

H-1B TECHHIRE

PROMISING PRACTICE

TOWARD A MORE DIVERSE TECH WORKFORCE

Promising Practices from the Nonprofit Sector

INTRODUCTION

The information technology (IT) field is attractive for many reasons. It is fast-growing, creating substantial, well-paying job opportunities. Computer and IT jobs are projected to grow by 13 percent between 2016 and 2026—faster than the average growth rate for all other occupations—adding more than 500,000 new jobs. The median wage in these jobs is \$84,580, more than twice that for all occupations (\$37,690).¹ The IT job market is robust, with shortages of skilled talent in many areas, ranging from general digital literacy and web development to fluency in specific programming languages, such as Java.² And while employers look for four-year or advanced degree college credentials for many positions, there are ample “middle-skilled” opportunities that don’t require a college degree, in areas such as programming and technical support. Almost one in four (24 percent) of those in computer occupations with certificates but not a bachelor’s degree earns more than \$75,000 per year.³ Tech employers seeking to fill vacancies often place more emphasis on applicants’ practical experience and interpersonal skills than on formal credentials.⁴

Opportunities in the IT field, however, are not equally distributed. People of color, women of all races and ethnicities, and lower income communities are starkly underrepresented. While women comprise 47 percent of the U.S. labor force, they represent just 27 percent of tech workers. African Americans comprise 12 percent of the labor force but only 7 percent of workers in tech occupations. Latinos represent 16% of the labor force but just 8% of the tech workforce, with Latina women comprising just 2 percent of that. And while African Americans and Latinos have improved their status in IT, their representation has increased by only one or two percentage points in the past 15 years.⁵ Some indicators show the proportion of women employed in tech has actually declined by half since the 1980s, from 37 percent to 18 percent.⁶

The workforce at today’s tech giants—Facebook, Apple, Microsoft, Google, and Amazon—is just 2 percent African American and 4 percent Latinx.⁷

These unequal conditions have many origins, including racial and gender biases in the tech industry and culture; uneven awareness of IT jobs, skills, and how to access them; unequal quality of K-12 education and exposure to STEM skills; lack of connections to tech employers and their networks (“social capital”); and employment discrimination. But whatever the reason, the results are the same: The tech field is disproportionately white or Asian and male, and others do not enjoy equal access to the benefits of working in IT.⁸ This is not only a problem for populations excluded from IT careers; the lack of diversity imposes costs on technology employers as well, as they fail to benefit from the skills and experience of a broader, untapped workforce. Given the shortages and skill gaps plaguing both the IT sector and occupations in other industries, these costs are substantial.⁹

Fortunately, there are proven strategies to match IT skill gaps with underrepresented groups. Among the most promising are those used by nonprofit, community-based organizations (CBOs) that make equal access to tech skills and employment their core mission. This brief describes these strategies, drawing on the experience of several well-respected CBOs. It explains the most promising practices employed by these groups, their challenges, and how they addressed them, and offers lessons to practitioners seeking greater equity and diversity in IT. It is based on interviews with several nonprofit organizations, including TechHire grantee partners Per Scholas and General Assembly, as well as Resilient Coders, a well-respected, Boston-based CBO. The study also employed desk research on additional education and service providers. The brief was produced for H-1B TechHire, a grant program of the U.S. Department of Labor, which supports accelerated training in high-demand IT skills and credentials in 39 nationwide. It is directed to H1-B TechHire partners in community colleges, public workforce agencies, and CBOs, and to practitioners and policymakers in the wider workforce and education field.

KEY STRATEGIES TO SUPPORT

Nonprofit organizations supporting diversity in IT employ several organizational models that vary depending on whether they are direct training providers or not and whether they work directly or indirectly with underrepresented communities. Given these differing specializations, these providers typically collaborate with other nonprofits, government, and employers to maximize their effectiveness.¹⁰

- **Direct workforce services, direct community outreach.** [Per Scholas](#), a community-based organization founded in the Bronx, New York, in 1995, provides training and career services to participants recruited from disadvantaged communities, focusing on serving people of color. Boston-based [Resilient Coders](#), founded in 2011, also follows this model.
- **Direct workforce services, partners for community outreach.** Organizations such as [General Assembly](#), founded in 2011, train participants in IT skills but work through CBOs, such as Per Scholas, to recruit and prepare candidates for technical training.
- **Preparation for IT training, direct community outreach.** This category includes organizations that recruit directly from disadvantaged groups and provide exposure and introductions to IT as well as readiness for work. Examples include [Black Girls Code](#),

which focuses on tech awareness and education for African American girls ages 7 to 17; [Girls Who Code](#); and CBOs such as [The Door and its Bronx Youth Center](#). There are also intermediary organizations, such as [#YesWeCode](#), that promote tech careers to underrepresented groups.

