SKILLS-BASED HIRING:

A Primer

PRODUCED BY

W/A | Whiteboard Advisors

COMMISSIONED BY

GA GENERAL ASSEMBLY

FORWARD

Imagine you're hiring for an important member of your team. A friend recommends a candidate with the skills, the passion, the grit you are looking for, but they lack industry experience. Maybe they couldn't afford to finish college or ran into trouble with the law when they were younger, and if you were relying on the tried-and-true measures to find candidates, this potential great fit likely wouldn't even make it past the initial screening process.

Unfortunately, in hiring, even the best businesses can overlook candidates who have taken a different path—giving preference to those who had the right specific last roles, had the right internships, or have a specific number of years of experience.

As someone who took the path less traveled myself, dropping out of college to continue traveling around the world, opening franchises and taking on additional responsibilities at Hooters, I worry that others like me and those with far more unique and challenging backgrounds may not be "seen" for the awesomeness they are and can become. And organizations then cannot improve their diversity as quickly and those who could be moving into the skilled workforce continue to stall and have the lid put on their career potential.

Research shows that in hiring, the deck is often stacked against low-income and minority candidates—especially when it comes to the technology sector. Luckily, some companies are beginning to pursue new strategies, like skills-based hiring, to make the hiring process more open and equitable.

In my work with General Assembly and Opportunity Fund, a scholarship program to empower the next generation of diverse tech talent, we see incredibly diverse talent getting access to 21st-century skills that are in high demand in today's economy. At the same time, I often see that same talent stall in the hiring process because it focuses on their background, not their skills.

By assessing not only experience but also competencies, skills, and indicators of grit and potential, rather than what's on a resume alone, companies can more accurately identify candidates that fit their needs with the potential to succeed, while broadening the potential talent pool.

This can be scary for hiring managers, and rightfully so—with limited information and as quickly as companies may be trying to hire – it's understandable that they use systems and processes to mitigate risk and find the best candidates. They may not realize, however, that those very tools may be creating barriers to accessing top talent, and even if they do, they may not have a way to innovate the hiring practice to be more skill-centric while still mitigating risk and measuring for likely success.

Several such tools are emerging to help companies focus on specific skills and potential, and I'm loving working with General Assembly on their Skills-Based Hiring Primer. The right perspective, coupled with the best assessments, can broaden the view to more qualified candidates while simultaneously allowing a company to improve diversity. It's something that should be explored, iterated, used, and scaled.

Happy reading!

Kat Cole
President, Focus Brands

ABOUT THE AUTHORS

Erica Price Burns is Vice President and Co-Director of Whiteboard Advisors. She advises clients on the intersection of policy and innovation, with a particular focus on education, health, and wellness. She leads a team that produces proprietary research on complex issues and conducts transactional due diligence, policy analysis, and risk assessment. As head of Whiteboard's philanthropy practice, Erica has advised Fortune 500 companies on multi-million dollar grant programs, and works with company leadership to establish meaningful philanthropic relationships.

Prior to joining Whiteboard Advisors, Erica worked for U.S. Senator Michael Bennet and served in a variety of roles in Democratic politics and on Capitol Hill. Erica was a Nemerov Writing Scholar at Washington University in St. Louis, where she graduated *magna cum laude* with a degree in Political Science and Economics.

Deirdre Dlugoleski serves as a Research Associate for Whiteboard Advisors. Prior to joining Whiteboard, Deirdre taught English and researched alternative education programs and public-private partnerships in India as a Fulbright scholar. Deirdre earned her degree in history with distinction from Yale University in 2013 (Phi Beta Kappa), where she served as a President's Public Service Fellow in New Haven and taught with Breakthrough Collaborative.

ABOUT WHITEBOARD ADVISORS

Whiteboard Advisors is a multidisciplinary agency specializing in business development, complex research, and communications for highly regulated markets like education and health and wellness. Our team of policy wonks, geeks, and storytellers brings an unmatched understanding of the political and policy landscape to bear on corporate strategy.

ABOUT GENERAL ASSEMBLY

General Assembly (GA) is a global educational company on a mission to empower a global community to pursue work they love. Focusing on the most relevant and in-demand skills across data, design, business, and technology, GA is confronting a skills gap through best-in-class instruction and providing access to opportunities.

GA works with students online and in person across 15 campuses on 4 continents. GA also works with companies as partners in course development and graduate placement as well as helps companies stay competitive in today's digital landscape. Additionally, GA's focus on affordable and accessible education combined with our education-to-employment approach is helping to create a diverse talent pipeline.

