

PEOPLE INSPIRING CHANGE

**2021**  
**PARTNERSHIP**  
**REPORT**

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## INTRODUCTION

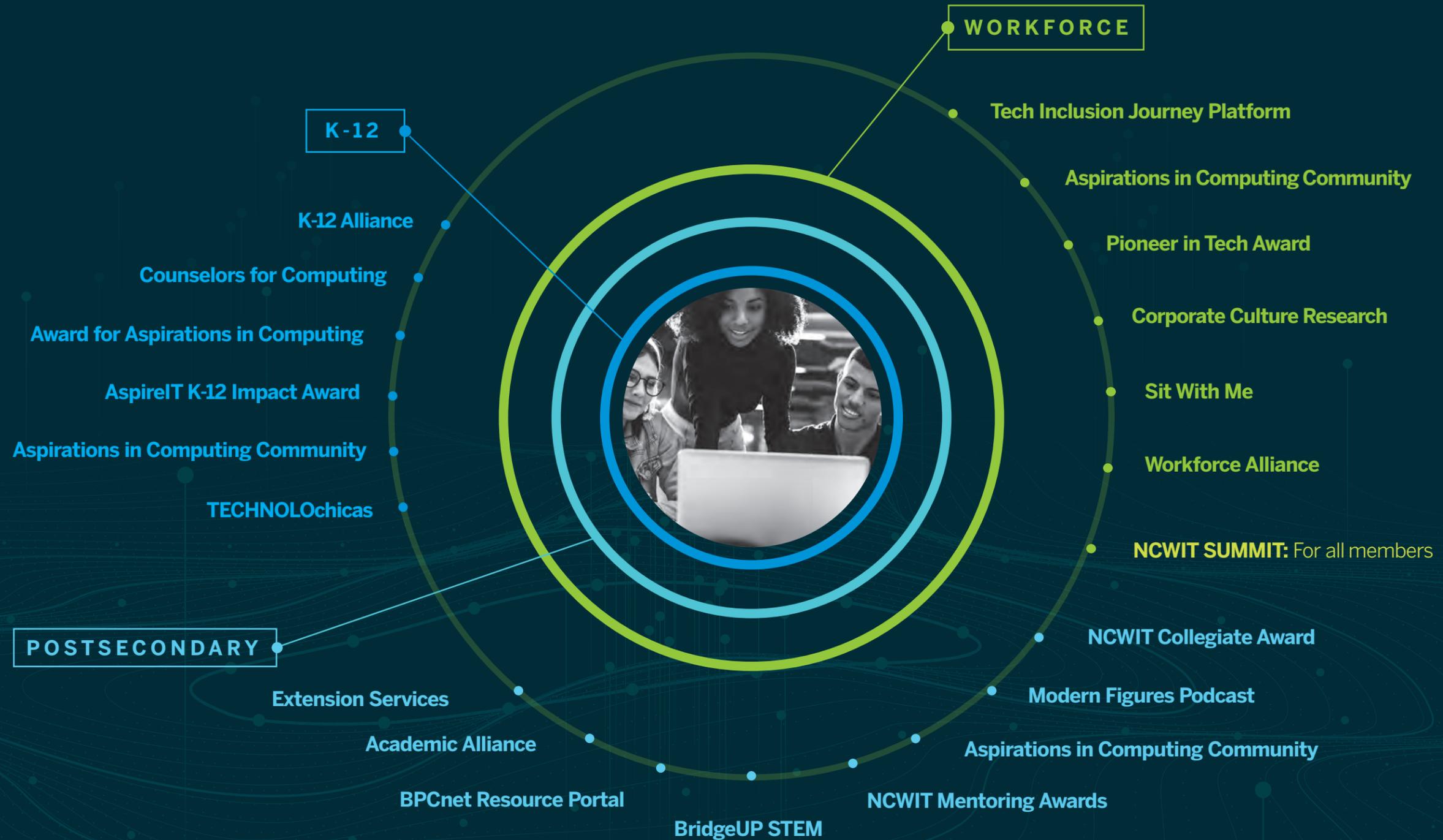
## PEOPLE INSPIRING CHANGE

While 2021 was, in many ways, a continuation of 2020 and the effects of the pandemic, it was also a year of inspiration, growth, and renewal. In this year's report, we focus on people who are making a difference each and every day to correct underrepresentation in computing. The National Center for Women & Information Technology (NCWIT) network consists of nearly 1,500 member organizations with more than 4,000 individual change-leader representatives who are working in their own communities, and in so doing, they collectively form a national movement.