While the models of these organizations differ, they share many common strategies. Above all is a mission of pursuing equal opportunity by eliminating the barriers to IT careers for groups traditionally excluded or underrepresented. Key to this mission are recruitment strategies to engage adults and youth from nontraditional populations. Once recruited, participants typically receive a continuum of education and workforce services, including screening, assessment, orientation, instruction, supportive services, career advising, placement, and follow-up. And the training is generally without cost, whereas for-profit bootcamps cost \$11,500 on average.¹¹

DISTINGUISHING ATTRIBUTES OF DIVERSITY-FOCUSED CBOS

Mission

These organizations are distinguished by a social justice mission. For Resilient Coders, this means offering more than technical skills. It presents “a path toward economic resiliency” for “populations that have been systematically marginalized” but represent an untapped talent pool for tech.¹²

Participants

The best community-based IT providers make good on their commitment to diversity. Some 90 percent of Per Scholas students are people of color, one-third are female, and one-third are disconnected youth.¹³ Per Scholas has also strived to achieve gender parity in its classrooms. The vast majority of Resilient Coders participants are African American or Latinx; participants must be between the ages 18 and 33 and earn at least 80 percent less than the area’s median income. General Assembly’s programs for disadvantaged groups serve lower income persons, including those on public assistance, veterans, LGBTQ individuals, and people of color.

Outreach and recruitment

The key to outreach for these nonprofit groups is their connections to individuals and organizations in disadvantaged communities. In the early years of Per Scholas’ computer training, all recruiting was conducted via referrals from grassroots community organizations. Later, Per Scholas broadened its recruitment strategies and opened training to all community members. It targets its host neighborhoods with flyers, emails, print ads, social media messages, and more. New program managers are given a recruitment toolkit with guidelines for recruiting at street fairs, churches, and other community sites. According to Per Scholas Vice President for Programs Linda Quinones-Lopez, the organization now looks at recruitment strategically in all of its host communities, partnering with local nonprofit groups with a consistent outreach message. But in her view, “our students are the best representatives for recruitment,” with 20-25% of referrals coming from word-of-mouth.¹⁴

Another entry point for participants into IT CBOs is “hackathons” (code-learning events) or similar hands-on activities that introduce prospective applicants to IT skills and allow them to demonstrate interests and ability. Resilient Coders promotes its regular hackathons

in Boston’s communities of color, using social media, word of mouth, and contacts in nonprofit and city agencies. The Resilient Coders managers observe how individuals work in teams, problem-solve, and demonstrate persistence and interest in the mission. After one-on-one interviews, a portion—usually one-third of applicants—are called back to participate in coding bootcamp.

Educational approach

The content of instruction in these CBOs does not vary widely from conventional, for-profit providers, but the process is keyed to reaching nontraditional candidates “where they are” in terms of background, experience, learning styles, and aptitude. General Assembly offers a 12-week, full-time “immersive web development” course but also employs a part-time version for lower income adults who must balance training and employment. For very low-income persons, General Assembly’s CodeBridge model provides five weeks of pre-training at Per Scholas. And its Adobe Digital Academy provides scholarships and places graduates of the immersive web development or user experience courses into internships as junior software engineers at Adobe. Resilient Coders trains students for 14 weeks in web programming through full-time coursework and a stipend; to graduate, students are required to earn badges signifying competence in Java, HTML, and other languages. In addition to coding and computer tech support, Per Scholas has expanded its trainings to include network engineering, software testing and quality assurance, and cybersecurity. Through its TechHire partnership, Per Scholas is also offering Career Accelerator, a flexible incumbent worker training program in data analytics that includes support services.

