WPs can continue. A&I will continue because industry partners cannot add another year to their commitment. Public Policy and Government Outreach TG WP is connected to DC trip, hence cannot be delayed. Bi-weekly meetings could become monthly. People shouldn't feel like they have to attend during the pause.
- Need to put down some targeting objectives for the WP group to review. Need to organize our work and schedule. WP#2 has a lot of interest. We had discussion on WP#3. WP#1 overlaps with Career Pipeline & Development. WP#4 and 5 need organizing. Our work can benefit from the Snowmass delay.

Action Items

- WP leaders to organize groups and fill out TLC template.
- Randy to send TLC template to Marge.
- Marge to put together a skeleton of the WP to start with.

Please, let me know if any changes are needed.

Thank you,

Daria Wang, CMP, DES

Event Project Planner

Scientific and Technical Resource Integration (STRI)



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