I first heard about QuarkNet and met Kenneth Cecire (Ken) when I was working at the American School in Japan (ASIJ), Tokyo in 2015. Ken and Joel Klammer from the Shanghai Concordia International School came to Tokyo to run a two day particle physics workshop. I was immediately hooked. As I had been teaching Conceptual Physics and AP Physics for the previous 5 years, I felt that the majority of the topics were over 200 years old. The particle physics workshop gave me an insight to what was happening currently in physics.

After that first meeting I was in contact with Ken and Joel and in January 2017 we met again in Tokyo to finalize the Fermilab Masterclass that we would hold in Tokyo in the spring of 2017.

That spring, after a week of particle physics lunch labs, my students and I headed over to Hiroogakuen, another school in Tokyo, where we did a 2-day Masterclass with students from all over the world (see picture below).

The Masterclass was a huge success. The students were counting Muons and discussing with other high school students and Fermilab scientists. One of my favorite parts was that several of the students' questions were questions that the Fermilab scientists also did not know the answer to. The Fermilab scientists would then say "What do you think?" It was a fantastic way to get students on the edge of modern physics.

Most recently, in November 2017, I introduced particle physics to my DP students. We got involved with QuarkNet's World Wide Data Day (W2D2). It was similar to the Fermilab Masterclass in that the students were counting muons, asking questions, and becoming intrigued with particle physics. For three of my students (see picture below), it was the first ever contact that they have had with Particle Physics. They were a little lost at first but by the end of the session asked some great questions and are looking forward to getting into the particle physics unit of the DP physics curriculum and more activities with QuarkNet.

Working with the team at QuarkNet has become one of the highlights of my year. The activities they have created, for getting students familiar with figuring out the unknown, like Rolling with Rutherford are fantastic introductions. Then have manipulatives like the Quark Puzzle, which I had 3D printed and laser cut (see picture below), has really made students interested in Particle Physics. In fact, one of my students, as a result of this class, used our contacts to have a personal tour of CERN.

The most direct impact of QuarkNet's outreach has been sparking the interest of Greg Crow, now a senior at ASIJ. After the Masterclass he was interested in visiting CERN. Through these connections he was able to visit the facility with his family last summer. Below is a picture of him (left).

He also said "It was a truly once in a lifetime experience to actually get to process and understand data from CERN. More than just the experience, it inspired me to look further into particle physics and learn what I could on my own to visit CERN than following summer. Currently, I am still learning more about particle physics and want to go into engineering physics as a major in college."

This spring we will be working with QuarkNet again during the CMS Masterclass. I will also be involving the students at my old school ASIJ as well. Having this connection to real physics applications and career opportunities is exactly what high school physics students need to see beyond physics in the classroom.

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