IS/IT Education vs. Business Education: The Plight of Social Collapse in Technical Business Environments

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Abstract

In an age when information, management and technology are supposed to be hand-in-hand, there is often a rift between these elements when considering people and comportment. The detachment is caused by a distressing lack of understanding between Information Systems (IS)/Information Technology (IT) students and professionals and those they interact with in the business world. Eventually, this deficiency manifests itself in various ways including a collapse in communication and interaction. This paper is a discussion and sample case of a major oversight in curricula, of preparing students socially for immersion in technical business environments. The omission of cultural literacy on both sides of the equation, in IS/IT programs and in business and management programs (be they technically focused or not), is argued as the underlying cause of many problems in information professions and a source of management contention.

Keywords: technical business environments, technology culture, cultural literacy, social skills, information programs, curricula, success

1. INTRODUCTION

In the information age there is a realization people must come to: if you work, you will interact with technology and the people responsible for it. Information technologies permeate all hierarchical levels of organizations and therefore involvement is expected from a wide range of workers and groups (Mraovic, 2003). Business managers will be involved in the implementation of information systems (IS). Information technology (IT) managers and their staff will be meeting with managers and end-users when systems are analyzed and designed. With this guaranteed social interaction ahead for students in information and business programs, suitable preparation should be a principle educational concern.

It is the responsibility of any educational institution to properly prepare their students for the environments they will eventually inhabit. In IS and IT education the majority of time is spent on technical detail, while in business education it is most spent on business fundamentals. Though this is to be expected, there is a weakness on both sides, of social preparation for the information arena. The result is that the players involved in projects and on teams neither appreciate nor understand the social frameworks and culture of these environments and how to behave within their borders. Additionally, business and technology managers often struggle to appropriately communicate with their staff and coworkers. With relationships and interaction strained, social collapse and project failure are probable.

There is an eminent need for IS/IT and business curricula to include required core courses discussing social culture and communication in technical business environments (TBEs). This is logical considering the fact that most industries, businesses and environments are bound to IS. Workforce trends show skills related to working

with external parties are increasing in importance and that is what employers are searching for in IT professionals (Abraham, Beath, Bullen, Gallagher, Goles, Kaiser, & Simon, 2006).

The lack of supportive courses to meet this call is a deceivingly costly oversight, which is often attributed to related but non-foundational reasons in the professional realm. Ergo, without acknowledging the fundamental problems in IT departments and with IS projects, and without pinpointing their origin, they will persist indefinitely into the future. Giving students the keys and educating them on best practices of communicating and interacting in these situations and environments will go a long way in improving project success and inner/inter-departmental relations in their professions.

For the purpose of this research, a review is given of the ongoing struggle in IS/IT management. Then, a summary is given of the current trend in IS/IT and business education with respect to how much effort is being spent on social preparation. Next, results of a sampling case are presented. The methodology was to randomly sample current curricula in various information and business disciplines. Using course descriptions and content analysis, the classes were aggregated and rated according to their social preparation characteristics and prescription. The resulting data can then be applied against commonly cited symptoms of project failure and departmental problems to expose a foundational cause, which if acted upon harbors potential benefits for information systems and technology as a profession. Ultimately, this should validate the social imperative and provoke discussion of how these educational programs can be improved to include this missing core component.

2. BACKGROUND

IT department struggles and IS project failure have been some of the most talked about topics in this facet of academia for decades and with good reason. They are a persistent plight. There are conflicting views of the reliability of the Standish Group studies on project rates (Standish Group International, 1994-2009), but no matter ones' conclusions of Chaos or Bull reports, the fact is information system implementation is a tall order and complete success is rare. There are academic concentrations in Project Management, expensive software packages to help manage projects so failure is "less" likely and consulting

firms to help "improve" the rate of success. Yet, anyone who has worked in these TBEs can aver that the situation has not improved significantly, and is ironically chaotic from year to year. Additionally, one can hardly examine any tech news outlet without coming across columns on management issues related to IT, both with people and technology.

