

# techbridgetalk

For families &amp; friends of Techbridge

Spring 2014

## Computer Science is Boring? Scratch that!



"Yes! I made it work!" has been a common cheer at **Alpha: Blanca Alvarado Middle School** and **ACE Empower Academy** in East San Jose this year. Girls at both schools learned computer science using Blockly and Scratch, visual coding programs that help students build their confidence with programming. These programs remove the intimidating syntax of programming languages and focus on the power of programming in a fun, visual way.

Techbridge recruits role models to inspire girls in science and technology. This year, we invited women with computer science backgrounds to share their experiences in a male-dominated career. After the visit, one girl said the role models

"showed me cool things you can do with computer science. Before, I thought computer programming was pretty boring." Another reflected that "these role models changed my ideas about engineering and inspired me."

Techbridge girls enjoy coding because it lets them be creative and use computers to draw and animate characters. Techbridge creates a safe learning environment where girls can push themselves to try new things that they might find intimidating initially. Thanks to the generous support of the **Motorola Solutions Foundation** and the **Applied Materials Foundation**, Techbridge is now in its third year at ACE and its second year at Alpha. Their commitment is helping girls in San Jose discover a passion for technology.

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## FROM THE EXECUTIVE DIRECTOR

I have been reconnecting with our alumnae and I am moved to see the accomplished young women they've become. I've known some of the girls since they were in elementary school. Now they're navigating their way through undergraduate and graduate studies and launching into professional careers. Each one is finding her way to self-discovery and is ever passionate about learning and making a difference in the world. They reminisce over the projects they worked on and the role models they met through Techbridge. Some share that they still have the telephone or robot they made in Techbridge as a reminder of experiences that set them on their path. While the projects in which they engage now are far more complex, some of the lessons they apply are similar. The stories I

learn from each alumna remind me of the ways that Techbridge makes a difference in the futures of girls.

As we approach our 15th year, we are working with partners to expand our

*"The stories I learn from each alumna remind me of the ways that Techbridge makes a difference in the futures of girls."*

impact so that many more girls can experience success and leadership in technology or engineering. You'll read about these projects that reach girls around the country and around the world in this newsletter. We rely on partnerships that not only give us a

chance to expand our efforts but also reimagine how we do Techbridge. We live the engineering design process and from each project we learn something new about turning girls on to technology or engaging with families.

I am especially excited to share that Techbridge is expanding. With funding from the **National Science Foundation**, Techbridge will be coming to three new cities in the next five years. We are launching in Seattle with after-school programs starting in fall 2014. We are adding to the Techbridge family and building a talented team in Seattle and new partnerships with remarkable groups. Stay tuned for developments.

*Juda Kekelis*

## TECHBRIDGE BOOK CLUB



The Techbridge team has been diving into critical topics during all-staff discussions around the books *Lean In* and *Quiet: The Power of Introverts in a World That Can't Stop Talking*.

Sheryl Sandberg's *Lean In* sparked a lively discussion about how we can help empower Techbridge girls to be the next generation of leaders. Takeaways included encouraging girls to "sit at the table" by sharing opinions, asking questions, and taking on leadership roles, even though those activities may not always feel comfortable. Role models can also have a significant impact on girls' perceptions of possible careers, and demonstrate it's possible to balance a STEM career with a

fulfilling family life. Staff also discussed larger societal changes needed to increase equity and support women and families in the workplace.

*Quiet* prompted conversations about how staff view themselves along the introvert-extrovert spectrum, how workplace environments can provide space for the quiet reflections that lead to innovation and breakthroughs, and how to support Techbridge girls who may identify as introverts. Best practices include providing individual reflection time before large-group discussions, and giving girls opportunities to build skills on their own. At the same time, we want to continue to help girls develop confidence in public speaking, starting with presentations in pairs or small groups and supporting them as they ramp up to larger, more public events.

These book discussions have spurred us to reflect on our approach to supporting Techbridge girls, whether we are encouraging them to "lean in" or making space for those who need more "quiet" time. We look forward to productive conversations around future topics.

# US2020: Girls and Role Models Connect at Cisco

On a sunny September morning, 55 middle school girls piled off a school bus on **Cisco Systems'** campus in San Jose. More than 50 role models were ready to greet the girls from **Ocala Middle School** and **ACE Empower Academy** and show them the fun side of technology.

