Minding the IS Soft Skills Gap: Evidence of Discourse Convergence and Organizational Field Structure

Muhammad Adeel Zaffar
*University of North Carolina at Charlotte, mazaffar@uncc.edu*

Susan J. Winter
*Portland State University, sjwinter@pdx.edu*

Follow this and additional works at: [http://aisel.aisnet.org/icis2008](http://aisel.aisnet.org/icis2008)

**Recommended Citation**
[http://aisel.aisnet.org/icis2008/69](http://aisel.aisnet.org/icis2008/69)

This material is brought to you by the International Conference on Information Systems (ICIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ICIS 2008 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
MINDING THE IS SOFT SKILLS GAP: EVIDENCE OF DISCOURSE CONVERGENCE AND ORGANIZATIONAL FIELD STRUCTURE

Prêter attention au différentiel de savoir-être en SI : éléments sur la convergence de discours et sur la structure du champ organisationnel

Completed Research Paper

Muhammad Adeel Zaffar
University of North Carolina at Charlotte
9201 University City Blvd, Charlotte NC, 28223, USA
mazaffar@uncc.edu

Susan J. Winter
Portland State University
615 SW Harrison St.
Portland, OR 97201
sjwinter@pdx.edu

Abstract

IS continually struggles with the ‘gap’ between academic preparation and industry needs. To close this gap, we need to better understand its causes. Recent IS research suggests that gaps may arise when issues receive attention in only practitioner or academic discourses. Institutionalism suggests that gaps can be attributed to the structure of the organizational field. We conduct two studies to investigate these rival explanations. In Study 1 we analyze the practitioner and academic discourses on the need for soft skills in IS. In Study 2 we identify important actors in the IS field and the degree to which they are tightly coupled as evidenced by linkages in their discourses. We then present a process model of the identification, development and assessment of requisite IS skills. We conclude that convergence between academic and practitioner discourses alone cannot close the gap between preparation and industry needs in a loosely coupled organizational field.

Keywords: IS skills, soft skills, process-based model, institutions
Résumé

La recherche en SI a continuellement identifié un écart entre les avancées académiques et les attentes des acteurs de terrain dans le domaine des savoir-être. Dans ce papier, nous explorons deux explications rivales à ce fossé : (a) est-ce un désaccord entre les discours universitaires et praticiens sur l’importance des savoir-être qui est à l’origine de ce fossé ? ou (b) est-ce que les SI sont un champ organisationnel faiblement couplé qui empêche les universitaires de répondre aux requêtes des acteurs de terrain ?

Introduction

Responsiveness to the needs of employers is a particularly important issue for applied professional programs such as Accounting, Engineering and IS because they emphasize the preparation of graduates for employment in a specific area (Nellen, 2003; O’Neil et al., 1999; Tan and Veal, 2005). IS programs were originally created to fill a need for workers with a mix of soft and technical skills. Since then, the IS literature has repeatedly identified gaps between employees’ skills and employer needs and called for them to be filled (e.g. Trauth et al., 1993). Among these gaps has been a persistent need for workers with better soft skills (such as interpersonal skills, presentation skills, contract negotiation and management). Despite the evolving nature of the IS area, our review of the literature from the past four decades reveals that this call for a greater emphasis on soft skills is not new, but industry has never been satisfied with the level of preparation IS graduates have in this area (Israel, 1990; Ives, 1981; Ives and Rubin, 1993; Jenkins and Johnson, 1977; Leitheiser, 1992; Miller and Luse, 2004). Recent growth in the outsourcing of technical work has been associated with renewed calls for a greater emphasis on soft skills for IS professionals for contract negotiation and management (Ferguson 2004; Ferguson, 2005; Hirschheim et al., 2005). To close this gap, we must understand its causes. We explore possible explanations for the persistent gap between graduates’ skills preparation and industry needs. Using soft skills as an exemplar, the paper explores two alternative explanations: fragmented discourses and the institutionalized structure of the IS organizational field.

Ramiller and colleagues suggested that the ecology of research markets can explain persistent sub-optimal academic research agendas (Ramiller et al., 2008). They argued that the degree of overlap in the academic and practitioner discourses and the order in which these communities focus on issues results in a lack of mutual awareness and unresponsiveness to industry needs. To assess this potential explanation for the gap, we determine if there is convergence between academic and practitioner discourses on soft skills. In contrast, neo-institutional theory suggests that responsiveness is a function of the larger organizational field within which IS programs and IS employers are embedded, (McAdam and Scott, 2005). This potential explanation points toward identifying the components of the organizational field involved in skills development, the knowledge flows within and across these components and the degree to which they are tightly linked. Identifying knowledge flows that could link these components more tightly delineates a research agenda that could enhance IS programs’ responsiveness.

