2000

Integrating the IT/IS Professional Community with IT/IS Academic Programs

Russell K.H. Ching
California State University - Sacraento, chingr@csus.edu

Louis W. Glorfeld
University of Arkansas, lou_the_blue_guru@compuserv.com

Monica Lam
California State University - Sacramento, lamsm@csus.edu

Integrating the IT/IS Professional Community with IT/IS Academic Programs

Russell K.H. Ching, Dept. of MIS, California State University, Sacramento, chingr@csus.edu
Louis W. Glorfeld, Dept. of CISQA, University of Arkansas, Lou_the_Blue_Guru@compuserv.com
Monica Lam, Dept. of MIS, California State University, Sacramento, lamsm@csus.edu

Abstract

Developing a successful IT/IS curriculum requires departments to understand the needs of their constituents, organizations that hire their graduates. As many recent studies have revealed, the success of an IT/IS graduate rests on the possession of both non-technical and technical skills. Furthermore, a greater understanding of how IT can be applied to solving organizational problems is sought. This study presents the findings of a recent national survey that asked respondents to rank the importance of certain skills and academic/profession community involvement. The results suggest IT/IS curricula should emphasize developing professional skills, such as work ethic, problem solving, and oral and team communication skills in students. By the same token, ways should be sought to integrate professional experiences into curricula for developing these skills.

Introduction

Rapid advances and continuous expansion of information technology (IT) have placed many challenges and opportunities on IT and information systems (IS) academic programs in colleges and schools of business across the country. Paramount to this challenge is determining the focus of the program in the context of the professional community to which it serves. Given the limited resources that constrain the content of most IT/IS course offerings, putting forth an IT/IS program becomes a matter of delivering a quality *product* with the most *efficient* means that effectively couples to the expectations of constituency (i.e., employers) needs. One approach would be to draw upon the IT/IS professional community to aid in the delivery through their involvement. A distinct advantage of this approach is the division between the delivery of concepts (i.e., classroom) and the exposure to current professional practices that can be tied to producing valuable learning experiences (i.e., *real-world* experiences). However, identifying curricular focus and the role of the community looms as a formidable task that precedes the success of such a partnership. This study exams the responses to a national survey that sought greater insights on framing a curriculum which draws upon and integrates scholarship and professional practices.

IT/IS Curricular Focus and Components

The objective of an IS undergraduate curriculum should be to produce qualified and employable professionals who meet the needs of industry (Hingorani and Sankar, 1995). A key element in the definition of *employable* rests in the knowledge and skills imparted upon them through their education. In recent years, researchers have reported a major shift in the skills employers seek in their candidates. Organizational skills, such as the ability to communicate with others in the organization, and understand the business and its needs in the context of problem solving, have begun to take precedence over technical skills (Crokett, Hall and Jeffries, 1995), (Farwell et al., 1992), (Lee, Trauth and Farwell, 1995), (Leitheiser, 1992), (Ng, Poon and Burn, 1995). The need for technical and pragmatic skills is still evident, although the focus may be shifting to accommodate a new IS paradigm, managing and coordinating as opposed to providing or acquiring IT resources (Farwell et al., 1992). Thus, the challenge for most academic IT/IS departments is to create a curriculum that balances the development of organizational and technical skills within a cohesive framework.

Understanding the constituencies' requirements will lead to the success of a program. At a very broad scope, several external factors determine how an organization applies IT (Leitheiser, 1992), (Porter, 1985). By understanding how these factors shape the needs for skill sets, IS curricula can be developed to better prepare their graduates to satisfy the needs of organizations within their community. The goal of a curriculum program should not be to produce a set of generic graduates, but to put forth candidates who can enhance the operations of these organizations.

Leitheiser (1992) proposed an integrative approach to defining curriculum content. His model suggests other factors, such as the availability of technology, competitive service requirement and environmental constraints, all of

which are beyond the control of the organization, have an impact on the skills it needs (Figure 1). Often, the actions taken by organizations to employ IT are spearheaded by a competitive strategy. IT may be used to alter the industry structure, create new products or services, or improve new product lines and services (Porter, 1985). Thus, depending on their industry and geographical location, organizations will place different emphases on skill sets and seek candidates accordingly. Leitheiser's model suggests that organizational factors and service requirements determine the need for IS skills. Organizational factors, such as business processes, competitive environment, growth, and its abidance to government regulations, create a need for services within the scope of available technology. However, economic and legal constraints limit the degree to which they can provide such services. Technology also influences the IS service requirements which in turn impact the need of IS skills. Thus, the need for IS skills will differ for each organization since many factors will determine how technology will be employed. The importance of a skill depends on how it helps the organization achieve its goals and objectives.

