

8 WAYS TO GET MORE WOMEN INTO

STEM

by
LIANNE YU

GET YOUR HANDS DIRTY, HAVE FUN, THINK LIKE A WOMAN AND OTHER ADVICE FROM HAWAII'S FEMALE S.T.E.M. LEADERS

PHUONG-THAO NGUYEN'S work at Hawaiian Telcom will affect everyone in the state.

She is part of the emerging technologies and integration team managing development of a new fiber-optic transPacific cable passing through Hawaii while connecting Southeast Asia and the continental U.S. Nguyen's team will not only ensure we have the broadband needed for Netflix and Facebook, but, more importantly, that our schools, universities, businesses, hospitals, governments and military have enough bandwidth for their critical data and communication needs.

"I became an engineer because I enjoyed and excelled in math and science," Nguyen says. "The technology environment promotes and encourages competition, aggressiveness and analytical skills based on data. I enjoy working with folks who are logical, precise and direct."

Although women in Hawaii like Nguyen play leadership roles in science, technology, engineering and mathematics, the number of females in STEM jobs continues to lag far behind that of men. Women earned 57 percent of all bachelor's degrees in the U.S. in 2011, but women earned only 18 percent of the degrees in engineering and computer science, and 19 percent in physics, according to the National Girls Collaborative Project. Although women make up 47 percent of the overall workforce, they hold only 27 percent of all science and engineering positions. So we asked a diverse spectrum of Hawaii's women in STEM to weigh in on how to increase those numbers.

PHOTO: ELYSE BUTLER



It's important to maintain the passion that first drew you to STEM, says Phuong-Thao Nguyen of Hawaiian Telcom. "Passion is your sense of curiosity, your desire to understand why, your curiosity to learn more. When you have that, you won't think of what you're doing as work. When you have that, you'll overcome your fears."

1. LET GIRLS GET THEIR HANDS DIRTY

Teresa Nededog credits her father for inspiring her fascination with technology. “The first time he ever taught me how to fix something, it was a motherboard. When I was 8, he showed me how to solder my own necklace when it was broken. By 12, he had taught me how to build my first website.”

Today, Nededog is working on her master’s degree in computer science, has recently completed DevLeague’s 12-week boot camp in Honolulu to become a full-stack software developer and has just gotten a job at a company developing an app to help people manage their weight.

As a single mother to a young daughter, she encourages parents to examine their own gender biases. “Girls experiment in science and tech from when they are very young. They like to collect and examine seashells, and do little science experiments. But, as they get older, they are told to not get their hands dirty, take woodshop or use their dads’ tools for fear of getting hurt. Dads invite their sons to help them change the oil or tires on their cars. They should invite their daughters to do that, too.”



Cindy Mauiola, senior manager of financial planning and analysis at Hawaiian Telcom, recalls there were few women in her college math and accounting classes. She credits her parents with giving her confidence by not treating her differently than her brothers. “My dad coached a lot, but there were no girls sports teams. So I would just play flag football and basketball right alongside the boys. This instilled in me and my sister the belief that we could do whatever we wanted, so long as we worked hard.”

Other women in STEM remember less supportive environments. Sunshine Topping, who grew up in Hilo, recalls one painful but pivotal event. “When I was in high school, I wanted to go to the college fair. My parents had already signed the form to give me permission to attend. But then one of the counselors tried to discourage me. I’ll never forget this. She said, ‘You’re a pretty girl, and I don’t think college is going to be your thing anyway.’”

Topping didn’t let those biases stop her. In previous roles at Hawaiian Airlines and Boeing, and in her current role as VP of human resources at Hawaiian Telcom, she has dedicated herself to making sure everyone, especially underrepresented groups, knows about opportunities in STEM. “It’s amazing how expectations of you can be game changing. In my case, I just wanted to prove them all wrong,” she says.

2. MAKE STEM EDUCATION FUN AND RELEVANT

Marshmallows can make engineering come to life, observes Corynne Umeda, former president for the Society of Women Engineers at UH. As part of the SWE’s outreach to middle-school girls, the club creates exercises that showcase the collaborative and fun sides of engineering: designing self-powered cars and circuit boards, and, in one of their most popular exercises, building a bridge entirely of marshmallows and Choco Pies.

“It is so rewarding when you see that they finally get what engineering is,” Umeda says. “And they ask us if they can do more of these activities. Engineering is no longer an unapproachable thing.”

