



Meeting Minnesota's Workforce Needs

Information Technology

September 2012

FACTS:

- Minnesota ranked 17th nationwide in the number of individuals employed in computer and mathematical occupations in 2010.
- The largest IT occupation is applications software developers, employing over 14,000 people statewide. This occupation is also projected to add nearly 2,500 new jobs over the next ten years—more than any other computer-related occupation.
- According to Wanted Analytics, there were 16,000 unduplicated job postings for IT-related positions in Minnesota during the month of March 2012.
- Only one of eleven IT-related occupations, “computer support specialists” has a mean wage less than \$30 per hour in Minnesota. (\$26.16)

OVERVIEW

Minnesota companies – of every size and in every region of the state – depend on the 31 Minnesota State Colleges and Universities to prepare and maintain a skilled workforce, increase employee productivity and support new business growth. In partnership with the Minnesota Chamber of Commerce and the Department of Employment and Economic Development, Minnesota State Colleges and Universities held 44 listening sessions in six industry sectors across the state in April and May 2012.

More than 1,300 individuals representing businesses, community members and educators attended and offered ideas and feedback about current and future workforce needs. Expanding and deepening engagement with industry partners will enable Minnesota State Colleges and Universities to better meet current and future workforce needs. Specifically, the listening sessions were designed to:

- Understand the workforce needs of business and industry;
- Align the supply of graduates with employers' needs;
- Align the skills and knowledge needed by employers with what is taught in instructional programs and
- Improve student awareness of employment markets.

In Information Technology, six meetings were convened with about 175 attendees. Nearly half of the attendees represented businesses. Employers focused on the following occupational program groups:

- Scientists and Engineers
- Information and Technology Specialists
- Infrastructure and Systems Specialists
- IT Management and Administration

Following is a summary of the employer conversations across the industry sessions divided into seven themes. Additional information from the statewide occupational reports can be accessed at: www.mnscu.edu/business/workforceassessment.

Industry themes and direct quotes from employers can be found at: www.mnworkforceneeds.org.

PRELIMINARY FINDINGS: INFORMATION TECHNOLOGY

Industry Trends

- One of the most prominent industry trends is virtualization through the development of cloud computing infrastructures. Employers predict this will continue to increase.
- In addition to cloud computing, the industry is seeing trends toward network security, data storage, Android and iPhone platforms, and mobile applications. Employers anticipate continued demand for these types of services.
- Employers speak of the rapid, ongoing changes in technology and they acknowledge that it is difficult for academic curricula to keep up with industry developments.
- Employers note that it is common to outsource IT technician positions as well as positions that require specialized knowledge. However, several employers prefer a boost in local skill levels to keep these positions in Minnesota.

Workforce Trends and Challenges

- Many employers state it is difficult to find quality entry-level applicants in general, and quality applicants for specific occupations in particular; this includes engineers, technicians, and software/database development specialists.
- Some employers also have difficulty filling mid-level to senior-level leadership positions.
- Fewer employers say that they are either not hiring, or they have not had difficulty in filling openings.

Workforce Skill Needs/Gaps: Occupation-Specific Skills

- With rapid and ongoing changes in the field of technology, many employers are most interested in candidates that have broad technical knowledge. When candidates possess this knowledge, employers are able to provide on-the-job training in more specialized knowledge.
- A few employers look for candidates with knowledge of specific software programs and virtualization skills.
- Respondents who hire IT technicians seek candidates who understand interoperability; that is, an understanding of how various technologies work together.
- Respondents who hire computer science graduates seek candidates who possess database and data analytics skills as well as knowledge of quality-assurance testing programs and equipment.

“We are going to look for the well-rounded person. So we want them to be able to have the personal skills, communication skills, technical skills, etc.”