At this launch event for **US2020**, a national initiative aiming to get one million science, technology, engineering and math (STEM) mentors into classrooms by the year 2020, Cisco employees were prepared to spark an interest in the girls knowing how important it is at this age to lay the foundation for a lifelong interest in STEM. Role models walked our girls through stations introducing some of the areas of Cisco expertise. The girls dissected desktop computers, interviewed role models via WebEx, and assembled a kit that rolled, spun in circles, or lit up. The activities were eye-opening to girls who don't always see the connection between the real world and science class. One girl reflected that, "Before, I loved science but not technology, and now after the field trip I like them all."

In advance, Techbridge prepared the role models to engage with the girls. The role models did an amazing job showcas-

ing how appealing the tech field can be. As one girl noted, "I would totally like to work at Cisco because it looks really fun, interesting, and exciting."

Jessica Graham with Cisco Community Relations ended the day by delivering a final message to girls, encouraging them to think about what they learned about selecting future classes and careers. The message resonated with the girls as they later shared, "You're always an engineer; you just have to show it!"



## Global STEM Empowerment



In October 2013, Techbridge partnered with **The Institute of International Education (IIE)** for the second time to host a workshop for the **TechWomen** delegates. Generously sponsored by **Walmart**, Techbridge developed a workshop to engage the Tech-

Women in outreach and role model practices. The innovative and inspiring TechWomen program, sponsored by the **U.S. Department of State**, works to empower, connect, and support the next generation of women leaders in STEM by helping them to advance their careers, pursue their dreams, and become role models for women and girls in their communities.

The 78 TechWomen delegates hailed from locations across Africa and the Middle East and for many this was the first trip outside their homeland. Outreach and giving back to their community was a focus for the delegates and many shared stories of their struggles to gain an education and equal footing in the workplace. To help them develop a plan to address these issues, the workshop focused on finding ways to engage and inspire girls to follow their dreams and open up opportunities to explore STEM careers. The TechWomen alumnae will have the chance to put this workshop into practice in 2014 through small seed grants supporting innovative STEM initiatives benefitting women and girls in their home countries and regions. Despite the challenges that await these women when they return home, the passion and dedication they brought to the workshop was inspirational and will be key in their success. The TechWomen Program is an initiative of the U.S. Department of State's Bureau of Educational and Cultural Affairs. Learn more at: [techwomen.org](http://techwomen.org)

# Families Matter



Extra, extra read all about it; the new Techbridge family guide is here! *Science: It's a Family Affair, A Guide for Parents* has been revised for national distribution and includes hands-on activities, tips on how to encourage kids to work through challenges, and strategies to make summer a time for learning. This resource has been made possible through the generous support of **Chevron**.

Techbridge has also hosted workshops for families throughout the San Francisco Bay Area. At the

**Exploratorium** during their Engineering Day event, families practiced their engineering skills to design, build, and test a piñata that could take the impact of 10 hits, while safely containing a cup of candy. Parents were encouraged to help their kids by providing constructive feedback, asking open-ended questions, and empowering their kids to lead the activity. Both parents and kids learned valuable engineering skills. "I was so excited to see several kids running through the science center with their piñatas. They were so proud of their work," shared an Exploratorium employee.

Techbridge has also reached Bay Area families through community events. The biggest event was the 2013 **Bay Area Science Festival at AT&T Park**, which was attended by over 28,000 people. Copies of the new family guide were distributed to families. Those attending walked away with a wide range of science and technology projects, and kids from all ages were exposed to the wonders of science.

Kishore Hari, Director, Bay Area Science Festival at **UCSF**, shared, "Families coming to the Bay Area Science Festival are always looking for resources and ideas to continue science inspiration throughout the year. Simply put, The Techbridge Family Science Guide is the most thorough and thoughtful science resource guide for Bay Area parents. Building Super Cuffs with my son was one of my favorite activities this year!"

## Techbridge Takes on San Francisco

How can we engage more youth in STEM? At Techbridge, we run after-school programs for girls. We are able to further expand our reach through projects like the **STEM Learning Community** that launched in fall 2013 in partnership with **San Francisco's Department of Children, Youth & Their Families**. Through the STEM Learning Community, Techbridge is offering training and resources to nearly 50 after-school staff serving elementary and middle school youth at over 25 school and community-based sites in San Francisco. STEM Learning Community participants meet one to two times a month during the school year to receive training on best practices in informal STEM education. Participating after-school staff take lessons learned back to their sites where they engage their girls and boys in the hands-on and collaborative aspects of STEM.