Research by the Maui Economic Development Board’s Women in Technology program shows a

“One predictor of whether women will continue in science is whether they have strong female mentors,” says Anna Liem, head of the high school science department at Punahou School. Those mentors include teachers, professors and professionals.

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—ANNA LIEMHEAD OF THE HIGH SCHOOL SCIENCE DEPARTMENT AT PUNAHOU SCHOOL

significant difference between how young boys and girls talk about what they want to do when they grow up. Boys define success in monetary terms, having their own company or inventing something. STEM is perceived as a natural path to such goals.

Girls emphasize working with people, solving community problems and serving others. They do not naturally associate STEM with their aspirations.

“A big part of what we do is connect the dots for the girls,” says Women in Technology director Leslie Wilkins. “We show them how engineering can be used to make the environment better, or how science can be used to help people. We emphasize that STEM can make the world a better place, and is not just something that lives in a textbook.”

Anna Liem, head of the high school science department at Punahou School, agrees that one way to interest girls is to make STEM relevant to their aspirations.

“Students can be highly engaged if they see their work as making a positive impact in somebody’s life,” Liem says. “For example, one of the projects in our summer introduction to engineering course is to design something that will benefit kids at Shriners Hospital. For high school students, the idea of making a difference seems to be more important to girls than to boys, and so we try to tap into that through science.”

3. SPEAK UP FOR YOURSELF

Despite her Ph.D. in communications and information science from UH Manoa, years of teaching, and the fact that she is co-founder and CTO of software startup MeetingSift, Viil Lid says some people assume she does not understand technology.

“In networking situations, men don’t speak tech with me. They speak tech with other guys. But, with me, they have conversations they may have with a neighbor’s wife,” she says. “My co-founder is male and we both have tech backgrounds. And, very often, when we’re in meetings about our products, the tech questions get directed towards him. You have to wave and say, ‘Hey, that’s actually in my expertise.’”

Melialani James co-founded two tech startups in Silicon Valley, one an app for wine drinkers and another an app for people to share music in public places. After returning to Hawaii, she started a consultancy to help others design mobile apps. As



Viil Lid, co-founder of MeetingSift, faces a challenge encountered by many women in tech: Some people don’t initially recognize her expertise. “My co-founder is male and we both have tech backgrounds. And, very often, when we’re in meetings about our products, the tech questions get directed towards him. You have to wave and say, ‘Hey, that’s actually in my expertise.’”

program manager at Blue Startups, she advised dozens of tech startups, and in her current roles as head of new ventures at Sultan Ventures and president of the Hawaii Venture Capital Association, she continues to mentor early-stage companies.

She tells women to do the one thing that most men have no problem doing: Have the confidence to ask for help. “A lot of women don’t have that ‘I’m going to ask for money even though I’m not 100 percent sure how things are going to work out’ mentality that men have. And that can hold women back. Only 2 percent of venture capital money is put into women-run startups. We need to have the balls to take these kinds of risks.”

4. FIND MENTORS AND BE A MENTOR

Michelle Felizardo, an engineering student from Cornell University, could have chosen Silicon Valley or New York City for her Kessler Fellowship summer internship in a startup environment. Instead, she chose Blue Startups, a Honolulu technology accelerator. What helped persuade her was that two of its co-founders are women, Chenoa Farnsworth and Maya Rogers.

"It's super cool to have the chance to work with women leaders in tech, whether they are involved on the technical side or, like Chenoa, on the venture capital side," says Felizardo. "That she invests in tech companies is really cool to me, given how few women there are on the investment side. Having women create that space and be our trailblazers makes it easier for girls. Not only do we feel more open to the idea, we want to fill those shoes."

Blue Startups champions women entrepreneurs. "Over the last five cohorts, 25 percent of the founders have been female," says managing director Farnsworth. "It sounds low, but, compared to the national average of 11 percent, that's still very good. We're proud of that. Our leadership is female, and so through modeling ourselves we tend to attract more women."

It's critical that girls have older women to emulate, especially in middle and high school, as studies show that's when girls' interest in STEM tends to wane. "One predictor of whether women will continue in science is whether they have strong female mentors," says Punahou's Liem. "One of the reasons we have high percentages of girls in our high school science classes is that we have a lot of female science teachers, including at the AP level. They provide the role models the girls need."

Despite a busy schedule that includes invitations to speak at White House energy-policy events, Go Electric CEO Lisa Laughner believes strongly in making time to mentor others. "One thing that every leader in STEM needs to do is spend time sharing what they've done, and helping the next generation of kids become interested in STEM. For example, our chief engineer is lead mentor on a high school robotics team. Practice what you enjoy, but be sure you give back to the STEM community," she says.

