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**Information Technology
Workforce Study**

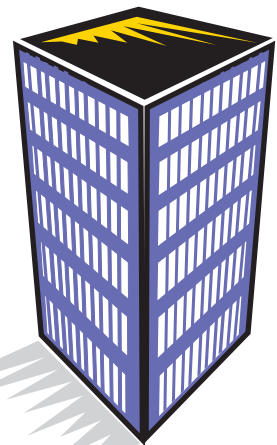
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Executive Summary

EastBayTech.net and the Peralta Community College District commissioned this research project to learn about capacity of organizations to train individuals for occupational clusters in information technology. In addition, this study is meant to provide an understanding of the supply-side and demand-side issues of workforce development in the Tech.net region and Peralta District service area (northern Alameda County).

This reports provides an overview of our research findings. It reflects the dynamics, challenges and opportunities of workforce development in the emerging Tech.net region. Furthermore, the report examines workforce development in the context of Tech.net's mission as a regional leadership organization interested in creating tech jobs.

Report Highlights

- An understanding of the IT skills shortage that is driven by the new economy.
- A snapshot of the workforce development environment for the Northern Alameda County (Tech.net) region. The reports makes note of the new emerging workforce development models in the region.
- Survey results: An assessment of the “supply-side” of workforce development, the providers of IT training.
- Survey results: An examination of the business needs or the “demand” of the labor market, more particularly in the area of entry-level job opportunities in information technology.
- Recommendations and strategies for collaborative workforce development in the Tech.net region.

Summary of Findings:

- **IT Labor Market:** the IT market is currently slow. However, the need for highly skilled, experienced tech workers (like software engineers) will continue to be a mission- critical issue for businesses, more particularly among high technology sector firms.
- **Entry-level IT jobs:** EDD Labor Market Division projects that by 2005,there will be 10,000+ technical support positions in the Tech.net region. These entry-level jobs such as help desk, technical assistant, technical support and computer repair technicians are viable opportunities for low-come, dislocated and re-entry workers to pursue. Technical support positions do not require a 4-year college degree.
- **Community-based Training Organizations:** CBOs are capable of training IT workers for job opportunities. However, many organizations are in need of quality control measures, curriculum standards, stronger ties to post secondary institutions (like community colleges) and the business community. Eighty-eight percent of the companies survey said that they had not worked with community-based organization.

- **High Schools Programs:** School technology programs desire to have stronger ties to the business community so that they may expose their students to leading-edge technology, tech mentors, and work experience opportunities for students.
- **Community Colleges:** the Peralta Community College District has solid technology training programs and is a great recruitment resource for employers seeking IT workers. In addition, community colleges are also flexible training entities that have the potential to partner with community-base organizations and high schools through articulation agreements.
- **Workforce Initiatives:** There are a number of workforce initiatives in operation in the Tech.net region. However, there are no major, well-marketed initiatives in place that bring together business, education and government leaders, unlike other parts of the Bay Area and the country. The notable exception is the East Bay Community College IT Curriculum Collaborative led regionally by the Peralta District.

Recommendations

- **Tech.net:** Convene key stakeholders from the business, K-12, training agencies, city governments, chambers of commerce and higher education to build and support a collaborative for a sustainable IT workforce development systems. The stakeholders would be responsible for developing regional-wide quality and continuous improvement standards for curriculum, instructors and training programs.
- **Labor Market Intermediary:** Provide a “real-time” labor-market information systems provides stakeholders with resources, data, best practices, events, employments opportunities.
- **Training Articulation:** Peralta Community College District has the flexibility to work with training organizations–CBO’s, high schools, and businesses–to provide certificated instructors, credit-level curriculum and lab facilities with high quality standards.
- **Business Engagement:** Tech.net community of firms should actively partner with high school, CBO’s and community colleges in the region to aggregate hiring trends and needs, to review and validate curriculum, to participate in program design and to provide internship opportunities for skilled program graduates in the region.

Methodology

EastBayTech.net and Peralta College District commissioned this research project to learn about the capacity of workforce organizations to train individuals for jobs in information technology. Further, study examines the type of regional leadership role that can be supported by businesses, local government agencies, institutions of higher education and community-centered nonprofit agencies interested in enhancing the education, training, placement and job opportunities for the local labor force.

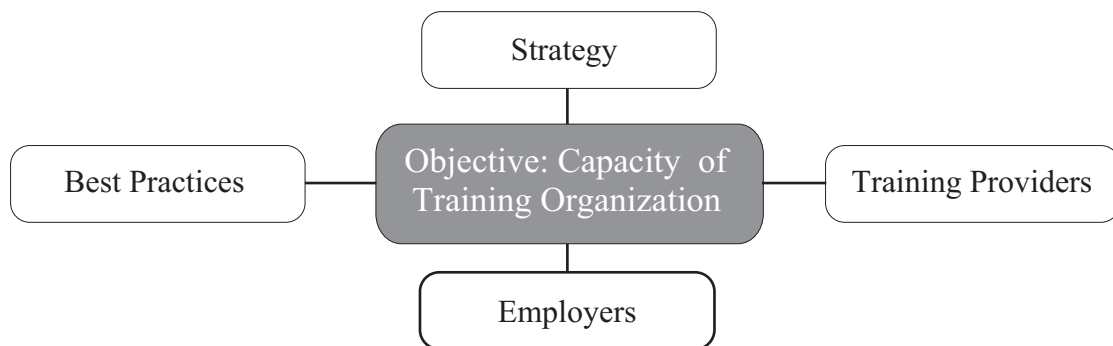
NetFutures focused on four areas of analysis:

1. **Training Providers:** surveyed programs offering skills training in information technology at the high school, community-based organization, and community college level.
2. **Employers:** surveyed the “demand side” of the labor market equation, more particularly in the area of entry-level job opportunities in information technology.
3. **Best Practices:** benchmarked local and national initiatives that have proven effective at addressing workforce development.
4. **Strategy:** recommended strategies for a regional approach to IT workforce development that can be supported by businesses, local governments, institutions of higher education and community-based organizations.