When reasons for such a plight are given, many are admittedly symptomatic and not causal (IT Cortex, n.d.). Also, opinions run rampant through firms, publications and blogs as to the causes of and remedies for the sickness of project failure and departmental problems. Be they realistic or not, there are arguments for and against every statement. A wealth of studies, discussion and reasoning later, the difficulty remains. And it will remain until the foundational constructs of these environments are unearthed and examined. The debate should not be solely one of finance, time, communication, quality control, resource planning or management. These are symptomatic layers built on a weak base.

Deeper investigation reveals the difficulty extends from departmental and managerial business relationships and behavior. This is often discussed in a broader context about social capital in organizations. Peppard (2007, p.341) described it this way:

> "The central proposition of the theory around social capital is that this network of relationships constitutes a valuable resource for the conduct of social affairs in an organization. Crucially, social capital operates outside of formal organizational structures. However, how we structure organizations can impede the development of social capital; it may encourage fragmentation rather than integration. For example, IT specialists tend to have their own language and codes of practice. Often, little trust exists between IT specialists and employees from within the business. Indeed, it has been suggested that there can be a cultural difference between employees from the IT function and those from the rest of the business (Ward & Peppard, 1996)."

Here are good questions to ask current information and business students or even experienced professionals. Have you ever come across useful information about: The types of people you'll be working with as an aspiring technology or business operative? The managerial tendencies of those above or around

you? The expectations of being an IT worker? Perceptions of team members throughout an IS implementation? Interactions between IT departments and business personnel? Communication practices in a TBE? Chances are probably not or minimal exposure, yet these disciplines are about INFORMATION.

The upshot is that students go into the workforce and collide with an unexpected force no matter their position in the chain. For example, the lower tiers may not know how to communicate effectively with those above them or achieve success in terms of business (Brockway & Hurley, 1998). Those in managerial and higher tier positions may not know how to respect, communicate with, or influence and manage technical teams and projects. These environments have developed into societies with no social compendium hence the plight deepens.

This leads closer to the base issue, which is cultural illiteracy. One side does not understand business culture and social frameworks. The other side does not understand technical culture and social frameworks. They are then expected to interact and communicate to achieve success, in spite of the fact that they do not understand the realms they are operating within and between. National Education Association (NEA, Retrieved 2010) research states that the first key to best practices of teaching and learning in education is cultural competency. The same can be argued for managing and interfacing in business. If we know or do this for the classroom's sake, why not for the department's sake or the project's sake. Motivation and attention are paramount in the educational sphere to direct students toward learning the culture and social constructs of these technical business environments, and how to behave and communicate within them.

3. THE TREND

Of the several observations that should be recounted before digging into the curricula and statistics, the first is this elementary question of literacy. Thomas and Blackwood (2009) argue that exposing non-IS majors to computer literacy courses has potential to improve students' perception of technology in business. It is also fact that most technology programs expose their students to business literacy usually by mandating or offering some fundamental business courses. If the need for this operating level literacy and training is perceived, the need for cultural and environmental literacy and training should not be ignored, though it currently is.

One way this lack of attention reveals itself is talked about as a crisis in computing, the much-discussed decline in student interest in IS/IT programs over the past decade. Though things may be turning around, some of the reasons given for the decline: "fear of becoming isolated in jobs perceived to involve little human contact, little public understanding of the broader dimensions of the computing field, doubts about the relevance of computing particularly as it is taught, lack of excitement and currency in the undergraduate curriculum", are interesting in this context (McGettrick, Cassel, Guzdial, & Roberts, 2007, p.330).

Students obviously need to be made aware that certain cultural and social skills are needed, but faculties need to ensure educational investment. Beard, Schwieger, and Surendran (2010) pointed out that many studies show this need and remarked that Management Information Systems (MIS) students may have an edge because their programs have additional business offerings in "soft skill set" areas. But even if certain programs may have an edge, they also acknowledged, "acquiring soft skills remains somewhat elusive" (Beard, et al., 2010, p.9). Also, just as needed courses remain elusive, so do fundamental concepts within the courses actually being offered. Students are requested to learn these concepts and skill sets in a small percentage of their coursework, and they are not given the context or tools with which to make application.

