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Registered Apprenticeship Trends in INFORMATION TECHNOLOGY

Registered Apprenticeship in the Information Technology Industry

Registered Apprenticeship training plays an important role in developing skilled workers. With the combination of on-the-job learning, related instruction, mentoring, and incremental wage increases, the apprenticeship model can be an effective system for addressing human resource issues and skill shortages that many industries/businesses face. Registered Apprenticeship can provide the expertise and knowledge individuals need to do their jobs effectively and advance in their careers.

Twenty-first century apprenticeship allows for a flexible competency-based training strategy that enables apprentices to move through a program at her/his own pace, benchmark the achievement of each set of core competencies and build a portfolio of skills and interim credentials that validate the acquired skill levels. Additionally, the related instruction is articulated with many two- and four-year colleges, allowing apprentices to work toward a degree. This is good news for the information technology industry because it meets many of their human resources and skills training needs.

The U.S. information technology sector faces a very difficult challenge: how to keep jobs here in the U.S. and still be competitive. Competition means that the skills of U.S. IT workers must constantly be updated and improved to meet employers' needs. Additionally, most of the nation's 10 million IT professionals do not work in large technology firms. The vast majority—92 percent—work in other businesses that rely upon computers to maintain their competitiveness and lower their costs.

The Computing Technology Industry Association (CompTIA) has developed an innovative, competency-based apprenticeship training model that addresses training for the skills IT workers need to do their jobs well. CompTIA is working with companies nationwide to implement the model. So far, companies are finding that the program is greatly improving retention and productivity and enhancing skills development.

The Registered Apprenticeship model has proven its ability to address these and other issues in other industries and should become part of the human resources and training strategy for information technology. The model offers an efficient, flexible training system that is responsive to new technology to keep workers up-to-date on skills they need to do their jobs.

The U.S. Department of Labor (DOL), Employment and Training Administration (ETA), Office of Apprenticeship Training, Employer and Labor Services (OATELS) has made a strategic decision to introduce the model to the information technology industry. "Advancing the Apprenticeship System" is one of the department's key initiatives, with investments of more than $12 million to fund apprenticeship programs in new industries through the President's High Growth Jobs Training Initiative. They include:

- Health Care
- Advanced Manufacturing
- Information Technology
- Maritime Trades - Transportation
- Military - Indiana National Guard
- Geospatial Technology

The following case study looks at early results of investments and marketing efforts in information technology. Even though the project is young, there are promising trends that point to the value of apprenticeship:

Benefits to Employers
- Greater competence of employees
- Reduced turnover rates
- Greater employee retention
- Lower investment in recruitment
- Higher productivity
- Improved quality of products and services
- More diverse workforce

Benefits to Apprentices
- Nationally recognized and portable certificates
- Improved skills and competencies
- Increased wages as a result of mastered competencies
- Ability to advance in career
- Higher self-esteem based on enhanced skills and certifications

Flexible Methodology Offers Effective Solution to Skills Gap

Information Technology (IT) is the fastest growing sector in the economy and has become essential for conducting business. Rapid advances in computer technology have stimulated high growth in the demand for workers skilled in the development and use of IT.

- The IT industry is projected to experience a 68% increase in output growth and add 632,000 new jobs between 2002 and 2012.

- The unemployment rate for IT professionals was only 3% in July 2004, according to the trade publication *Information Week*. However, due to technology advancements many workers are finding themselves unprepared to hold some jobs.

- Some IT specialists have lost their jobs as a result of outsourcing of routine computer-related tasks to workers in foreign countries where cheaper labor markets exist.

- Most of the nation's 10 million IT professionals do not work in large technology industries. Most (92%) work in other businesses that rely upon computers to maintain their competitiveness and lower their costs. This competition has meant that the skills of IT workers must constantly be updated and improved to meet changing employer needs.

