



# EFFECTIVE EMPLOYER ENGAGEMENT PRACTICES

OBSERVATIONS FROM SELECT  
TECHNOLOGY APPRENTICESHIP PROGRAMS

## AT A GLANCE

The goal of this report is to highlight effective employer engagement practices and identify key lessons learned from implementing technology-focused apprenticeship programs.

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# INTRODUCTION

**As of March 2018, there were 6.6 million job vacancies in the US, signaling a shortage of skilled workers.<sup>1</sup>**

Furthermore, a 2017 McKinsey survey of young people and employers reported that 40 percent of employers said a lack of skills was the principal reason for entry-level job vacancies, which demonstrates that the current education and training systems do not provide the competencies that businesses need to close the talent gap.<sup>2</sup> Alternative approaches to education and training—such as apprenticeships—offer a potential solution by providing workers and learners with the skills and credentials needed to work in the occupations with the most demand in the 21<sup>st</sup> century workforce.

The primary audience for this report are member colleges of the Enhancing Programs for IT Certification (EPIC) consortium in Kentucky. In 2015, this consortium was awarded a US Department of Labor Round IV Trade Adjustment Assistance and Community College Career Training (TAACCCT) grant. Led by Hazard Community and Technical College, the project developed online courses in computer information technologies and medical information technology

to meet growing demand for flexible training options in the state. One of the grant goals was to develop employer interest in registered apprenticeships for IT occupations.

Working with the state apprenticeship agency and local workforce boards, the colleges held a series of webinars, in-person meetings, and information sessions to raise awareness about apprenticeship programs and state resources available to employers who may be interested in developing more targeted training to meet their IT skills needs. Despite these efforts, no regional employers engaged with the colleges to pursue this opportunity. While the TAACCCT initiative is drawing to a close, the Kentucky colleges expressed an interest in learning from others around the country about their experiences in trying to work with the IT sector to develop apprenticeship programs to support future efforts in the state.

The goal of this report is to highlight effective employer engagement practices and identify key lessons learned from implementing technology-focused apprenticeship programs. To identify effective practices, JFF interviewed eight individuals who are implementing these types of programs through the American Apprenticeship Initiative (AAI) to answer four questions:

1. How are tech apprenticeship programs engaging employers?
2. How do these programs identify employer hiring and training needs?
3. What are the primary barriers faced when working with employers to develop apprenticeship programs?
4. How are apprenticeship programs addressing barriers to employer engagement?

This report summarizes the findings from those interviews.

# Using Apprenticeship to Solve Tech Workforce Needs

**The Bureau of Labor Statistics** projects faster than the average job growth for all computer and information technology occupations between 2016 to 2026, and these occupations are projected to add about 557,100 new jobs in that period.<sup>3</sup> Yet ongoing industry reliance on the bachelor's degree as a gateway credential may mean that many of these jobs will go unfilled. A study conducted by Microsoft warned that only about 40,000 Americans graduate with a bachelor's degree in computer science each year.<sup>4</sup>

The largest number of tech workers are software developers, followed by computer user support specialists. The table below shows the top occupations in the sector, including annual openings and typical education requirements. Data show the employment of software developers will increase by approximately 23 percent, or 76,000 jobs, by 2026.

Occupations that require less than a bachelor's degree, like computer support specialists and web developers, also show significant promise for growth. Apprenticeship programs can be an effective strategy to meet demand across many of these occupations.

## *What is an apprenticeship?*

An apprenticeship is a workforce solution that integrates many of the most advanced learning models, such as applied, contextualized, and project-based learning. It also develops