NCWIT convenes, equips and unites change leaders in a wide variety of research-based programs and educational opportunities. For example, more than 22,800 girls, women, and non-binary and genderqueer individuals with diverse identities are being supported by Aspirations in Computing. Teachers and other educators are leveraging NCWIT resources and programs to engage and inspire students. School counselors are learning about computing fields and, in turn, guiding more students to the courses they need. Post-secondary educators are mentoring undergraduate and graduate students alike. And workplace cultures, both corporate and academic, are becoming more inclusive because leaders are owning them, and using research-backed resources and tools to make change – rethinking their organizations and the everyday experiences of those who work in them.

There is not enough room in a partnership report to thank and highlight each of the thousands of people participating in NCWIT's programs. But what we can do is shine a light on individuals who are inspiring change in their own communities through a few illustrative stories. From the librarian in Birmingham, Alabama to the corporate executive in New York City, to the thousands of volunteers spread throughout the country, we offer gratitude to all who are increasing the meaningful and influential participation of women across all intersecting identities in computing. In the following pages, you will see how NCWIT's programs are a catalyst for action. From the first inspiration in grade school to lifetime achievement awards, NCWIT's volunteers and members are leveraging the infrastructure created by our organization to implement real change in their local communities.

NCWIT is the largest computing community in the world focused on diversity and inclusion.



## NCWIT's **Aspirations in Computing** program

(AiC)

NCWIT Aspirations in Computing (AiC) stands alone as an active and growing nationwide Community of more than 22,800 diverse high school, collegiate, and professional women, genderqueer, and non-binary individuals who share a love of computing. Research shows that communities such as these can support and reinforce computing identities. Other organizations provide individual experiences, but long-term persistence in the field requires much more.

Volunteers make the work of Aspirations in Computing possible. In 2021, 4,347 awards were given out across 83 affiliates. Each affiliate includes a regional team of volunteers from K-12 organizations, post-secondary institutions, and the computing workforce who recruit students, publicize the program, organize the award ceremony, and bring together a community of local support to inspire these students to continue to pursue computing.

In 2021, AiC provided nearly 400 opportunities to the Community, including:

- 19** conference scholarships
- 92** educational workshops and webinars
- 32** hackathon invitations
- 18** college scholarships
- 72** peer mentoring and networking events
- 2** member-only career fairs
- 5** innovation and tech challenges
- 66** internship and job opportunities

## VOLUNTEER CLOSE-UP

# Anne Matrone

In reflecting on her involvement with Aspirations, Anne says, “Sharing my knowledge and my years of experience, and being able to promote women in technology fields is a great passion of mine [and] I was really grateful that I took something on a whim and it turned out to be such an important part of my life. It’s so wonderful year after year to see the number of applicants continue to grow. That part of it is so exciting to me because I started my career way back when I was a freshman and the only girl in my computer programming class. One other girl joined in my sophomore year. When I joined the workforce, I was the only woman in the room. I know people hear that all the time and they always think it’s cliché, but it really isn’t; it was intimidating. That’s another reason why I’m so grateful to be part of something that’s going to make the future more diverse and inclusive.”

Anne Matrone is just one of nearly 1,000 volunteers throughout the U.S., Puerto Rico, Guam, the U.S. Virgin Islands, and Canada. She is a Vice President at Bank of America in New York City, where she has worked for over 34 years. In 2017 she was asked to be a keynote speaker at the New Jersey Aspirations in Computing Award Ceremony at Kean University. As Anne describes it, “When I got there I saw the program for these incredibly talented young women, what they were working on and what they were aspiring to do, and I was completely blown away.” After the event, she had a great conversation with the NCWIT Affiliate manager who encouraged her to become more involved with the program. Anne is now the lead coordinator for the Greater New York City Aspirations in Computing Affiliate, and for her, “it has been a thrilling experience to see what’s out there and what’s on these women’s minds and to be a part of giving back to the community.”



“When I joined the workforce, I was the only woman in the room. I know people hear that all the time and they always think it’s cliché, but it really isn’t; it was intimidating.”