Thus, our question is whether the persistent gap between IS graduates’ preparation and industry needs is explained by divergence between academic and industry discourses or by the structure of the organizational field. Table 1 presents a summary of two studies conducted to answer this question. Study 1 reviews Ramiller et al.’s (2008) work on overlapping discourses and uses their framework to determine the degree of convergence between the academic and practitioner discourses on the need for IS graduates with soft skills. Study 2 describes the concept of fields and the literature on institutionalism and organizational change and then presents three phases of investigation. In the first phase four major components of the organizational field that are involved in the development and instantiation of IS skills are identified: theory-based recommendations, curricula recommendations, instantiated curricula and skills assessment. In the second phase, empirical evidence of the knowledge flows between these components is assessed to discover how much is known about how they interact to shape the development of skilled IS personnel. In the third phase, we propose a process model of how the components could interact and connect with each other for more responsiveness to industry needs, providing a framework for future research. We then discuss whether the IS skills gap reflects unresponsiveness to industry requirements due to fragmented discourses, or to loose coupling among components of the organizational field.
Data Source

Both studies analyzed the IS literature on soft skills published between 1970 and 2008. IS curriculum and skills related papers were located by searching four major electronic databases (JSTOR, Business Source Premier, ACM

<table>
<thead>
<tr>
<th>Study One</th>
<th>Study Two</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Purpose</strong></td>
<td>Institutionalized structure of the IS Organizational Field Explanation</td>
</tr>
<tr>
<td><strong>Research Questions</strong></td>
<td>Phase 1: What are the components of the organizational field that are involved in IS skills development?</td>
</tr>
<tr>
<td>Is there convergence between academic and practitioner discourses on soft skills?</td>
<td>Phase 2: What are the knowledge flows, within and across these components and are they tightly linked?</td>
</tr>
<tr>
<td></td>
<td>Phase 3: What knowledge flows could link these components more tightly?</td>
</tr>
<tr>
<td><strong>Theoretical Foundation</strong></td>
<td><strong>Theoretical Foundation</strong></td>
</tr>
<tr>
<td>Discourse analysis</td>
<td>Neo-institutional theory</td>
</tr>
<tr>
<td><strong>Data: Source is Published IS Literature</strong></td>
<td><strong>Data: Source is Published IS Literature</strong></td>
</tr>
<tr>
<td>Focus is academic or industry</td>
<td>Phase 1: Themes related to development of soft skills</td>
</tr>
<tr>
<td>Stated relative importance of soft skills, technical skills and other skills</td>
<td>Phase 2: a) Stated hypotheses tested</td>
</tr>
<tr>
<td></td>
<td>b) Authorship of articles</td>
</tr>
<tr>
<td></td>
<td>c) Reference lists of articles</td>
</tr>
<tr>
<td></td>
<td>Phase 3: Actors, temporal order and mechanisms linking components</td>
</tr>
<tr>
<td><strong>Analysis</strong></td>
<td><strong>Analysis</strong></td>
</tr>
<tr>
<td>Comparison of importance of soft skills in industry and academic discourses</td>
<td>Phase 1: Identification of 4 components</td>
</tr>
<tr>
<td></td>
<td>Phase 2: Knowledge flows between components</td>
</tr>
<tr>
<td></td>
<td>a) Stated tests of relationships</td>
</tr>
<tr>
<td></td>
<td>b) Overlapping authorship between articles in each component</td>
</tr>
<tr>
<td></td>
<td>c) Overlapping reference lists between articles in each component</td>
</tr>
<tr>
<td></td>
<td>Phase 3: Potential knowledge flows between components</td>
</tr>
<tr>
<td></td>
<td>a) Temporal order of components</td>
</tr>
<tr>
<td></td>
<td>b) Causal mechanisms linking components</td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td><strong>Results</strong></td>
</tr>
<tr>
<td>There is shared understanding among academics and practitioners about the importance of soft skills. The discourses fall in the Ecotone of Ramiller et al’s framework.</td>
<td>Phase 1: Components involved in IS skills development</td>
</tr>
<tr>
<td></td>
<td>a) Theory-based recommendations</td>
</tr>
<tr>
<td></td>
<td>b) Curricula recommendations</td>
</tr>
<tr>
<td></td>
<td>c) Instantiated curricula</td>
</tr>
<tr>
<td></td>
<td>d) Skills assessment</td>
</tr>
<tr>
<td></td>
<td>Phase 2: Little overlap in authorship or reference lists: loosely coupled institutional field inhibits responsiveness to industry needs</td>
</tr>
<tr>
<td></td>
<td>Phase 3: Increased knowledge flows and better linking</td>
</tr>
</tbody>
</table>
Digital Library Core Package and MetaPress) using various combinations of relevant keywords (requisite IS skills, soft skills, technical skills, curricula recommendations etc.). Articles whose content was not relevant to requisite IS skills were excluded. Relevance was decided based on the following criteria:

- discussed fully or in part the topic of requisite IS skills either from the perspective of industry or academia. This included everything from surveys of employees, practitioners, or academics on required skills to a commentary on the state of the current or predicted skill set for IS workers.
- main objective was to discuss IS skills. We excluded those that only noted how IS skills could be affected by the research study in the conclusions section while presenting ‘implications for practitioners’.
- was the ‘final’ version of a series of reports on a particular issue. Often, when curriculum guidelines were developed by a group of researchers on behalf of AIS or an accreditation board, the preliminary findings or results of these committees would appear in conferences throughout the development process. We included only the final report (published in a journal) of the formal set of guidelines proposed by that committee. The authorship of the interim and final publications was matched to ensure that duplicate efforts were removed from the analysis.