To promote student success, these organizations emphasize learning by doing. As part of its training, Per Scholas students may be asked to set up a network and troubleshoot it. At Resilient Coders, instructors work with each participant to identify their preferred way of learning. Each day includes just two hours of direct instruction, while the remainder is less structured “lab time.” Participants are encouraged to “learn how they learn” so they can develop the capacity to master additional programming languages and other IT skills. Instructors work closely with students to address blockages—both in learning technical material and addressing anxiety and low self-confidence. This approach was summed up by a Resilient Coders participant: “This is an environment where you can feel comfortable not knowing. If you’re willing to learn, you don’t have to have a background in languages or code. You just have to have the interest. And grit.”¹⁵

CBO IT programs also emphasize non-cognitive skill development, to ensure participants are work-ready. Per Scholas maintains a “zero tolerance” policy for lateness in its classes and constantly challenges participants to do their best. As its name suggests, Resilient Coders stresses the cultivation of “grit,” or resilience, in its students. General Assembly also teaches employability skills, such as work norms, teamwork, and communication.

Student support and career services

CBOs engaged in IT training double down to support their participants, not only in academics, but also with personal and life issues. They do this both internally and through their partnerships with other community organizations, such as those serving disconnected youth, ex-offenders, and homeless people. And all of the CBOs studied offer career coaching, resume development, and job search skills, as well as post-placement follow-up. At Resilient Coders, coaching participants is part of everyone’s job description, rather than a specialized

role. Two weeks before graduation, staff divide the cohorts and designate point people to assist with job searches and continue building self-confidence. Per Scholas “advancement coaches” craft individual career plans with every participant prior to graduation. The coaches stay in touch with participants at least quarterly for up to two years after graduation, giving support for personal or workplace issues and helping them remain on the job. General Assembly’s coaches offer support through the Adobe Digital Academy internship period and assist those who do not attain permanent jobs with finding employment elsewhere.

Engaging employers

Close relationships with employers are key to the success of community-based IT trainers, as is a clear focus on meeting business needs. By serving as reliable sources for skilled talent, CBOs build the trust of tech employers. And deep engagement ensures that curriculum and certifications are current with the rapidly changing IT business environment. Per Scholas has found that over time, employer partners become more willing to take a chance on less-polished candidates and overcome their biases. In one instance, an employer skeptical of hiring female coders took on a mother of five young children who was “a solid tech, hungry to learn and grow in the industry.”¹⁶ The CBOs also cultivate deep partnerships for placing interns—as with General Assembly and Adobe and Per Scholas with Barclays. Long-term business partners to IT CBOs become champions, enlisting additional employer support and engagement.

Funding

As with other successful nonprofit workforce providers, CBOs in the IT space are strategic and aggressive in seeking support from multiple sources. Organizations such as General Assembly have revenue from self-paying participants of its regular bootcamps and business-to-business transactions to cross-subsidize its social impact work. General Assembly and Per Scholas also garner government grants, such as TechHire or equivalent programs at the state level. These organizations, as well as smaller scale entities such as Resilient Coders, also leverage investments from corporate partners and philanthropic partners. Google, for example, donated space to Black Girls Code for its technology exploration lab, which will also serve as office space and house student workshops, hackathons, tech panels, and parent-daughter events.¹⁷

Scaling

IT CBOs have scaled their work by expanding their footprints to wider geographic locations. Per Scholas has graduated more than 6,500 students since it instituted IT training in the mid-1990s and expanded from its original South Bronx site to eight other locations. Black Girls Code has served more than 10,000 young women of color in 13 U.S. chapters as well as one in South Africa.¹⁸ General Assembly’s social impact work has grown from its Bay Area base, where Digital Academy partner Adobe is headquartered, to Salt Lake City, with partner coding bootcamp V School. For Boston-based Resilient Coders, scaling has been more modest. At its origin, the organization served formerly incarcerated adults and justice-involved youth of color. It has since expanded its coverage to all disadvantaged populations of color in and around Boston.

Per Scholas offers lessons for how to scale and replicate operations without losing fidelity to the model. As Linda Quinones-Lopez, vice president of programs, explains, potential expansion

sites must meet clear criteria: Is there a need for training in this area? Are there populations underrepresented in tech?¹⁹ When expansion sites are established, they use tools and templates to help them adhere to Per Scholas' practices: how to conduct and recruit students, how to conduct an information session, how to interview candidates, and other standard, nonnegotiable procedures.