NetFutures conducted primary and secondary research to assess the “landscape” of IT workforce development in the Tech.net region. NetFutures surveyed training providers, interviewed key stakeholders and held focus groups. Furthermore, NetFutures spoke with high school students enrolled in technology courses to get a perspective about their future career interest in information technology.

NetFutures also surveyed and interviewed human resource professionals, technical recruiters and business executives to determine their approach to meeting their needs in the IT labor market.

Last, NetFutures benchmarked the “best practices” of organizations, regions and communities who have shown a degree of success as participants in a workforce development initiative.



Introduction

The industrial economy has been transformed into a robust information economy often referred to as “the new economy.” In this economy, Information Technology (IT) is now responsible for more than one-third of U.S. economic growth.

These new economy companies are driven more than ever by the need to quickly innovate. Deregulation and the diffusion of “disruptive” information technologies have created relentless competitive forces. Companies must now have the capacity to meet global market demand by having an organization that is adaptive to change. Consequently, new business models have emerged where information technology is an integral part of a company's success.

Technology now plays a significant role in the business workday. Computer use among the American workforce has increased dramatically. A recent survey indicated that 68% of workers use the computer everyday and on average workers spend roughly 35% of the workday on the computers. Thus, the demand for IT workers to maintain information systems, integrate new applications and to provide just-in-time technical support has created a large workforce gap. The Information Technology Association of America (ITAA) estimates that by the year 2000, 1.6 million IT jobs will be created and half of the jobs will go unfilled. This burgeoning market demand for IT workers has emerged to a point where the United States has officially announced a shortage on the supply-side (*America's New Deficit*, U.S. Department of Commerce).

Signs of an economy driven by information technology:

- Information technology's share of the U.S. economy nearly doubled between 1977 and 1998, growing from 4.2 percent to 8.2 percent.
- Information technology contributed more than a third of U.S. economic growth between 1995 and 1997.
- Traffic on the Internet is doubling every 100 days. The rapid growth in traffic is generating demand for hardware and software, as well as skilled IT workers to implement and manage these systems.
- Between 1998 and 2003, U.S. business-to-business commerce over the Internet is projected to grow from \$48 billion to 1.3 trillion, with an additional \$1.8 to 3.2 billion in global e-commerce.

Digital Workforce, U.S. Department of Commerce

Unfortunately, the rise of new economy has left behind a large section of adult workers, most of who are poorly educated and unskilled. This situation has the potential to create a bifurcation between highly skilled, highly educated workers and low-skilled, poorly educated workers.

Conversely, the rapid growth in occupations that heavily rely on information technology also presents an opportunity for improving the employment prospects of disadvantage workers. It is estimated that the demand for workers in IT occupations will continue to outpace the available supply. If this trend continues, with careful design and planning, workforce development systems can take advantage of the existing opportunities for broadening the benefits of the economic growth to all Americans.

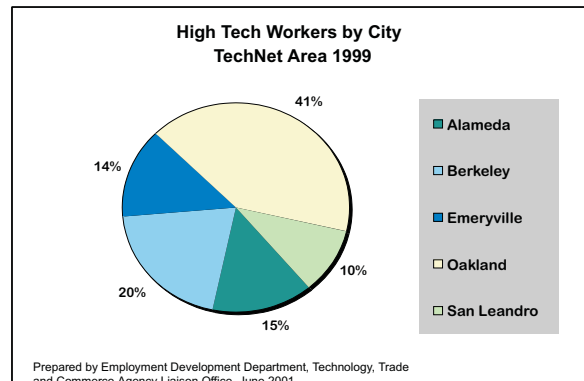
Tech.net's Regional Advantage

The East Bay technology sector has undergone a high rate of growth within the past five years. Companies, both high-tech and non high-tech, have created new job opportunities in information technology. Recent Labor Market Information (LMI) estimates show the East Bay region with as many as 40,000 IT jobs available in the area. However, like other regions across the globe, East Bay leaders are challenged with the demand to develop a skilled labor force to meet the needs of business. Easy Bay Tech.net, as an emerging regional organization, has an opportunity to “connect the dots” to workforce development.

EastBay Tech.net is an economic development project of the Oakland Metropolitan Chamber of Commerce. Part of Tech.net's vision is to establish its region as an innovation center for the digital economy. As a regional leadership organization, one of Tech.net's key objectives is to attract and retain a local talent. In its 2001 goals plan, Tech.net stated that “establishing a mechanism to transition local residents from old economy to new economy [into technical positions]” were one of their top priorities. This means that working to understand the regional workforce infrastructure and developing effective strategies will be essential.

Workforce development has historically relied upon supply-side institutions, such as community colleges, Private Industry Councils, and other training providers. However, Tech.net's entry into workforce development arena creates an opportunity to articulate labor market information more readily between employers and training providers. Tech.net, by engaging its members as a labor market intermediary, could help aggregate labor market demand information for training providers.

There are currently 579 high tech firms conducting business in the tech.net region in the following areas: *software, telecommunications, biotechnology, hardware and Internet.*



Regional Highlights

- The East Bay was ranked in the top five dynamic regions for business in the United States by Forbes magazine.
- Berkeley and Emeryville are considered “brain center” for biotechnology innovation, according to Economic Development Alliance for Business (EDAB).
- Oakland was chosen by the American Electronics Association as #6 on the Cyber Cities list rankings of high tech employment in metropolitan areas.
- Services and business sector continues to be the fastest growth sectors (EDAB).
- East Bay region ranks the highest in the United States on the Ethnic Diversity Index (ABAG)

Workforce Development: New Emerging Models

Developing an effective workforce development system is a key concern for employers, labor, community-based organizations, educational systems, politicians and local government.

In many cases across the U.S., workforce development leaders are in the midst of making significant changes. In 1998, President Clinton signed the Workforce Investment Act of 1998, which consolidated many workforce and education programs and required a restructuring of workforce delivery systems in states and regions. Moreover, the legislation encouraged communities to pay greater attention to employer involvement, regional labor markets, competitive procurement, and benchmarking.

New workforce development models are emerging that stress regional networked relationships, employer-driven services, sector-based labor markets and occupational clustering.