Students then have the difficulty of crossing into professions. Again, Beard, et al. (2010, p.5) stated that academicians from IT disciplines should be working with those from other disciplines to "ensure graduates possess not only technical skills and knowledge but also business knowledge and soft skills". The author agrees with this sentiment, but taking it one step further asks where this preparatory request is translated into curricula. In the Association for Information Systems Wiki ("Commentary," n.d.) a question was posed that asked, "What do employers (and potentially other stakeholders) want?" A Midwestern faculty member replied: "The ideal candidate is one that has it all - excellent communication, leadership, and social skills, and at the same time a geek." Again, this "soft skill set" is something that is clearly desired and sometimes requested as a primary need, expected by employers (Overby, 2006),

but in reality most effort is spent on "geek" and very little on communication, social skills and cultural literacy. This makes the exchange from student to professional increasingly difficult.

Another observation can be made based on the IS curriculum model (http://blogsandwikis.bentley.edu/iscurriculum/index.php). Whether looking at the 2002 or 2010 model, social frameworks and culture of TBEs are not included specifically, but there are some related topics within the foundational knowledge and skills section and sprinkled elsewhere. Though there is plentiful discussion of leadership and collaboration, communication and negotiation, one must ask how a person can effectively do those things without cultural understanding and social competency. Additionally, no matter the model a university may be using to build its curricula, the training for these skills is commonly distilled into generalized courses with titles such as Organizational Behavior, Management and Organizations, Project Management, Leadership Communication, Global Business Environments, Business Communication and IT Management. The trend to generalize and minimize cultural knowledge and social skills in IS/IT and business educational programs is ongoing and so are the professional consequences.

4. SAMPLE CASE

Methodology

In order to determine the amount of coursework in IS/IT and business programs geared towards cultural literacy and social preparation for TBEs, a sampling study was done. Degree curricula were sampled from 19 universities and 38 programs in Information Systems, Management Information Systems, Information Technology, Computer Information Systems, Computer Information Technology, Information Systems Management, Information Science, Technology Management and Business Administration (some including concentrations in IT), totaling just shy of 1200 courses.

Sample Profile:

- 15 public and 4 private institutions
- By region of accreditation there are 6 from the Southern region, 6 North Central, 3 Middle States, 2 Northwest, 1 West, and 1 New England
- 18 are accredited by the AACSB and 1 by the ACBSP

- Size of student enrollment and programs varied
- 25 Bachelor and 13 Masters programs
- All programs available on-campus, 4 available online

Programs were then filtered.

Criteria

1. Are there any courses listed related to social culture and communication in technology environments?

2. How many? Out of?

3. Rate each course as Generic, Inclusive, Specific or Potential using Content Analysis.

Generic - provides some general concepts applicable in a variety of situations, not technology specific.

Inclusive - either includes some related discussion of social frameworks and relational behavior in technology or has potential for inclusion of more specific topics. Typically broader based but does include some related material. Range may vary.

Specific - course is specifically about social and cultural aspects of IS/IT business environments.

Potential - open/topical course that has the potential to include such topics.

4. Are the courses given by the home department or an external department?

Considerations

This study was done with the understanding that much deeper research would be needed to get a complete framework for reference. This would include a thorough review of all the syllabi, a task that time did not permit for this particular project. However, the author would still caution that going by class description or even syllabi does not necessarily guarantee what is discussed in each particular class.

Course totals were based on courses listed as available or required by the program using information provided publicly. This did not always include the total coursework required for completion of the degree or what courses may have been available outside of the department.

General education and elective courses were not always included in the totals because they were not part of the required or listed curriculum and therefore no guarantee exists as to which exact classes are taken. They have been included

when possible and if listed in some manner with the specific degree information.

In some cases, Project and Technology Management courses were not tallied as related if their descriptions did not indicate any social or cultural inclusion but focus entirely on very broad or technical aspects of the topics. In the same respect, some Business Communications and Organizational Behavior courses were not related since based on their descriptions, the material was too unfocused.