The skills vital to the success of an IT/IS graduate could be imparted through a partnership between the IS/IT professional community and academia. The successful candidate will possess an understanding of how IT can be applied to produce a desired effect through learning experiences (not vocational training) acquired beyond the classroom. Therefore, what elements from the professional community should be considered to help students acquire this knowledge?

A Survey of IT/IS Professionals

A national survey was conducted to (among other things) seek an understanding of current IT/IS practices. The two major questions in this study are: *How can IT/IS academic programs improve services to the IT community? What skills are you looking for in IT/IS program graduates?* The questions were part of a 10-page survey that was mailed to IS and IT executives, directors and managers of private, nonprofit and government organizations throughout the country. Names of both the organizations and persons were drawn from the "Directory of Top Computer Executives," published by Applied Computer Research, Inc. The survey instrument was patterned after that used by Necco, Tsai and Gordon (1986). Although the response rate was low, 48 out of 1,000 organizations responded with 46 usable surveys.

Table 1 summarizes the responses for the primary skills organizations seek in graduates. Respondents were asked to rank the top five (one being the most important) skills (from a list provided to them) they sought from candidates and believed were important for all IT/IS graduates to possess. Unlike many of the previous surveys and studies, many respondents frequently ranked work ethic as the most important. This was closely followed by problem solving, and oral and team communication skills. Surprisingly, the only technical skill to receive a significant number of the most important ranking was programming. Evidently, most respondents did not believe telecommunication skills were important. None assigned telecommunication skills a top rank, while seven were almost evenly divided among the remaining ranks.

In a following question, respondents were asked to rank the top three ways in which the IT/IS community could be served by academic curricula. Table 2 summarizes these responses. Most respondents (27) believe it is important for an academic program to encourage its students to enroll in an internship/cooperative education experience. Internship and cooperative education experiences provide students with opportunities to work in a production environment and become acquainted with ways to apply their IS/IT skills in an organizational setting.

The second most frequently ranked service involved executive and professional review of and advisement on curricular issues. Whereas internships and cooperative education experiences allow organizations to provide students with opportunities to operationalize their knowledge and skills in an organizational environment, executive and professional review and advisement issues provide departments with invaluable input that can be used to set curricular direction and focus, and help ensure the curriculum's currency and relevancy.

No clear service emerged for the third rank. However, between bringing IT executives and professionals into the classroom (use IT executives/professionals as guest lecturers), and offering short courses to IT firms, the former would have a greater impact on a curriculum. First, it can also be used as a means to establish a close working relationship between the two worlds. Asking an executive into the classroom often requires building a friendly relationship between the parties that can be later extended to their benefit. Secondly, topics that are presented and discussed in class, can be validated or placed into a more interesting operational perspective through guest lecturers since they can bring their experiences into classroom. For many executives and professionals, this provides opportunities to share their knowledge and experiences with the community. Students benefit from guest lecturers through achieving a greater understanding of IT's practical application.

Integrating IT/IS Professionals and Academia

Integrating the knowledge and experiences held by IT/IS professionals into an IT/IS academic curriculum represents an important step toward producing a coveted candidate. One of the frequent criticisms of graduates is their lack of understanding of how an IT organization operates within a larger corporate context. Having been brought up in *sterile* environments, *book smart* candidates often fail to fully comprehend the role IT plays in an organization and how it contributes to the organization's functions. For some graduates, the contrast between what was taught in the classroom and what is practiced in industry raises contradictions in thought rather than opportunities to innovate. Thus, there is a need to integrate professional knowledge and experiences as another dimension to the curriculum. The results of this survey suggest two important areas IT/IS curricula should emphasize: developing non-technical skills alongside of technical skills, and introducing greater interaction between the professional and academic worlds.

The higher ranked items in Table 1 appear to downplay the technical knowledge and skills most curricula assume to be paramount and most textbooks convey. Although these (technical knowledge and skills) represent important segments that contribute to a graduate's background and distinguish them from other candidates, they must complement or be worked into honing work ethic, problem solving and communication skills. With the continuous and rapid advances in IT, many organizations seek ways to better apply IT, either for a competitive gain or to remain competitive. IT by itself offers no opportunities unless it is framed in the context of the organization's goals and objectives. Many organizations seek IT/IS graduates who can provide them with the resources for solving problems concerning the application of IT, and effectively communicating their solutions to others as team members, end-users or managers. When effective systems are proposed and implemented by such individuals, the organization will profit from IT. Most professionals acquire this intricate knowledge through experience.

Differences in the way IT is implemented and applied throughout industry provide learning opportunities for students. Textbooks and project/homework assignments specifically focus on lesson material and objectives. For many students, these *cleansed* presentations help them isolate and understand the concepts embodied by these assignments. As students graduate to higher levels of thinking, such as those requiring integrative thought, they can begin examining different ways in which IT has been applied and the factors surrounding the decisions that led to its use. Two complementary approaches suggested by the results of this survey include exposing students to professional experiences outside the classroom, and bringing professional experiences into the classroom. The former directs students toward gaining professional experience through internships and cooperative education experiences (co-ops). The objectives of both are to extend learning beyond the classroom, and to expose students to operations of an IT environment as a means for better preparing them for their discipline. In many cases, they provide students with invaluable work experiences that most employers recognize and will credit as an actual work experience. For a few employers, internships and co-ops present opportunities to screen individuals for future career assignments.