—Employer,
Metro meeting

Workforce Skill Needs: Experience and Credentials

- Internships and other forms of practical experience, such as working at a college IT desk or building a program in the candidate’s spare time, are highly sought after in new hires.
- For entry-level technicians, employers look for a minimum of an associate degree. Some say that associate-level technicians tend to have more practical experience, while bachelor-level technicians tend to have stronger soft skills. Some respondents feel that candidates coming from disciplines other than IT can be successful technicians as well.
- Employers emphasize they can provide extensive on-the-job training for new hires to ensure competency in the specific programs used within their sector of the industry. Therefore, a basic skill set is more important than vendor-specific certifications.

Workforce Skill Needs/Gaps: General Skills

- Employers in the IT field look for well-rounded new hires. The ideal candidate has strong communication skills, business sense, leadership abilities, consultation skills and broad technical knowledge. Small businesses tend to look for generalists since their positions are less specialized and require a variety of tasks.
- Consultation skills are essential for IT professionals since they must work directly with clients to assess and resolve technical issues in an efficient, professional manner. They must be able to clearly communicate technical ideas to stakeholders who may have less technological knowledge, and they must be able to effectively manage conflict.
- Employers desire candidates with strong communication skills, both verbal and written. They look for new hires who possess interpersonal skills, which enable them to communicate professionally with their colleagues and work effectively on a team. These skills are often lacking. Some respondents attribute this lack to the younger generations having less experience with face-to-face communication.
- Employers look for individuals who are passionate about the field and are self-motivated to learn new technologies.
- Employers would like to see more technologists who have business knowledge, particularly budgeting skills when consulting with clients. It is also important that technologists understand the organizational ramifications of their technical decisions when working with various businesses.
- Some respondents report that new hires need to possess stronger project management skills, stronger leadership skills, and greater critical-thinking and problem-solving skills.

“The technology just changes so fast, and there’s so much information available, if somebody’s motivated and willing to learn things and take the initiative and do things, those are the ones that will excel.”

—Employer,
Bemidji meeting

- Employers say that professionalism is sometimes lacking in new hires. This includes work ethic, quality of work, and realistic expectations of the work environment.
- Employers see a need for additional training in basic application and interviewing skills among entry-level candidates. Several employers report receiving incomplete or inadequate cover letters, résumés and applications.

Incumbent Workforce: Current Continuing Education

- Employers provide incumbents with training on both technical and soft skills. Technical training topics focus on new technologies related to application development, virtualization and cloud computing. Soft skills training topics include project management and business skills.
- Many employers have professional development units that provide in-house training, although some employers send incumbents off-site for training.
- Vendor training is frequently used when new software/technologies are purchased.
- Incumbent employees are expected and encouraged to learn new technologies on their own and to introduce them to employers; this requires employees to be self-directed and to take initiative.

Incumbent Workforce: Needs and Challenges in Continuing Education

- Because it is becoming more expensive to send incumbent workers to vendor training, several respondents expressed interest in additional partnering with MnSCU for incumbent worker training. Employers are interested in specialty training that is tailored to their needs; this includes shorter trainings when possible.

Preliminary Action Items

Educational Partnerships

- Improve connections for businesses to recruit college and university students.
- Employers recommend inviting industry members to speak to students.
- Business and higher education need to support educational opportunities for K-12 students to learn more about industry.

Program Suggestions

- Explore program design that creates dual track for technician-level training and upper division skills.
- Incorporate learning materials that cover business and soft skills, such as budgeting, working on teams, managing projects and meeting customer or client needs.
- Create a solid network of business and education professionals to increase the numbers of students who participate in internships and the number of faculty who spend time in industry.
- Employers encourage higher education to continue to offer project-based work in the classroom. Specifically, graduates who have had experience consulting with clients during course-work are much better prepared for the work place.

“Internships are another thing that we look for. They can usually speak about what they did there and what they ran into, the products they used, what problems they ran into they had to deal with. That’s invaluable to us if they walk in with those.”

—Employer,
St. Cloud meeting

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