## COMPUTER & IT

### PROJECTED JOB OPENINGS & PROJECTED DEGREE HOLDERS

**Projected 2016-2026 - USA**  
New Computer & IT Jobs

~557,100  
~400,000

**Projected 2016-2026 - USA**  
Newly Produced Computer Science  
Bachelor's Degrees

FIGURE 1

## Tech Occupations Employment Patterns

United States, 2016–2026

Description	2016 Jobs	2026 Jobs	2016 –2026 Change	2016 –2026 % Change	Annual Openings	Typical Entry Education
Software Developers, Applications	801,825	989,671	187,846	23%	75,884	Bachelor's degree
Computer User Support Specialists	606,393	706,548	100,155	17%	57,674	Some college, no degree
Computer Systems Analysts	572,406	706,954	134,548	24%	54,023	Bachelor's degree
Software Developers, Systems Software	414,911	482,250	67,339	16%	35,489	Bachelor's degree
Network and Computer Systems Administrators	379,360	425,826	46,466	12%	29,528	Bachelor's degree
Computer Network Support Specialists	191,794	212,300	20,506	11%	16,861	Associate's degree
Computer Network Architects	159,250	178,510	19,260	12%	12,807	Bachelor's degree
Web Developers	131,808	171,200	39,392	30%	14,452	Associate's degree
Database Administrators	115,547	132,586	17,039	15%	9,600	Bachelor's degree
Information Security Analysts	98,165	117,821	19,656	20%	9,153	Bachelor's degree

Source: EMSI Analyst. 2018.2 – QCEW Employees

learner competencies and provides hands-on skill development.<sup>5</sup> Apprenticeship programs can lay the foundation with which to build a career, acquire lifelong learning, and attain important credentials.

The US Department of Labor (DOL) defines a registered apprenticeship as a dual “learn and earn” model that includes progressive wage gains as apprentices become more proficient on the job. The

needs of the occupation determine the length of apprenticeship training and instruction. However, apprenticeships typically range from one to six years, and most are approximately four years in length. Registered apprentices must complete a minimum of 2,000 hours of on-the-job training, as well as 144 hours of classroom instruction. Community colleges, training centers, technical schools, and institutions that employ

distance and computer-based learning approaches often provide related classroom instruction. Upon completion of a registered apprenticeship program, participants receive an industry-issued, nationally recognized credential that certifies their occupational proficiency.<sup>6</sup>

Apprenticeships are the most employer-driven form of workforce training, and employer engagement is an essential component of any apprenticeship program. Understanding the employer's perspective and the ability to meet employer needs is key to any successful engagement effort. AAI grantees that are developing

technology-focused apprenticeship programs have found that orienting their programming and resources toward meeting employer needs is the most effective way to develop productive relationships. This report will provide several recommendations to maintain employer participation in a tech-centered apprenticeship program.

### *Purpose and Methodology*

Staff with JFF's Center for Apprenticeship and Work-Based Learning contacted grantees from the DOL's American Apprenticeship Initiative who are working

## **EMPLOYER ENGAGEMENT**

Employer engagement is central to the development of apprenticeship programs; however, we know very little about the forms of engagement used to implement apprenticeships for technology occupations. In the apprenticeship model, employers recruit and hire workers and partner with education providers to develop curricula, as well as identify the appropriate entity for classroom instruction, the necessary skills to be acquired, and the amount of wages paid. Sponsors develop a formal agreement and ensure their programs meet state and federal requirements.<sup>9</sup>

Employer engagement might be conceptualized as a ladder, with less intensive forms of engagement (such as advisory boards or contract training) on lower rungs and more intensive engagement (such as developing pathways or partnering for sectoral workforce initiatives) on higher ones. The ladder also suggests how productive relationships with employers might evolve, with activities at one level helping build trust, momentum, and leverage for more intensive activities.<sup>10</sup>

in the IT sector to ask for their perspectives on four key questions to help the Kentucky colleges think through future apprenticeship work:

1. How are tech apprenticeship programs engaging employers?
2. How do these programs identify employer hiring and training needs?
3. What are the primary barriers faced when working with employers to develop apprenticeship programs?
4. How are apprenticeship programs addressing barriers to employer engagement?

This report shares findings from interviews with eight AAI grantees and draws conclusions for the Kentucky community colleges involved in EPIC, as well as other colleges across the country who are interested in developing IT apprenticeship initiatives. Although DOL-sponsored apprenticeship programs have existed since 1937, they still to date have not undergone rigorous evaluation, which represents a serious gap in workforce development research. Thus, more research is needed in order to solve several issues that are currently facing apprenticeship expansion, such as how to engage employers, finance the program, and promote the training for young people in high-skilled, non-trade occupations. This report seeks to add to the research literature by synthesizing the early experiences and perspectives of a small sampling of AAI grantees who have worked to engage employers in the IT sector. While this interview-based research provided rich information, no employers were interviewed. Across the eight interviews, common themes emerged around engaging IT sector employers in initiatives to develop apprenticeship programs. The next section presents those findings.

