Community colleges can overcome math barrier

By Debbie Budd, Brynt Parmeter and Margaret Daoud-Gray

As Silicon Valley seeks to grow and diversify its tech workforce, one obvious solution is overlooked: The 15 community colleges in our region.

They are educating the next generation of the Valley workforce. With 250,000 students — about 70 percent people of color and more than half of them women — community colleges in Silicon Valley and surrounding areas serve a diverse talent pool of potential engineers, computer scientists, bio-tech researchers and advanced manufacturing technicians.

Besides offering a wide range of educational credentials and technical training, community colleges also serve as a gateway to California's world-class public universities.

Community colleges are part of America's largest and least expensive higher education system. In Silicon Valley they serve a diverse student body including many students with low incomes who are first in their family to attend college. Students are passionate about their education and determined to build a career, but too often, systemic barriers prevent them from completing their certificate or degree.

One major barrier is math preparation. The need for high-level math skills is a critical barrier to advancement in science, math, engineering, and technology (STEM) careers. Currently, more than 75 percent of entering students test at a math level that typically requires two to three years of course work to reach the calculus threshold required to pursue degrees in engineering and computer science.

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In addition, many community college students receive limited exposure and access to tech career opportunities. Finding ways to assist our students in meeting these challenges is critical to Silicon Valley's hopes of building a homegrown workforce.

One promising new strategy has been put in place by the San José — Evergreen Community College District in collaboration with nine regional community colleges and employers such as NASA, Lawrence Livermore National Lab, Lockheed, and Jabil; business organizations such as the Silicon Valley Leadership Group; the statewide non-profit Growth Sector; and work2future, San José's job training agency.

The new program — the STEM Core — rethinks the community college experience for students taking remedial math courses. Instead of a lengthy process of completing developmental courses, the STEM Core challenges lower-level math students with an accelerated two-semester program combining multiple higher-level math classes with real-world technical training, computer programming, hands-on experience, and paid internships at partner employers.

Building on pilots in the region and state, this model has proven very successful. Statewide, 65 percent of participating students advanced to calculus readiness in two semesters compared to an overall rate for traditional path students of just 4 percent over three years.

The STEM Core pilot has been supported in its initial stage through state and federal funding. Continuing growth will require a broader public/private coalition that brings together Silicon Valley educational institutions, regional tech employers, philanthropy and government.

Such broad-based coalitions come with their own challenges, but one template already exists in San José: FlexFactor.

Developed by NextFlex, a National Manufacturing Innovation Institute, in partnership with Evergreen Valley College, the FlexFactor program fully immerses high school students into the world of advanced manufacturing technology, generating excitement about STEM-based education and career pathways among young people.

It does all this through an innovative, project-based learning model that brings the college, industry, and other stakeholders into the high school.

These initiatives help achieve two important goals for our region—advancing economic opportunity for residents to rebuild our middle class while creating a more diverse generation of tech workers. It's critical to build and expand them.

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