Outcomes

The results of the CBO model for bringing diversity to IT are impressive—particularly for Per Scholas, which has been rigorously evaluated twice. While just two out of three participants graduated from its technician program in the early years, the completion rate has increased to between 80 percent and 90 percent in all the years since.²⁰ A 2010 study, employing a randomized control trial, investigated Per Scholas and two additional sectoral workforce programs (Boston's Jewish Vocational Service and the Wisconsin Regional Training Partnership) to determine the impact of well-implemented training programs on the earnings of disadvantaged people. While participants in all three programs had significantly better results than control group members—18 percent more in wages, plus more hours worked and greater likelihood of working in high-wage jobs—the results for Per Scholas were the most dramatic: Participants earned 32 percent more than controls in the second year and 21 percent more overall for the two-year study period. Results for subgroups were striking as well: Immigrant trainees earned 70 percent more than similar control group members; formerly incarcerated participants and young adults (ages 18 to 26) also outdistanced subgroup controls in earnings and likelihood of working in higher paying jobs.²¹

A subsequent evaluation, also using random controls, examined Per Scholas and additional nonprofit workforce providers under WorkAdvance, a program supporting demand-driven skills training for jobs with career pathways and industry certifications. While all WorkAdvance programs resulted in improved completion rates, increased employment in the targeted sector, and higher incomes for participants relative to control group members, Per Scholas, the most mature of the three sites, exceeded all others in terms of its level of impact: Participants earned \$3,700 (26 percent) more in wages than did controls. The proportion of Per Scholas participants finding work in the targeted sector (IT in this case) was 41 percentage points higher than those in the other WorkAdvance programs.²²

General Assembly and Adobe Digital Academy—while not subject to rigorous evaluation—also suggests strong results: More than three-quarters of participants qualify for an internship at Adobe, and two-thirds of this group have been retained for full-time employment at Adobe following their internship.²³

CONCLUSION

The IT field offers significant job prospects but also troubling inequality, especially for persons of color and other disadvantaged communities. Employers, educators, and policymakers have responded in varied ways to diversify technology work—including outreach by hiring managers and higher education to underrepresented groups and promotion of STEM careers to youth in K-12 schooling. But, as the examples here demonstrate, some of the most promising inroads are being made by community-based organizations. Their models vary, from providing training services and community outreach directly to working through partner organizations. But key to

their success is deep engagement with participants and their communities, as well as with employers and industry groups.

The CBOs profiled here leverage these connections to local and business networks to extend participants' "social capital," or access to skills and employment previously unavailable to them. They are mission-driven but business-focused—committed to equality while meeting the IT industry's needs for a skilled workforce. They do this by meeting participants "where they are," adopting diverse learning strategies while providing the structure and rigor to prepare for demanding and high-paying jobs. Their results in placing candidates in targeted employment at good wages are compelling.

Yet their work is not without serious challenges. Intensive, service-rich training is costly; retaining participants with high needs and barriers remains difficult. Shorter-duration programs that match the needs of lower-income, working learners may yield lower occupational and wage results. And given the magnitude of tech job growth and the level of inequality, CBOs' impact is necessarily limited without significant scaling. Scaling these and similar efforts, while maintaining close connections to diverse communities, represents both a critical challenge and a promising opportunity.