Reference lists from these papers were scrutinized to identify additional sources (see the extended reference list for the 73 papers).

**Study 1 – Convergence of Practitioner and Academic Discourses on Soft Skills**

**Theoretical Foundation**

This study determines whether there is divergence between academic and practitioner discourses on soft skills that can explain the soft skills gap in the IS field. Ramiller et al. (2008) proposed an ecology of research directions in IS and presented a framework that showed three distinct streams of discourses created as a result of interactions between academics and industry. Topics in academic discourses that are not shared by practitioner discourses are considered “esoteric” and topics in practitioner discourses that are not discussed in academic research are considered “excluded”. In these cases, the academic and industry discourses are fragmented and an issue may be recognized and seen as important only by one group and not the other. Under such conditions, the response to industry needs would be inadequate. However, some topics receive attention in both academic and practitioner outlets. These fall into what is referred to as the “Ecotone or zone of mutual discursive interaction”. Such research can converge allowing for both groups to recognize and accept the urgency of the issue and develop a satisfactory response.

**Data**

To determine the extent to which the academic and practitioner discourses on soft skills have converged and hybridized Ramiller et al., (2008) argue that “the degree of cross-referencing (or borrowing) of themes, ideas, and language across the corresponding ‘literatures’” be measured. Of the 73 IS skills papers identified, only 66 assessed the importance of various sets of skills and were retained for this analysis.

**Analysis**

Our objective was not to duplicate previous taxonomies of requisite skills, but to assess the two discourses to identify whether soft skills and technical skills were treated similarly by both. Through thematic analysis, the papers were categorized on the basis of skills discussed and whether the paper had an industry or academic focus. Papers that conducted empirical studies with managers or that were authored by business professionals were placed under the ‘Industry’ category and made up the industry discourse; otherwise, the paper was placed in the ‘Academic’
category and formed the academic discourse. Papers that involved both academicians and practitioners were grouped in the ‘Academic and Industry’ group and represent overlapping academic and practitioner discourses (see Table 2). Three categories of skills were discussed: soft skills including (oral and written) communication, interpersonal skills, teamwork, management; technical skills including hardware/software, design and development, systems analysis; and other skills including business ethics, organizational knowledge, business functional knowledge, which were outside the scope of the current analysis and are omitted.

**Results**

All papers showed similarity in their terminology and themes, suggesting that the discourses have hybridized. Only 9 of the 66 papers (14%) concluded that technical skills were the most important, and eight of these were at least 13 years old, representing an older stream of the discourse on skills. In contrast, almost 86% concluded that soft skills were at least as important as technical skills, if not more so. Although 61% of these 57 papers were categorized as solely representing industry, about 39% were either academic or included both academic and industry perspectives.

Thus, research on soft skills falls within the ecotone of discourse shared among academics and practitioners (Ramiller et al., 2008). However, the calls for more emphasis on soft skills continue. It appears that shared discourse is a necessary, but not sufficient condition for responsiveness to the needs of industry. An alternative explanation of this persisting gap lies in an understanding of the institutional structure of the IS organizational field.

With this in mind, Study 2 explores the concept of an organizational field and responsiveness to change.

**Study 2 – Institutionalization and the Organizational Field**

**Theoretical Foundation**

New Institutional Theory focuses on the field as an important unit of analysis in its role as the central arena of organizational action. A field is a system of related organizations who consider each other as they carry out their actions and may include suppliers, customers/consumers, regulatory agencies and potential competitors (DiMaggio and Powell, 1983; McAdam and Scott, 2005). Scott emphasizes organizational fields as communities of frequently interacting organizations that share a common meaning system and affect one another (Scott 1994). Furthermore, Scott states that one example of an organizational field could be an educational system ‘comprising of a set of schools’ and ‘related organizations’ (Scott, 2001). Hence we refer to the universities with IS programs, organizations hiring IS workers, publishers of IS texts and accreditation boards or affiliation groups generating and disseminating guidelines for IS programs as the IS organizational field (henceforth, the IS field).

Some researchers have argued that understanding organizational change requires a field-level approach (Davis and Marquis, 2005). According to DiMaggio and Powell ‘the virtue of this unit of analysis is that it directs our attention … to the totality of relevant actors (DiMaggio and Powell, 1983: p. 64-65). The actors involved in the IS field and their roles are: a) Academicians and researchers: these include teaching faculty, IS researchers, and developers of pedagogical material (i.e. curricula guidelines, university curricula, textbooks, etc.). They interact with each other through workshops, conferences, research publications and joint research ventures; b) Practitioners: they assess their hiring needs and form opinions about the distribution of desired skills among potential employees during the hiring process and about current employees. They know their firms’ employment needs and the skill mix of their IS workers. Practitioners also provide feedback to University boards and are often included in studies regarding the needs of the industry; c) Accreditation boards and professional affiliation groups: these can be composed of a combination of these actors and evaluate and provide educational guidelines for IS workers.

Organizational fields influence and constrain organizations just as cultures influence and constrain individuals by providing a set of norms and meanings (Davis and Marquis, 2005). Furthermore, just like some cultures may be more adaptive, fields may be loosely or tightly structured and provide more or less freedom within their framework. It is easier to make changes more consistently and efficiently in tightly coupled fields in which the most influential actors and their responsibilities are known. Thus, although prone to inertia, once motivated, highly institutionalized fields are able to create a faster and more coordinated response to the demands of influential actors.