INTRODUCTION

Explosive job growth in high-tech fields is creating unprecedented opportunity for social and economic mobility. But it also creates unprecedented risk of exacerbating income gaps and inequality if new categories of jobs exclude a generation of talent because they didn't attend the right schools or have the right initial job experiences.

Skills-based hiring isn't about abandoning the college degree, but it is about using data to identify job candidates that can succeed, without regard to signals like college ranking or social networks. Innovate+Educate defines skills-based hiring as "the act of incorporating a tangible and objective measure of skills and skill level into the hiring process." It's not a new idea, but it's a powerful one. This Primer provides an overview of the challenge along with the history and relevance of skills-based hiring. It's a concept that informs General Assembly's work, and we hope you find it useful.

THE OPPORTUNITY

Building "a global community of individuals empowered to pursue the work they love" starts with developing the skills and competencies to launch a career. It's about cultivating the talent that exists in unexpected places, and creating a more diverse workforce that draws upon our nation's collective skills and perspectives. But it also means addressing the "last mile" challenge of bridging education and employment that leads to diversity gaps in high-growth fields and hybrid jobs.

Computer science programs in higher education are slowly becoming more diverse: 4% of computer science graduates are Black. About 8% are Hispanic.[1] Yet most large tech firms have diversity rates that are half this.[2] Women are also underrepresented: among those with a science and engineering degree, men are twice as likely to be employed in a STEM job as women.[3]

Large employers know that a more diverse workforce is a more talented workforce, but often struggle to identify candidates from diverse social and educational backgrounds.[4] The use of predictive analytics in the hiring process is in its infancy. As a result, employers often fall back on sorting mechanisms like college rank or degree that make the hiring process manageable—but risk excluding hidden talent. There will be over one million new computing jobs created by 2024, and two-thirds of high-tech jobs will exist outside of high-tech companies. These jobs present an opportunity to close economic gaps and increase social mobility. "Employers are the most important piece of the skills-based hiring puzzle," said Jamai Blivin, founder and CEO of Innovate+Educate. "Employer demand has the power to impact every other component of the ecosystem, from which competencies job-seekers must demonstrate, to the process by which they can do so."

A BRIEF HISTORY

Skills-based hiring isn't a new concept. The military has used tests to screen for aptitudes since World War I to help commanders understand the strengths of recruits. In 1974, the Department of Defense adopted the Armed Services Vocational Aptitude Battery (ASVAB) to create greater consistency in assessing candidates across the armed services. The ASVAB identifies individuals who possess particular skills important to the military and assists with placement within a particular service branch.

Skills-based hiring can be used in tandem with blind hiring. Blind hiring allows hiring decisions to be made without knowledge of an individual's name, gender, race, alma mater, or other information that could bias the hiring outcome. By providing objective measures of skill or competency, skills-based hiring can provide a more robust picture of a candidate, while maintaining the benefits of a blind hiring process.

In some cases, skill is easy to assess. Orchestras began using blind auditions in the 1970s and 1980s, placing musicians behind a screen and letting their performance be the sole indicator by which they were judged. A study of this practice found that women, who were underrepresented in top-tier orchestras at the time, were 50% more likely to make it past initial audition rounds as a result of blind auditions.[5] In 1970, female musicians made up only 5% of players in top American orchestras; by 1997 women made up 25% of musicians.[6]

Hiring based on merit is as intuitive and appealing as it is complex. On NBC's "The Voice," judges listen to the contestants perform before turning around to see them. Yet in many occupations, assessing skill is not so simple. Determining what skills are most valuable, as well as how to best assess them, is a complicated issue.

The development of assessments to measure skills (especially soft skills) is relatively nascent. Employers often struggle to identify and articulate the discrete skills and competencies required for success. Jason A. Tyszko of the U.S. Chamber of Commerce Foundation explains that "an effective talent supply chain requires a shared understanding between employers, providers, and employees about required skills and performance—and a shared language for communicating those requirements." Without a clear understanding of these requirements, employees "can't share information and specifications about their fit for a job in ways that are recognized by employers as end-customers in a talent supply chain."

