



TechHire Strategy Design

Commissioned by the City of Bellevue

OneRedmond
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- Curriculum matrix for regional post-secondary schools
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Executive Summary:

On March 10, 2015, President Obama announced the TechHire initiative at the National League of Cities annual conference. TechHire was launched as an initiative to expand local technology sectors by building technology talent pipelines in communities across the country.

In December 2016, Bellevue was awarded the TechHire designation. TechHire-Bellevue will bring together local employers, government and workforce development resources from local partners to facilitate training and hiring of local talent into tech jobs. TechHire-Bellevue aligns with local employers' missions to increase workforce diversity. In addition, TechHire-Bellevue will specifically target under-served populations locally, including minorities, veterans and the homeless, to help them learn and connect with local tech jobs.

The City of Bellevue's Office of Economic Development contracted with OneRedmond to develop a strategy for the City to promote non-traditional pathways for underrepresented groups to gain employment in the technology sector. Non-traditional pathways include coding schools and boot camps and applied baccalaureate degrees from Washington's community colleges and technical institutes. Underrepresented demographic populations include women, persons of color, low and moderate income and other minority groups.

The relationship between workforce development and economic development is profound. For technology companies, talent comes first when choosing to locate or expand to Bellevue or the Seattle region. Companies examine three factors to determine if their company can locate and expand: current supply of talent, ability to attract and retain talent, and workforce development pipelines to develop new talent and support existing talent through skill development. Therefore, the need to attract, retain and develop talent is critical for the long-term success of Bellevue's and the region's economy.

OneRedmond convened a series of roundtables with businesses and educational providers and conducted one-on-one interviews with executives and human resource representatives from regional technology companies as well as institutions of higher education. OneRedmond also supported a dacum process to refine the curriculum for Lake Washington Institute of Technology's new applied baccalaureate degree in computer science. Lake Washington Institute of Technology is part of the AppConnectNW; a consortium of five community colleges (Bellevue College, Renton Technical, North Seattle, Lake Washington Institute, Green River) who were awarded an \$800K National Science Foundation grant to develop an Applied Baccalaureate program to support the technology industry.

The information gained from the roundtable sessions and interviews with technology companies coupled with a literature review of best practices in the field informed the recommendations. Based on the findings it is recommended that the City of Bellevue sponsor mentorships, paid internships and hackathons for underrepresented groups to develop interest and experience that can improve resumes and hiring potential. The City can also promote the establishment of a TechHire Education Alliance, connecting the regional tech community and post-secondary education to ensure that curriculums (and graduates) are keeping pace with the rapid changes in the tech sector and their skill needs. Finally, the City can promote a broader regional response

from other organizations such as the Washington Technology Industry Association (WTIA) for ongoing mentorships and increased educational funding to support both technology literacy, employment pathways and teaching.

In order for the City of Bellevue to implement these recommendations, a City of Bellevue full-time employee with experience in workforce development and community engagement should be hired. This would facilitate the coordination needed among the technology business community, educators, interns and other partners.

Introduction:

TechHire is a national network of communities working to create pathways for overlooked and underrepresented Americans to gain skills and access to open technical jobs across the country. TechHire was launched in 21 communities by President Barack Obama at the 2015 National League of Cities. When TechHire formally transitioned from the Obama White House to Opportunity@Work in December 2016, the network had expanded to 72 communities, states and rural regions across America.

“When these tech jobs go unfilled, it’s a missed opportunity for the workers, but it’s also a missed opportunity for your city, your community, your county, your state, and our nation.”

- *President Barack Obama, National League of Cities Annual Conference, March 9, 2015*

For Bellevue, becoming a TechHire community enhances the city’s ability to partner with technology oriented businesses and education providers to deliver technical training for under-served populations to include women, minorities, veterans and homeless that supports the growth of the technology industry and foster life-long learning.

The goal of this strategy is to understand the current state of technology hiring and education in Bellevue, identify barriers that prevent underrepresented populations from obtaining a career in technology, and develop strategies targeted at under-served populations for careers in technology.