This brings us to the question of the structure and degree of institutionalization of the IS field. DiMaggio and Powell state that ‘the structure of an organizational field cannot be determined a priori but must be defined on the basis of
empirical investigation’ (DiMaggio and Powell, 1991) so we performed such an investigation. In the next section we explore the structure of the IS field in more detail through empirical investigation. We build a process model based on the way soft skills have been identified, instantiated and evaluated over the past four decades and present that as a reflection of the institutionalized process in the IS field. This description is followed by our understanding of how the process would play out for the identification, instantiation and evaluation of IS skills in a tightly coupled institutionalized field.

<table>
<thead>
<tr>
<th>Focus</th>
<th>Soft most important</th>
<th>Soft &amp; technical equal</th>
<th>Technical most important</th>
</tr>
</thead>
</table>

**Phase 1 - The Components Involved in Developing IS Skills**

**Research Question and Data**

The research question addressed in phase 1 is, What are the components involved in the skills development at the level of the organizational field? A total of 72 out of 73 papers previously identified in the Data Source section were used. One of the papers (Litecky et al, 2004) was excluded from this phase since it developed a model for using both technical and soft skills in the IS hiring process and could not be categorized into one of the 4 components.

**Analysis**

Relevant papers were reviewed for similarities in thematic coherence, methodology, and conclusions. Each author read the papers and did a preliminary identification of themes. Alternative categorization schemes were considered for their explanatory value. The authors then compared categorization schemes, identifying the contributions to understanding made by each.
Results

The analysis revealed that researchers have favored a more descriptive research methodology which was used primarily to identify required skills based on the theoretical bases or feedback from practitioners and academicians. Generally, they concluded that in the future more emphasis would be placed on 1) soft skills such as interpersonal/management skills, 2) technology management knowledge and 3) ‘other skills’ such as business functional knowledge. There was also broad agreement that IS jobs in industrialized countries would require less technical knowledge (Lee et al., 1995).

Ultimately, four explanatory themes were identified: theory-based recommendations, curricula recommendations, instantiated curricula, and skills assessment. A later perusal of curricula development and instantiation studies in other areas found similar categories in use, providing evidence of external validity for our categorization. For example, literature on medical education redesign discusses the need for theory-based curriculum development in surgical residency and health education (DaRosa and Bell, 2004; Nagy, 2002).

Theory-based recommendations – Papers categorized here were those that recommended inclusion of sets of skills based on a high level analysis of the nature of the job and its requirements. For example, Jenkins and Johnson (1977) argued that since communication skills are important for information analysts, communication theory should be used to elucidate the nature of these skills. Based on communication theory, then, this skill set would include the ability to exchange and elicit information from the end user using verbal and nonverbal means such as body language and should include a well-developed understanding of other contextual factors.

Curricula recommendations – papers within this category were mostly formal guidelines containing skills recommended by recognized research committees and accreditation boards (see, for example, Gorgone et al., 2006). The curriculum guidelines were presented with the aim of imparting skills, knowledge and values to IS workers such as core IS management and technology knowledge, communication, interpersonal and team skills etc. For example, the IS 2002 guidelines for undergraduate IS curriculum state that the graduate’s skill set should draw from the following broad areas of knowledge: business fundamentals; interpersonal, communication and team skills; technology; analytical and critical thinking (Gorgone et al., 2006). Guidelines then identified a pool of potential sets of course content that could be included in a program, and discussed how each of these courses could help in developing the required set of skills. Usually, guidelines were provided for the core areas within the field and for subsets of courses with varying emphases.

Instantiated curricula – papers within this category look at the set of skills actually imparted by IS schools and colleges. For example, Gupta and Seeborg (1989) conducted a survey of AACSB schools and colleges of business to find out about the content of and differences between their undergraduate and graduate MIS programs. Additional studies could investigate the nature of the teaching materials widely available from publishers in the form of textbooks and other sources.

Skills assessment – papers within this component were evaluations of the effectiveness of the skills held by potential or current IS employees as compared with the current requirements of the industry. For example, Lee et al., (1995) surveyed a group of IS managers, user managers and IS consultants about the skills and knowledge requirements of IS professionals. Some papers also investigated the anticipated future skills required. Most made a distinction between technical and non-technical skills, and called for more of the latter.

Table 3 shows the relevant papers and the categories to which they belong, based on our analysis of the literature. The earliest paper was published in 1972 and provided curricula recommendations for the nascent MIS field (Ashenhurst, 1972). The first skills assessment paper was published the following year (Couger, 1973). The majority of papers (55 of 72) were either assessing IS skills or providing theory-based recommendations, with approximately twice the number of papers in the former than in the latter category. Only 6 studies looked at instantiated curricula.