Despite the challenge, skills-based hiring may be accelerating. Last year, a U.K. government commission asserted that bright working-class applicants were "systematically locked out" of job opportunities with top accounting firms, prompting Ernst & Young to abandon degree requirements for U.K. hires in favor of numerical tests and online strengths assessments.[7]

THE CHALLENGE

Easy Proxies: Degrees and Signaling

According to Burning Glass, more and more jobs once available to high school graduates are now reserved for those with a college degree. Sixty percent of new job postings for IT help desk positions request a bachelor's degree, but only 39% of current job holders have one. Burning Glass' analysis suggests that the skills listed in job postings, regardless of whether a degree was required, were identical.[8]

Although degrees may not be required for on-the-job success, they provide easy proxies for skills or competencies. The challenge is that degree requirements rule out the approximately 70% of American adults above the age of 25 who lack a degree today, particularly racial/ethnic minorities or low-income adults.[9] According to a Pew study, only 9% of 25-to-29-year-olds with a bachelor's degree were African American, and only 9% were Hispanic—rates disproportionately low compared to the population overall.[10]

Differentiation among degrees also creates challenges. Top employers often limit their recruitment efforts to top-tier or Ivy League schools, which rules out the vast majority of students—only about 0.4% of undergraduates in the U.S. attend one of the Ivy League schools.[11]

Retention and Training

Employers have a financial stake in ensuring that they have a clear understanding of their employees' capabilities. Too often, new hires require retraining in basic skills like presentation and writing for business, yet employers spend very little to evaluate the skills and competencies of job-seekers. Consider this: employers spend $590 billion annually on formal and informal training for their employees, but spend only $.75 billion a year on psychometric testing of candidates.[12][13]

Identifying and hiring candidates is as costly as retraining. In 2014, the average time between posting the job and interviewing was 38.7 days. The average cost per hire was $3,582.[14]

Limitations on Data

Since the 1920s, colleges and universities have used national norm-referenced admissions tests, designed to be the great equalizer in college admissions. Colleges and universities are awash in data to inform their admissions decisions. In addition to tests like the SAT or ACT, admissions officers utilize GPA, AP and IB scores, and essays to assess college match and develop a holistic picture of an applicant. Upon graduation four or five years later, however, employers have precious little information on the characteristics of the very same students. It's only relatively

recently that transcripts have moved online. In most cases, the data produced by universities is limited to only grades and course numbers. It is rarely machine readable.

"Credentials are the coin of the realm in an information economy," said Parchment founder Matt Pittinsky. "But colleges and universities are just beginning to invest in 'clickable credentials' that can provide employers with a much more comprehensive picture of a student's skills and knowledge—in the coming years, the data available to employers will continue to accelerate."

Soft Skills and Personality

Skills matter, but it takes more than competence to succeed in the workplace. In the 1980s, MetLife insurance spent tens of thousands per individual to hire and train salespeople—only to have half leave in the first year. Four out of five were gone within five years. It wasn't until the insurance giant began testing for optimism and resilience that they were able to bend the curve on retention. Soft skills were a better indicator of fit and success: individuals with high optimism scores outsold non-optimists by 27% in the first year, and 57% the next year.[15]

"Today, employers can gather data on personality traits of candidates much more quickly," notes Spencer Thompson, founder of soft skills assessment platform Sokanu. "Data enables employers to conduct blind evaluations of applicants that are a strong match for the position, and often results in a more diverse candidate pool than they might uncover through traditional methods."

Personality traits also can impact an employee's aptitude for a job, as well as their likelihood of success. New platforms like Sokanu are providing simple ways for employers to identify which skills matter by analyzing which skills are seen in high-performing current employees, and using this knowledge to recruit and hire individuals that fit a particular archetype.

Bridgette Gray, Executive Director of National Sites for non-profit training program Per Scholas, explains that "developing the right technical skills is only a piece of the puzzle; closing diversity gaps is about developing and measuring soft skills in way that makes sense to employers — and cultivating the ambition and confidence to succeed among job-seekers from underrepresented backgrounds."

Bias in Hiring

The hiring process is often prone to unintentional bias. Even with the best intentions, human nature makes hiring based on resumes and interviews over-reliant on educational background, employment background, or personal characteristics. Research from the Kellogg School of Business at Northwestern

found that hiring decisions at elite firms (40 each in banking, consulting, and law) were often most strongly correlated with how similar the candidate was to the interviewer, rather than how qualified the candidate was.[16]

Another survey on hiring found that while 82% of respondents said that "cultural fit" was an important part of the recruiting process, only 54% could define their corporate culture.[17] Legand Burge, chair of the computer science department at Howard University, noted that corporate culture seems to play a bigger role in hiring now than it has historically—something that can be challenging for graduates of his historically black institution. "Back in the civil rights period, it used to be that lighter-skinned people were able to pass and be more acceptable, so they were able to get into organizations or get into companies," he recently told Bloomberg Business. "Now it's a little bit different. It's about cultural fit. Do you laugh at the same jokes? Do you Rollerblade or whatever?"[18]

