



# Teaching Business Students about the Management of IT: Matching Theory to Practice

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## ABSTRACT

*This paper examines the teaching of concepts related to the management of an information technology department, by examining the development of a subject designed to teach concepts related to the management of information technology in the Masters of Business (Information Systems) program offered by Victoria University in Australia. The lecturers adopt a 'constructivist' approach to delivering the subject, encouraging students to relate the subject material to their own view of the world. Two assessment tasks in particular are examined to highlight how the subject has been refined over a two-year period.*

## INTRODUCTION

This paper examines the teaching of concepts related to the management of an information technology department, and particularly a subject in the Masters of Business (Information Systems) program offered by Victoria University in Melbourne, Australia – the core subject BCO6653 Management of Information Technology. The development of the assessment of the subject over a two year period is examined to see how the lecturers have wrestled with the need to provide a 'practical' understanding of concepts related to the management of information technology in an organisation.

## BACKGROUND

One aspect of Information Systems (IS) development as a discipline that has continued to be emphasised that teaching and research of IS has to be based in practice. This section briefly examines this notion.

### Teaching Concepts related to the Management of Information Technology

Hosseini (1993) identified the challenges of teaching Management Information Systems (MIS) concepts; one being that the abstract nature of the concepts surrounding the development and management of information technology systems makes these concepts hard to teach in the classroom. Often, he states, students do not have work experience involving the use of IS or information technology (IT), and the lack of any practical frame of reference in a student's mind makes it difficult for the student to appreciate IS issues, especially if the issues are those that are dealt with at a managerial level.

So how do we facilitate a student's appreciation and learning of the various current issues in the management of IT?

Biggs (1999) advocates the concept of "constructivism" in teaching. This means that a student's learning is based on the degree to which the subject content is made meaningful to the student with respect to the student's world view; that in order for a student to learn, he/she must be able to personally construct meaning from the subject content. In other words, the subject will mean something to the student if the student is supported in constructing meaning for it. This "meaningfulness" is evident if students feel a "need-to-know."

*"When students feel this need-to-know, they try to focus on underlying meaning: on main ideas, themes, principles or successful applications...students needing to know will naturally try to learn the details as well as making sure they understand. When using the deep approach in handling a task, students have positive feelings: interest, a sense of importance, challenge, even of exhilaration." (Biggs 1999, p. 16).*

It can be argued that developing this "meaningfulness" involves encouraging the student to participate and interact, at an intellectual level, with the material presented. One way this can be done is through the structuring of learning activities that pose a question or problem to a student, motivate the student to look for information that will help answer the problem, assess the relevance of the information, and to communicate what they have found.

Applying this technique can be an effective strategy in facilitating a student's learning of 'management of IT' issues.

Practical Applications of Information Systems Research

Williamson et al (2000, p.12) lists a number of reasons as to why research should play a part in professional practice. Included in these reasons are the following:

- To assist in understanding problems and issues in the workplace
- To add to knowledge in the field and/or provide solutions to problems
- To provide a body of research findings and theory to inform practitioners.

*Information systems researchers draw problems from practice and the results of their studies usually generate theories, which need to be applied and tested by practitioners in the context of the real world information systems. Information systems researchers are very conscious about the usefulness of their research results to industry as well as the rigour of their approaches and their contribution to the core knowledge of the information systems field. (Williamson et al, 2000, pp.17-18).*

Benbasat and Zmud (1999) recognise IS research that is committed to both applying the methodology best suited to research goals and better accommodating practical endeavours. They suggest that relevance is not just assured with the selection of a "relevant" topic. The results must be *implementable* before practitioners will take an interest in it. They go on to list five reasons as to why much information systems research lacks relevance. Included amongst these is:

- The dynamism of information technology. Amongst other things, this can result in the results of research 'chasing after practice'

rather than leading practice and reporting results after the technology has been accepted or rejected.

- Limited exposure to relevant context. Information systems researchers must be exposed in some ways to the *practical contexts where IT-related usage and management behaviours unfold*.

In the following case study the intention is to show how the concepts of constructivism in teaching, combined with access to practical IS research, can provide students of a Masters program in information systems with a view of what is required in the effective management of an IT department.