Old Workforce Dynamics

- Fragmentation and duplication
- Supply-side concentration
- Placement Driven

Emerging Workforce Dynamics

- Networked-regional approach
- Employer-Linkage
- Sector-Standards Driven

The networked and sector-based approach is a natural fit for regional economies that are service sector markets like high technology, finance and telecommunications. Workforce development organizations are able to better define relevant skills for job opportunities. In some contiguous metropolitan regions such as Austin and Memphis, workforce development organizations have been able to link transitional workers and new entrants to the labor markets in the IT sector.

Workforce development organizations have often found clustering useful for focusing on a family of occupations that are most commonly employed by an industry. In the Tech.net region, training providers have identified technical support positions as an occupational area that allows for entry-level workers to obtain viable opportunity.

In the Tech.net region, it appears that workforce organizations are somewhat ahead of the curve in the networked approach, and a number of workforce organizations in the region have been working together. However, what appear to be lacking are networks that include strong participation of business organizations where seamless integration of resources are shared and region-wide skill standards are acknowledged.

Emerging workforce networks:

The development of these emerging networks are erecting promising partnerships, many of which include are inter-agency and multi-city programs that allow for the better use of resources in the workforce development system. To add, these new workforce development models are more than employment in the narrow training sense. They are focusing on employer engagement, deep community connections, career advancement, integrative human service supports, industry-driven education and community college curriculum standards. Below are emerging workforce development networks in the East Bay.

- **East Bay Works:** a network of One Stop Employment Centers offering a myriad of resources and services to East Bay residents.
- **Berkeley Trainers:** The City of Berkeley's Economic Development Agency has a network of IT training providers that meet on a monthly basis to discuss relevant issues.
- **Oakland WIA Board (Business Services):** has identified its local employers as one of its “key customers” and has included them into the design and oversight of their workforce initiatives.
- **East Bay Community College IT Curriculum Collaborative:** is a regional network of 10 East Bay community colleges which have developed model IT curriculum. The collaborative has an active regional industry advisory board and has earned national recognition for its outstanding work.
- **East Bay Learns:** is a School-to-Career initiative housed at the Alameda County Office of Education which has engaged a network of high schools, community colleges, employers, and CBOs in developing career pathways for high school students.
- **East Bay Regional Information Technology Training (BayTEC):** a newly formed start-up organization of best-in-class community training organizations partnering with community colleges to provide IT training and career-ladder development to underserved populations. BayTEC will partner with East Bay community colleges to provide lab-intensive, college instruction.
- **Bay Area Skills Consortium (BASC):** is a regional collaborative that brings together a consortia of workforce development organizations including the *Peralta Community College District, Bay Area Partnership, East Bay Works, North Bay Employment Connect and SkillsNET* to address the IT skills gap that exist in the Bay Area. BASC is charged with developing a set of tools that is responsive to industry needs for information technology. The BASC tools includes four tools: Worker's Skill Match, SkillsNET, Employer Toolkit and IT Training Curricula.

The Supply Side: Survey Results of IT Training Providers in Tech.net Region

In response to the strong IT economy, various workforce development institutions such as high schools, community-based organizations and community colleges have expanded their offerings of computer training classes ranging from basic computer literacy (keyboarding, Internet, word processing) to advanced computer skills (programming, network administration and technical support).

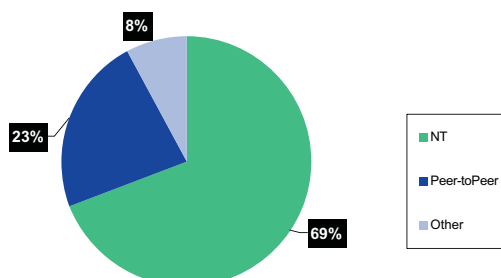
NetFutures surveyed 23 community-based training providers, 11 high schools, and the four Peralta colleges. Because we were really interested in getting a “look and feel” for these organizations, we surveyed and conducted onsite, in-person interviews with 96% of the training providers targeted for this study. NetFutures also convened two focus groups where we solicited the opinions of the training practitioners, non-profit directors, economic development directors and foundations.

Survey Results: Community-Based Organizations

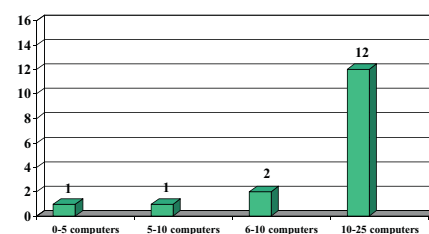
Computers: Hardware, Software and Operating Systems

- Overall, CBOs that were surveyed had very little trouble obtaining an adequate number of updated computers and gaining access to the Internet. For example, roughly 75% of CBOs had between 15-25+ computers.
- The majority of computers used on site were either Pentium I, II, or III. In some cases, CBOs also used Macintosh computers (Mac Power PC or Mac G4).
- The vast majority of centers purchased their own computers (77%) with the rest either leasing their computers or obtained donations. In addition, 81% of the CBOs had either a DSL (50%), T1 (19%) or ISDN (12%) connection to the Internet. Moreover, 94% were connected to a local area network (LAN).
- In terms of software, it is no surprise that all of the community-based computer training centers used Microsoft Office. Forty-four percent used Adobe PhotoShop and 13% used Lotus Suite. Other than these three software packages, no other package was dominant among the CBOs. It is also important to note that 88% of the CBOs used a Microsoft operating system, either Windows 98 or 2000 (only 2 did not).
- The vast majority of centers purchased their own computers (77%) with the rest either leasing their computers or obtained donations. In addition, 81% of the CBOs had either a DSL (50%), T1 (19%) or ISDN (12%) connection to the Internet. Moreover, 94% (15 out of 16) were connected to a local area network (LAN).