Source: Bureau of Labor Statistics, 2004

Project Overview

DOL awarded the Computing Technology Industry Association (CompTIA) a series of grants to put in place a nationwide apprenticeship program for information technology (IT) workers. Specifically, CompTIA was to:

- Support the development and implementation of NITAS—the National Information Technology Apprenticeship System—a competency-based apprenticeship methodology that supports consistent and flexible credentialing for the career development and advancement of IT workers; and

- Develop a seven-track NITAS career path that allows workers to progress through all or part of the apprenticeship program using a combination of related instruction and on-the-job learning.

CompTIA, a not-for-profit trade association based near Chicago, was formed in 1982 and represents an international technology community of 19,000 members consisting of employers, workers, and trainers. The association is dedicated to advancing the growth of information technology and provides leadership in developing professional standards.

As part of its partnership with DOL that began in 2000, CompTIA is building the NITAS infrastructure, a web-based system that registers, tracks, and manages participants. Employers and trainers who are enrolled in NITAS have access to information that is kept in the system. In addition, students or IT professionals enrolled in NITAS have access to the system, which stores their transcripts of completed training, including certifications and other information that they may use when seeking jobs.

When NITAS becomes fully institutionalized and operational, CompTIA staff said that they expect it will help improve the productivity and competitiveness of American IT workers by helping employers better track the strengths and weaknesses of their workers. In fall 2004, NITAS was still being developed and pilot-tested. The effort is to take five years to complete.

By summer 2004, CompTIA had enrolled and trained 68 consultants around the country to promote and recruit NITAS participants. As of fall 2004, the consultants had enrolled 33 employers and more than 300 apprentices in NITAS. CompTIA staff members said that they expect to enroll an estimated 384,000 IT apprentices and 6,700 employers by 2008 when NITAS is fully operational.

As part of the overall effort to build the infrastructure and institutionalize the IT apprenticeship, CompTIA also is developing skill standards and work processes for several IT career tracks. By early 2005, CompTIA had completed development of three career tracks for IT workers: IT generalist, project management, and information assurance and security. Additional tracks were being developed: help desk, network infrastructure and devices, and database services.

Role of Registered Apprenticeship

NITAS is an important step toward making training within the IT industry more formal and systematic, according to CompTIA staff. When it is fully operational, NITAS will be accessible throughout the nation—to both small and large employers—and will serve as a universally accepted competency-based IT workforce development and skill validation program.

The apprenticeship system especially holds great promise for small businesses that employ only a few IT professionals because it better connects them with the public workforce system, CompTIA staff pointed out. The employers can use NITAS as a tool to manage their IT workers, especially ensuring that the competencies and skill levels are current and reflect national standards and IT trends.

The career tracks offered to apprentices help IT workers manage and update their skills as they progress through their careers. The structured program available through NITAS uses a color-coded template that indicates an apprentice's skills and achievements and weaknesses and skill gaps, based upon assessments and training the apprentice receives.

A CompTIA study showed that firms believe that a home-grown approach to training IT

Workforce Challenges

The primary workforce issues for the IT industry are retention, recruitment, education, and training, according to DOL's Business Relations Group. Challenges to publicly funded training programs in IT include:

Recruitment and Retention

- Difficulties for entry-level workers with employers desiring prior IT-related experience—getting students into internships with area employers so that the experience issue is no longer a barrier to employment

- Limited industry growth opportunities in certain IT niches and regions

- The trend toward "offshore outsourcing" of IT workers to places where the cost of labor is lower for companies

Education and Training

- Difficulties in making training accessible to incumbent workers, with regard to cost of training and time scheduling (during and/or after work hours)

- Limited prerequisite preparation in math and other subjects on the part of some individual participants

Jeff Kistler, an apprentice going through the Navy's IT apprenticeship at the Naval Undersea Warfare Center near Seattle, reports that Registered Apprenticeship has helped him better learn his specialty—beyond what he learned in IT classes. "It is pretty straight-forward," he explained. "Coming out of class, you really don't understand the level of detail you need."