#### RELATED RESOURCE

### **The Center for Apprenticeship and Work-Based Learning**

The Center for Apprenticeship and Work-Based Learning provides expert guidance on how to identify and share effective approaches that work for companies, students, and workers.

**VISIT THE CENTER**

<https://center4apprenticeship.jff.org/>

# Themes from Interviews

The interviews revealed nine common issues and strategies used by AAI grantees to connect with IT sector employers.

These include:

- 1 IT employers need to be educated about apprenticeships.
- 2 Tech employers need information in order to dispel some common apprenticeship myths.
- 3 Conducting industry outreach is crucial to any apprenticeship program.
- 4 Form partnerships with local technology councils.
- 5 Develop a program that meets the employer's workforce needs.
- 6 Flexibility is key to meeting IT employer and participant needs.
- 7 Offer incentives to bring employers to the table.
- 8 Use innovative strategies to diversify the tech workforce.
- 9 Develop a group sponsorship model.

Each of these themes is detailed further below.

# 1

## **IT EMPLOYERS NEED TO BE EDUCATED ABOUT APPRENTICESHIPS**

Since the apprenticeship model is new to the IT sector, the interviewed AAI grantees have had issues with encouraging and growing employer engagement. A great deal of the initial work for these grantees has involved educating employers and sharing best practices. It can take some time to get an employer fully educated about the apprenticeship model and what it involves. In particular, it is important for the employer to understand that the apprenticeship model requires more of a commitment on the employer's side than they might traditionally have been required to offer in the past for different training approaches.

Additionally, some grantees recommend a national public service announcement (PSA) for apprenticeship.

**“It can take some time to get an employer fully educated about the apprenticeship model and what it involves”**

Apprenticeship program directors are routinely asked: With all this investment in apprenticeships, why haven't I heard about it? Why is it not in the newspapers? Why is it not on the news? Why is it a big tech secret? One must dig to find information about apprenticeship programs. If a PSA were broadcast on television on a regular basis, it would boost credibility and make the process easier for program developers rather than individual advocates trying to go out and sell the apprenticeship model on their own.

# 2

## **TECH EMPLOYERS NEED INFORMATION IN ORDER TO DISPEL SOME COMMON APPRENTICESHIP MYTHS**

Myths and misinformation about apprenticeship were highlighted as a barrier to employer engagement by the interviewed AAI grantees. These included that apprenticeships

- take too long;
- are solely for the construction trades;
- don't provide good credentials;
- result in large employers poaching good candidates; and
- will cost too much money.

The stakeholders interviewed think the word *apprenticeship* has a negative connotation with many tech employers. The problem here is the misconception that apprenticeships are jobs programs, when in fact they are skills-formulation programs that can build in-demand, hard-to-fill skills.

**“Apprenticeships... are skills-formulation programs that can build in-demand, hard-to-fill skills.”**

The stakeholders often change their language and instead discuss the development of a new “grad training” program to address workforce challenges. As one grantee noted, “You’ve got to call it something else to engage them and then bring up apprenticeship later on.” Once you have an employer’s attention, you can inform them about how apprenticeships can help build a pipeline of skilled workers, help build a pool of accomplished employees to boost retention, and lead to a positive business impact.

### 3

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#### **CONDUCTING INDUSTRY OUTREACH IS CRUCIAL TO ANY APPRENTICESHIP PROGRAM**

Interviewees recommended that people doing the employer outreach should think like a salesperson who can go out and speak the language of employers. For instance, tech employers understand the term *talent* better than *participant*. Apprenticeship coordinators need to learn the employer’s language and use it in practice. They should also begin industry outreach with employers that are in their network, make connections to new employers through tech networking events, and request introductions from partner organizations and agencies. Educational institutions can easily reach out to business contacts - companies that hire student interns as well as alumni who are hiring.