Bias may also be more overt. A study from the National Bureau of Economic Research found that, while applicants with "white-sounding" names, like Greg or Emily, must send out about ten resumes on average to get one callback for an interview, job applicants with "black-sounding" names, like Lakisha or Jamal, must send out 15—a 50% gap.[19]

SKILLS-BASED HIRING IN ACTION

Leveling the Playing Field

According to a recent study, just 20% of candidates who were not white, male, able-bodied graduates from elite schools were invited for a first-round interview after going through a traditional resume screening process. When a blind hiring process focused on skill demonstration was used, however, 60% of these applicants were contacted for an interview.[20] Inequitable distribution of opportunity is, of course, not based on an inequitable distribution of talent. The same organization found that 60% of top performers on technology assessments were women, suggesting that the lack of women in STEM fields is not due to lack of skill.

In August 2015, the U.K. office of Ernst & Young announced that, beginning in 2016, it will no longer require new hires to have a college degree. Instead, E&Y will evaluate candidates based on the result of a series of pre-employment tests.[21] In the statement it released on this decision, E&Y noted that this shift came after an internal 18-month study of 400 employees that found little correlation between academic success and performance on the job.[22]

Google has famously dismissed unstructured interviews, grades, and test scores as "worthless" in the hiring process. Instead, Google uses an internal tool called qDroid, which allows the interviewer to pick the job they are screening for and check the attributes they want, and then emails them an interview guide with questions that are predictive of performance on the job.

Improving Turnover and Time-to-Hire

Assessments for workplace competencies allow employers to more quickly identify individuals with important skills, saving time and money. According to a report by Innovate+Educate, skills-based hiring practices can lead to reductions in turnover (25-75% improvement), reductions in time-to-hire (50-70% improvement), reductions in cost-to-hire (70% improvement), and reductions in time needed to train employees (50% improvement).[23] In Albuquerque, a program to encourage employers to use skills-based hiring called Talent ABQ (implemented in partnership with Innovate+Educate) reduced turnover rates by 73% and time-to-hire rates by 60%.[24]

Benefits are also seen in assessment of soft skills. According to the Harvard Business Review, when using an assessment for workplace competencies like dependability, one U.K. company found that those who scored in the highest 30% of the group were 2.3 times as likely to have perfect attendance as workers who scored in the bottom 30%.[25] Another U.K. company used a situational judgment test to screen out the bottom 25% of applicants, and saved 73,000 hours of managerial time.[26]

It stands to reason that understanding which competencies are important for success in a particular position, and having an assessment that identifies candidates with those skills, increases the chances of making a quality hire.

The U.S. Government

In March 2015, the White House launched the TechHire initiative, intended to promote the training and hiring practices needed to get working-class Americans into the high-skill tech jobs that make up over half of the 5 million job openings in the U.S. today. As part of this initiative, twenty regions, representing more than 120,000 open technology jobs and 300 employers, announced plans to develop new ways to recruit and place applicants based on their actual skills, and to create more fast-track training opportunities for tech careers.[27]

Proponents on both sides of the aisle are recommending an overhaul of O*NET, the federal database of occupations. The database is used as a library of occupations within both the public and private sector; federally, it is part of 33 regulations on everything from worker training to employment assistance for veterans. O*NET specifies competencies required for success in various occupations; however, the

database is limited in scope, listing only 1,000 jobs, and ignores many newer, high-growth occupations like those in the technology sector.[28] "Some of the most exciting, high-growth jobs reflect an amalgam of skills and disciplines," said Stephen Smith, President of Advising & Admissions Solutions at Hobsons, which provides Naviance, a college and career readiness platform for middle and high schools. "If we want to help young people find career pathways that are aligned with their interests and passions, we have to help them see the entire picture of what is available, not just an easily definable subset."

Emerging Platforms

Skills-based hiring is particularly relevant to technology jobs, where skills (quality of code, for example) are easier to assess. It is no surprise that investors have been drawn to skills-based hiring startups focused on technology skills. In fact, VC funding for recruiting technology startups was $219 million in 2014, double the investments seen in 2009.[29]

"Employers are eager to use practical assessments because they are strong predictors of success on the job," said Kieran Luke, General Manager of Credentials at General Assembly. "Our goal is to help employers recognize people for what they can do using our assessments, no matter where they come from."