The apprenticeship is a three-year program consisting of 50% classroom instruction and 50% on-the-job learning for newly hired workers. Apprentices are registered through DOL and NITAS and are being trained for jobs in software and computer systems development, network support, and information security.

Jeff Kistler
Apprentice
NUWC
Keyport, WA

Even college graduates with computer science degrees sometimes must go back to school for additional training so they can qualify for new IT specialties.

The program requires apprentices to receive 1,500 hours of college class-room instruction through nearby Olympic College and 4,000 hours of on-the-job learning to receive a DOL certificate of completion. Upon completion of the apprenticeship, participants become journey-level workers and are certified in CompTIA's IT generalist track.

Jeff added that unlike in college classes, Registered Apprenticeship actually requires trainees to be able to perform specific job tasks. "We were 10 times more capable than college-only trainees," he said. "When the apprenticeship came along, I was able to see how different aspects of IT work together; it helped my confidence."

workers, such as apprenticeship, is beneficial. Company officials who responded to the survey identified several benefits of apprenticeship. The model:

- frees employees from depending upon a resumé to gauge a worker's qualifications;

- offers a more cost-effective way of training workers;

- provides a method to hire untrained workers and then train them in the company's way of doing things; and

- provides a clear way to determine competency.

Apprenticeship also addresses fundamental issues that hamper the IT industry, according to CompTIA staff, especially the large gap between worker skills available and worker skills needed. A survey of human resources personnel commissioned by CompTIA showed that more than 70% of the firms surveyed reported problems with the performance of IT employees. In addition, 8% of the firms surveyed reported that their IT employees were not up to par.

Role of Educational and Training Organizations

CompTIA intends for colleges to play a major role in the national apprenticeship system. In early 2005, three colleges were serving as NITAS pilot sites, testing how their IT curricula fit into the NITAS career tracks. The colleges participating as pilot sites were:

Trainer Profile

Robert Wilson, General Manager of Business Development with Athena Computer Learning Centers in Jackson, Mississippi, is one of CompTIA's training consultants. As a training consultant, he recruits employers and students for NITAS.

Robert Wilson
General Manager,
Business Development
Athena Computer Learning Center
Jackson, MS

Mr. Wilson believes that the apprenticeship training model is of particular value to employers. There are several benefits, he says:

- Because it combines classroom instruction and on-the-job learning, it is a superior way to train workers than models that rely solely on either classroom instruction or on-the-job training.

- Unlike other models, NITAS provides the structure and validated information about an individual's qualifications and ability to perform tasks.

- Because it is web-based, NITAS transcripts of a worker's training and qualifications are portable and easily accessible by employers.

- It provides an approach to career development that is based upon the needs of employers.

- NITAS career tracks reflect current industry standards.

The beauty of NITAS, according to Mr. Wilson, is that it can be used by employers in remote areas such as in the Mississippi Delta region where Athena has partnered with the Charles W. Capps Jr. Technology Center. The technology center, a division of Mississippi Delta Community College, and Athena offer IT courses to NITAS participants. Mr. Wilson explained that the web-based system provides employers easy access and allows them to identify training needs specific to their workplace.

Participating Employer Sponsors:

- State of North Dakota
- Northern Virginia Community College (Fairfax, VA)
- NFL Films (Mt. Laurel, NJ)
- Oki Data (Mt. Laurel, NJ)
- McDonalds Corp. (Oakbrook, IL)
- Hill International (Marlton, NJ)
- Keyport Division, Naval Undersea Warfare Center (Keyport, WA)
- Henkels & McCoy (Blue Bell, PA)
- Exodux IT Services (Hickory, NC)
- Cosmopolitan Chamber of Commerce (Chicago)

Apprenticeable Occupations Include:

As of 2005, CompTIA has developed three of seven career tracks for apprentices:

- IT Generalist
- Project Management
- Information Assurance (security)

- Mesa Community College in Mesa, Arizona

- State University of New York, Institute of Technology (SUNYIT) in Utica

- DeVry University, which has campuses across the United States, including Phoenix, Dallas, and Atlanta

More than 200 students at the schools are NITAS participants. The students are able to apply courses they complete toward the IT generalist career track.