Methodology

Three facilitated roundtable discussions were held. Information technology companies of various sizes, post-secondary educational institutions, local workforce organizations were included in these discussions.¹ Roundtables gleaned information to develop the recommendations in this report. Company participants were

¹ The full list of roundtable attendees is attached.

selected based on their position within the company, and their knowledge about the skill sets needed for entry level jobs. Education representatives were selected based on their knowledge of their respective institution’s technology curriculum.

In addition to the roundtable discussions, one-on-one meetings were held with companies and organizations that were not able to attend the scheduled roundtables. Additional research on industry best practices was also performed to help develop these recommendations.

Does Education Meet the Needs of the Industry?

Technology workforce attraction and retention continues to be the number one issue for companies in the region as there are simply not enough qualified employees to fill positions available. Four-year degrees in computer science is the standard. Most positions in technology companies require a four-year degree, usually in computer science, math, engineering and statistics. These degrees provide both the theoretical and practical knowledge to work in tech and provide growth opportunities.

However, this means that technology companies are competing for the same talent people in Bellevue, regionally and nationally. In King County of May of 2018, the number one job posting was for software

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developers. And, in that same month, there were nearly 14,000 posting for positions in computer sciences, down from nearly 24,000 postings in April 2017.² Our findings indicate that tech companies have little or no problem finding talent for entry level jobs. It is the mid-level tech job that is the hardest to fill. Usually those jobs require workers that have several years of job experience with smaller technology companies. Although companies claim to want a diverse workforce, applicants who are the “best trained” are what are really sought.

Engineers and programmers remain in the greatest demand and the shortest supply. The tech industry competes for talent with many other sectors as technology is an essential component to almost every company in almost every industry. It was learned that at a minimum level, many people are hireable if they: 1) Can build a website, and 2) Can build a web service. Machine Learning, Artificial Intelligence (AI), and Data Analytics will be the most sought-after skill sets in the next five years. Today, there are not enough programmers at the mid-level positions with the right skill sets and programming knowledge to meet minimum job requirements for these positions.

² Washington State Employment Security Department, Supply/Demand Report, May 2018.

Through the roundtable discussions, we examined the skills being taught at regional post-secondary and coding schools and how it relates to the needs of the technology industry. The local educational institutions brought forward their technology-focused programs which included computer science and engineering, application and web development, and video game development. Industry then evaluated the components of these curriculums. It was found that there is still a strong need for foundational software engineering knowledge (hardware, operating systems, data structures, algorithm analysis). In addition, there is also a need for in-demand skills such as project management and marketing business skills specific to the industry.

Soft skills are becoming more critical. Technology companies are realizing that soft-skills are becoming more critical to the success of their business. These skills include communication, people skills, and project management. Finding those skills coupled with a tech-related degree is difficult. For example, having the ability to work in teams is critical to an individual's success in a technology company. Skills such as giving and receiving critical feedback, using active listening skills, empathy for coworkers, and presenting evidence-based decisions are necessary when working with groups on a product.

*[P]rogramming...experience working in teams and building products...
This combination of skills is an ideal combination for entry level
candidates in any tech position.*

Another barrier to underrepresented populations in technology careers that was identified is many technology companies lack a culture of support. Human resource departments are revolving doors and are often not representative of the wider company culture. They screen applicants by key-word and easily identifiable skills. As a result, many potential qualified candidates do not overcome the initial screening. In addition, “culture fit” can be used as an excuse to hire candidates that fit a traditional technology worker profile—largely white, male with a four-year computer science degree—to the exclusion of diversity candidates. When underrepresented candidates are hired they face higher attrition rates than traditional technology workers. The reason is that gaps exist in the ability for a technology company to onboard, properly mentor, and support employees from underprivileged or diverse backgrounds, particularly women.

Training our future workforce for the tech industry can be quite challenging for post-secondary institutions. Technology moves so rapidly that it can be difficult for our educational organizations to keep up with the required skills for tomorrow's jobs. When it comes to the underrepresented population's participation in the various programs, it was learned that the schools don't know where or how to market their program to this segment of our population. In addition, there is a lack of resources for educational institutions to track placement of students into jobs after graduation.