Table 1 - Total Coursework Related

	IS/IT	Business
Related	5.0%	5.0%
& Required	3.1%	3.3%
& Elective	1.9%	1.7%
& Generic	2.9%	3.9%
& Inclusive	1.5%	0.8%
& Specific	0.1%	0.0%
& Potential	0.4%	0.4%
& Internal	3.1%	4.3%
& External	1.9%	0.8%

Table 2-Characteristics of Related Courses

	IS/IT	Business
Required	61.8%	65.4%
Elective	38.2%	34.6%
Generic	58.8%	76.9%
Inclusive	29.4%	15.4%
Specific	2.9%	0.0%
Potential	8.8%	7.7%
Internal	61.8%	84.6%
External	38.2%	15.4%

Table 3 - IS/IT Total Coursework Related

	Undergrad	Grad
Related	4.5%	7.8%
& Required	2.4%	6.8%
& Elective	2.1%	1.0%
& Generic	3.0%	2.9%
& Inclusive	1.0%	3.9%
& Specific	0.0%	1.0%
& Potential	0.5%	0.0%
& Internal	2.6%	5.8%
& External	1.9%	1.9%

In all, a delicate effort was made to list all courses that would be potentially related in any way to culture, social studies, communication or behavior in TBEs. When exact details were not

provided or unclear, the courses were given the benefit of the doubt and included.

Table 4 - Course Averages

	IS/IT	Business
Related	1.48	1.73
Out of *	30.82	34.33
Percentage	4.8%	5.0%
IS/IT	Undergrad	Grad
Related	1.59	1.33
Out of *	35.94	17.17
Percentage	4.4%	7.8%

* Does not always include entirety of coursework required to complete degree

Points of Interest

- One of the more interesting outcomes was that the random sampling showed 5% of courses as related in both IS/IT and business programs.

- There are surprising similarities when comparing IS/IT and business programs. This is largely due to the fact most related classes are shared.

- About two-thirds of the classes are required, one-third are elective.

- The majority of classes are generic.

- Only 1 course of the almost 1200 sampled was specifically related to these topics, and it was a graduate course.

- Inclusive courses are mainly at the discretion of the instructors and though perhaps given the benefit here, many are borderline generic.

- Current courses harbor little potential due to their out-dated structure.

- Though many related courses are offered internally, external departments give a sizable number, making them less likely to instill a suitable skill set.

- In IS/IT programs, graduate students have a higher probability of being exposed to these topics, whereas undergrad chances diminish. Undergrads have nearly half the related

courses, nearly three times less required courses, most are generic, nearly four times less inclusive, none are specific, and they are split between internal and external.

- On average, programs have about 1.5 courses related to social and cultural frameworks.

- If all coursework for a degree was included, related percentages drop 2% on average assuming an average 130 credit-hours/undergrad and 40/grad. For example, assuming a Bachelor IS degree of 130 credit-hours, related courses would account for 3.4% as opposed to 5%, and lowers all other percentages. However, for this study only listed curricula was included.

5. THE FACTS

To better understand the connection between curricula and professional environments, the common hardships of the environments should be represented along with the symptoms. It is commonly accepted that IT departments are highly subject to turmoil and IS projects to failure. Almost every report and survey says the same thing about what is wrong with IT environments and what is needed to fix them. Jeff Ello (2009a) wrote that almost every source on the subject can be summarized in a couple sentences, which includes the belief that though smart and creative, IT pros are "antisocial, managerially and business-challenged", among other things. Along with the author, Ello also believes such stereotypes stem from a lack of understanding of the people and the culture, and that if one does understand, it makes working with them a much easier job.

Organizations sometimes attempt to build up relationships between IT and the rest of the business by using relationship managers and other in-between positions; though they typically make things more convoluted or are minimally effective. Some organizations offer internal training to improve knowledge of the business or IT. But, if collective competencies and coordinated knowledge are to be developed, then they must overcome the requirement for business and IT people to work together (Peppard, 2007). Also, what might be a good plan or idea for social integration can quickly turn into social irritation if respectful and competent communication is not proffered. Organizations put a lot of effort and time into increasing communication, relieving anxiety,

boosting visibility and deterring pessimism in relation to technology departments (Brandel, 2010). Social irritants along with company effort and time investments can be reduced with pre-profession educational skill building, making it less irritating for the industry itself.

