



U cbl cqb_wQcnrck ` cp/ 7*0. / 6



Dr. Abigail Joseph coaching a participant in the MIT MOSTEC (MIT Online Science, Technology, and Engineering Community) program for college-bound high school students.

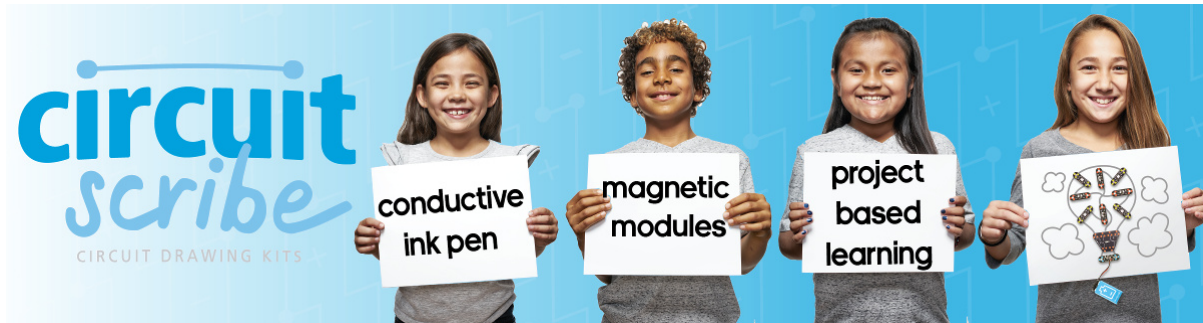
Mentoring: An Operating System for Learning

The last two newsletters have looked at individuals and their work – July highlighted Glenn Corey and design-based learning; August focused on a group of educators at the Connected Learning Summit 2018 and their thoughts on making. This month we're continuing this perspective with another story from the field: Dr. Abigail Joseph, a computer scientist, teacher, and the new Director of Learning, Innovation, and Design for the Middle School at the Harker School in San Jose, California. While it's a new position for Abigail, it's her second tour at Harker; the first ran from 2011–2014, when she helped develop the Middle School Computer Science program and worked on programs combining design thinking with introductory CS, a collaboration with faculty that led to the creation of a dedicated makerspace.

If there's a throughline in Abigail's experience, it's the power of coaching and mentoring and the importance role models and support networks play in helping individuals feel secure in their ability to explore and take risks. It's central to who she is as a person and why she pursues her work with such a passion.

“That’s the most profound thing, the mentoring, and people who are in positions of power actually stepping up and doing the task of bringing in those diverse people who are talented and qualified into the room to start making a difference,” she said.

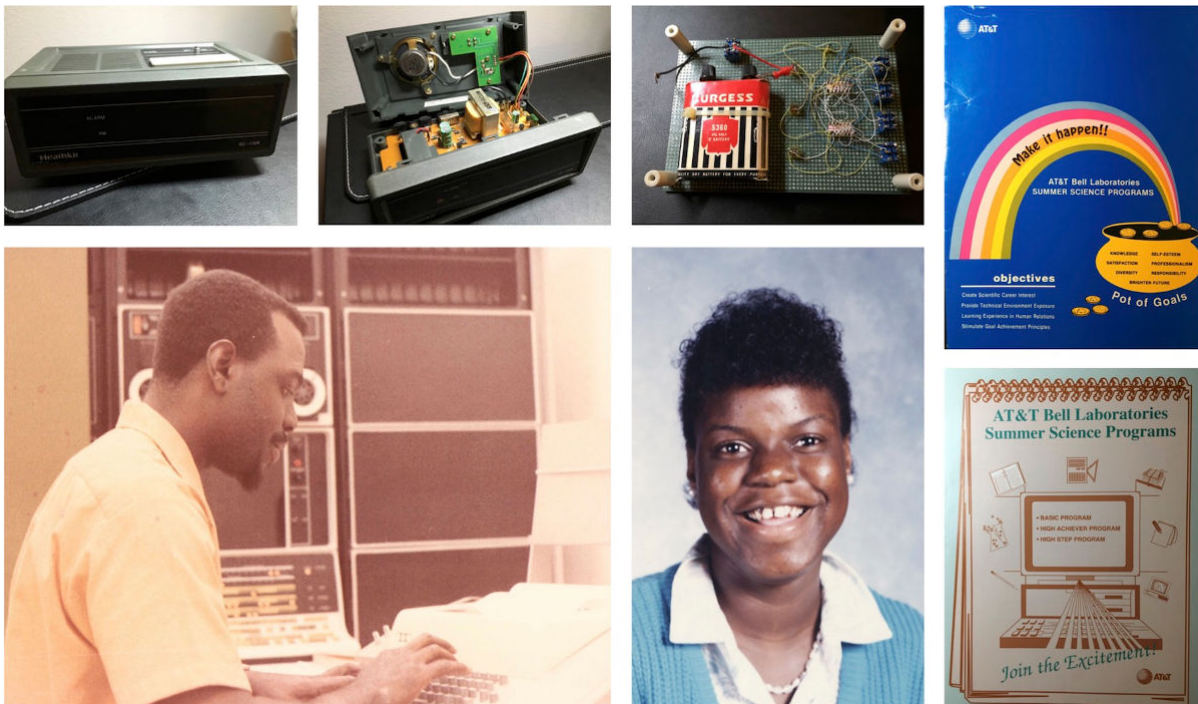
Sponsored by:



Growing up in New Jersey, her father was an electrical engineer at Bell Labs, an iconic institution in the history of technology and American innovation. As a young woman Abigail took part in outreach and technical mentoring programs at the Lab designed to bring more minorities into technical fields. Through the second half of the 20th century the Lab was a bellwether for its commitment to grow and diversify the workforce. In the words of mathematician, lab researcher and Princeton professor Dr. William Massey, “Bell Labs of the 1970s, 80s, and 90s was to black scientists what Harlem of the 1920s was to black writers, artists and musicians. It was a true renaissance.”