Network System Used by CBOs



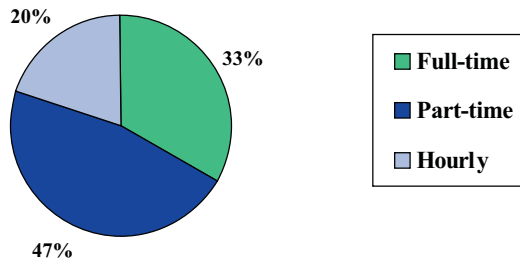
Computer Ownership within CBOs



Employees and Instructors

- Many of the CBOs varied greatly between the number of employees that they had on duty. The average number of full-time employees among the centers surveyed was 6. However, one center had 20 employees where another had no full-time employees.

Type of Instructors within CBOs



- The average number of part-time employees for the centers was slightly less with an average 4 and one center had 16.
- The average number of instructors among the CBOs was 4, but the most any center had was 10 and the low was 1.
- Based on the data, it appears that some CBOs are understaffed, while a small number have been able to meet their employee and instructor needs.

Funding

- There is also a disparity in funding among the CBOs surveyed. Twenty-nine percent of the CBOs reported having an operating budget greater than \$750,000 while 29% reported having an operating budget between \$100,000-250,000. Another 14% of centers had an operating budget between \$0-50,000.
- Among those centers receiving outside funding, 56% reported receiving funding from both public and corporate donors. However, 38% were able to raise additional funds by charging a fee-for-service.

Curriculum and Certification

- The majority of CBOs focused on basic computer education. Roughly 94% of those surveyed claimed to offer foundation courses. The majority of these courses were in the areas of computer literacy (Internet, keyboarding, word processing, etc.).
- 56% of CBOs offered some sort of computer certificate training A+, Cisco CCNA or Network Plus.
- Surprisingly, 80% of the centers do not offer basic English or math classes to their clients. This is a major void in the education curriculum of CBOs in a state such as California, where immigrants and non-English speakers comprise such a large percentage of the population, especially among those needing computer training.

Training Outcomes

- The majority of CBOs provided services to youth and adults. Roughly a 1/3 of the adults seeking training are either TANF, dislocated workers or career/skill upgrade.
- Over 50% of the training classes offered by the centers are daily or drop-in. The number of graduates completing training programs in the last 12 months ranged from a high of 300 to a low of 20. The average number of graduates was 105. However, this number is misleading because two centers graduated (300), three centers graduated between (100-150) and the rest of the centers had total graduate numbers well below 100 students.
- Only a few centers had a significant number of students receiving industry certifications in the last 12 months. Only four reported having any students receive industry certification. Finally, 63% of centers did offer their clients some sort of internship and placement services. The majority of CBOs provided services to youth and adults. Roughly a 1/3 of the adults seeking training are either TANF, dislocated workers, need career/skill upgrade or are youth.

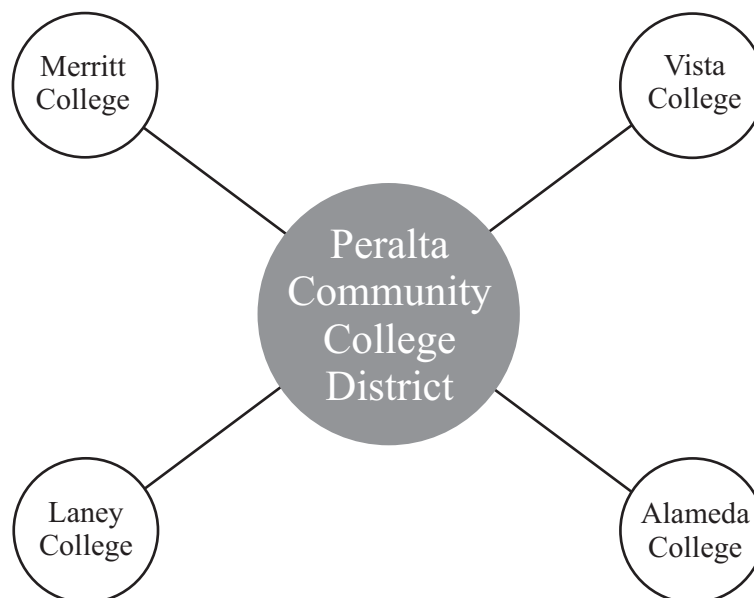
Survey Results: Peralta Community College

Peralta Community College District provides a vital academic function for adults returning to school, retraining for job changes, or acquiring credentials for moving up within their existing companies or agencies. Peralta's vast educational resources allow for flexible academic and training arrangements with community organizations, high schools and businesses. The Peralta Community College District has technology training programs at four of their college campuses: *Vista Community College, Merritt College, Laney College and College of Alameda*. Below are the results of our findings:

- All four colleges provide Associate of Art degrees and certificates for their programs in Computer Information Systems: Computer Networks & Communications, Multimedia, Computer System Specialist, and Software Development.
- Industry Certifications: Microsoft MOUS, Cisco CCNA, Microsoft MCSE, Novell CNA, A+, Network Plus
- Peralta's four college campuses are rich in technical resources. On average, each college campus has at least 168 computers available for instruction. Moreover, each campus has a minimum of two instructional labs and several have significantly more.
- Community College graduates have reported obtaining jobs such as data communications specialist, network engineer, technical support, and web designer. Many of the students conveyed that their first jobs were at government agencies or small businesses.

The community colleges expressed a strong interest in strengthening their relationships with the technology industry. Several instructors believe that the Peralta College District has stronger ties to the business community.