Several new platforms have emerged to support skills-based hiring and blind hiring:

» General Assembly's Credentialing Network, which includes companies like GE, PayPal, Bloomberg, and L'Oréal, has developed a series of authentic assessments. The Credentialing Network identifies competencies that correlate to success in the workplace, and crafts challenges to assess these skills.

» After facing challenges in the hiring process, Stephanie Lampkin, a female African American engineer, created Blendoor, an app that helps companies recruit candidates without photos or names. The app launched at SxSW 2016, and so far has piqued the interest of Intel, Google, Facebook, and Apple.[30]

» San Francisco-based startup GapJumpers allows technology companies to create open "challenges" for potential job candidates. No personal information about the candidates is sent to the tech companies at first, allowing them to make initial decisions on interviews based solely on the quality of work provided through the challenge.

» Gild, another San Francisco company, uses machine learning, big data, and fellow developers to evaluate coding skills.[31] It has been used by major firms including Facebook, Groupon, Buzzfeed, and Progressive.

Areas for Further Exploration

This primer primarily focuses on skills-based hiring as it has historically been used and is being used today. However, as use of skills-based hiring increases, additional questions will emerge. To what extent are skills assessments and credentials descriptive of knowledge/skills vs. predictive of future success? The SAT authors readily explain that the test is designed to be predictive of college success—but not necessarily evaluative of content mastery. Will employers develop similar tools? How can they be deployed efficiently at scale? What are the implications for institutions of higher education, or for new categories of education providers? Experts are also beginning to ask if "skills-based hiring" is the proper term for this process, given that the goal is to include a broad set of competencies, from things like critical thinking and analysis to softer skills like communication and interpersonal skills. These questions and others will certainly merit deeper consideration by employers and other stakeholders as diversity gaps persist, and the potential of skills-based hiring comes into focus.

[1] Zweben, Stuart & Bizot, Betsy. 2014 Taulbee Survey. Computing Research News, May 2015 (vol. 27, no. 5). Computing Research Association. http://cra.org/wp-content/uploads/2015/06/2014-Taulbee-Survey.pdf

[2] Weise, Elizabeth & Guynn, Jessica. (2014, October 13). Tech jobs: Minorities have degrees, but don't get hired. USA Today. http://www.usatoday.com/story/tech/2014/10/12/silicon-valley-diversity-tech-hiring-computer-science-graduates-african-american-hispanic/14684211/

[3] Landivar, Liana Christin. (September 2013). Disparities in STEM Employment by Sex, Race, and Hispanic Origin. US Census Bureau American Community Survey. September 2013. https://www.census.gov/prod/2013pubs/acs-24.pdf

[4] Hunt, Vivian, Layton, Dennis, and Prince, Sarah. (January 2015). Why diversity matters. McKinsey&Company. http://www.mckinsey.com/business-functions/organization/our-insights/why-diversity-matters

[5] Goldin, Claudia & Cecilia Rouse. (January 1997). Orchestrating Impartiality: The Impact of "Blind" Auditions on Female Mucisians. National Bureau of Economic Research. http://www.nber.org/papers/w5903

[6] Ibid.

[7] Havergal, Chris. (2015, June 15). Working-class graduates 'locked out' of top careers. Times Higher Education. https://www.timeshighereducation.com/news/working-class-graduates-locked-out-top-careers

[8] 2014, September. Moving the Goalposts: How Demand for a Bachelor's Degree is Reshaping the Workforce. BurningGlass. http://burning-glass.com/wp-content/uploads/Moving_the Goalposts.pdf

[9] United States Census Bureau. (2014). Quick Facts [Data file]. http://www.census.gov/quickfacts/table/PST045215/00

[10] Krogstad, Jens Manuel & Richard Fry. (2014, April 24) More Hispanics, blacks enrolling in college, but lag in bachelor's degrees. College Enrollment by Race/Ethnicity: Pew Research Center. http://www.pewresearch.org/fact-tank/2014/04/24/more-hispanics-blacks-enrolling-in-college-but-lag-in-bachelors-degrees/

[11] O'Shaughnessy, Lynn. (2011, September 6). 20 Surprising Higher Education Facts. U.S. News & World Report. http://www.usnews.com/education/blogs/the-college-solution/2011/09/06/20-surprising-higher-education-facts

[12] Carnevale, Anthony P., Strohl, Jeff, and Gulish, Artem. (2015, February). College Is Just the Beginning: Employers' Role in the $1.1 Trillion Postsecondary Education and Training System. Georgetown Center on Education and the Workforce. https://cew.georgetown.edu/wp-content/uploads/2015/02/Trillion-Dollar-Training-System-.pdf