## 4

### **FORM PARTNERSHIPS WITH LOCAL TECHNOLOGY COUNCILS**

Partnering with a technology association or council is important because part of their charge is to help technology companies with their workforce needs. For example, AAI grantee Central New Mexico Community College partnered with the New Mexico Technology Council, a member-driven association of businesses, organizations, and tech professionals. This partnership provided access to employers, education, and workforce partners seeking to expand the pipeline of qualified, diverse workers for the IT industry.

Looking to replicate a proven model by Apprenti, the State of Oregon Employment Department partnered with the Lane Workforce Partnership and the Technology Association of Oregon, which assists with employer outreach. In this apprenticeship model, the Oregon partners use Apprenti's turn-key option to offer training and certifications for several tech occupations. These partnerships helped the Employment Department identify the talent pool, administer the apprenticeship program, and manage compliance needs more effectively than the state could have done on its own.

## 5

### **DEVELOP A PROGRAM THAT MEETS THE EMPLOYER'S WORKFORCE NEEDS**

There is much that colleges can do to ensure their apprenticeship program is tuned to the needs of employers—especially taking on roles that make it easier for industry to be involved. In Illinois, William Rainey Harper College acts as both the program sponsor for its registered apprenticeship programs and the provider of the related technical instruction. As a program sponsor, they assume the documentation and reporting requirements for employers. They also document the apprentice's progress through the apprenticeship. As the related instruction provider, they work with industry associations and employers to review the curriculum and build the on-the-job learning program.

**“It’s important to convene groups of industry experts, employers, and faculty”**

It’s important to convene groups of industry experts, employers, and faculty who participate in job and task analysis to gather information about the tasks, job responsibilities, and duties that entry-level workers perform. For example, the Milwaukee Institute of Art & Design developed four design apprenticeships using the DACUM process which brings design industry experts together to complete a job and task analysis, create the apprenticeship training, and identify the needed knowledge areas for required coursework. MIAD initially brought together regionally based professional designers for the DACUM and then issued a national validation survey. During the process it was revealed that employers believe young designers, while extremely talented, are not workforce ready. Among the competencies employers seek are polished communication skills, an understanding of organizational culture, team leadership, and client relation skills. MIAD worked with subject matter experts to develop an online design leadership and management curriculum and awards continuing education credits for each course, as well as an opportunity to earn digital badges.”

Program planners can also build leadership roles for employers. The Central Illinois Center of Excellence for Secure Software (CICESS) convened a group of local and national stakeholders to develop an industry-led dual vocational training (apprenticeship) model. CICESS is a collaborative effort of industry, government, and academia. This steering committee is a part of the Greater Peoria Economic Development Council and developed the first-in-the-nation Associate of Applied Science degree in secure software development.

## 6

### **FLEXIBILITY IS KEY TO MEETING IT EMPLOYER AND PARTICIPANT NEEDS**

While occupational specifications for registered apprenticeship programs are approved by the US Department of Labor, program components may be added to better serve employers and apprentices or respond to changing economic conditions. Several grantees interviewed made changes to program content, delivery methods, and schedules during implementation. For instance, Managed Care Solutions' Open Tech LA Regional Apprenticeship Collaborative added an online training portal to help apprentices receive their 144 hours of classroom instruction while working. Providing the classroom portion in a virtual or online format can help students attend class and solve potential transportation issues and other barriers to participation.

## 7

### **OFFER INCENTIVES TO BRING EMPLOYERS TO THE TABLE**

Several costs are associated with developing apprenticeships, including apprentice wages, training fees, mentor training, administration, and supervision. Several of the interviewed grantees included incentives for employers to develop apprenticeship programs. One program included incentives to pay for college credits; apprentices were able to earn several college credits during the apprenticeship, further enhancing the benefit of the program to employers and participants.

Another grantee developed a pre-apprenticeship program and added participant stipends, which helped retention. Incentives are also used in the program development and outreach phase. Individuals who are developing apprenticeship programs with and for employers often discuss incentives, what's in it for the employer, return on investment, and cost savings to incentivize participation. Most employers who see the business impact of apprenticeships go on to become employer champions, fully funding apprenticeships.