## A CASE STUDY AT VICTORIA UNIVERSITY

The School of Information Systems (part of the Faculty of Business and Law) at Victoria University of Technology (VU) began offering a Master of Business in Business Computing (now Information Systems) in the mid 1990's. In addition to local students, in recent years the M.Bus (IS) program has also become very popular with overseas students (students travelling to Melbourne to study). The course1 format is a total of twelve subjects, usually taken over three semesters full time.

A core subject in this course, and one of the first subjects that students study, is BCO6653 Management of Information Technology. The purpose of this subject is to introduce students to the issues faced by the manager of an information technology (IT) department. Specifically, the subject aims to ensure that students will:

- Be familiar with current research and developments in information technology management,
- Be familiar with important management issues in managing information technology,
- Understand the information management approach, its nature and importance,
- Be able to apply relevant methods and techniques to better manage information resources,
- Have applied a relevant method or part of a method to an organisation or part of an organisation and prepared a report,
- Plan and prepare a substantial research paper on a designated topic,
- Have critically reviewed research papers, presented the evaluations and lead group discussions on the evaluations.

In order to do this, the subject is based around a number of major issues that are examined in each of the two major assignments. The number of issues covered varies slightly from semester to semester. As at semester two, the issues were:

- Information systems planning and strategy
- The use of IT for competitive advantage
- Information technology architecture
- Information technology control and security issues
- The analysis of information technology investments: value and risk
- Business continuity management
- Managing the human resource: IT employees and users
- Outsourcing the information technology function
- Managing the e-business resource
- Knowledge management.

Many of these topics are covered in other subjects in the course. An important component of this subject is that it concentrates upon each of the topics in relation to how they affect the manager of an IT department in an organisation. Students are constantly reminded of this as they prepare their assessment tasks for the subject.

The subject is divided into two major sections. The first half of the subject (six weeks) is divided into a series of 'mini' presentations related to each of the topics, delivered by the subject lecturers and guest speakers. This is designed to introduce the topics to the students, allow them to see how many of them are interrelated and provide them with

some basis by which they can select which of the topics they would prefer to examine in greater depth.

The second half of the subject is divided into two sections, and is where the students take over the presentation of seminars. This occurs in two major assignments.

### Assignment One: Literature Analysis

The first assignment allows students to select one of the major topics and investigate it at some depth. This occurs by allowing them to select four of the topics using a selection form. An even distribution of presentations is then made across all of the topics.

The seminars for assignment one run over four weeks. In each week, two or three of the topics are covered. Students prepare presentations based on the topics and deliver seminars based upon them. Although they deliver one topic 'in depth' students are also assessed on their contribution to the discussion on each of the other topics – thus they are exposed to each of the topics at some depth by delivering seminars, listening to seminar presentations or participating in discussions.

The seminar presentations are based upon a paper that students prepare for the topic. The paper is based upon 'theory' and 'practice'. For 'theory', the students have to search the online databases (such as ABI Inform or Business Source Premier) for materials to prepare a 'mini' literature analysis. At this stage they have had the value of selecting 'peer reviewed' journals over web sites found using a search engine explained to them. For the 'practical' component, each semester the students have to relate what they have discovered in their literature analysis with a 'real' application. In recent semesters these have included the use of case studies in each of the major areas or reference to materials gathered from 'online' magazines for IT managers (such as [www.CIO.com](http://www.CIO.com)). In this way the students are introduced to the notion of gathering the best research in the area from peer-reviewed publications and comparing it to 'actual' practice.

### Assignment Two: Practice

Up until 2002, this assignment was mainly an in depth literature analysis and presentation based upon this topic. Feedback from students, however, indicated that they were feeling less fulfilled by this assignment after having had a taste of matching theory and practice in the first assignment. It was decided in 2002 to introduce a 'practical' aspect of this assignment as well – in the form of interviews with IT managers. The next few sections of the paper track the difficulties in developing this, but also the rewards that eventuated.

#### Semester One, 2002

Group work was encouraged, but not forced upon students, throughout the subject. Thus, groups of two to four students and the occasional sole student were typical for the subject. Varying the size of the paper and the length of the presentation for different sized groups moderated this. Initially, each 'group' was expected to perform a literature analysis and develop a set of questions for four topics, despite the number of students in the group. What would vary would be the length of the literature and number of questions for each topic per group. The questions would then go on to form the basis of an interview that had to be conducted with an IT Manager of two businesses (which they had to find). The only requirement for the business was that it had to have an IT department of at least five employees. The students would then be expected to write up the interviews and make a comparison between the literature and the interviews.