## NCWIT's **AspireIT** program

# Inspiring and recognizing the next generation of technology **change leaders**

NCWIT's AspireIT program is a critical part of the computing ecosystem – helping inspire students to consider tech careers. Students need to be exposed to the vast possibilities that a career in tech can offer if they are to pursue it in high school, college, and beyond. AspireIT helps reach and engage students who belong to groups that are traditionally underrepresented in technology, builds their confidence, and provides them with a sense of belonging, reinforcing their tech identity. In 2021, NCWIT launched the AspireIT Impact Award as a way to recognize AiC Community members for their incredible efforts to build and creatively offer hands-on computing opportunities that encourage K-12 girls to explore computing and see what possibilities a future in tech can hold.

## NCWIT's **AspireIT** program

**Samina Mondal** was one of 30 Impact Award winners in 2021. Samina offered her first CyberWeek computing program in 2018. She was the primary instructor and also organized outreach efforts to encourage students and teachers to participate, invited Department of Defense (DoD) STEM professionals to engage in career exploration, and utilized her position as an intern at the U.S. Naval Research Laboratory (NRL) to build relationships with local schools and expand DoD efforts in the DC area.

Samina's second program included IT engineers and NRL specialists and took place at Oxon Hill High School (PGCPS) in Maryland. Students made vital connections with researchers, received answers to their career-oriented questions, and got a taste of the incredible career opportunities DoD laboratories have to offer. 65 percent of the students (with a majority being from BIPOC communities) had never previously participated in a technology-based club or organization inside or outside of school.

Samina aims to bring CyberWeek programs to schools across the country to continue to encourage students to pursue cybersecurity and DoD STEM fields. Ultimately, she wants students to know their diverse perspectives and experiences in the world of STEM exploration matter – regardless of their race, gender, sexual orientation, or economic background.



“Through the consistent guidance I have received from AspireIT and the NCWIT Community over the past six years, my organization, Cyberweek.org, was able to develop a dynamic program centered around empowering young girls in cybersecurity exploration and career development.”



## BridgeUP STEM

One of NCWIT's exciting new programs is BridgeUP STEM at Georgia Tech. The innovative program provides opportunities for students from the Atlanta area to learn computer science skills in small groups with their peers. In 2021, 25 high school Scholars began taking classes from four associate professors of computing at Georgia Tech. Additionally, six current Georgia Tech students were selected to begin research fellowships in 2022. Ensuring that the Scholars have a meaningful experience has been critical. **Cedric Stallworth** and **Michael Johnson** developed a curriculum in which the students gain coding knowledge and first-hand experiences while connecting their new knowledge to solving real-world problems.

**Chanteal Edwards** provided direct support to the Scholars and their parents or guardians. Prior to the first coding course session, Ms. Edwards personally called each Scholar and their parent or guardian to welcome them to BridgeUP STEM at Georgia Tech and answer their questions. She has been instrumental in ensuring the Scholars feel welcomed to campus and that their parents or guardians are aware of the safety measures put in place as the high school students navigate a college campus in the middle of Atlanta.

**Dana Johnson**, digital design and computer science teacher at Coretta Scott King Young Women's Leadership Academy (CSKYWLA), not only disseminated this opportunity to her students, but also communicated with their parents or guardians as to the importance of this opportunity. Ms. Johnson went out of her way to provide a time and place for the CSKYWLA students to complete the application and followed up with them to make sure all paperwork and permission forms were completed. She also attended the initial coding class session for a first-hand view of what her students would be experiencing.

**Georgia Tech** brought significant in-kind support to this program, utilizing Makerspace lab as a place to explore different computational modalities, such as computer simulation, physical computing, and e-textiles, and also tapping into other institutional funds, resources, and programs. To welcome the BridgeUP STEM Scholars to their first coding class, Georgia Tech organized "Welcome to Georgia Tech" gift bags which included BridgeUP STEM stickers.



**Through regionally-focused initiatives,** NCWIT bundles successful national programs to increase the local participation of women and girls in tech fields and careers. NCWIT partners with community stakeholders to build awareness, inspire participation, and connect women to like-minded peers, role models, and opportunities. Many other programs offer one-off computing experiences, but none offer nationally-distributed, research-based solutions that address critical stages of a woman's career path, yet can be leveraged locally. Preliminary data suggests that adding regional intentionality may accelerate local progress and build capacity and sustainable infrastructures for women and girls in tech. NCWIT currently has regional initiatives in Birmingham, Alabama and Detroit, Michigan, and is launching a third city, Pittsburgh, Pennsylvania, in 2022. Additionally, NCWIT is partnering to build regional initiatives through its membership in DoD STEM's Defense Science, Technology, Engineering, and Mathematics Education Consortium (DSEC). Through the work of DSEC, focused efforts to increase STEM participation have been made in San Diego, California, Dayton, Ohio, and the DC, Maryland, Virginia tri-state metro region.