It is true that many technical workers may be socially unskilled and the same can be said for business associates, especially when dealing with technical departments. The good news is that skills can be taught, but what makes it hard is preconceived stereotypes on both sides and differing definitions of competence. Everyone in these situations acts and reacts to these perceptions (Ello, 2009b). Business personnel and IT pros alike need to be reminded of the social particulars of the opposing group if success is to be achieved.

However, the common ending is much like the popular Nut Island Effect detailed by Levy in the *Harvard Business Review* (2001). JoAnn Hackos (2004) commented on the five stages of the effect and their application to information development teams. Her assessment, along with many others, is that there lacks some form of understanding between senior management and team workers, which leads to an utter breakdown in communication. She also states in closing that "we need to get out of the office ourselves to learn directly from team members and to interact with colleagues in our own field and associated fields" and by doing this "we are continuously exposed to new thinking, decreasing our isolation, and providing us with challenges" (Hackos, 2004). The author believes this should not only apply to managers and workers, but technical and non-technical coworkers and teams. Appropriate training and interaction exercises throughout educational programs, focused on cultural understanding and behavior in technical environments, would help with professional de-isolation.

One could use project surveys to argue statistical facts of failures. Like, the 2009 Standish Group study claims approximately 68% of projects fail or are challenged and 63% over-run, the Robbins-Gioia Survey (2001) claims 51% failure in ERP implementations, *The State of IT Project Management* (Huber, 2003) claims 59% are over budget and only 16% hit all targets, and BCS research stating only one in eight are truly successful (McManus, J., Wood-Harper, T., & BCS 2008). But departing from that approach, it will just be accepted that there are problems. The symptoms (sometimes listed

as causes in surveys) and risks of problems, improvement factors and characteristics of success have been extrapolated from these surveys and concisely listed.

Symptoms and Risks

- Stereotypes
- Differing definitions
- Isolation
- Lack of direction
- Lack of continuity
- Bad communication between relevant parties (over 50%)
- Lack of planning of scheduling, resources and activities
- Inadequate co-ordination
- Mismanagement of progress
- Overall poor management, business specific and technology specific
- Lack of attention to the human and organizational aspects of IT
- Poor articulation of requirements
- Inadequate attention to business needs and goals
- Management commitment
- Lack of client/user involvement
- Inadequate project management
- Failure to manage expectations
- Conflict among stakeholders
- Shortage of knowledge/skills in the project team
- Improper definition of roles and responsibilities
- Staff turnover
- Unrealistic expectations
- Technology illiteracy
- Poor delegation

Improvement Factors

- Greater management support
- Commitment from users
- Greater control over resources
- More project management training
- Stable project management methods
- Greater understanding of PM on the part of top management, teams, and clients
- Ability to adapt

Characteristics of Success

- Leadership
- Integrity
- Understanding of IT
- Written communication
- Problem solving
- Understanding business processes and strategy

- Ability to manage change
- Well qualified in project management techniques
- Communicates goals
- Attention to detail and high-level issues

6. DISCUSSION POINTS

Departments and Projects

The survey lists presented in *The Facts* section do not spell out causes of problems in the professional world of IS/IT. They are symptoms and relief methods, which can all be linked to a common fundamental origin. Professional IS/IT and business relationships and projects regularly break down because IS/IT and business students are not provided with cultural knowledge, communicative practices, skills and training needed for a technical business environment. Granger, Dick, Jacobson, and Slyke (2007, p.304) state it is "possible that many IS curricula do not reflect the evolving demands of today's (and tomorrow's) IS professionals" when arguing fundamental causes of a decrease in IS-related enrollments. It may also be a fundamental cause of this instability in IT environments. Cultures and social constructs evolve as demands do, and if those nuances are not accounted for in curricula then understanding and preparation are lost. The result is that technical departments and projects suffer and succumb to the plight.

Even though IT has changed drastically over the last decade, the requirements for IS/IT success have not changed as many people may think. As Brockway and Hurley (1998, p.203) said years ago:

> "success…requires high degrees of interaction among IT and business people discussing business direction and the information systems required to support it. In order to participate, the IT organization needs to have staff that understand both the capabilities of systems in general and the essence of the business they work in and can hold their own in complex and sensitive discussions about the interactions of the two. IT needs staff that know and understand the business, have a point of view about the future, and apply this knowledge to engender support and confidence across the business. Business functions need a similar set of skills. The two groups need to understand and respect each other."