[13] Bateson, John, Wirtz, Jochen, Burke, Eugene, and Vaughan, Carly. (2013, November). When Hiring, First Test, and Then Interview. Harvard Business Review. https://hbr.org/2013/11/when-hiring-first-test-and-then-interview

[14] 2014, October. Recruiting Benchmarks Survey Report: Key Measures for University Recruiting. National Association of Colleges and Employers (NACE). https://www.naceweb.org/uploadedFiles/Content/static-assets/downloads/executive-summary/2014-recruiting-benchmarks-survey-executive-summary.pdf

15 Seligman, Martin. Learned Optimism. New York: Alfred A. Knopf, 1991. Print.

16 (2013, April 3). Hirable Like Me. Kellogg Insight. Kellogg School of Management at Northwestern University. http://insight.kellogg.northwestern.edu/article/hirable_like_me

17 (2013, July). Cubiks International Survey on Job and Cultural Fit: July 2013. Cubiks International. http://www.cubiks.com/SiteCollectionDocuments/Files%20ENG/Research%20Studies%20ENG/Cubiks%20Survey%20Results%20July%202013.pdf

18 Vara, Vauhini. (2016, January 21). Why Doesn't Silicon Valley Hire Black Coders? Bloomberg Business. http://www.bloomberg.com/features/2016-howard-university-coders/

19 Bertrand, Marianne, and Sendhil Mullainathan. (2004, September). Are Emily and Greg More Employable Than Lakisha and Jamal? A Field Experiment on Labor Market Discrimination. American Economic Review, 94(4): 991-1013. https://www.aeaweb.org/articles.php?doi=10.1257/0002828042002561

20 Miller, Claire Cain. (2016, February 25). Is Blended Hiring the New Hiring? The New York Times Magazine. http://www.nytimes.com/2016/02/28/magazine/is-blind-hiring-the-best-hiring.html?_r=0

21 Lam, Bourre. (2015, September 24). The Best Job Candidates Don't Always Have College Degrees. The Atlantic. http://www.theatlantic.com/business/archive/2015/09/ernest-young-degree-recruitment-hiring-credentialism/406576/

22 Bock, Laszlo. (2015, April 7). Here's Google's Secret To Hiring The Best People. Wired. http://www.wired.com/2015/04/hire-like-google/

23 (2014, February). The U.S. Skills Gap. Innovate+Educate. http://actfdn.org/wp-content/uploads/2014/02/Report_US-SkillsGap_Innovate-Educate.pdf

24 Innovate+Educate a catalyst for job growth in Albuquerque. W.K. Kellogg Foundation. https://www.wkkf.org/what-we-do/featured-work/innovate-educate-a-catalyst-for-job-growth-in-albuquerque

25 Bateson, John, Wirtz, Jochen, Burke, Eugene, and Vaughan, Carly. (2013, November). When Hiring, First Test, and Then Interview. Harvard Business Review. https://hbr.org/2013/11/when-hiring-first-test-and-then-interview

26 Ibid.

27 FACT SHEET: President Obama Launches New TechHire Initiative. The White House, Office of the Press Secretary: March 9, 2015. https://www.whitehouse.gov/the-press-office/2015/03/09/fact-sheet-president-obama-launches-new-techhire-initiative

28 Chopra, Aneesh & Sinai, Nick. (2015, March 5). Unlocking Labor and Skills Data for America: A Roundtable Discussion with Business and Policy Leaders. Shorenstein Center on Media, Politics, and Public Policy. http://shorensteincenter.org/unlocking-labor-and-skills-data-for-america-a-roundtable-discussion-with-business-and-policy-leaders/

29 Kadet, Anne. (2015, July 19). The Robots That Can Get You a Job. OZY. http://www.ozy.com/true-story/the-robots-that-can-get-you-a-job/41567

30 O'Connor, Clare. (2016, March 3). Black Woman Engineer Launches 'Blind' Job Match App To Take Bias Out Of Tech Hiring. Forbes. http://www.forbes.com/sites/clareoconnor/2016/03/03/black-woman-engineer-launches-blind-job-match-app-to-take-bias-out-of-tech-hiring/#5d8a2e04601c

31 Kadet, Anne. (2015, July 19). The Robots That Can Get You a Job. OZY. http://www.ozy.com/true-story/the-robots-that-can-get-you-a-job/41567