It was also noted by several participants in the roundtable discussions that a candidate with work and educational experience in video game development demonstrates to an employer that the candidate has the programming skills to do the job, as well as experience in working in teams and building products. This combination of skills is an ideal combination for entry level candidates in any tech position.

In our discussions, it was recognized that coding academies can help in the development of talent but there are limits. Academies mainly cater to students with four-year non-technical degrees (75%). Moreover, the financial cost can be a barrier as coding academy costs can range from the mid-\$10Ks to \$30K+ depending on coding languages needed. The benefit of coding academies to technology companies is they can provide employers with on-demand talent for specific needs. However, for coding academy students that don't have computer science or related four-year degree, the opportunities for advancement within a company are limited because employees do not have the theoretical understanding of associated with technical degrees. Finally, there is no formal accreditation, standardization or monitoring in place for coding academies. Some academies publish graduation and job placement information but not all. The Council on Integrity in Results Reporting, a non-profit, has set up a voluntary system for academies to report. However, only two academies in the Seattle region voluntarily report—CodeFellows and Epicodus.

Recommendations

As this analysis unfolded it was recognized that the recommendations needed to be two-fold. First, support the goal of developing pathways to bring underrepresented populations into the technology industry. And, second, support existing technology sectors that have the best opportunity of bringing in diverse employees and skill sets to technology companies. Therefore, the recommendations are focused on Bellevue's interactive media and game development community. As identified in Bellevue's Creative Edge strategy, this community captures a broad-array of needed skill sets such as programming, animation, videography, sound production, marketing, program management, community engagement and others. And, it provides a variety of entry points into interactive media companies for prospective job seekers from diverse backgrounds and skill sets. Moreover, it

Interactive Media and game development provide a variety of entry points for prospective job seekers from diverse backgrounds and skill sets.

aligns with Bellevue's Economic Development Plan adopted by City Council in 2014.

There are several recommendations that were derived from this research. Some are specific to the City of Bellevue while those that require an immense amount of resources or coordination, or are simply out of the jurisdiction of the City of Bellevue, will be listed under regional resources and should be embraced by other organizations.

City of Bellevue:

Below are recommendations for the City of Bellevue to consider as they work toward bringing the underrepresented population into technology careers.

Internships

Project-based internships are some of the best ways to help provide students with the skill sets and portfolios needed to get entry-level jobs in the technology industry. Students need to be nurtured in building self-confidence, organization and communication skills, teamwork, ethical work habits, and entrepreneurial/self-starter habits.

There is a unique opportunity and need for interns in the field of interactive media and game development. Currently, smaller companies without formal internship programs encounter challenges in finding and selecting interns. The process of weighing the costs and benefits has proven itself a cognitive hurdle. When seeking interns for credit (as opposed to for pay), companies find that each school's processes and procedures for intern placement vary. With such varied processes and procedures, small companies struggle to evaluate if the intern process could work for them. Small businesses do not have the resources to offer paid internships while at the same time contributing their staff to educate and train students. Interns from the underserved communities will almost always need a paid internship. Often out of necessity, a student will choose a paid summer job, as a parking attendant for example, over unpaid internships in their field of study.

One way to accomplish some of the mentoring and work experience needed would be to create an incentive for small businesses to provide paid internships for TechHire eligible students. State Strategic Reserve Funds ³ could be matched with private sector dollars and used to implement internship training for small tech or game companies. The local industry would come up with a list of hard and soft skill required for their internships. Schools could take this list and select the students that match the specific needs of the company and that fit with the TechHire requirements.

To assist industry in finding interns, an organization like the Washington Interactive Network (WIN) ⁴ could consolidate the application/ evaluation/ expectations process for local companies and schools. In addition, WIN could assist in finding pre-qualified smaller companies to hire student interns and thus providing the student sufficient educational value. To help in the preparation for internships, WIN could assist in developing an "Intern Boot Camp" which would be a student-focused workshop to nurture soft skills sets, in addition to interview and networking skills.

