

General notes on IT industry trends — A white paper

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The IT industry is in transition and the directions it is taking are not clear at this time. Since the .com bust the market has seen an abundance of IT workers looking for jobs. Most of the IT jobs that remain unfilled today are high level jobs requiring several years of experience, and jobs that call for very specific and difficult-to-find technical skills and knowledge.

As the economy recovers and hiring picks up once again, it is not certain that all the IT jobs will once again be in high demand by employers. The primary reasons are outsourcing and an overall maturing of the IT industry with an increasing penetration in the non-IT/non-Technology organizations. Examples of non-IT/non-technology industries include: healthcare, local-state-federal government, insurance, banking, finance and e-commerce.

A strong trend in the IT industry is the outsourcing of low-level, entry-level jobs. Specifically, helpdesk, coding and software testing jobs are being exported to third-world countries. Even small companies are getting involved in outsourcing by working through contractors that offer outsourcing services to a wide range of companies. This outsourcing of low-level IT jobs means that the jobs remaining in the US are higher-level, higher skilled jobs.

Outsourcing combined with the large number of IT workers looking for work allows employers to require significantly higher levels of IT skills and knowledge, and a higher level of industry experience than they used to require a few years ago, even for low-level, entry level jobs. At the same time, IT literacy and expected skill level are increasing in non-IT jobs, squeezing out of the market IT trained-workers with only entry-level/basic IT skills. A good example of this is the job area of administrative assistant. A few years ago, the job requirements called for basic computer literacy with intermediate-to-advanced knowledge in word-processing (i.e. Word) and basic-to-intermediate knowledge of spreadsheets (i.e. Excel). Today many administrative assistant job descriptions require in addition to strong word-processing skills, intermediate-to-advanced knowledge of spreadsheets, a basic level of office databases (i.e. Access), a basic-to-intermediate knowledge of presentation software (i.e. PowerPoint), and an intermediate knowledge of email and scheduling software (i.e. Outlook). In addition, strong preferences are often given to candidates with basic knowledge of graphic software (i.e. Visio), and of HTML and Web design and maintenance software (i.e. Dream Weaver).

So as IT knowledge and skills are becoming more prevalent, the IT-skill bar is being raised in non-IT positions, and correspondingly the IT-skill bar is being raised in IT positions. A good example is the job area of technical support. Excluding entry-level helpdesk positions (which as noted above are being exported outside of the US), most technical support jobs require a basic-to-intermediate knowledge of networks. A few years ago, solid PC knowledge was enough to get started in the industry as a technical support professional. Another trend is the increased expectation that IT workers understand business processes and applications.

The 2-year IT degree programs that were designed as recently as two-to-three years ago are now finding themselves out of step with the demands of the industry. Many administrators are holding on to their current program design, hoping this difficult time will only be temporary. However, they may be missing the signs of the significant shift that is happening to the hiring patterns and requirements for IT workers.

Program design recommendations for IT and Business Technology community college degree and certificate programs

In response to these trends, some of the recommendations to consider include the following:

- Develop advanced programs (degrees and certificates) that require entering students to have a basic-to-intermediate knowledge and skill level in IT, and preferably some industry experience. Examples include Network security programs and System Development and Integration programs for already-trained Network Administrators; Database Development and Administration programs for persons with basic-to-intermediate database knowledge; and Web Development programs and Software Program Development programs for entry-level programmers.

Even though this is a current trend in community colleges, several barriers stand in the way of success.

Main issues

- One of the barriers for community colleges to offering “advanced” programs is that community colleges have not been traditionally perceived as providers of advanced training. To be successful, community colleges need to design and implement a strong marketing campaign and effective partnerships with businesses and other training institutions to change this image.
- Another factor of success is the need for a strong prior learning assessment program. A large part of the target audience for these “advanced” programs will be IT professionals who do not have an IT degree and who have acquired their IT knowledge and skills through non-traditional educational channels. Therefore their IT knowledge and skills need to be assessed for entry qualification into the program.
- Reassess the target jobs and the employment expectations of graduates from existing 2-year and certificate IT programs as published in the college catalog and website. The graduates of these programs most likely will start in lower level positions than they did a few years ago. An example would be a graduate from a Network Administration program who will most likely start in a technical support position and move up to a network administration position only after a few years of experience and additional training.

Main issues

- Current program titles and descriptions imply job levels for which graduates of these programs have difficulty qualifying in today’s market.

- As discussed earlier, some of the entry-level jobs are being exported outside of the US making some of the IT programs less viable than they used to be. Traditional programming and code development training programs are examples of these.
 - A related issue is that students graduating from IT programs tend to look primarily to the IT and high-tech industries for hiring, while many of the IT openings and the largest growth in IT jobs are in non-IT organizations. However, these organizations may require or prefer the job candidates to have a basic broad understanding of their industry practices — knowledge which is often not included in traditional IT programs.
- Move some of the basic IT skills that used to be included in IT programs into Business Technology programs. This includes presentation software and user-friendly graphic and web design tools. Include new technology tools into BT programs such as the use of email/scheduling software, wireless devices, and the use of technologies that support the increasing shift to a virtual office environment.

Main issues

- Shifting some of the content from IT to BT programs can sometimes be difficult as the two programs are not always used to working in collaboration. As IT programs are currently suffering from low student enrollment, administrators of these programs may be reluctant to relinquish some of their area of responsibility.
 - Adding new content to sometimes already packed-with-content programs requires careful program/curriculum redesign with strong input from local employers.
- Develop elective and/or continuing educational courses that target a specific industry, giving IT graduates a basic knowledge of the processes, practices and terminology of the industry they are interested in entering. This significantly increases their employability into the target industry.

Main issues

- Traditionally IT professionals see themselves as operating in a separate group from the rest of the organization and not needing to be overly concerned with the business processes. However, when considering IT jobs in the non-IT industry, understanding of business processes and practices becomes critical. In some organizations, the professionals performing some of the IT functions report to a business functional unit, not an IT group.
- As more and more IT job postings require several years of industry experience, it is becoming increasingly difficult for new graduates with no prior industry experience to find jobs. Graduates can significantly increase their employability by completing one or several quality internship experiences. It is also very valuable for the candidate to bring to the interview a well-designed and well-organized portfolio documenting their technical and business skill and knowledge, their ability to effectively work in a business environment (i.e.

professional, organization, communication and team skills), and their industry experience including internships.

Main issues

- For colleges and departments, developing an effective internship program is time and effort intensive. It requires building and maintaining strong industry relationships, and putting in place an effective selection and assessment process for both the students and the internship opportunities. Also in today's economy, many internship opportunities are unpaid which lessens students' interest.
 - With the possible exceptions of Media students, IT students are not usually taught how to develop effective portfolios. In most IT portfolio examples, only the technical skills are featured. Training in portfolio development and the infusion of the portfolio process throughout the program should be considered to increase the placement rate of graduates.
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- Additional notes
 - When revising programming and web-development related programs, attention to the trends towards web services and reusable component design must be taken into account.
 - Security content should be infused in all IT programs.
 - The increased merging/interaction of Web development, programming and databases should be taken in consideration in redesign and consolidation of IT programs.
 - The incorporation of e-business content/knowledge should be included in IT and business programs.