Curricula

As courses and descriptions were analyzed there were some notable details for discussion:

- Generic project management and other generic courses are not designed to expose social and cultural frameworks of TBEs, even if they are "for information technology".

- Programs may contain one or two courses that are related but don't emphasize social nuances in technical environments.

- Based on their current descriptions, some courses have the potential to incorporate these topics if only updated and structured to include them.

- If there are courses available that supply some of these aspects, they are likely hidden among the electives and among the least taken.

- Some entire computer and information science, information systems, information technology catalogs do not posses one class related to cultural and social frameworks.

- Generally, students take at least one course in each subject they won't use as often or at least not daily, like calculus, economics, statistics, history, in a beneficial effort to be well rounded. Yet, many are not offering any courses on the skills and knowledge they need to possess and use every day while interacting in a technical environment.

- Based on analysis, little or no time is spent discussing the society at the bottom of the IT chain but only upward towards managers, executives, or the global community. Environments are only seen on a macro level, yet the coders, engineers, administrators, analysts and business personnel need to be understood as well.

- There exists practically every type of management or strategy focused course on human resources, organization, business, ethics, international business, strategy, IS, project, finance, risk, supply chains. Yet, not one focused on technical personnel or technical environment management.

- Even if there are one or two courses that touch on this subject in the average curriculum, is that enough? Or the right type?

- Of the programs sampled, 6 required internships, 4 encouraged them, 2 were programs for working professionals, equaling about 30% exposure at best. Though internships were not the focus of this study, these professional preparatory experiences can greatly enhance a student's understanding of social and cultural elements, and programs should require or at least encourage them as part of their curricula.

Exposure and Communication

This responsibility to broaden the social skills and cultural understanding of both technical and business students is a necessity but has yet to garner much attention. Previous conclusions have been similar to the findings of this study, that on average only a couple of hours out of an entire undergraduate degree are spent on highly sought after soft skills (Russell, Russell, & Tastle, 2005). They, along with other writers and faculty have issued calls for curricula enhancements, but not much has changed.

If courses in IS/IT programs are expanded to include more aspects of the humanities, the exposure to these topics may help increase enrollments just as other types of disciplinary exposure have (Granger, et al., 2007, p.306). They go on to say that seemingly many courses can be boring to students, especially early on, and that perhaps the diversity of curricula should be examined and modified to "provide an interesting and stimulating student experience." This particular subject matter should be one such modification. It would provide fundamental understanding, stimulate thought and properly prepare students interactively.

Right now the main source of information on these topics is sporadic and through technical news outlets (e.g. tech magazines and online publications such as *Computerworld* and *CIO*) geared towards professionals already in the workforce, not students in the classroom. This is like trying to vaccinate someone already infected. The best way to bring success and change to these environments is to send the students out already prepared for the professional expectation. Curricula modifications must be made and the need for a higher quality of cultural and social preparation, along with the right tools, must be communicated to today's students who are tomorrow's professionals.

7. CONCLUSIONS

Just as organizational culture has an impact on IT (Zhao, 2004) and vice versa, cultural competency and business impact each other. One should never forget the human side of organizational agility in businesses (Crocitto & Youssef, 2003) nor the learning of it in related educational programs. The success of an IT department, IS implementation, or IS/IT and business programs can be determined by how well the cultures are understood and level of respect in social interplay. This means educational institutions with various IS/IT and modern business programs should develop and instill courses into their core requirements focused on cultural literacy and social adeptness in technical business environments.

It is true that one cannot imagine and discuss every possible social situation or cultural setting, but one can properly prepare and act by developing, learning and applying best practices of understanding and interaction within these environments. However, with little or no effort being applied in this area, as evidenced by this sample case and other investigations, managerial, departmental and project complications will remain unless there is rudimentary change. Simply put, if improvement is desired in technical business professions, then students of these programs must be sent into the workforce prepared for cultural and social immersion.

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