³ Strategic Reserve Fund allows money that is authorized by the Governor of Washington State to be used to assist with workforce development among other economic development activities.

⁴ Washington Interactive Network is a Washington State 501c3 non-profit that provides educational opportunities and cluster-building activities for the local interactive media industry.

Hackathons

To raise awareness and garner interest in the tech industry among the underserved population, hosting one or more hackathons throughout the year would be ideal. A hackathon is a multi-day event in which computer programmers and others involved in software development, including graphic designers, project managers, and others come together during this event to create a small product. Often, there are also subject-matter-experts in the room to mentor the participants as they work together as a team. These hackathons would be an open invitation to students who are interested in the tech industry, and an opportunity to experience the various career positions available on a micro-level. This multi-day event would have the participants form small teams to create a game or interactive media product. Mentors from diverse backgrounds would be available in the various disciplines needed such as coders, artists, project managers, and marketing. Likely this event would be partnered with a platform like Unity or similar. The computer equipment needed could be leased, borrowed, or donated. There may also be opportunities to leverage some of the local industry resources to cover some of the costs of implementation. At the end of the event, participants will have a digital project to showcase as part of their portfolio. In addition, it reveals the mystery behind the tech careers: what they are and what is required to do the job.

TechHire Education Alliance

As technology is always changing, it is challenging for schools to keep up with industry's ever rising standards. Having company representatives connected to educational organizations is of continuing importance.

Regular meetings will be useful so that schools and industry have an easy way to connect immediately with the correct person at each respective institution. Additional quarterly or biannual meetings about new skills and technologies could prove to be valuable not only for curriculum changes, but also for increasing the awareness about the latest programs being added to the schools. A "TechHire Education Alliance" would consist of industry and education representatives and would meet once or twice a year to talk about skill gaps, opportunities, and challenges.

Regional or State-Wide Recommendations:

Ongoing Mentorships

The first and foremost need to help underrepresented population into technology careers is continuous touch points throughout the students' academic career and during their first job. Students in middle school and high school need to be aware of the careers available in technology, and of what it takes to get to those careers. Mentorships are required to assist the students in building confidence in themselves, in helping make academic choices, and in finding pathways to those tech careers. Once they have their education complete, the new graduate will need continued mentorship to be coached on how to write a resume; how to do phone and technical interviews; and how to interpret and navigate their way through the culture of the tech industry. This all would require an immense amount of coordination amongst many schools, non-profit organizations, and companies. This would be best accomplished at a regional level as it would require significant resources. In addition, these efforts would be difficult to scale for a single entity and would require significant funding and coordinated efforts amongst agencies and other non-profit organizations.

Company Education

For HR staff to see beyond the resume when it comes to the under-served population, there will need to be metrics related to diversity hiring which will result in staff working harder and spending more resources to hire diverse candidates. To have metrics set for diversity and appropriate resources allocated, executives in the company will need to understand the benefits of having diverse teams. Google's 2012 Project Aristotle is a good example. The goal of this study was to look at teams and figure out why certain groups worked while others did not. The underlying lesson this Project Aristotle is that high-functioning groups, also had high psychological safety to help further this mindset and to share best practices, an organization could organize and host an event that features local executives who have championed diversity within their own companies. If an event like this was held for consecutive years, it may be possible to build momentum and awareness across the industry.

Additional Funding to Schools

Findings indicate the lack of resources for educational institutions at several levels. First, additional resources are needed to hire staff and develop programs to track placement of students into jobs after graduation. This lack of data is an issue when it comes to evaluating the true success of an established curriculum. Second, full funding of the State Need Grant and other academic grants and scholarships are needed not only for public schools but also for our private schools as well. Last, dollars are needed for public relations to help the schools increase awareness about the schools and their programs to the underrepresented population as well as to the local companies. Marketing and PR efforts are limited at most schools as there is neither enough staff nor enough resources to develop new outreach programs.