The Teaching Of Informatics For Business Students

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Informatics is a branch of computer science that concerns itself, in actuality, with the use of information systems. “*Informatics includes the science of information, the practice of information processing, and the engineering of information systems*” (Wikipedia, <http://en.wikipedia.org/wiki/Informatics>, 3/10/07). In fact, while the term can be used alone it is used as a descriptor to a specific discipline, as in “Business Informatics, Medical Informatics”.

Schools such as Indiana University have recently introduced a course of study in which they offer a course of study at the Bachelor level in Informatics. “*Informatics is the application of Information Technology to a particular area or discipline of study. It is concerned with converting data into information, and applies information technologies to solve problems. It combines coursework in a traditional subject area with information technology.*” (http://www.iuk.edu/~konims/Programs/BS_Info.shtml, 3/10/07)

The objective of this paper is to focus on the business curriculum for graduate students and their gaining proficiency in informatics so that they can understand the concept of information, the access of information, the use of information, and the generation of information which enables a secure knowledge of what is needed to make good business decision within a frame work of valid data and data requirements.

Most business students at the MBA level take classes in Management Information Systems which is ultimately concerned with report generation from various data sources.

“Management of business has changed. The growth of enterprise-wide information systems with extraordinary rich data means ...managers have access to really important data that needs to be accurate to make timely decision” (Laudon, Laudon 2007). Without an understanding of what makes data accurate and valid, or how information is generated the business manager can make extraordinarily bad decisions when you couple that with the fact that data is changing rapidly in a global economy.

Given the above, the business curriculum at most covers: basic concepts of information generation, domains of use of information, data and its probability of correctness first as facts, and then as contributions to created information. The successful business major must understand the modeling of information, and how to use a computer to generate information according to his/her specific needs. Often computer specialists can supply data, but supplies it given a manager’s request, which may not always be what was understood by either the manager or the computer specialists. The only way to resolve this ‘silo’ understanding of information is to have the manager well define his needs and requirements. Unfortunately, many managers know what problems they want to solve but not what data they need to generate the information they need to solve the problem. This is a growing problem especially in a global corporation, which is operating in a culturally diverse environment.

WHO IS THE BUSINESS MAJOR

For purposes of this paper, I am differentiating the undergraduate business major from the graduate. Undergraduate business majors generally come from a sub group of students who are not specifically inner directed to any science or art and see business as a catchall of studies. According to research by (Sid C. Dudley, Lola W. Dudley, E. Wayne Chandler, Eastern Illinois University) 65% of all business students are extraverts and marketing majors are even more likely to be extraverts (<http://www.swlearning.com/marketing/gitm/gitm4e08-21.html> 4/20/07). As undergraduates, they therefore are more socially oriented. This is at variance to the characteristics of computer science/ information science students, who tend to be more introverted. In a recent study by Layman,

Cornwell, Williams and Osborn, it was found that 55 percent of the students were introverted and 45 percent were extroverted (ftp://ftp.ncsu.edu/pub/unity/lockers/ftp/csc_anon/tech/2005/TR-2005-40.pdf, 4/20/07).

Graduate students, in contrasts, at the MBA level, tend to be working students, who see the MBA as a tool for their advancement in the business world. Often the MBA degree is a requisite for management positions within the corporate environment. What this all means is that the student is focused on two aspects of learning. The first is application and the second is practicality. Given that, then, from a practical perspective, the learning that takes place in the context of 'informatics' must have application to business issues (like decision making, organization modeling, operations, ethical and legal, risk and probability, communications, and case studies), and be 'usable' and understood within its limitation. Graduate students in business come from multiple disciplines and this has both a positive affect on learning and a negative one. The positive affect is in the focus that the individual student brings, this shared focus is important for the learning environment in that the students learn from each other as well as the teaching staff; the negative affect is in the variant pre-requisite learning that affects their interest and learning in a specific course. However from an Informatics perspective, every student must learn how to integrate this area into his base area of understanding within the business context. Informatics is pervasive in the business context; it must affect all domains of business knowledge.

INFORMATICS WITH THE SUBJECT AREAS OF THE GRADUATE BUSINESS COURSES

The University of Indiana has introduced the concept of 'cognates', they define it as "courses that emphasize the foundations, applications and/or implications of information technology in the chosen area (<http://www.informatics.indiana.edu/academics/cognates.asp>). From a graduate perspective, the informatics used in this course of study, is used to actualize the course work that in the past would not have had informatics embedded in the course of study.