5. THINK LIKE A WOMAN

Many career advice books counsel women to adopt traits commonly associated with men, such as embracing risk, speaking forcefully and aggressively pursuing goals. But women say some so-called "female" traits are also important in STEM.

Susan Yamada, executive director of the Pacific Asian Center for Entrepreneurship at UH Manoa, mentors students across a variety of disciplines, including STEM. Although she sees a confidence gap between men and women, she emphasizes that women's working styles can keep their business ideas viable beyond the initial excitement.

Cecilia Viljoen finds that a woman's touch is often what's needed in her field. As nursery R&D director at Big Island Abalone in Kona, she must ensure the abalone's high quality for worldwide export. "Women make sure things don't fall through the cracks on the way to achieving the goal. When it comes to raising and packing abalone, women have a finer, gentler touch."

PHOTO: JOSHUA FLETCHER

"FROM A GENERAL STANDPOINT, I'VE SEEN MEN WANTING TO JUST DIVE IN. THEY ARE ACTION ORIENTED. WOMEN ARE MORE REFLECTIVE ... (AND) BUILDING RELATIONSHIPS AND TRUST." – SUSAN YAMADA, EXECUTIVE DIRECTOR, PACIFIC ASIAN CENTER FOR ENTREPRENEURSHIP AT UH MANOA



“Programming is not just about going from one step to the next,” says Julia Bond, a full-stack Java programmer and COO of YogaEd. “It is also about understanding what’s happening on a larger scale, so you can plan for different things simultaneously. As holistic thinkers, women can sometimes more easily see how all the pieces fit together.”

"From a general standpoint, I've seen men wanting to just dive in. They are action oriented," she says. "Women are more reflective. They won't just get a place and start hiring people or believing their own forecasts. If you hit the jackpot, it pays to be aggressive. But a lot of things need to fall in place in your favor for that approach to be successful. Women, on the other hand, are about building relationships and trust, and taking the time to find and listen to their mentors."

Women's inclination to be nurturing and detail oriented are critical to fields such as marine science. As nursery R&D director at Big Island Abalone in Kona, Cecilia Viljoen makes sure the abalone are healthy and the best quality possible to ship worldwide. She has noticed that some traits more common to women than men can make a difference in her field. "In general, men are very goal oriented. Women make sure things don't fall through the cracks on the way to achieving

the goal. When it comes to raising and packing abalone, women have a finer, gentler touch."

With a background in dance and writing, Julia Bond is not your typical full-stack Java programmer. After becoming COO of YogaEd, an educational company dedicated to changing education through the practice of yoga, she enrolled in DevLeague's developer boot camp to learn coding. While coding is an overwhelmingly male discipline and typically associated with male personalities, she says, women's perspectives offer a needed balance.

"Women are generally more holistic, and men are more logical and linear. But programming is not just about going from one step to the next. It is also about understanding what's happening on a larger scale, so you can plan for different things simultaneously. As holistic thinkers, women can sometimes more easily see how all the pieces fit together," says Bond.

PHOTO: ELYSE BUTLER

“I FEEL LIKE THE ENVIRONMENT IN HAWAII CREATES A MORE OPEN SPACE FOR ENTREPRENEURIALISM AND TECH IN GENERAL.”

– MICHELLE FELIZARDO,
ENGINEERING STUDENT AND
SUMMER INTERN AT BLUE STARTUPS

6. CHOOSE SUPPORTIVE WORK ENVIRONMENTS

As director and co-founder of Impact Hub Honolulu and CEO of Smart Sustainability Consulting, Shanah Trevenna is dedicated to creating working spaces that support collaboration, inspiring conversations, community activism and diversity. She advises women to recognize the environment they need to thrive.

“My personal philosophy is that you can’t change someone else but you can find a place where you’re valued,” Trevenna says. “It’s hard to transform others, but it’s OK to let that go. You will find other people who have the same values alignment as you have, whether you’re a woman or see things differently in other ways. Really get true about who you are, what niche you are in and find a place that supports that.”

Developer Teresa Nededog has spent the last few weeks evaluating multiple job offers. The company she chose impressed her because its VP of engineering is both a woman and gay. “I want to work for a company that cares about diversity, about people of color as well

as other underrepresented groups, and stands behind that through its actions.”