One of the many stories of success comes from  
**Jessica Bradham,  
Detroit, Michigan:**

"I got the NCWIT scholarship and finished my program in November 2021. My Job Search Start Date was set to begin on December 31, but as of December 23 I had three competing job offers, all for remote companies. I'm so excited to say I accepted a six-figure offer (worth more than the value of my house and car combined) to be a Front-End Engineer and I start January 18. I'm so nervous and excited! It's literally changing my whole life."

## Counselors for Computing program



# C4C

In 2021, C4C trained  
**3,748** counselors  
who can reach as many as  
**1,474,672** students.

## Continuing to fill a critical gap in the educational ecosystem

In 2021, NCWIT expanded C4C program offerings to include a new series, Advising for Future-Ready Careers. Seven webinars designed to appeal to students, teachers, and school counselors covered topics ranging from cybersecurity, to accessibility in computing, to how art and computing intersect, and more. Counselors use these and other resources to change the way they advise students about computing fields and careers. In 2021, C4C held 76 events, training 3,748 counselors. Using the national average of 424 students per counselor, the potential impact to students is 1,474,672. Additionally, 1,941 C4C resource kits were distributed nationwide during 2021.

# Shannon Gibbs

September 16, 1974 - January 19, 2022

The high-energy, engaging educator who championed underrepresented students

As a middle school math and science teacher at Graceland Park O'Donnell Heights Elementary/Middle School in Baltimore City, MD, Shannon taught in his school for 10 years. Originally from Beaumont, TX, the environment of Baltimore City was vastly different from his hometown, but the conditions that affected his students were the same as the ones that had affected him and his peers while growing up in Texas. He recognized on a very personal level the dire need for representation in STEM fields and how that affects the opportunities available to underrepresented populations such as his own. As an educator, he advocated for his students by increasing their exposure to opportunities and resources that can prepare them to explore STEM as a career. He taught his students that they can be successful and make essential contributions to the world through STEM and provide their unique voice as a representation of the family and community that support them. As a computer science teacher, he understood the importance of equity and access particularly for young women, and how pathways in CS could change the trajectory of not only their individual lives, but of generations and communities.

"I loved Superman as a kid, but when I dressed as him one Halloween, I was told I could not be Superman because I didn't look like him. It broke my heart because before then, I never imagined I could not be Superman because of my color. As I got older, I realized that it's important for students to see a reflection of themselves in their heroes. That way, they can visualize themselves being in that role one day. TECHNOLOchicas are Hispanic and Latinx heroes! Their visibility is a confirmation to my young women that they too can have a voice and make important contributions in STEAM, specifically CS! They too can be heroes!"

Until recently, the school where Shannon worked didn't even have a full-time school counselor. As a computer science teacher, he stepped in, doing the work of a school counselor, providing C4C resources to students and staff, and reaching out to other educators in the area. He promoted DoD programs with his students who were interested in defense-related technology. He also created two after school programs: a Girls Who Code Club and a Boys Who Code Club.

Shannon experienced first-hand how many students' curiosity increased once they understood how computer science impacts their daily lives. Shannon knew that early exposure and impact is critical, especially in middle school. NCWIT honors Shannon's memory and is grateful for his work with students.



## Post-secondary experiences are critical for encouraging persistence in computing

NCWIT members are at the forefront of innovatively working with undergraduate and graduate students. In 2021, NCWIT honored four undergraduate professors and one graduate professor for their efforts.

The NCWIT Harrold and Notkin Research and Graduate Mentoring Award is given in memory of Mary Jean Harrold and David Notkin, in honor of their outstanding research, graduate mentoring, and diversity contributions. The award recognizes faculty members who combine outstanding research accomplishments with excellence in graduate mentoring, as well as those who advocate for recruiting, encouraging, and promoting women and members of other underrepresented groups in computing fields at both a local and national level. Dr. Barbara Ryder from Virginia Tech received this award in 2021.