Technology Training Programs



Vista Community College:

Vista Community College offers an **Associates of Science Degree** and a **Certificate of Completion** in Computer Information Systems. These programs qualify beginning students for entry-level employment in occupational settings that utilize computers, computer networks, and software applications. Vista also offers an **Associate of Arts** and a number of **Certificates of Completion** in Multimedia. The Vista Multimedia program is interdisciplinary, and the program focuses on developing both artistic strengths and technical computer skills. Vista technology programs are equipped with state of the art labs that provide students with the opportunity to receive hands-on experience. Coursework and programs include:

- Advanced Database Programming
- Advanced Network Administration
- C Programming
- Java Programming
- Digital Imaging for Multimedia
- 2-D and 3-D Animation
- Digital Video
- Web Design
- Visual Basic Programming
- Software Applications

College of Alameda

Offers a **Certificate of Completion** in Computer Information Systems that prepares students for entry-level positions in programming, computer hardware, and network administration. Courses include:

- Network Administration
- Java Programming
- Web Publishing
- Cisco CCNA preparation
- C++ Programming
- Unix
- Linux
- Visual Basic Programming
- Software Applications
- Computer Hardware
- Windows Operating Systems

Merritt College

The Computer Information Systems Department offers three **degree/certificate programs** designed to train students in computer and related technologies: *Computer Networks and Communications*, *Microcomputer Software Specialist* and *Software Development*. Course offerings include:

- Programming in Basic
- Programming in Assembly Language
- Programming in C++
- Programming in C
- Programming in Visual Basic
- Programming in Java
- MOUS Certification
- Data Communications and Networks
- Unix
- Database Management
- Network Administration
- Software Applications

Laney College

Laney offers a variety of programs and curriculum for students interested in technology careers or progressing to a 4-year college program. The Computer Information Systems programs are aligned with industry standards for a range IT occupations. Courses include:

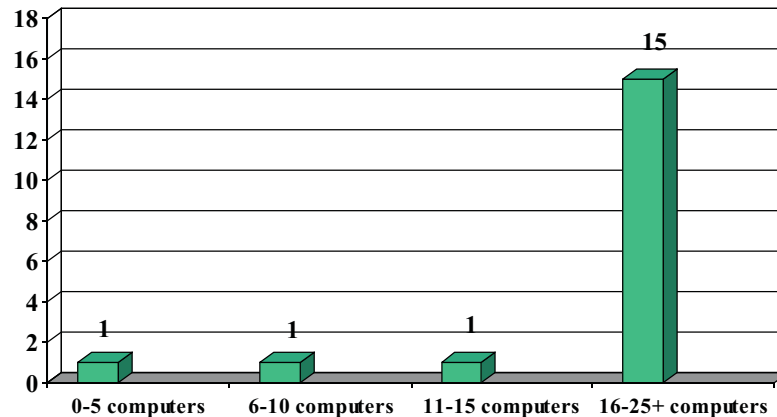
- Unix Operating System
- Unix Server Administration
- Windows Network Administration
- Novell Netware Administration
- XML Documents and Applications
- Computer Hardware
- Database Management
- C Programming
- Java Programming
- C++ Programming
- Software Testing
- Internet Scripting Languages
- Programming in Visual Basic
- Network Architecture

Survey Results: High School

Information and Communication Technologies (ICT):

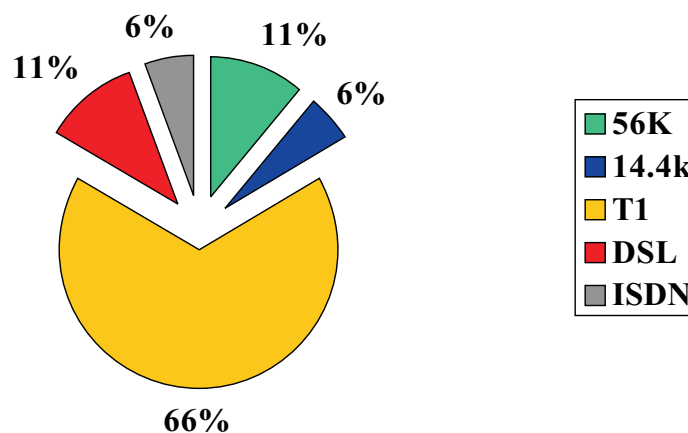
- The majority of high schools have anywhere between 16-25+ computers (83%). Moreover, 89% has some type of Pentium computer I, II or III. Ninety-four percent of high schools own their own computers and only 1 leased their computers. Of the 94% of schools that own their own computers, 17% were donated

Number of Computers within High Schools



- Similar to CBOs, nearly all of the high schools used a Microsoft operating system, either Windows 95/98 or 2000 (78%) while the rest used a Mac OS 8.0+ system. The most popular software packages used by the high schools were Microsoft Office (94%) and Adobe Photoshop (33%). There was no other dominant software package used by the high schools.
- In terms of Internet access, 66% had a T1 line, 11% had DSL, 11% had 56K and only 6% had an ISDN connection. All of the high schools were linked up to a local area network (LAN). 74% of the high schools used an NT network operating system followed by Novell and Peer-to-peer each at 13%. Unfortunately, 56% of the high schools did not have a network administrator.

Internet Access (In Percent)



Curriculum and Instruction

- Over 50% of the schools surveyed have a computer academy with one or more instructors. The average number of teachers in an academy ranged from a high of eight to a low of one with the average being three. Nearly 2/3 of the funding for high school technology academies came from general funds. Several high school IT programs receive supplemental funding from the state or other sources. Schools that do not have a technology academy also offer sequences of IT courses.
- The majority of high schools focus on basic computer literacy, however they appear to be flexible with the type of computer curriculum that they offer. For example, 78% of the high schools surveyed claimed that they taught foundation courses in computer literacy (keyboarding, Internet, word processing, etc.) (89%). However, many high schools reported teaching software applications (44%), web page development (39%), database (22%), C+ programming (roughly 33%), digital art and multimedia (22%), Cisco (22%) and technical support (11%). This data represents the diverse set of skills being taught at the high school level.

Outcomes

- Most high schools are offering if not requiring computer literacy courses. Many have computer or technology academies that enroll cohorts of students in sequences of IT-related courses, and other schools enroll students in sequences of IT courses that are not part of an academy structure.
- Among all the high schools surveyed, we determined that only six students received some sort of industry certification! The data suggests that the high schools are doing a good job at introducing students to the breadth of career opportunities in the IT field, but are not so focused on industry certifications for high school students. 61% of the high schools reported developing partnerships with outside entities, and another 72% stated that they offered their students internships.