Although the overall concept worked quite well (students were overwhelming in their appreciation of the assignment) there were a number of problems:

- The smaller groups and 'sole' students were quite overwhelmed by the need to cover four topics, even at lesser depth than the other groups.
- The standard of questions being put together by students varied quite a bit. A lot of them were quite inappropriate (eg "How often do you sack IT employees and why?").

- Many of the students complained that they did not have enough time to contact the companies and conduct the interviews.

#### *Semester Two, 2002*

A number of subtle changes were made for the assignment in semester two. The assignment was changed so that the number of topics to be covered related to the number of members in the group. For instance, a group of four students would have to cover four topics. This seemed to work quite well (except that some students working by themselves complained that they did not get to ask many questions at the interview stage)! An assessable 'milestone' was introduced for the assignment, forcing the students to start work on the assignment earlier, but still there were some students that left the search for businesses until too late. There was no backup strategy for them if the business they selected would not respond. Some students that could not find businesses to respond actually resorted to 'inventing' companies and responses, which was quite obvious from the standard of responses that were reported. Written assistance for the development of interview questions (and some sample questions) was provided, but still the standard of questions being developed was quite poor and they required a fair amount of editing before they were suitable to be used in interviews.

Another interesting sideline was that the subject lecturers felt that the line between teaching and research was being blurred in this assignment – and were wondering whether the assignment would fall within the realm of the Victoria University ethics committee.

#### *Semester One, 2003*

One of the main changes made to the assignment for this semester was that the lecturers submitted to the Human Research Ethics Committee of the Faculty of Business and Law at Victoria University to see if it actually fell under the guidelines of 'human research'. This actually prompted a personal visit from the head of that committee, who indicated that the committee had indeed spent a fair bit of time debating that issue – whether it was 'human research'. Although we had not considered using the results of the students' research to publish their results in conference proceedings or in journals, the head of the committee did suggest that it could be done. This was on the condition that students and the IT managers being interviewed would be informed that was going to occur. In the end, we decided that just having approval to carry out the assignment would be enough and so did not pursue that option. We did, however, get approval to carry out the study even though it had still not been resolved whether the approval was actually necessary!

One sideline of this process was that we had to submit 'typical' questions to the ethics committee as part of the proposal. This prompted us to prepare a series of questions in advance for students to use and did remove another problem – the quality of the questions that had been developed by the students. It did, however, mean that the research process was little out of sequence for the students. Instead of them searching the literature and identifying gaps and subsequent questions to ask – we provided them with the questions and they had to find matching literature. In the end, this turned out better than anticipated with students having little difficulty finding relevant literature, as the questions were quite generic (for instance, one question related to the relative advantages and disadvantages of outsourcing the IT function).

Further milestones were introduced, forcing students to start work on assignment two, as they were still involved in assignment one. These milestones related to identifying the companies (with potential backup companies) and topics, contacting IT managers, developing the literature analysis and conducting the interviews – all to be complete by the week *before* the assignment was due. The feedback from students for this initiative was quite positive.

In relation to students 'inventing' companies, asking students to supply the URLs of the business' web sites discouraged this. They were told that URLs that included 'Yahoo' or 'Hotmail' in the address would not be accepted.

By this stage the problems associated with the assignments were somewhat more specific. Students were still having some difficulties finding suitable businesses but we were learning some lessons in relation

to what types of business were likely to respond positively. Some of the milestones were required to be submitted by email. We were finding that students were sending the emails, but leaving out certain things they were required to enter.

#### *Semester Two, 2003*

The most recent set of refinements to the assignment have worked reasonably well. Students were provided with a set of guidelines as to how they might select businesses that were likely to respond. In the subject guide, the following points were highlighted:

In the past, some students have had some real problems in getting business to co-operate for a number of reasons:

- They have left it too late to contact the businesses
- They have targeted businesses that are too large. Many of the really big businesses are approached for surveys and interviews all of the time and may be unwilling to help. Try setting your sites a little lower, perhaps at medium sized businesses. In the past we have found the success rate to be a little higher with these businesses. You can target these in guides like the Yellow Pages, looking for advertisements that are about 'medium' in size.