**“Several... grantees included incentives for employers to develop apprenticeship programs”**

## 8

### **USE INNOVATIVE STRATEGIES TO DIVERSIFY THE TECH WORKFORCE**

A recent *Forbes* article reported that men hold 76 percent of technical jobs and 95 percent of the tech workforce is white.<sup>7</sup> Many of the programs interviewed use innovative solutions to provide tech apprenticeships to untapped labor pools. A multiprong strategy is needed to diversify the tech workforce through apprenticeships. For instance, some large tech employers do not like to hire apprentices directly; they instead hire them through a recruiter or staffing agency for the first year. One of the programs interviewed used this strategy to introduce women and minorities to several large media companies. Using this process, the company gave one-year contracts to two Hispanic and two African American women. Several success stories were discussed during the interviews, including a 42-year-old African American woman who was hired at \$110,000 per year after her apprenticeship as a project manager.

## 9

### **DEVELOP A GROUP SPONSORSHIP MODEL**

An apprenticeship sponsor may be a company or a group of companies in addition to a higher education institution, public agency, or a union. There are several advantages to this approach. Group sponsorship

- creates economies of scale;
- facilitates managing standards;
- helps companies manage apprenticeship programs for multiple occupations;
- gives small companies an opportunity to customize a solution; and
- provides shared solutions across employers in the same region.

For instance, Philadelphia Works is using the group sponsorship model for their IT Generalist Registered

Apprenticeship Program. In this group model, JEVS Human Services is the sponsor of the program, and multiple employers then join and customize the program using a baseline framework.<sup>8</sup> These employers provide input on what should and shouldn't be included in the program. The JEVS group sponsorship program takes on the reporting requirements, paperwork, and startup costs associated with apprenticeships, making it easier for employers to participate.

## Conclusion

Apprenticeships in the US have been characterized by periods of fits and starts, and several pieces of legislation over the years have worked to either enhance or impede the development and expansion of a registered apprenticeship system for youth and adults. We are currently in a resurgence period, evidenced by increased funding and new legislation. Apprenticeship training can be used in a variety of settings to promote college and career readiness, and it represents a longstanding, but generally untapped, resource to better prepare students for college and careers. Entities that are developing apprenticeship programs need to be flexible and establish programs that address employers' workforce challenges.

The colleges involved in the Kentucky EPIC project can use the themes presented in this report to help formulate an outreach campaign for future efforts around apprenticeship development. The key, as detailed in the interview findings above, is effectively engaging employers as partners throughout the apprenticeship process.

# Endnotes

1. Bureau of Labor Statistics, US Department of Labor. <https://www.bls.gov/news.release/jolts.nr0.htm>.
2. J. Manyika, M. Chui, A. Madgavkar & S. Lund, Technology, jobs, and the future of work (McKinsey Global Institute, 2017).
3. Bureau of Labor Statistics, US Department of Labor. <https://www.bls.gov/ooh/computer-and-information-technology/home.htm>.
4. Microsoft Corporation (Microsoft), “A National Talent Strategy: Ideas for Securing U.S. Competitiveness and Economic Growth” (2012). <https://news.microsoft.com/download/presskits/citizenship/MSNTS.pdf>.
5. K.E. Hay & S.A. Barab, “Constructivism in practice: A comparison and contrast of apprenticeship and constructionist learning environments,” *The Journal of the Learning Sciences*, 10(3) (2001): 281–322.
6. S.R. Nilsen, “Registered Apprenticeships: Labor Could Do More to Expand to Other Occupations.” Report to the Chairman, Subcommittee on 21st Century Competitiveness, Committee on Education and the Workforce, House of Representatives (2001).
7. A. Johansson, “Why Millennials Are Demanding Even More Diversity In Tech,” *Forbes* (December 19, 2017). <https://www.forbes.com/sites/annajohansson/2017/12/19/why-millennials-are-demanding-even-more-diversity-in-tech/#13ffecdb386b>.
8. JEVS Human Services, formerly Jewish Employment and Vocational Services, is a non-sectarian social service agency.
9. S.R. Nilsen, “Registered Apprenticeships: Labor Could Do More to Expand to Other Occupations.”
10. R. Wilson, *A Resource Guide to Engaging Employers*. (Boston: Jobs for the Future, 2015). <http://www.jff.org/publications/resource-guide-engaging-employers>.