Table 3 also documents a decade-wise timeline of the papers to see how attention to these various categories has changed over time. Theoretical aspects of the IS worker’s job has received attention in every decade with 2, 8, 4, and 5 papers appearing in the 70s, 80s, 90s and 00s respectively. Most of the research on theory-based recommendations was clustered in the 1980s, but there may be a resurgence of interest this decade if the current trend continues. Curricula based recommendations have appeared consistently throughout these decades. It is
important to note that curricular recommendations do not appear only once every 10 years. As new guidelines are being developed intermediate reports are presented in various conferences and workshops. However, to avoid duplication, we included only final reports published in major conferences or journals. In the case of skills assessment studies, it appears that interest has grown throughout the 1990s and the beginning of this decade. Surprisingly, across the entire timeline, very few publications examined what skills the Business schools and colleges have actually been imparting to IS graduates.

It is worthwhile to note that skill sets have sometimes been talked about in the context of different jobs within IS (Cheney and Lyons, 1980; Henry et al, 1973) as well as in a general context of the IS function (Ferguson, 2004; Ferguson, 2005). However, it was observed in these papers that the call for soft skills persisted whether the jobs under discussion were those of junior/senior level programmers, systems analysts or IS managers.

Phase 2 – Knowledge Flows Among Categories

Research Question and Data

The research questions addressed in phase 2 are, “What are the knowledge flows within and across the components of the IS field that are involved in the development of IS skills?” and “Are components tightly linked?” Answering these questions shows how the process of IS skills development actually works in the IS field, which enhances our ability to systematically manage the mix between technical and soft skills among IS graduates. As in phase one, 72 papers were used in this phase.

Analysis

The discourse on IS skills development was scrutinized for evidence of a flow of knowledge between the components. Such evidence was broadly and variously defined. The most stringent evidence would be the existence of articles that explicitly tested relationships among the categories. Less direct evidence would be overlapping authorship between articles in various categories. The most indirect evidence that the discourse in each of these components was informed by one another would be overlapping reference lists.

The articles were read and coded for evidence that a) they specifically tested the relationships among these categories b) there was overlapping authorship between articles in various categories c) articles in one category listed articles in another category in their references.

Results

The discourse predominantly contains articles that describe the state of each of the 4 components. There were no empirical studies that tested the relationships between one category and another.

A second possible indication of a flow of knowledge between components would be articles that address different issues but share authors. The 72 publications were authored by 140 unique authors.

As shown in Figure 1, of the 72 publications 36 focused on skills assessment, 19 on theory-based recommendations, 11 on curricula recommendations, and 6 on instantiated curricula. Only 17 were authored by contributors that wrote in different categories; 9 papers had joint authors that published in the ‘Skills Assessment’ and ‘Theory-based Recommendations’ categories; 7 papers had joint authors that published in ‘Theory-based Recommendations’ and ‘Curricula Recommendations’; 4 papers had joint authors that published in ‘Instantiated Curricula’ and ‘Skills Assessment’. None of the authors contributed to literature belonging to more than two components. Furthermore, of the 140 authors, only 6 contributed to these joint publications which suggests very limited knowledge flows within and across the different components.

A third indication that papers in one discourse category were informed by those in another would be papers that shared references. As shown in Table 4, it appears that most of the papers in one category have not referenced work in another area; although the authors may be aware of it.

Reading from left to right, in the first cell, Vitalari (1985) and Willcocks and Feeny (2006) are theory-based recommendation papers that have each referenced one or more other theory-based recommendation papers.
Similarly, Benbasat et al. (1980) is a theory-based recommendation paper which has referenced one or more papers in the curricula recommendations category (hence it appears underneath the curricula recommendations column in the first row) and papers in the skills assessment category (hence it appears again underneath the skills assessment column in the first row). The letters in bold are the Figure 2 arrow labels showing these results graphically.

Although it appears that there is little influence across categories, it is important to note that authors may have been influenced by work that did not appear in their reference lists.
<table>
<thead>
<tr>
<th>Year</th>
<th>Theory-based recommendations</th>
<th>Curricula recommendations</th>
<th>Instantiated Curricula</th>
<th>Skills Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>19</td>
<td>11</td>
<td>6</td>
<td>36</td>
</tr>
</tbody>
</table>
Figure 1. Number of authors and number of papers published in more than one component of the IS field

Figure 2 shows linkages among references and components in published research (line thickness is proportional to the number of papers sharing references). The directional arrows in Figure 2 indicate a connection between two components based on a paper in one discourse category referencing a paper in another discourse category. The number on each arrow indicates how many papers in the target component (if an arrow is pointing towards it) referenced papers from the source component (if an arrow is coming out of it). For example, the link D indicates that 6 papers from the ‘Theory-based Recommendations’ discourse component referenced papers from the ‘Skills Assessment’ discourse component.

As shown in the bottom row of Table 4 and in Figure 2, most (30) of the skills assessment studies reference studies in other areas including the theoretical aspects of the job (10 papers), curricula recommendations (17 papers) and instantiated curricula (3 papers). This makes intuitive sense as the field tries to match curriculum offerings with industry needs and since journals are more likely to publish papers with a theoretical dimension. Similarly, link J is indicative of instantiated curricula being based on curricula recommendations. Also, link D indicates that theory based recommendations develop over time as IS jobs evolve and IS skills are assessed. Most of the papers reviewed in the first two phases identified gaps between industry and academia’s expectations regarding the need for better soft skills among graduates and provided various guidelines for reducing these gaps. These contributions are important because they reflect an appreciation by both academics and practitioners of the existence of a major problem suggesting that this issue falls within the ecotone. However, they do not appear to have allowed us to successfully solve this problem and the call for more soft skills continues unabated.