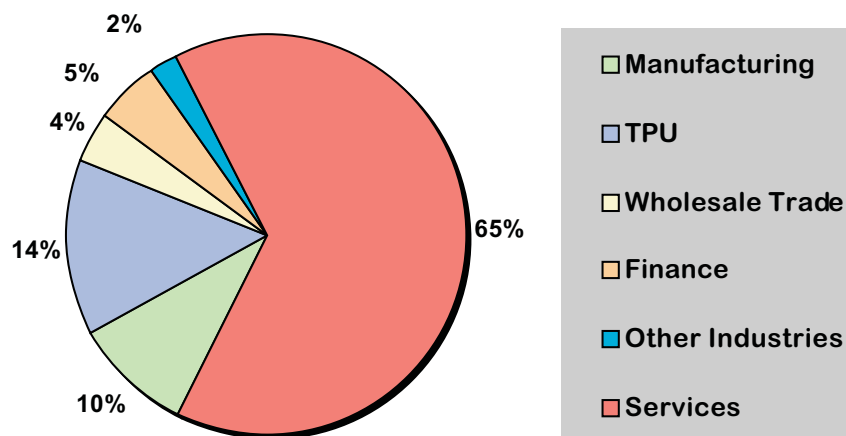
Demand-Side: Survey Results

NetFutures interviewed 18 companies in the Tech.net region to understand their IT occupational needs. These firms were comprised of both high-tech and non high-tech firms. The majority of these firms were small to mid-size with the base average of 5-50 employees. We interviewed 5 companies with 100+ employees. We interviewed human resource managers (larger firms), CFOs (mid size firms) and CEOs (responsible for hr recruitment).

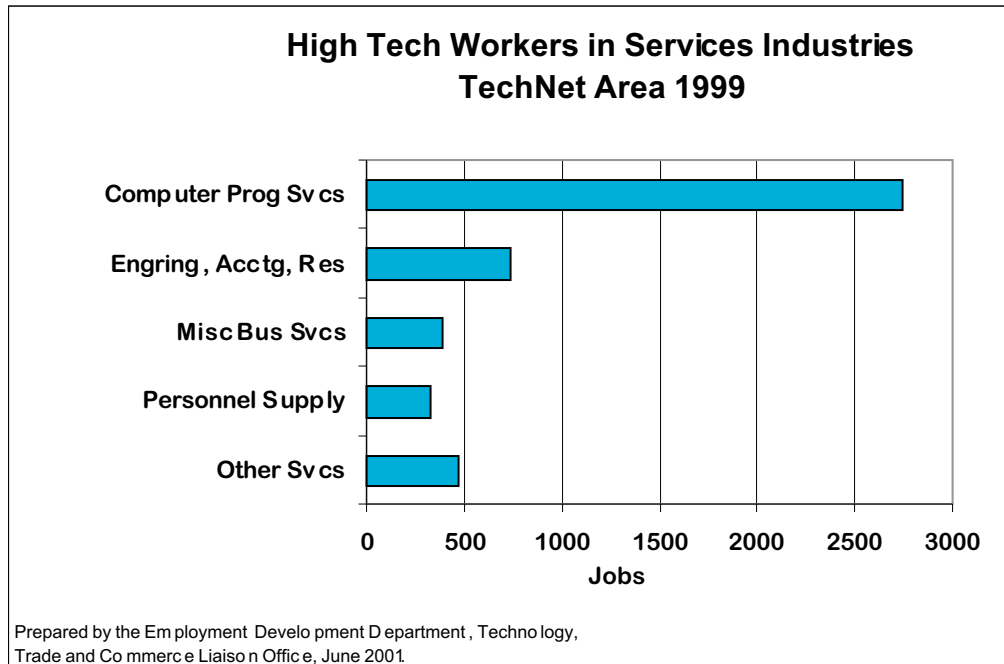
IT must be noted that NetFutures experienced difficulty in getting firms to respond to this study. We attribute this problem to two possible explanations: First, this study started at the beginning of the economic slow down which made the topic of "IT workers" and "workforce development" less of an issue. As one major East Bay employer stated, "we are not hiring right now" Second, as we will see by our findings, employers are unaware of workforce development systems as a means of recruiting from a pool of workers. This is not a regional issues but a national issue.

- Six high tech firms (who responded to this question) stated that their highest recruitment priority was software developers. The most sought after skill set was Java and XML programming. These firms also stated that individuals need to remain "up-to-date" with the latest development tools.
- The same six high-tech firms stated that they each had fewer than five employees committed to technical support services but supplemented technical support delivery through "outsourcing" these services.
- Smaller firms reported having "an IS" person on their staff. This person was responsible for a multitude of technical support and system support issues.

**High Tech Workers by Industry
TechNet Area 1999**



Prepared by the Employment Development Department, Technology, Trade and Commerce Liaison Office, June 2001.



- 4 firms, including an IT support services firm and a government agency, state that “advanced networking tools” (like Tivoli from Computer Associates) are allowing for more virtual IT support to be provided to its internal customers. These tools allow for systems problems to be identified easier and quicker. These new tools apparently reduce the human resource cost for onsite support services. Several of these respondents suggested that new entry-level workers of IT support learn to use these tools.
- One leading employer of animation filming stated, “It is as equally important to develop non-technical skills like collaborative work, reasoning and visioning.” The company conducts extensive training in non-technical skill development.
- The majority of the responding firms (15) look for experience when they hire IT workers. However, DML Staffing, a technical recruiting firm, stated that there is a willingness by firms to hire entry-level (minimal experience) when the economy is doing well.
- 15 of the firms stated that they have not worked with community training organizations to find candidates for IT job opportunities. To add, most firms were unfamiliar with community organizations as a human resource pool.
- 17 firms reported using websites, recruitment agencies, newspapers advertisements and/or college recruitment as the primary resource for recruiting IT workers.
- The 5 largest firms stated that they actively recruited from community colleges. Ten small firms stated that they did not recruit from community colleges. It appears that large firms with full time recruiters recruited from community colleges.
- In small to mid-size firms, most employees personally upgrade their skills at local colleges (community colleges/university extension courses) or rely on informal peer-to-peer training from their colleagues.
- Fourteen firms reported not having formal internship programs inside their companies. However, company representatives pointed out that many of their employees volunteer time to schools or non-profit organizations.

