

## LOCAL BLOGS

**By Tim Hunt**

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About this blog: I am a native of Alameda County, grew up in Pleasanton and currently live in the house I grew up in that is more than 100 years old. I spent 39 years in the daily newspaper business and wrote a column for more than 25 years in add... (More)

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## Pivoting and piloting science programs to serve students and families

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When Caleb Cheung and the board of the Quest Science Center in Livermore mapped out a plan for 2020, it was full of pilot programs. And that was before the pandemic. The March shutdown has made it a year of even more experimentation as Cheung pivoted to mostly virtual programs. He also launched face-to-face, week-long programs for small groups (bubbles) of students this summer. Cheung joined Quest in February as its first full-time employee. When schools closed and people sheltered at home, the Quest team figured out there was a crying need for good information. So, they enlisted some of their professionals to write articles to explain key points. That grew into a weekly newsletter and the first pilot program -- Quest@Home. The webpage is updated weekly with

resources targeted at helping parents engage with their kids around science. The target age is middle school, although Cheung believes activities can extend to high school and elementary students. The page suggests science apps and other free resources.

One summer initiative is a two-hour, week-long science camp done digitally. Participants receive a box with supplies and then participate in the Zoom call. One lesson focused on electricity and magnetism, while another had students building a speaker.

Cheung noted, "It's not a cookbook where you do five steps and have a completed product. They need to do trial-and-error to figure out the engineering and design challenge. It encourages experimenting and tinkering." He believes the program could scale up in the fall as an after-school offering.

Quest also launched a nature exploration program for small groups of students that met at Del Valle Park and Sycamore Grove Park. The "Nature Explorers" program taught kids to observe and look for connections outdoors in the biological world. They learned about plants, animals, insects and how they related together. Participants kept a nature journal with notes and sketches as they were encouraged to learn to ask good questions.

The fourth summer program grew out of a spring request from ninth- and 10th-grade parents who wanted to keep their students engaged around math. The original plan was for volunteer tutors, but the pivot involved a one-hour Zoom session with students given an open-ended challenge or puzzle that was math-related.

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They would develop algebraic formulas and then create their own puzzle. Two high school interns have been working with the students and do breakout groups for individualized coaching.

A core Quest value is partnerships.

One that had been taking shape in the spring involved the Tracy Boys and Girls Club, which has large after-school and summer programs. This summer their Zoom attendance had been falling so Cheung suggested he provide some live demonstrations for their STEM week. Demos ranged from Cheung doing science magic from his home office to using frozen nitrogen in the back yard of a board member's home. Attendance quadrupled, he said.

Another initiative involves community science. It was launched at the Horizons Science Conference for girls last winter where participants built CO2 sensors. Cheung sees a community filled with the sensors providing real time data on air quality.

One intriguing community project could revolve around the huge windmills in the Altamont Pass. The vision is for an app to take families on a tour and teach them about the windmills, the conflict with the raptors and some local history. It could even evolve into a scavenger hunt where families move from location to location and watch videos and then record information. The goal is to make it interactive and fun.

The same is true for a computer-generated art project that is targeted for the lobby of the Bankhead Theater. It involves a software program that generates art that then can be printed out. The big vision would have interactive computers so people could design their own art and then take it home.

Cheung and the board, which is filled with retired Lawrence Livermore and Sandia scientists and engineers, are using this year and next to plan what type of exhibits and activities to include in the science center. They plan to build a science center in 2024 in the heart of the downtown Livermore.

He brings a rich background to this position, having taught science in Oakland schools for 10 years and then spending 10 years as the science director for the district. He had been an adviser to the Chabot Space and Science Center and then the opportunity opened up for him to join Chabot full-time to implement new educational programs.

That assignment lasted three years before he'd wrapped up the initiatives and was ready to move on. After a few months off to enjoy family time (he has two children, ages 10 and 6), Quest reached out with the consulting opportunity and he's hit the ground running.