CompTIA staff said that they consider linking the colleges to NITAS a "breakthrough," because most NITAS participants at the schools are students, rather than full-time workers. Nonetheless, the students can earn an associate's degree and begin working toward a DOL certificate of completion before they are hired by an employer. As NITAS apprentices, they can continue toward completion of the apprenticeship after they become workers with employer sponsors.

After pilot-testing is completed, CompTIA intends to export NITAS to additional colleges across the nation. Connecting the colleges with NITAS, according to CompTIA staff members, will ensure that IT courses they provide match employer needs as well as industry-endorsed standards.

Role of Workforce Development System

CompTIA staff are working with local workforce development agencies to become important partners as the IT apprenticeship matures. In early 2005, CompTIA was working with OATELS staff to market the project around the country.

In early 2005, CompTIA was preparing a packet of tools that will allow One-Stop career center staff to assess unemployed workers to determine their suitability for IT work and to help direct them to employers participating in NITAS. In addition, CompTIA has in place staff members who are able to help employers, who as NITAS members, tap into the resources that are available through the workforce development system.

Preliminary Observations

CompTIA has laid the foundation for a nationwide apprenticeship program for the IT industry that appears to meet the needs of employers, workers, colleges, trainers, and local workforce systems.

Effective way to train:
Interviews with IT supervisors, apprentices, and others appear to indicate that the apprenticeship model is superior to the classroom-only approach to training IT workers. Apprenticeship helps diminish the problem of employers having to rely upon academic credentials when hiring IT workers.

Verify skill level:
NITAS works for apprentices by providing a tracking model, creating a permanent online resumé of the apprentice's education, certification, and skills validation experience. Apprentices can share the DOL validated record with potential employers, their local workforce contacts, and other educational institutions.
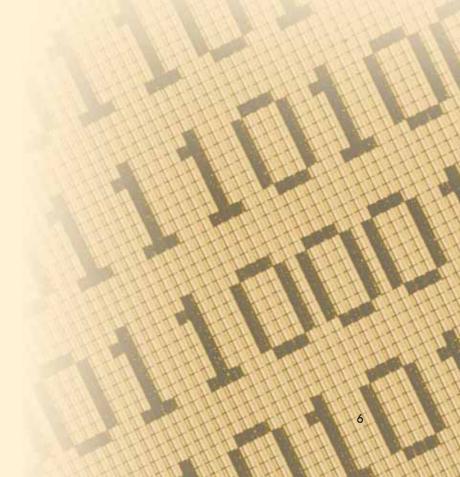
Increased productivity:
NITAS is a demand-driven system, based upon the needs of employers to ensure and increase productivity. Employers can use the NITAS system to help identify employee training needs that may hinder productivity. Employers of all sizes, and regardless of urban, suburban or rural location, appear to benefit from using the apprenticeship training model.

Return on investment:
CompTIA studies of apprenticeship in selected businesses appear to confirm productivity increases, shorter cost-recovery periods, workforce revitalization, and increased revenues when employers use the IT apprenticeship model. The apprenticeship training method also helps employers attract and retain high-quality workers at lower costs.

In addition, an employer's access to information provided by NITAS appears to save time and money by allowing an employer to compare the profile of his/her own company workforce with other industry and regional benchmarks. Information obtained through NITAS helps the employer ensure that a worker's skills and salary are properly aligned.

For More Information

Office of Apprenticeship Training,
Employer and Labor Services
Employment and Training Administration
U.S. Department of Labor

www.doleta.gov/atels_bat
202-693-3812

Information Technology
www.comptia.org and www.nitas.us