The NCWIT Mentoring Award for Undergraduate Research (MAUR) recognizes Academic Alliance representatives for their outstanding mentorship, high-quality research opportunities, recruitment of women and students from populations that are underrepresented in computing, and efforts to encourage and advance undergraduates in computing-related fields. In 2021, this award was given to Dr. Diba Mirza, University of California Santa Barbara; Dr. Gloria Washington, Howard University; Dr. Haiyan Cheng, Willamette University; and Dr. Damla Turgut, University of Central Florida.

Each of these outstanding individuals has inspired and mentored many students, with Dr. Turgut's story serving as just one example. Dr. Turgut served as PI for an NSF Research Experience for Undergraduates (REU) program in which 50 percent of the participants were women, and more than 75 percent were Hispanic, African American, and/or first-generation college students. The program produced such projects as smart mobility devices and ScaledHome, a reconfigurable model of a suburban home and its external environment. Of the students who co-authored papers as a result of this program, 38 percent were women.



Our 2021, award winners:

**Dr. Damla Turgut**, University of Central Florida

**Dr. Diba Mirza**, University of California Santa Barbara

**Dr. Gloria Washington**, Howard University

**Dr. Haiyan Cheng**, Willamette University

**Dr. Barbara Ryder**, Virginia Tech

# Thanks to Gladys West you're never lost.

We had outstanding contributions from a diverse array of speakers including Cathy O'Neil, Lisa Cook, Van Jones, Gladys West, and Lien Diaz. More than 750 people joined and were inspired by the words of 2021 NCWIT Pioneer in Tech Award Recipient Gladys West, who changed the world of navigation through her pioneering and foundational work that led to the creation of global positioning systems.



In 2021, Conversations for Change and the re:think magazine continued to tell inspiring stories.

Dr. West started her career at the Naval Proving Ground in Dahlgren, Virginia, now called the Naval Surface Warfare Center, in 1956, and she worked there for 42 years as a mathematician and computer programmer. When she began, she was the second Black woman ever to be hired at the site, and one of only four Black employees total. Inspired by the civil rights movement that was unfolding around her, she countered prejudice within her workplace through hard work and intellectual achievement. Dr. West's work laid the foundation for modern GPS Systems, and she never stopped pursuing new interests and lifelong learning. At the age of 70, she received a PhD in public administration and policy affairs from Virginia Tech. Read more about Dr. West as well as other highlighted stories about age and how our perceptions of it affect our lives and our workplaces in the second edition of NCWIT's re:think magazine, published in 2021.

"I'm extremely honored to receive the Pioneer in Tech Award. I am very thankful to NCWIT for the recognition. Many years ago, I committed myself to be the best that I could be through my successes and challenges. I stayed focused and persevered, never losing sight of my goals. Being recognized at this point in my life brings some closure to a long and committed journey."

I recently published my memoirs entitled, "It began with a dream." I had many thoughts and dreams that dominated my thinking through my developmental years. I encourage each of you to always move confidently toward your dreams, yourselves."



# Driving change with the Tech Inclusion Journey

**Over the past two years**, NCWIT has applied our Tech Inclusion Journey (TIJ) methodology with a large financial services company, with tremendous results. In Phase 1, NCWIT worked closely with senior tech leaders and other executives within the company to increase their familiarity with the research foundation needed to identify effective vs ineffective approaches to DEI. This six-month-long effort involved more than one hundred tech professionals and focused on developing a common language and understanding of the social science of inclusive culture and change leadership.

**Phase 2** focused on the strategic use of NCWIT's online change management platform, the TIJ. This process included an in-depth self-diagnostic of existing team cultural norms and values, followed by priority-setting and strategic course-charting to bring team cultures from where they were to where leadership wanted them to be.

**Phase 3** focused on implementation of the cultural change priorities. Importantly, this included the creation of a squad of inclusive culture ambassadors from within the ranks of the company. These change agents were trained and prepared by NCWIT social scientists, conducted numerous peer-to-peer facilitated culture discussions throughout several departments, and laid a foundational structure for on-going cultural change management at the team level that is internalized – not relying on external consultants or services, but rather building the internal capacity of the organization for sustained and successful change management.

## RESULTS REPORTED BY AMBASSADOR LED SESSION PARTICIPANTS:

97%

reported thinking more about unconscious bias impacts at work

94%

reported paying more attention to whose voices are heard in meetings

92%

reported having taken some kind of action to create a more inclusive environment

98%

reported wanting more of their colleagues to attend similar sessions

97%

felt the ambassador program was laying a good foundation for inclusive culture construction

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DoDSTEM

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