*Best Practices***Community Training Organizations****Program****Description: Center for Employment Training (CET). San Jose, CA**

CET is a private, non-profit, community-based organization that trains low-skilled, low-income people for jobs. CET has 22 training and service centers throughout the United States (California, Illinois, Nevada, North Carolina and Virginia). They are involved in the entire workforce development process from recruiting trainees, providing the training, job placement and follow-up services. CET provides trainees with job training and basic skills remediation (including vocational ESL and GED preparation). They offer over 25 different job training options including Automated Office Skills, Data Entry/Computer Operator, Electronic Assembly, Electronic Technology, Medical Assistant, and Printing and Graphics. The training is intensive requiring trainees to attend class 5 days a week for about 35 to 40 hours per week for seven months.

There are several reasons for CET's success. Firstly, they have been able to develop strong partnerships with employers, instructors are hired straight from the industry, they offer training only in demand occupations, and most of the CET training and service centers are accredited through the Western Associates of Schools and Colleges (WASC).

Program**Description: Access To Software For All People, Berkeley, CA**

In the process of learning how to design websites and databases for local companies like the California Symphony and the Berkeley YMCA, trainees gain an array of marketable skills. Workshops are provided in word, animation, Photoshop, java script and computer hardware. Leadership skills are developed through entrepreneurship and marketing classes as well as opportunities to become Project Managers.

ASAP's model works. Young people receive high-end technology training and also get paid to use their skills in real work settings with real customers and real deadlines. At the same time businesses that contract with ASAP receive quality products in the form of top-notch databases and websites. ASAP creates a skilled workforce that can fill tech positions and other employment opportunities down the line.

The model also stressed the important aspects of job readiness and employment etiquette. Currently, ASAP delivers services on the local, statewide and national levels to clients like The Educational Testing Service in Princeton, New Jersey and the Judicial Council of California. Other referrals are made through a recent partnership with the City of Berkeley who markets the program to East Bay businesses.

Program**Description: Glide Tech Training and Employment, San Francisco, CA**

Glide Tech is partnership of Glide Memorial Church, one of San Francisco's largest churches and a well-known provider of social services; Manpower, the nation's largest temporary service provider; Mission College, one of the most respected training institutions in the Silicon Valley; and City College of San Francisco, the City's major academic institution serving low income and welfare-to-work populations. Glide Tech's training program offers welfare recipients and low-income individuals career training and development in information technology. Glide Tech offers comprehensive training to serve the needs of their diverse population: basic skills training in literacy, computer skills, office skills and advanced technical training in industry standard based competencies like A+, Cisco and Unix. Students are also enrolled in Mission Community College and receive credit for completed coursework.

Upon graduation from the program, each person receives placement assistance for high tech jobs in companies located in San Francisco and Silicon Valley (like Unisys and HP). Participants receive continuing counseling and supportive services by Glide for a minimum of 180 days following initial placement.

Workforce Development Collaboration

Program

Description: Annie E. Casey Foundation's Jobs Initiative Program: Denver Workforce Initiative. Denver, Colorado

The Denver Workforce Initiative (DWI) primarily focuses on the retention of entry-level workers in their new jobs. As part of a program called, Workin' It Out, a workplace-based curriculum has been developed to help entry-level workers understand the differences between work and home cultures. The goal of the program is to encourage workers and employers to work out differences that often arise between entry-level workers and management. The program offers workers with little work experience crucial soft skills that are necessary to maintain long-term employment. It also provides supervisors with conflict resolution skills and broaden their understanding of the different backgrounds and cultures employees bring to work. Approximately 63 percent of entry-level workers were who were placed in jobs stayed employed for three months.

Program: Greater Austin@Work (Greater Austin Chamber of Commerce)

In partnership with city and county agencies, community-based organizations, community colleges and universities, private training vendors, and economic development organizations, Austin @ Work has taken the leading in coordinating workforce development and school-to-work activities. The program has viewed economic development within the context of the entire labor market, including youth internship programs, welfare-to-work and incumbent worker training.

Program: Greater Cleveland Jobs and Workforce Initiative, Cleveland, OH

The Cleveland Chamber of Commerce and the Greater Cleveland Growth Association has taken the lead to support manufacturing, service and technology-related sectors by creating a more efficient labor market. The Cleveland Jobs and Workforce Initiative is a business-led, regional collaborative that focuses on three outcomes:

1. Raising the level of workforce quality
2. Ensuring that the skills of the regions workers
3. Match the needs of current and future employers
Finding jobs for Cleveland workers

Program: Memphis 2005 Program Memphis, TN

The Memphis Chamber of Commerce has assembled 100 plus Memphis businesses to create a long-range economic development plan called Memphis 2005. The plan concentrates on four core areas: workforce development, economic development, public policy and minority business ownership. The Chamber manages local business needs, school-to-career, community colleges training programs and local job seekers.

Workforce Development : Education Initiatives

Program: The Greater Metro Chamber of Commerce Education Foundation Charleston, North Carolina

Charleston Metro Chamber are spearheading community efforts to improve public education in Berkeley, Charleston and Dorchester counties. Since 1995, the program has established programs and initiatives that have impacted the way students learn and the way teachers teach. The Education Foundation believes that education is too big a task for schools and school districts to undertake alone. Business and community leader must serve as advocates for change. The Chamber engages in several education partnerships in the region. Moreover, they hold the *Annual Business Education Summit*, which brings together business, education and community leaders together throughout the region for action dialog around education improvement.

Program: Workforce Silicon Valley San Jose, California

The Manufacturing Group determined that a powerful, systemic education reform strategy known as "school-to-work" (following the 1992 Federal School-to-Work Opportunities Act) could help our schools and colleges better prepare students for the 21st century.