So the teaching of informatics in the business curriculum is not an add on. It must be part of every course of study. However this is an issue for course content and purity and often is not implementable in the normal curriculum. Given this an alternative schema must be introduced to enable informatics in business.

BUSINFORMATICS

At the undergraduate level, BusInformatics seems to have been defined in the same context as training in a discipline with informatics applied on top of it. At Murdoch University in Perth, Australia, (<http://handbook.murdoch.edu.au/courses/detail07.lasso?crscdhb=34225&-Search>), it is noted that students take standard business courses as , Principles of Information and Data Management, Multimedia, Statistics, Intro to Accounting, Principles of Commercial Law, Principles of Management, Organizational Theory Behavior, Managing of IT Projects; all of this is followed by normal computer courses as, Systems Analysis and Design, Databases, Knowledge and Security Systems, and Networking.

This is not appropriate for graduate students in business. At this level it is this authors opinion that such students need to know how to apply informatics within his/her business interest or position.

SCENARIO I

A student who is currently working in Business and needs an MBA to grow in the corporation, need not understand the intricacies of networking but rather understand the issues associated with computer and people linkages. He/She should understand the basis of an MBA but in the context of information management/informatics.

Let us take the example of a person looking at becoming a CIO; the role is to assure the functioning of the corporation, from the perspectives of 'data' in the legal, security, analytical, and financials cognates. "The Chief Information Officer directs the planning and implementation of enterprise IT systems in support of business operations in order to improve cost effectiveness, service quality, and business development. This individual is

responsible for all aspects of the organization's information technology and systems.” (Info Tech Research Group, June 9, 2003). Given this, the MBA Curriculum for this student would be:

- Decision Making and Modeling
- Organizational Theory and Modeling
- Information Theory and Modeling
- Accounting and Finance Systems
- Business Network Structures
- Security of Data Information Structures
- Comparative Systems Analysis
- Business Communication Systems
- Transmission Media and Analysis
- Systems Design
- Strategic and Tactical Planning
- Distributive Systems and Data Technologies
- Business Knowledge Structures/AI/ES applications

The concept of modeling in the above course structure is meant to signal computer techniques that would be used or sort after by management to enable simulations, data analysis, effect analysis, model building and linear programming

OTHER SCENARIOS

Beyond that of a CIO, one might say why does the modern day manager need this pervasive focus on informatics. Generally we think of management at 3 levels. – strategic, tactical and operational. All three roles require the use of information based on data to achieve success. It is how the manager applies data that he/she is successful. If a manager does not understand how information is generated, nor how valid it is for his decision domain, he/she can not apply it correctly and in an intelligent manner. This same manager must have a working knowledge or sense of how and where to get data and information to support his/her strategic/tactical/operational decision making and planning. He/she must have a ‘gut feel’ for correctness of the information supplied to him/her by the technologists.

For a generalized track in Businformatics at the MBA level. The course structures are essentially the same but would be slightly more in the base cognate level. The University of Canberra, creates the follow cognate areas as being necessary to get a degree in Businformatics. Those courses are (http://www.canberra.edu.au/secretariat/attachments/other_files/dcp/masterdeg/coursework/bus845aa-2.rtf)

- Organisational Behaviour G
- Sociology of Technology and Work G
- Accounting for Managers G
- Database Design G
- Designing Human-Computer Interaction G
- Document and Workflow Management G
- Entrepreneurship G
- Human Resource Management G
- Systems Analysis and Modelling G
- Statistical Analysis and Decision Making G

Given these course from the undergraduate or graduate program, then the graduate student would take courses in the following areas:

- Information Security PG
- Business Finance PG
- Business Intelligence Systems PG
- Current Issues in Business Informatics PG
- Information Law PG
- Information Systems Management PG
- Knowledge Management Systems PG
- Management Ethics PG
- Social Informatics PG
- System Testing PG

CONCLUSION

What is to be noted in my review of course structures is that in all cases, we have the implementation of the paradigm of information systems on top of the training/education in normal business courses. I firmly believe this creates the illusion that they are not integrated. I am convinced that the thinking process for managers would be different if the field of informatics for business students was an integrated whole with all the business courses containing the informatics areas associated with that course.

Finally managers must be able to apply rational tests to his or her complex decision making which now exists in a complex multivariable global setting. Sub-optimum processes will enable competition and must be understood, not in the classical business environment, but in the new global competitive business environment. To that end, *Businformatics* is required in the Graduate Business Curricula.

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