Figure 2: Number of shared references (line thickness is proportional to the number of papers sharing references)
<table>
<thead>
<tr>
<th>Theory-based recommendations (TBR)</th>
<th>Curricula recommendations (CR)</th>
<th>Instantiated Curricula (IC)</th>
<th>Skills Assessment (SA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (3 papers)</td>
<td>B (7 papers)</td>
<td>C (1 paper)</td>
<td>D(6 papers)</td>
</tr>
<tr>
<td>Curricula recommendations</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E (0 papers)</td>
<td>F (9 papers)</td>
<td>G (3 papers)</td>
<td>H (2 papers)</td>
</tr>
<tr>
<td>Instantiated Curricula</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I (1 paper)</td>
<td>J (3 papers)</td>
<td>K (1 paper)</td>
<td>L (1 paper)</td>
</tr>
<tr>
<td>Skills Assessment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M(10 papers)</td>
<td>N (17 papers)</td>
<td>O (3 papers)</td>
<td>P (20 papers)</td>
</tr>
</tbody>
</table>
In the next phase of Study 2 we consider whether the IS field could benefit from including new approaches to investigating and addressing the gap between the expectations of industry and the skills imparted in academia based on an understanding of institutionalized fields.

**Phase 3 – Developing a Process-Based Model**

**Research Question**

Phase 3 addresses the question, “What knowledge flows could link these components more tightly?”

**Data and Analysis**

It is a commonly held understanding that ‘good theory must guide practice’ and conversely good practice must be based on theory (Da Rosa and Bell 2004). This view suggests that the linkages between components are particularly valuable in ensuring the accuracy and relevance of each. It also implies that theory must guide the curricular recommendations and the instantiated programs that produce the workforce which will put that theory into practice. However, research suggests that this temporal order of interaction between curricula development and instantiation is often ignored in many areas (Nagy, 2002), and IS may be no exception. When curricular materials are examined from a theoretical framework, experts are frequently consulted after the fact to identify the theoretical rationale that justifies the curricular approach (Lorig and Gonzalez, 1992), rather than before the materials are developed. Therefore, in this phase we proposed how the process of skills development could work more efficiently and effectively to bridge the gap between academic preparation and industry expectations.

Process models are concerned with highlighting the major actors and agents that affect possible outcomes at different times and identifying the sequence of necessary conditions for an outcome (Mohr, 1982; Markus and Robey, 1988; Newman and Robey, 1992). They investigate possible precursors and show how they could lead to a desirable outcome. They can also be used to provide a broad overview of a phenomenon and reveal why or how a phenomenon takes place (Orlikowski, 1993).

Given this understanding, process models are inherently more suited to the investigation of the IS pedagogical field to identify who can intervene, and how, in creating a better prepared IS worker. Further, the non-IS literature on curriculum design, delivery and assessment suggests a temporal order as the defining logic for a process model of IS skills development.

Sensitized to issues of temporal order and linkages among components, we considered whether a more holistic and complete theoretical view of institutional change would provide better guidance in putting theory into practice. We developed a process-based theoretical model of the relationships among the components involved in the development and instantiation of skills in the IS field. The following subsections provide a brief review of the literature on process-based models followed by a description of our process model of skills development in the IS institutional field.

**Results**

Curricula recommendations should rest on theoretical bases and provide the roots for the instantiated curricula to which the skilled workforce in the field would be exposed. Skills assessment can, in turn, inform theory development. However, the results of phase 2 indicated that such a temporal order in the development and instantiation of skills through curricula is not visible from the published discourse. Therefore, we believe that a process model of IS curricular development and delivery can 1) lead to a better understanding of our past and 2) help us identify fruitful avenues for improving our pedagogical development and delivery processes to help close the gap between academic preparation and industry needs. We propose a process model that highlights how the different components of the IS field could be connected to each other. However, this model will require further empirical testing for validation.

As we discussed earlier, there are three partially overlapping sets of major actors in the IS field. Academicians and researchers develop curricula guidelines, design and deliver instantiated curricula in educational institutions. Practitioners assess their hiring needs and form opinions about the distribution of desired skills among potential employees and current employees. Accreditation boards and research committees are made up of academicians and...
practitioners and evaluate and provide guidelines for developing the IS workers. Figure 3 shows our proposed model. Where possible, the same arrow labels have been used in Figure 3 that were used in Figure 2.

Moving counterclockwise and starting on the left side, our process model shows linkages between all of the four categories that could be studied. Theory can help enumerate the various dimensions of the skills required of IS workers and can be used to create theory-based curriculum recommendations (link Q). For example, communication theory could be used to identify important categories or dimensions of communication skills. These could be combined with pedagogical theory and research on the development of communication skills. Doing so would improve the probability that the ensuing curricula recommendations for developing communication skills in IS programs are a more accurate reflection of the theory based recommendations.