In early 1995, the Manufacturing Group enlisted the support of K-12 districts, colleges and training organizations, employers, parents, and community members to further refine WSV's strategy. Together, these stakeholders agreed that Workforce Silicon Valley should promote three key principles:

Application of high-level academic skills to real-world problems (so that students are prepared for both college and the high-performance workplace)

Integration of secondary and post-secondary curriculum (so that the rigor of high school work is increased, and students can gain college credit while still enrolled in high school)

Integration of work-based and school-based learning (so that students can discover first-hand the knowledge, skills, and attitudes needed for the 21st Century, and thereby increase their motivation to excel in school)

Program: 21st Education Initiative, Joint Venture Silicon Valley San Jose, California

The 21st Century Education Initiative started in the early 1990's as a shared commitment by schools, businesses and the communities to create a world-class K-12 education system in the Greater Silicon Valley. The Initiative gave local businesses, community agencies and educators new ways to work together and encourage change and reform in schools.

Today, business and education are defining guidelines for desired levels of student achievement in new and measurable ways. Schools know how to set meaningful targets for student learning, establish measurements and assessments of student progress and collect and analyze student data for improved teaching and learning.

Community Colleges

Program: Bay Area Information Technology Consortium

ITIEP is a regional collaborative of 15 community colleges and high technology companies including representatives from Intel, Oracle, National Semiconductor, Cisco, Lawrence Berkeley National Labs, and other smaller firms. The collaborative, led by the Peralta Colleges, has developed model curricula for

community college IT programs in Computer Programming, Network Administration, System Administration, Database Administration, and Technical Support. Detailed curricula and course outlines are available to educators on a website located at www.itiep.org.

Program

Description: Bay Area Information Technology Consortium

Bay ITC is a collaborative regional effort between 25 Bay Area community colleges and high technology businesses dedicated to educational innovation and information technology program reform in the Bay Region community college system.

Bay ITC has garnered support and input from such industry giants as Intel, Sun Microsystems, Hewlett-Packard, and Cisco Systems. Originating in the Silicon Valley, the Consortium now includes colleges from Monterey to Santa Rosa and extends from San Francisco to the Napa and Tri-Valleys. The Bay ITC represents the strongest workforce development network in the Greater Bay Area. We are connecting people, ideas and resources.

Analysis and Conclusion

High schools in the Tech.net region must work with industry and institutions of higher education to ensure that their curriculum provides students with a basic foundation to either enter the labor market after high school or enter an institution of higher education.

Community-based organizations can serve the population of low-skilled adults who lack a formal education, have been chronically unemployed, or seek re-training. This flexibility allows them to serve a diverse population and offer a wide range of IT-related skills. For example, some community-based training providers offer basic computer literacy courses to youth, adults and senior citizens, while others offer different levels of computer training (beginning, intermediate and advanced) based on the experience of the trainees. Trainees coming off of these programs can be a labor source for smaller companies who can not compete with larger firms due to the lack of financial resources.

The Peralta Community College District can be the link to the training side of IT workforce development. Peralta has the flexibility to work with all training organizations—community-based organizations, high schools and firms. Through “articulation agreements” Peralta provides college credit for appropriate high school courses to avoid redundancy and provide a seamless transition for high school students entering college. Peralta is also actively partnering with CBOs to provide certificated instructors at community sites, teach college level technical curriculum, and provide accredited college programs at the CBO site. The CBO provides recruitment, case management, as well as computer lab facilities for the program. These strategies have the potential to improve the quality of instruction for individuals in the Tech.net region. Moreover, Peralta can serve as a bridge for individuals who want to further their career by obtaining an AA degree or, subsequently, a Bachelor degree from a four-year institution.

Last, there is a potential labor market of entry-level IT workers for businesses. However, it appears that many firms, especially smaller firms, are unaware of the different training organizations that are looking to partner. If businesses play an active role with workforce development organizations, they can determine the requirements, standards and the curriculum that are adhered to by training organizations. Employers of IT are actually in the drivers seat. They can potentially help aggregate a labor market that stabilizes the cost of ownership of IT systems.

There is an urgent need for the Tech.net community of firms to more actively partner with the high schools, CBOs, and community colleges in the region to aggregate hiring trends and needs, to review and validate curriculum and program designs, to provide internship opportunities for skilled program graduates, and to provide other support as may be available.

Endnotes

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Appendices: NetFutures would like to thank all of the individuals representing their organizations for participating in our workforce development study.

Companies

APL
Tucker Technology
Clorox
Communications Technology Cluster
Zhone Technology
MDL Information Systems
Pixar
Nolo.com
Clear Ink
Nightfire Software
City of Oakland
Fast Trak
Project Arena
Renaissance Worldwide
Volt Technologies
Ask Jeeves
DML Consulting
Port of Oakland

Community Colleges

Laney College
Merritt College
Vista College
College of Alameda

High Schools

Emery High School
Berkeley High School
Oakland High School
Oakland Technical High School
McClymonds High
Castlemont High
Fremont High School
Skyline High School
Alameda High School
Encinal High School
San Leandro High School

Community Training Organizations

Access To Software For All People (ASAP)
East Bay Media Center
Inter-City Services
Alameda Computer School
Alameda County Computer Recycling Center
Computer Street Academy
East Oakland Youth Development Center
Eastmont Computing Center
National Training Institute
OpNet
OUSD Adult Education Technology Center
Project Transition
Regional Technical Training Center
Shell Youth Training Center
United Indian Nations
Urban Voice
Women's Economic Agenda Project
YMCA
Center For Digital Storytelling
San Leandro Works
Private Industry Council
Girl's Inc
Berkeley Neighborhood Computers



NETFUTURES
Equalizing Access To The Digital Economy

NetFutures is a provider of technology consulting services to businesses, non-profit and public sector organizations engaging in local and regional technology development. We provide solutions in the areas of strategy, research and thought leadership. Our core competencies are economic development, education and community.



TechNet is a leadership network of companies, cities and organizations whose mission is to further develop our region's technology and biotech base. East Bay TechNet's vision is to establish the East Bay - Alameda, Berkeley, Emeryville, Oakland and San Leandro - as an innovative center for the digital economy, biotechnology, telecommunications and the Internet evolution.



Peralta Community College Districts is the administrative office for Alameda County's four urban community college campuses. Peralta Community College District provides a vital academic function for adults returning to school, retraining for job changes, or acquiring credentials for moving up within their existing companies or agencies.