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Progress in Introducing ITIL into an Information Systems Curriculum

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ABSTRACT

Over the last four years there has been a concerted push for the integration of Information Technology Service Management (ITSM) concepts into the Information Systems (IS) curriculum. However, relatively few Universities have attempted to do so. While there are numerous papers pushing the idea forward, a literature review revealed only four papers discussing how this has been done. This paper details the progress made at an Australian university in integrating the Information Technology Infrastructure Library (ITIL) into IS courses. How integration has been achieved and the challenges are discussed.

KEYWORDS (REQUIRED)

ITSM, ITIL, IS Curriculum, ACM Model Curriculum.

INTRODUCTION

At AMCIS in 2007, a panel discussion was held to discuss the issues and promulgate the idea of including Information Technology Service Management (ITSM) concepts into the Information Systems (IS) Curriculum (Beachboard, Conger, Galup, Hernandez, & Probst, 2007). The argument for more ITSM to be taught in IS courses has since been made in a series of papers published by Cater-Steele, Conger, Pollard and others (Cater-Steel, Hine, & Grant, 2010; Cater-Steel & Toleman, 2007a, 2007b; Conger, 2009; Conger, Venkataraman, Hernandez, & Probst, 2009; Galup, Dattero, Quan, & Conger, 2007; Pollard, Gupta, & Satzinger, 2010). It has been noted that the growth of ITSM and in particular the adoption of ITIL by industry has been almost exponential over the last decade (Cater-Steel & Toleman, 2007b; Conger, 2009; Marrone & Kolbe, 2011). Yet, relatively few universities have begun to include ITSM and/or ITIL into their courses. This has led to a gap between what industry requires and what academia is providing (Cater-Steel et al., 2010; Conger et al., 2009; White 2008).

While these papers were being published, at Curtin University in Australia, it was the Industry Advisory Board and links with industry that prompted the Head of School to initiate and resource the inclusion of ITIL-based material into the IS curriculum.

Despite the arguments made and the industry requirements for the inclusion of ITSM concepts into IS courses, a literature review has been able to only locate four other papers detailing how it has actually been done (Bentley, 2006; Cater-Steel et al., 2010; Shackleton & Bentley, 2008; white, 2008).

This paper describes how ITIL has been integrated into the IS curriculum at the School of Information Systems at Curtin University so that it might provide assistance to other faculties considering this issue. At the time of writing, this is an ongoing process, with the School seeking accreditation to teach the Foundation Level of the ITIL qualification and examining the possibility of a post-graduate major in ITSM. The paper is based on the author's observations and experiences of this integration process and the paper is not based on rigorous scientific methodology. Despite this weakness, given the absence of research in this area it is hoped the paper can assist other IS Schools considering the introduction of ITSM into their courses.

DEFINITIONS

IT service management (ITSM) is defined by Pollard et al. (2010) as "*a strategy that focuses on defining, managing and delivering IT services and addresses the need for IT to become more customer-focused by offering information systems under contract to customers and managing IT performance as a service*" ITSM views IT management as customer-oriented IT in contrast to a traditional functional-oriented view. This functional orientation is where IS/IT departments have been organized and structured around the functions they undertake e.g. application development, network management or database administration. This leads to control and coordination problems. ITSM provides an approach based in customer-needs rather than the needs of the IT function and is seen as a solution to many issues associated with the functional orientation.

ITIL provides a best-practices framework for undertaking ITSM. The ambition of ITIL is the creation of value for customers and the organisation through the provision of IT services that are aligned with business strategy and meet business requirements (Conger, 2009). In general terms, if things are done the ITIL way, then a very high level of ITSM should be achieved. The best-practices are contained in a set of 5 publications: Service Strategy, Service Design, Service Transition, Service Operations, and Continual Service Improvement. These publications form Version 3 of ITIL which was released in 2007.

