EARLY MATH POLICY STATEMENT

RE: THE NEED FOR IMPROVED EARLY MATH EDUCATION—POLICY RECOMMENDATIONS

DATE: November 1, 2017

This policy statement is intended to generate action to support comprehensive mathematics education in California, beginning at an early age (Birth to age 8). The shortage of resources for early childhood math education affects all California public school students, but has a particularly negative impact on low-income minorities and other vulnerable children as it is clearly linked to their later ability to compete for well-paying jobs and STEM (science, technology, engineering and math) careers.

The Institute for STEM Education at California State University, East Bay, began convening The East Bay STEM Network in 2010. The network is comprised of a broad cross-section of leaders in education, business, public policy, and community organizations, and applies a “cradle to career” approach to improving STEM education regionally and statewide.

The Network understands that the challenges of delivering quality education to the most diverse population in the nation are complex and difficult. We believe that, by continuing to break down institutional barriers and focus on priority areas with the greatest potential to yield breakthroughs, our state can systematically help all our students build the confidence and competence that will allow them a lifetime of success.

The Issues

The issues we have identified highlight the social injustice brought about by the lack of early math literacy, and its impact on later life success. This has great economic impact as well, as it strains our innovation, our local talent pool, and our global competiveness. The recommendations we propose are the product of years of research, policy analysis, input from employers, and cross-sector collaboration.

- Math proficiency at kindergarten is as important a predictor of future academic success as early literacy.1
- Preschools spend only about one-third as much time teaching math compared to reading.


Early Childhood Education providers must receive adequate resources and professional training so that all of our youngest students succeed in these two fundamental, interlinked disciplines which are the building blocks of future learning.
• By kindergarten, there is already a demonstrated achievement gap in math that is aligned with factors including ethnicity, socio-economic status, parents’ level of education, and language. This gap between the bottom and the top income quartile is equivalent to 20 developmental months in age for a child entering kindergarten, and it increases as the child moves through the grades. As a society, we must systematically work to eradicate these pernicious imbalances.

• A majority of students come to community and four-year colleges unprepared for college-level mathematics. This costs students money and time, and impedes their ability to complete coursework in their majors in a timely manner. It can stop them from finishing their degrees. We must develop seamless systems to prepare students all along the way.

• Math proficiency is a gatekeeper for all STEM fields. California’s economy is increasingly driven by STEM-based industries, with one million entry-level jobs anticipated within the next five years. To remain globally competitive, employers need an increased pool of a diverse, local, and qualified workforce.

• In today’s system, California ranks at the bottom among the top ten states with the largest percentage of Latinos and African Americans for engineering and computer science degree completion by students of color. We can and must improve our practices so that all of our students can succeed.

Recommendations for Change

1. Increase Public Awareness

Launch a broad public campaign, similar to those for early literacy or nutrition, to encourage parents and caregivers to understand the value of math at an early age as a factor in adult success.

   a. Develop a cohesive communications campaign for distribution at strategic access points—clinics, schools, Early Childhood Education providers, places of worship, recreation centers, non-profits and CBO that focus on families, and other networks—and through public service announcements, social media, and other media platforms.

   b. Partner with elected officials to promote the “Innovation 2.0 Regional STEM Action Plan” recently launched by the East Bay Economic Development Alliance, which can be expanded statewide.

   c. Support effective early childhood math programs and publicize and honor their success.

2. Provide Parents and Caregivers Culturally Appropriate Resources for Active Engagement in Math Education that are Accessible, Affordable, and Enjoyable

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3 www.CollegeCampaign.org

4 Ibid.
a. Encourage parents and adults to share the message that math competence is achievable by all.
b. Create supportive and culturally sensitive messaging that encourages families by recognizing that they are already promoting math fluency when they engage with their children in simple activities such as counting and playing games.
c. Disseminate resources, both concrete and online, for at-home math engagement, unrestricted by cost or time accessibility.
d. Promote early math at community venues, especially in low-income neighborhoods, while providing opportunities for parents and caregivers to engage with teachers and employers. Such venues can be based on existing models such as CIRCLe Labs, Maker Spaces and Family Math Nights.

3. Increase Understanding and Expertise of Early Education Providers

a. Teachers in Transitional Kindergarten through grade 3: Institutionalize sufficient Professional Development opportunities at teaching universities including Community Colleges and California State Universities, to provide the needed knowledge and skills in an affordable and accessible system.
b. Preschool and Child Care Educators: Increase knowledge and skills by incentivizing participation of educators to broaden their early math teaching skills with stipends, increased pay, or state-recognized continuing education units.
c. Increase mathematics competency as part of the multiple-subjects teaching credential requirements.
d. Require math skills assessments of students at Kindergarten entry as a measurement of educational effectiveness, and institute formal communications channels between preschools and TK-12 so that student progress can be understood and addressed.

Desired Outcomes

In summary, the limitations in the mathematics skills and knowledge development among youth is hampering equity and economic development in our state. Many resources currently exist, but need greater public understanding and leadership to develop them into a system that reaches all students. We call on our legislators, school district leaders, and our community as a whole to work together to remedy the problem of math education in California. The recommendations above are intended to:

- Work toward a cradle-to-career public education system that is driven by an awareness that literacy and numeracy are the twin pillars of knowledge starting at the earliest ages.
- Significantly and measurably increase skills and understanding among educators, as well as communication and collaboration between systems to foster student success as they move from preschool through the grades.
- Develop measurement and evaluation criteria that demonstrate and foster progress in bringing improved math skills to California’s diverse student population.
- Increase financial and policy support of those working to build a statewide infrastructure that supports math learning at all grade levels.
- Provide the appropriately educated workforce, representing all our population that will drive California's economy and its standing as an inspirational land of opportunity for all.

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January 3, 2018

Re: Support for CSU, East Bay/East Bay STEM Network – Math Policy Statement

Dear State Legislature:

On behalf of Cisco Systems, Inc. (Cisco), I am pleased to provide this letter of support for East Bay STEM Network’s Math Policy Statement proposal. Through our work with the East Bay STEM Network, we believe that the team has the skills and resources to deliver on the proposed early math education policies.

As an industry leader in the technology sector, with initiatives around Education, we are committed to growing resources and support for innovation and improvement in this sector. The East Bay area presents a significant development opportunity to resolve many of the issues surrounding early childhood math education.

We understand that the recommendations coming from East Bay STEM Network would:

- Work toward a cradle-to-career public education system that is driven by an awareness that literacy and numeracy are the twin pillars of knowledge starting at the earliest ages.
- Significantly and measurably increase skills and understanding among educators, as well as communication and collaboration between systems to foster student success as they move from preschool through the grades.
- Develop measurement and evaluation criteria that demonstrate and foster progress in bringing improved math skills to California’s diverse student population.
- Increase financial and policy support of those working to build a statewide infrastructure that supports math learning at all grade levels.
- Provide the appropriately educated workforce, representing all our population that will drive California’s economy and its standing as an inspirational land of opportunity for all.

This letter demonstrates Cisco’s support of the East Bay STEM Network initiative, however, it does not constitute a financial or resource commitment. We look forward to hearing of East Bay STEM Network’s success on this essential endeavor.

Sincerely,

Matt Reidy
Sr. Director Strategy, Planning & Operations
Cisco Systems, Inc. - US Public Sector