*Table 1: Summary of the Development of BCO6653 Second Assignment*

Semester	Details of Assignment Two	Feedback			Reflection	Changes
		Student	Peer	Personal Observation		
Pre 2002	Lit Review of Issues related to Mgt of IT	How do these concepts operate in real life?		Need to relate it to current practice	Relate theory to IT Mgt practice	Add component interviewing IT Mgrs
1, 2002	- Now Lit review combined with interviewing IT managers, covering 4 topics - Verbal assistance provided for d/ment of interview questions	- Worked quite well – <b>but</b> too many issues for small groups		- Difficult for small groups to cover all topics - Std of questions varied; requiring a lot of editing - Students leaving contacting the IT Mgrs until too late	- Reduce complexity for small groups - Further assistance for question d/ment - Encourage students to start work earlier	- Reduce issues for small groups - Written assistance for question d/ment - Introduce milestones for question d/ment
2, 2002	Changes introduced: - Reduced number of issues for small groups - Written assistance for questions - Assessable milestone introduced	- Milestones worked well. Helped with interview questions - Students were aware of other students using 'shortcuts'; mythical companies - Some difficulties in finding suitable businesses		- Even with milestone, some students attempted to 'invent' companies and interviews - Work started earlier, but still could be better - Students still not asking the correct questions	- Must get students to start work earlier - Perhaps the students need to be provided with the questions - Concern that the study was passing into the realm of 'research'	- Introduce more milestones - Provide students with questions and guidelines for company selection - Apply for Ethics committee approval to conduct the assignment interviews
1, 2003	Changes introduced: - ETHICS approval granted to conduct study - More milestones introduced - Students provided with interview questions and guidelines for company selection	- Students happy they were 'forced' to work progressively by milestones	- Why not get the students to submit via web forms instead of email?	- Improvement in interviews after students provided with questions - Milestones required email from students; often forgot to submit vital details - no evidence of 'false' companies	- Assignment seemed to be working well - Improved methods of milestone input would be useful - Need to provide further help with contacting companies	- Introduce guidelines for selecting companies - As suggested, use web forms for Milestone input.
2, 2003	Changes introduced: - Guidelines on how to decide on and contact businesses - Input of milestones using web forms rather than email	- Happier with selection of companies		- Much less confusion with submission of Milestone details		

- Do not choose universities or large banks. If you work in a bank or university and wish to select one of these then approach your lecturer.

The following businesses were selected by students in Semester One of this year. To avoid disrupting our relationship with these business you should not target them for assignment two in this semester.

This has resulted in students being a little more realistic in relation to the types of businesses they approached

Another initiative has been to use web forms to facilitate students filling in vital milestone information. The students are not allowed to 'send' the form as such until they fill out all of the required details, such as details of businesses they wish to interview and their web site URLs.

Table one summarises the development of this assignment.

## Discussion

Over the two-year period, the lecturers attempted to develop the subject so that the students were provided with access to recent ('practical') research in each of the particular major topic areas, they also were able to appreciate the applicability of these concepts in information technology departments. This was by having access to web sites such as 'CIO.com', conducting their own interviews with IT managers and listening to the presentations of students that had conducted their own interviews. In this way, the students were able to 'construct' their idea of the conduct of the management of an IT department according to their own view of the world.

These were always the primary aims of the lecturers over the two-year period (and heading forward). What this paper documents is the process that they have gone through to attempt to make this ideal achievable – dealing with their 'own' necessity to conduct this in an environment where students are assessed on their performance.

## CONCLUSION

This paper has hopefully highlighted some of the difficulties of teaching concepts such as the management of information technology

to students who have not previously had exposure to this environment. The lecturers have made a conscious effort to develop the subject in such a way that the students have a way of relating the theory of the subject to the actual management of information technology as it occurs in 'real life'. It is believed that this approach allows the students to 'construct' their own meaning according to their own views of the world of their experiences gained within the subject.

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## ENDNOTES

- 1 In Australia, students will study a particular course to gain an award (such as a degree). The course is made up of a number of subjects (or units). Confusion in terminology can arise because what Australians would refer to as a 'subject' would be what North Americans call a 'course'.

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