From 8th grade through high school, and again through college, she maintained connections with the Lab, each year completing unique internships and summer jobs. It was the best kind of training for a learner on her way to becoming an engineer and educator.

In her first month at the Lab she assembled a Heathkit clock project. It was a foundational experience: “That clock was everything to me. To go from a bunch of tiny electronic pieces scattered about to a fully working clock was almost like magic. But it was magic I had a hand in, from placing the components on the board to soldering them in place.”



Clockwise from top left: Heathkit clock, light project; summer program materials; Abigail, eighth grade; Selwyn T. Joseph, Bell Labs, 1978-1998.

Abigail majored in computer science in college and went straight to graduate school to complete her MS and PhD with a focus on the emerging field of computer graphics: “For as long as I can remember, I was always deciding between art and STEM. In high school I gave up taking AP Art to take AP Physics. As an engineering undergraduate I made certain that every semester was filled with art history, painting, or drawing. It was only natural that I would go to graduate school to study the computer graphics more in depth.”

At the time, CS was (and remains) not always welcoming as a career track for women and people of color. In the late 90s she was part of a small, tight-knit group of women in the CS department at the University of California Santa Cruz; she recalled how important it was to have that camaraderie. While in graduate school, she also tutored first generation college-bound students, paying forward on her own experiences as a young woman with internships and mentoring. It’s not surprising that she plunged directly into teaching after finishing her doctorate.

In the classroom, one of Abigail’s operating principles is differentiation — providing individual students with different avenues to learning — and creating conditions that support learning and discovery: “That kid who hasn’t had much exposure to CS and manages to create a creature with shapes in Javascript [versus] the student who has created their own game: both are valid. Being able to develop a differentiated curriculum where students can go at their own pace is the key where everyone is engaged and having fun,” she says.

This fall she’s taking over the reins of the Harker School’s makerspace that she helped build, and with it the opportunity to create learning experiences for 530 students and 70 staff members. Her intent is to “build space where people can come and feel comfortable and explore at their own pace,” and a big part of that

is providing the kind of mentorship to students that she received throughout her education.



Verizon App Inventor Challenge 2014: Dr. Joseph coaching a team from Los Fresnos, Texas, one of eight selected that year as Best-in-Nation.

See these links from Abigail's twitter for examples of her recent work: [a project in memory of her parents](#), completed at the Krause Center for Innovation at Foothill College; [working with movement and sound](#) with #InfyPathfinders; [making art by programming turtles](#) with Python; [teacher as learner](#) with the Microbit.

Don't miss [this writeup](#) from the American Institute of Physics on Bell Labs and "A Black Scientific Renaissance."

David Cole
San Francisco, California



Sponsored Content

Circuit Scribe's Everything Classroom Kit Has All Teachers' Needs

The Everything Classroom Kit is a great way to dive into electronics in your classroom or makerspace. This kit includes 25 sets of pens and modules to draw a wide variety of working circuits that use light, motion, and sound.

You can use the kit to dig into advanced concepts, or to use creative exploration to add the "art" into STEAM.

[Learn More](#)



Join the Make: Education Forum at World Maker Faire New York

Join us on Friday, September 21 for the Make: Education Forum. Maker education is one of the bright spots in education and we're proud of the maker educators who gather at Maker Faire to learn from each other. This year's program focuses on "Making and the Future of Work."

An important outcome for maker education is helping more students find meaningful, productive work. At this year's [Make: Education Forum at World Maker Faire](#), we'll look at how maker educators can help students navigate the future of work — a future that places a premium on, and innovation. Our speakers will provide insight into how hands-on learning experiences help develop future-forward skills and mindset all of us must think differently about education and careers.

Space is limited, so register now!

[Sign Up Now](#)

Sponsored by:



Upcoming Maker Faires

- » [WORLD MAKER FAIRE NEW YORK](#) (Corona, Queens, NY): September 22–23
- » [Shreveport-Bossier Mini Maker Faire](#) (Shreveport, LA): September 22
- » [Prince George Mini Maker Faire](#) (BC, Canada): September 22
- » [Kathmandu Mini Maker Faire](#) (Nepal): September 22–23
- » [Akron Mini Maker Faire](#) (OH): September 22
- » [Champlain Mini Maker Faire](#) (Shelburne Farms, VT): September 22
- » [Maker Faire Milwaukee](#) (WI): September 28–30
- » [Maker Faire Ottawa](#) (ON, Canada): September 29–30
- » [Maker Faire Seoul](#) (Korea): September 29–30
- » [Maker Faire Eindhoven](#) (Netherlands): September 29–30

Find a Maker Faire near you on the [Maker Faire map](#).



Maker Media, Inc | 1700 Montgomery St, Ste 240 | San Francisco, CA 94111

Having trouble viewing this email? [View it online](#).

If you got this from a friend, [join us here](#).