These recommendations then can be used in the creation of pedagogical materials to create and deliver courses that represent the curricula recommendations and reflect the theory-based recommendations (link J). To the extent that students learn the material included in each course, they should be developing the desired skills, a fact that should become evident in skills assessment (link O). Skill assessment could in turn have an impact on our current understanding of the nature of the job or field of IS (link D) and inform theory.

We have included arrows showing feedback between these categories. For example Skills Assessment could be informed by the current curriculum guidelines, relevant theory, and the instantiated curriculum (links M, N and O). Given a natural time lag between incorporating skills assessment into curricula recommendations (link H), some universities or colleges in consultation with their Advisory Boards may also decide to directly incorporate practitioner recommendations into their instantiated curricula (link L).

![Figure 3. Proposed process model for development and instantiation of IS skills](image)

Link G would indicate that the experiences of faculty with their respective institutions and industry could also cause changes in the instantiated curricula. Link B would indicate that the cooperation and consultation amongst academicians and practitioners in the process of developing the curricula guidelines may result in a modification of the theoretical bases of the IS workers’ job. Furthermore, it can be expected that experienced academicians associated with curricula development at educational institutions (instantiated curricula) may also develop a different understanding of the nature of the job of the IS worker based on changes in industry requirements (link C). This would represent a direct change in the ongoing evolution of the skill set from the practitioner’s perspective. It can be argued that changes in the theoretical bases of the IS workers skill sets can be directly incorporated in the instantiated curricula. This would be depicted in the shape of an arrow going from theory-based recommendations to instantiated curricula. However, research on curriculum design suggests a more intuitive path where the theoretical bases are incorporated into guidelines and then incorporated in formal IS programs. If however, there are such
dynamic changes in the requirements that they are immediately incorporated into the programs by academicians then they would have a direct impact on subsequent curricula recommendations. Although actors can skip some of the steps in our model, this might lead to less well-prepared IS workers.

Conclusion

The skills assessment discourse in IS has repeatedly identified the need for more soft skills among IS workers and despite being specified in the curricula recommendations, we have not seen a widespread integration of soft skills into instantiated curricula and the development of a cadre of IS workers with adequate soft skills. Consequently, we continue to see recurring calls for more soft skills. Although a relatively small subset of academics and practitioners work together to develop curriculum guidelines and to assess the needs of industry, the published IS literature does not provide evidence that the tightly linked and fully integrated model presented here is a reflection of current practice in our field. In contrast, other professional degrees such as accounting seem to have a more tightly integrated institutional field that enables faster and more efficient conformity to changing industry needs. This suggests that the IS field lacks mechanisms for integration among the different components. Integration mechanisms could include such options as high quality publication outlets for research on linkages among the components, a widely accepted exam to test skill mastery for licensure, or formal of pedagogical materials for consistency with curriculum guidelines, etc.

Limitations

There are two primary limitations of this research. First, our main source of information on the IS pedagogical process in this case was the discourse in academic journals and conference proceedings. We did not analyze the content of IS textbooks, nor did we interview practitioners and academicians which in some ways limits our data and hence our results. However, we did interview sales representatives and IS editors from well-respected publishers regarding the processes used to choose textbook content. They indicated that authors rarely attend to IS curriculum guidelines provided by professional groups and are instead driven by faculty expectations regarding topic coverage. Furthermore, prospective new textbooks are not evaluated for their conformance to curriculum guidelines. The usual quality control process is for IS professors to evaluate them using their own criteria. Future research should investigate the roles of publishers and authors of pedagogical materials (whether they be academicians or practitioners) in the instantiation and development of skills in the IS field.

Second, we used the reference lists as the primary tool and the content as the supporting tool to establish linkages between publications in the various discourse components. However, we must concede that oftentimes authors assume the theoretical bases in their work and do not feel compelled to state their sources. Therefore, it is likely that reference lists of curricular guidelines do not explicitly refer to the theoretical foundations of the field and that book authors do not feel compelled to draw explicit connections between the contents of their books and curricular guidelines. Perhaps, a more formal content analysis similar in depth to grounded-theory-based research or a quantitative cluster analysis would provide additional insights.

Discussion

The call for more soft skills has been consistent and widespread from the inception of the IS field (Cheney and Lyons, 1980; Henry et al, 1973). It has grown due to the recent increases in outsourcing and offshoring. Our research suggests that the need for soft skills falls within the ‘Ecotone’ identified by Ramiller et al. (2008) in that it is a research topic that attracts interest from both academics and practitioners. These discourses have converged and hybridized, sharing common themes, ideas and language. However, continued call for more emphasis on soft skills among IS graduates suggest that convergence of academic and practitioner discourses may be necessary, but is not sufficient to ensure responsiveness to industry concerns.

We presented evidence that the IS institutional field is loosely coupled with little cross-referencing between the four components involved in the process of sensing and responding to the needs of industry. In addition, we have presented a framework for future research on the linkages between these components. A more coherent process would enable theory development to benefit from the evolving nature of the field as indicated by industry needs. Theory development could then exert a more direct influence on the development of curricular guidelines which, in
turn could better support the academics who create and deliver programs that produce IS professionals with the skill sets required by industry.