Bringing professional experiences into the classroom through the participation of executives and professionals in curriculum development and as guest speakers adds a dimension to student learning. It helps ensure the currency of the program, and allows students to contrast textbook concepts to actual practice. In most cases, executives and professionals are very receptive to sharing their experiences and views. As guest lecturers, they place the importance of IT/IS concepts in a business perspective. Thus, integrating the experiences and knowledge of the professional community into an academic curriculum affords an efficient and effective means for imparting a more comprehensive view of the profession.

Summary

A challenge most IT/IS academic departments face is determining the content and focus of their curriculum. The results of a national survey indicate a need to focus on the development of non-technical skills, particularly work ethic, problem solving, and oral and written communication. Also noted was the importance of student involvement in internships and cooperative education experiences, the participation of executives and professional in curriculum development, and the use of IT executives and professionals as guest lecturers. Integrating professional practice, experience and knowledge into an academic program enhances the learning experience which better prepares students for successful careers.

References

Crockett, Henry D., Gillain R. Hall, and Carol J. Jeffries (1995). "Preferred Information Systems Skills: Are Undergraduate IS Programs Serving Their Markets?" *Interface*, 15, 2, pp. 9-13.

Farwell, Douglas W., Linda Kuramot, Denis Lee, and Eileen M. Trauth (1992). "A New Paradigm for IS," *Information Systems Management*, 9, 2, pp. 7-14.

Hingorani, Kamal K., and Chetan S. Sankar (1995). "Entry Level MIS Jobs: Industry Expectations Versus Academic Preparation," *Journal of Computer Information Systems*, 35, 4, pp. 18-27.

Lee, Denis M.S., Eileen M. Trauth, and Douglas Farwell (1995). "Critical Skills and Knowledge Requirements of IS Professionals: A Joint Academic/Industry Investigation," MIS Quarterly, 19, 3, pp. 313-340.

Leitheiser, Robert L. (1992). "MIS Skills for the 1990s: a Survey of MIS Manager's Perceptions," Journal of Management Information Systems, 9, 1, pp. 69-91.

Necco, Charles R., Nancy Tsai and Carl Gordon (1987). "Systems Analysis and Design Current Practices," MIS Quarterly, 11, 4, pp. 461-476.

Ng, Eugenia M.W., Ray S.K. Poon, and Janice M. Burn (1995). "Information Systems Skills: Achieving Alignment Between the Curriculum and the Needs of the IS Professionals in the Future," Data Base, 26, 4, pp. 47-61.

Porter, Michael (1985). Competitive Advantage: Creating and Sustaining Superior Performance, New York: Free Press.

Table 1. Skill sets

What skills are you looking for in IT/IS program graduates? (Rank top 5 with "***1***" = most important.)

		Frequencies					
Rank:	Median	**1**	**2**	**3**	**4**	**5**	***n***
Communication Skills:							
Written	3	9	1	4	4	4	22
Oral	2	**14**	6	6	1	4	31
Team	2	**14**	5	5	2	6	32
Enthusiasm	2.5	4	4	3	5	0	16
Problem Solving	2	**15**	5	5	7	5	**37**
Project Management	3	8	2	4	4	4	22
Technical Skills:							
Database	2	3	4	3	1	2	13
Programming	2	10	8	6	3	1	28
Systems analysis	3	4	8	6	4	7	29
Telecommunication	3	0	2	2	2	1	7
Work ethic	2	**16**	5	3	8	5	**36**
Other:		2	0	0	0	0	2

Table 2. IT community partnership

How can IT/IS academic programs improve services to the IT community? (Rank top 3 with "***1***" = most important.)

		Frequencies			
Rank:	Median	**1**	**2**	**3**	***n***
Use IT Executives/Professionals as Guest Lecturers	2	5	5	**9**	19
Offer Consulting Services to IT Firms	3	0	1	3	4
Offer Short Courses to IT Firms	2	7	2	8	17
Send Distance-Learning (Television) Courses to IT Firms	2	5	4	4	13
Allow Executives/Professionals to Review/Advise on MIS Curricula	1	16	**11**	3	30
Allow Executives/Professionals Advising to MIS Students	2	8	9	5	22
Encourage MIS Student Internship/Cooperative Education Experience With IT Firms	1	**27**	8	5	**40**
Other	1	1	1	1	3

Figure 1. Leitheiser (1992) model of IS skill requirement