Partner agencies are diverse and include ones as large as branches of the **YMCA of San Francisco** to smaller nonprof-

its like the **West Bay Pilipino Multi-Service Center**. These agencies serve youth across a broad spectrum of San Francisco including the Mission District, Chinatown, Bayview Hunters Point, and the Tenderloin. Jessica Robbin, Curriculum Specialist and Growth & Learning Opportunities, shares "[It] is a great professional development opportunity...great STEM curriculum provided by Techbridge, awesome resources, and a collaborative environment. The SF STEM Learning Community provides all the elements needed to incorporate STEM into [our] after school sites...Oh, and it's fun!"



# It Takes Grit!

## How Techbridge is Informed by Research



We know that our girls will face challenges along their way to becoming successful computer scientists and engineers. Techbridge introduces hands-on projects that give them a chance to work and play hard. By working on engineering design challenges our girls experience what it's like to practice science and engineering. They start with a real world problem and work out the solution without step-by-step directions. Some girls hunker down and stay focused for however long it takes to get their design to work. They will scrap a work in progress that has taken considerable effort and start all over again when their design fails. While these situations can be challenging, they are willing to work until they succeed. Not all our girls have that level of perseverance. Some are quick to give up. They explain they didn't like the activity, or try to bend the rules to get by without doing the work required to succeed.

What can we do to support every Techbridge girl so that she keeps trying in the face of challenges? We are learning from the work of **Stanford University** professor, Carol Dweck, and others who are doing research to better understand how mindset and perseverance affect learning and most importantly, how they can be promoted.

Our mindset affects how we experience and interpret effort. With a fixed mindset, we expect success to come naturally, so having to expend a lot of effort makes you feel not smart. In contrast, a growth mindset helps us understand that effort is necessary and failure just means that more work is needed. With a fixed mindset, we want to look smart at all costs. With a growth mindset, we want to learn at all costs.

Where do our mindsets come from? The kinds of praise and attention we received early on can affect how we regard intelligence and respond to challenges. The good news is that it's possible to change one's mindset. We are looking at the messages we communicate and making sure we are promoting a growth mindset in Techbridge. As our girls work on a science experiment or program for the first time, we start out with encouragement like "Let's do something we can learn from" or "Let's try something fun and hard."

Research also informs us about the type of environment that promotes grit and perseverance. The "secret sauce" includes a program with a respectful climate, high expectations, emphasis on effort, availability of resources, and challenges in small doses. These ingredients are part of Techbridge's DNA.

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# Preparing Our Girls for COLLEGE

The odds facing our girls are steep: not only for pursuing STEM careers, but accessing a high quality education compared to higher-income peers. At Techbridge, empowering girls means that we are leveling the playing field and helping them overcome challenges and systemic disadvantages. We want to give them the tools and knowledge to make more informed decisions. For our girls, this means creating a safe space for exploring STEM in a hands-on fashion; providing them access to role models in STEM professions, so they can ask important questions; and engaging allies, such as families, teachers, and community leaders, to share these messages. This year, we are partnering with **Wishbone.org**, an organization that helps connect students with summer learning opportunities and provides an online platform to crowdfund support for tuition. Our staff has been supporting high school girls in the application process. Girls are able to pursue individual interests in coding or engineering through programs like the **iD Tech program at Stanford** or **COSMOS program at UC Santa Cruz**. Our goal goes beyond building STEM interest by exposing students to a college campus. We want to approach being "college-ready" from a holistic standpoint. The objective is for

*For these girls, Techbridge is not just an after-school program, but a launching point for becoming self-advocates as well as STEM advocates.*



girls to identify interests and seek out educational opportunities; have the confidence to network and meet like-minded, college bound students; and familiarize themselves with the application process, including getting teacher recommendations. Some girls are first-generation college bound students, so giving them this experience is empowering.

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**Help us empower girls** to see themselves as leaders and problem solvers, using science, technology and engineering. Together we can inspire girls to change the world!

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