Finally, it is worthwhile to mention an important perspective discussed in the recent literature on institutionalism in education: “studies suggest that the subject is a key variable in understanding the extent to which instruction is loosely or tightly coupled with the wider institutional environment” (Spillane and Burch, 2006: p. 93). This means that perhaps in other subject matters, such as technical skills, the IS field may exhibit a different degree of coupling within and across the components of our process model. Future research could look into this direction.

**Implications**

These results have important implications for theory. We have shown that the concept of an ‘ecotone’ of convergence (Ramiller et al., 2008) in academic and practitioner discourses is useful in better understanding the identification of important issues in the IS field. However, development and implementation of solutions to these important issues appears to require more than just convergence of the two discourses. Despite a shared understanding amongst both academics and practitioners that IS workers need better soft skills, the gap between preparation and industry needs persists. Apparently, academia has not been able to respond in a timely manner to the needs of the industry.

New institutional theory suggests that this lack of responsiveness stems from the fact that IS is a loosely coupled institutional field with few mechanisms in place to enforce integration among its components. Our results have extended institutional theory to the IS field and shown its value in understanding the causes of the persistent gap between IS workforce preparation and industry needs. Future research should consider comparative studies of institutional fields that are more responsive to the needs of their industries to identify possible avenues to improve the integration among components in the IS field, their advantages and disadvantages. Tight coupling among system components can have negative effects (Perrow, 1984), and any attempts to improve the integration of the IS field should carefully consider the trade-offs involved.

These results also have important implications for practice. The current structure of the IS field limits responsiveness to industry needs. When these needs are ephemeral or illusory, this stability may actually be advantageous because it puts limits on the extent to which instantiated curricula can be hijacked by temporary fads and fashions and wind up creating workers who will be obsolete as soon as those fashions change. Employers need to give thoughtful consideration to targeting stable skills that will enable IS workers to adapt to the changing demands of the industry. Then they must work with academia to determine which of those skills are best developed in formal educational settings and which are best developed on the job.

Given the diversity of employment opportunities in IS, a diversity of programs developing graduates with a variety of skill mixes may be beneficial for industry as a whole, though some particular needs may not be met by academic training. However, if unresponsiveness is a serious issue threatening the legitimacy of IS programs, then the practitioner and academic communities need to consider various mechanisms for sensing and responding to relatively stable shifts in industry needs. Some possibilities might include providing an independent assessment of the degree to which pedagogical materials conform to various curriculum guidelines or providing assistance in setting up strategic boards for IS programs.

In addition to integrative mechanisms we need to develop a better understanding of each of the four components in our process model. For example, as summarized in Table 3, we have relatively little information about what is actually taught in undergraduate and graduate IS programs. Such an investigation would allow us to better understand how we enact the curricular guidelines and feedback from practitioners to educate IS workers and would reveal possible impediments to implementing existing curricula guidelines.

Striking the appropriate balance between flexibility and diversity on the one hand and consistency and control on the other is neither easy nor simple. Responding to the needs of industry for IS workers with the proper mix of skills presents the IS field as a whole just such a challenge. Locating the issue within the ecotone of academic and practitioner discourses and beginning to develop an understanding of the structure of the institutional field represent two early steps in meeting this challenge.
References

AACSB Accreditation Coordinating Committee and AACSB International Accreditation Committee “Deploying Academically Qualified Faculty: An Interpretation of AACSB Standards”, An AACSB White Paper, November, 2006.


Mohr, L. B. Explaining Organizational Behavior, San-Francisco: Jossey-Bass, USA, 1982


Extended Reference List: Publications Included in the Analyses


Chrysler E. and Auken S. V. "Entry level value versus career value of MIS courses: Faculty expectations versus alumni perceptions", *Journal of Computer Information Systems*, Spring 2002, pp. 38-43


Couger, D. J. “Preparing IS Students to deal with Ethical Issues”, *MIS Quarterly*, (13:2), June 1989, pp. 211-218


Green, G. I. “Perceived Importance of Systems Analysts’ Job Skills, Roles and Non-Salary Incentives” MIS Quarterly, June 1989, pp. 115-133


Henry, R. M., Dickson, G. W. and James, L. S. “Human Resources for MIS: A Report of Research”, Minneapolis, Minnesota, Management Information Systems Research Center, Graduate School of Business Administration, University of Minnesota, 1973


Israel, B. “Hiring Systems Analysts for the 1990s” Information Executives, (3:1), 1990, pp. 35-36


Ives, B. and Rubin, R. “Editor's Comments: Educating Tomorrow's Business Leaders About Information and Information Technology”, MIS Quarterly, (17:3), December 1993, pp. li-liiv

Jenkins, M. D. and Johnson, R. D. “What the Information Analyst should know about Body Language”, MIS Quarterly, (1:3), September 1977, pp. 33-47


McGee M. K. "Skills that will matter", InformationWeek, 02.01.2006

McGee M. K. "Want to keep your job safe? Beef up your soft skills", InformationWeek, 21.07.2007

McLeod, R. J. “The Undergraduate MIS Course in the AACSB Schools” Journal of Management Information Systems, (1:2), Fall 1985, pp. 73-85


Weber J. E., McIntyre V. J. and Schmidt M. "Explaining IS student and IS industry differences in perceptions of skills importance", Journal of Computer Information Systems, 41(4), Summer 2001, pp. 79-83