ITIL has its own certification levels. At the lowest level, is the ITIL Foundations Certificate. This requires undertaking a 3 day training course and passing a one hour exam. The next level is ITIL Expert which requires a minimum of 25 days training for many thousands of dollars as well as a number of years experience.

Please note that in the Australian context a "unit" is usually a 12 week program related to a specific topic in the curriculum. In the American context this might be a considered a "course". Whereas, in the Australian context a "course" is a series of units leading to an award usually based around one or two "majors".

LITERATURE REVIEW

Most all of the papers discussing ITSM, ITIL and IS curriculum begin with a discussion of the growth of ITSM, the growth of ITIL and how this has impacted industry (Beachboard et al., 2007; Cater-Steel et al., 2010; Conger, 2009; Conger et al., 2009; Pollard et al., 2010; Shackleton & Bentley, 2008). From a practitioner perspective, very little has been written about the spread of ITIL adoption since 2007. It would appear that it has become so widely accepted in industry that it is no longer newsworthy.

White (2008) reviewed CIO priorities and what is taught in IS courses and suggests there is a gap between IT topics important to CIO's and topics present in typical MIS texts. Conger (2009) and Cater-Steel et al. (2010) further this by suggesting there is a gap between industry and the MIS courses.

It is suggested the gap exists because the current approach to teaching information systems mostly revolves around the teaching of application development or the strategy and management of information systems development (Conger, 2009). Very little has been taught about the management of operations even though this may consume up to 90% of the IT budget of an organisation (Conger, 2009). Even in the discussion of application management, there are vital areas that are not discussed including how applications are transitioned into production (Pollard et al., 2010).

The gap becomes further evident because there appear to be relatively few attempts to incorporate ITIL related content into IS course curriculum (Cater-Steel et al., 2010). Cater-Steele et al (2007) noted there were 15 programs in Australia, Europe, Africa, Mexico, and New Zealand. Conger (2009) found two undergraduate and one graduate ITSM program in the U.S.

Mostly, the literature refers to the need to include ITIL into IS courses. The literature review found only four papers which provide any detail on how to incorporate ITIL content into IS courses (Bentley, 2006; Cater-Steel et al., 2010; Shackleton & Bentley, 2008; White 2008). This lack of publication is confirmed by Cater-Steel et al. (2010).

INTEGRATING ITIL INTO THE IS CURRICULUM

Curtin University is a large university located on the west coast of Australia in Perth. Curtin has a student population of more than 45,000 spread over campuses in Perth, Malaysia, Singapore and other locations. The School of Information Systems has been in existence since 1987 when Information Systems was separated from Computer Science. The School teaches over 400 equivalent full-time students.

Since the early 1990's the School of IS has taught Bachelor of Commerce (BComm) degrees in Information Technology and Information Systems. Prior to 2000, these courses incorporated two units on implementing systems and managing IT. A course review in 2000 removed these and other units in favour of more technical/technology oriented units. Very quickly the IT degree became almost identical to the IS degree. There was a heavy focus on application development and technology subjects and little on managerial aspects of IT. Some of the IT units such as programming and network management etc were not popular with the IS students because the IS degree was popular as a double major with accounting, finance and management. Many of those students did not want to undertake technology related units.

This lack of popularity combined with a downturn in numbers became problematic. In reviewing the course in 2003 and 2004, it was argued that the BComm IT and IS courses were too similar, too technical and lacked IS content. It was argued that even from an applications development perspective the courses were incomplete. The courses reflected the "over the wall" mentality referred to by (Pollard et al., 2010). This is where applications are developed and thrown over the wall to be implemented by someone else. It was successfully argued that the IS major, at least, needed units about taking applications

through the transition from development to production and the management of operations, particularly help desk. The issues described above were also present in the post-graduate programs. It was agreed to introduce a number of new units that included implementation, operations, ERP applications, and software package selection The School was now moving to cover gaps in the IS curriculum as described by Conger (2009) and Cater-Steel et al. (2010), and this was apparent by the strong support received from the School's Industry Advisory Board.