ENDNOTES

- ¹ “Computer and Information Technology Occupations,” in the Occupational Outlook Handbook. U.S. Bureau of Labor Statistics, last revised April 13, 2018. www.bls.gov/ooh/computer-and-information-technology/home.htm
- ² Paul Petrone, “The Skills Companies Need Most in 2018 —and the Courses to Get Them.” LinkedIn Learning, 2018. www.linkedin.com/pulse/skills-companies-need-most-2018-courses-get-them-paul-petrone/?trk=li_namer_bcs_alwayson18_blog_skills_gap&utm_campaign=alwayson18&utm_medium=blog&utm_source=blog&utm_content=skills_gap
- ³ Lul Teafai, Kim Dancy, and Mary Alice McCarthy, “Paying More and Getting Less: How Nondegree Credentials Reflect Labor Market Inequality Between Men and Women.” Washington, DC: New America, last updated September 13, 2018. www.newamerica.org/education-policy/reports/paying-more-and-getting-less/
- ⁴ Tara Smith and Randall Wilson, “Six Effective Approaches for TechHire Initiatives: Lessons from the Field.” Boston: Jobs for the Future, May 26, 2016. www.jff.org/resources/six-effective-approaches-techhire-initiatives/
- ⁵ Mark Muro, Alan Berube, and Jacob Whiton, “Black and Hispanic Underrepresentation in Tech: It’s Time to Change the Equation.” Washington, DC: The Brookings Institution, March 28, 2018. www.brookings.edu/research/black-and-hispanic-underrepresentation-in-tech-its-time-to-change-the-equation/
- ⁶ “Adobe’s Youth Coding Initiative: Girls Who Code.” YouTube video, published April 30, 2018. www.youtube.com/watch?v=O5Jal7vUSBU
- ⁷ Stephanie Lampkin, “Counteracting Compounding Inequity in Technology with Technology.” Plenary address at Horizons: A Vision for Economic Advancement, Jobs for the Future, New Orleans, 2018. YouTube video, published June 18, 2018. www.youtube.com/watch?v=K2lrkdU5fc
- ⁸ Andria Thomas, Joe Dougherty, Scott Strand, Abhinav Nayar, and Maryam Janani, “Decoding Diversity: The Financial and Economic Returns to Diversity in Tech.” New York: Dalberg Global Development Advisors and Intel Global Diversity and Inclusion Group, 2017. www.intel.com/content/www/us/en/diversity/decoding-diversity-report.html
- ⁹ Andria Thomas et al., “Decoding Diversity.”
- ¹⁰ Organizations that offer IT training and certifications but do not recruit from or link to underrepresented or disadvantaged groups are not covered here. But may employ instructional methods, such as programming bootcamps, with nonprofit organizations promoting racial, ethnic, and socioeconomic diversity.
- ¹¹ Steven Lohr, “Where Non-Techies Can Get with the Programming.” The New York Times, April 4, 2017. www.nytimes.com/2017/04/04/education/edlife/where-non-techies-computer-programming-coding.html
- ¹² <https://givingcommon.org/profile/1144186/resilient-coders-inc/>
- ¹³ See Per Scholas’ mission at <https://perscholas.org/about#mission>.
- ¹⁴ Interview with Linda Quinones-Lopez, September 27, 2018.
- ¹⁵ “Resilient Coders: Hacking the Opportunity Gap.” The Boston Foundation, No date. <https://www.tbf.org/nonprofits/nonprofit-stories/resilient-coders>
- ¹⁶ Interview with Linda Quinones-Lopez, September 27, 2018.
- ¹⁷ Alexis Buchanan, “Google Supports Black Girls Code to Support Tech Workforce Diversity.” Nonprofit Quarterly, July 3, 2018. https://nonprofitquarterly.org/2018/07/03/google-supports-black-girls-code-to-promote-tech-workforce-diversity/?utm_source=NPQ+Newsletters&utm_campaign=f0bbdd80a6-

EMAIL_CAMPAIGN_2018_01_11_COPY_01&utm_medium=email&utm_term=0_94063a1d17-f0bbdd80a6-12296489

¹⁸ Jennifer Elias, “What Black Girls Code Founder Says Silicon Valley Still Gets Wrong.” Silicon Valley Business Journal, June 4, 2018. www.bizjournals.com/bizwomen/news/profiles-strategies/2018/06/what-black-girls-code-founder-says-silicon-valley.html?page=all

¹⁹ Interview with Linda Quinones-Lopez, September 27, 2018.

²⁰ Ibid.

²¹ Shelia Maguire, Joshua Feeley, Carol Clymer, Maureen Conway, and Deena Schwartz, “Tuning into Local Labor Markets: Findings from the Sectoral Labor Market Study.” Philadelphia: Public/Private Ventures, 2010.

²² Richard Hendra, David H. Greenberg, Gayle Hamilton, Ari Oppenheim, Alexandra Pennington, Kelsey Schaberg, and Betsy L. Tessler, “Encouraging Evidence on a Sector-Based Advancement Strategy: A Preview Summary of Two-Year Impacts from the WorkAdvance Demonstration.” MDRC, June 2016. www.mdrc.org/publication/encouraging-evidence-sector-focused-advancement-strategy

²³ “Adobe’s Digital Academy Supports High-Potential Tech Talent,” <https://theblog.adobe.com/adobes-digital-academy-supports-high-potential-tech-talent/>

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