Creating a diverse workspace is both good for employees and important for customers who buy the products and services, says Susan Eichor, president and COO of aio Group, a Hawaii-based holding company whose broad portfolio includes *Hawaii Business* magazine. “If people are going to support an organization or buy from your company, they need to see themselves in your company,” she says. “Diversity communicates that the company understands who you are. If the leadership is homogeneous, then people may feel their voice is not represented. When you’re supporting an organization, you want to know that it shares your values.”

7. DON’T UNDERESTIMATE HAWAII’S OPPORTUNITIES

Hawaii may be best known for its tourism, but the state is encouraging STEM innovation to diversify

the economy. One driver is the state’s commitment to becoming 100 percent reliant on renewable energy by 2045. “There will be so much going on in this state in the next 50 years. As an engineer, it is so great to participate in something that will really change Hawaii as well as the rest of the world,” says Brienne Yamada, a mechanical engineering student at UH Manoa, who also works for R.P. Delio and Co., a renewable-energy-focused engineering consultancy.

Energy Excelerator, a Honolulu-based tech accelerator with a focus on clean-energy innovation, was founded by two women, Dawn Lippert and Jill Sims, both with STEM backgrounds in, respectively, environmental science and chemical engineering. They are looking for more women in their startups, like Go Electric CEO Lisa Laughner, who see opportunities to innovate renewable-energy solutions for Hawaii and the world.

“We have a specific focus in seeking women entrepreneurs for our program,” says Energy Excelerator communication director Lauren Tonokawa. “In our portfolio now, we have three or four women-led teams, out of 32 companies, and a bunch of women executives on other teams. But we’d love to see the ratio shift.”

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“STEM DOESN’T JUST MEAN YOU HAVE TO BE AN ENGINEER – THERE ARE SO MANY DIVERSE OPPORTUNITIES WITHIN THESE FIELDS.” – MAYA ROGERS, CO-FOUNDER OF BLUE STARTUPS AND CEO OF BLUE PLANET SOFTWARE

Hawaii’s natural resources also draw STEM talent to the state. Jennica Lowell’s path was inspired by her love of the ocean and passion for helping Hawaii become more food independent. The marine biologist worked for eight years at Blue Ocean Mariculture in Kona, which is dedicated to the sustainable production of marine finfish in Hawaii. In mid-August, she started new projects involving land-based agriculture, while working with UH Hilo on marine-fish aquaculture.

“I was fortunate enough to be part of the Agriculture Leadership Foundation of Hawaii, and it really got me so excited about how agriculture is growing and changing in this state. Being involved with the land-based agriculture and marine aquaculture might highlight new ways of pulling our resources together

to get more fish farms here so we can become more self sufficient,” Lowell says.

Hawaii’s growing technology startup scene also offers mentors, funding and networking opportunities for early-stage companies. Blue Startups, XLR8UH, Sultan Ventures and mBloom are among the accelerators and investors supporting Hawaii as “Startup Paradise.”

Blue Startups intern Felizardo appreciates the supportive vibe and close-knit tech community, even though it is not as established as startup communities elsewhere. “I feel like the environment in Hawaii creates a more open space for entrepreneurialism and tech in general. It’s such a small community, that you don’t feel as intimidated going in as you would in a place like New York.”

8. STAY TRUE TO YOUR PASSIONS

Hawaii’s women in STEM agree that one of the most important pieces of advice is to pick a field that feeds your passion because that will see you through the ups and downs of being the only woman in the room.

“One of the greatest blessings in my career is that I always felt like I was learning, being challenged and given opportunities to work in areas that keep that fire burning in your belly,” says aio’s Eichor. “That’s what I’d like to ask young people to consider more than just chasing the corporate ladder: Are you doing something that feels fresh and new?”

Maya Rogers, co-founder of Blue Startups and CEO of Blue Planet Software, also encourages women to look for ways they can apply their passions to STEM, regardless of whether they have a STEM education. “If you’re a programmer, and that’s what you are good at, go for it. But not everybody knows how to code. People skills, the ability to see trends, and understanding business strategy are also required. STEM doesn’t just mean you have to be an engineer – there are so many diverse opportunities within these fields, that there can be a place for women with many different interests.”

What Hawaiian Telcom’s Nguyen advises, above all, is to hang on to the sense of wonder that first drew you to STEM. “If you’re passionate about a career in STEM, then follow your instincts. You will face hurdles regardless of the industry, but it is passion that will help you stay focused. Passion is your sense of curiosity, your desire to understand why, your curiosity to learn more. When you have that, you won’t think of what you’re doing as work. When you have that, you’ll overcome your fears. You will take a chance and take a step forward.”



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