The 2007 AMCIS panel noted that inclusion of ITSM followed two main approaches (Beachboard et al., 2007; Conger, 2009). The first is the inclusion of ITSM content into traditional IS courses or the addition of ITSM specific units to the IS curriculum. The second approach is the development of entire ITSM majors. At Curtin, first approach was loosely followed.

The decision to develop new units had been taken prior to the decision to include ITIL related concepts. Even the decision to include ITIL related material was made somewhat naively with it not being clear how this would be done. However, initial research into the ITIL publications revealed the objectives of the units were suited to including ITIL–based content. At post-graduate level this included a unit on strategic planning of information systems which is also managerial in nature. Subsequently, this proved to be almost identical to the approach detailed by Shackleton & Bentley (2008) where they too began by altering units to include ITIL-based content.

That ITIL proved relevant was not coincidental. The original idea for these units was to cover material to ensure students are industry ready. The arguments for these units had been based on the author's 15 years experience in implementing and supporting information systems. This was later supported by industry representatives on the School's Advisory Board. ITIL is a framework of best practices and in the course of his experience, the author had come to learn or develop similar practices so these were already part of the design for the units. Although the decision to incorporate ITIL was post the decision to resurrect the units the industry-based nature of the units meant there was a meeting of objectives and content, and that teaching ITIL based practices would fulfill the curriculum requirements for these units.

In summary, the process of integrating ITIL into the course was facilitated by the decision to implement a number of new, managerially oriented units into the IS and IT courses. These units were then found to be suitable for being based on ITIL, and the approach taken was to include parts of ITIL into the units. The first unit to include ITIL material was Business Systems Management.

SERVICE OPERATIONS

This unit is called Business Systems Management. The objectives of this unit are to cover aspects of IT management based around the help desk activities. To achieve the objectives of the unit, it was decided to base the unit around the Systems Operation publication. The first running of this unit was in 2009 in the Undergraduate course. The original content followed the Service Operations book very closely and covered nearly all the content.

It quickly became apparent the ITIL publications are written for an audience with expertise in the subject area, and particularly. practical experience. The course content needed to be modified for students. As noted in Cater-Steel et al. (2010) the course content can be dry and emphasize rote learning etc. However, that is not entirely a bad thing as many of our students prefer that style of learning. To overcome the issue of previous experience, the students are provided background material on the processes and the rationale for the processes in the form of journal and other readings. These readings were reviewed in tutorial classes. For example, a class on IT Asset Management introduces the concepts through a tutorial reading, and then covers the Service Configuration and Asset Management process within ITIL.

In lectures, more examples and discussion were added and the structure of the processes emphasized over other Service Operations concepts. In ITIL, each process has a similar structure within the publication e.g objectives, business case, activities etc. This structure is used to provide a framework to assist students remember the materials. A visit to the Curtin University Help Desk to discuss how they worked received positive feedback from the students who attended.

In reviewing the unit at year end, a number of other changes were identified. Students are used to thinking of systems as being a project-oriented discipline where systems are developed and implemented and then staff move onto developing new systems. This issue has been dealt with by readings and discussion on operations in contrast to development, and the staffing and financing implications of operations. Because the terminology of ITIL is precise but not previously used in prior units, a large focus on the meaning of terms is required, and the terms need constant reinforcement throughout the unit.

Since the original unit, another modification was the introduction of IT Governance as the first area to be covered which gave a high level view of why service management was important. This then leads into Service Management as a Practice which emphasizes the paradigm shift from a functional approach to IT management to a service oriented approach. Cater-Steel et al.

(2010) have also found this important. The range of operational activities are discussed and then the Service Operation processes are taught. The current unit structure for 2011 is at Table 1.

Two other areas of ITIL have been added to the unit. Previously, outsourcing discussed the pro and cons of outsourcing and other high-level issues. This has been superseded by using Service Level Management (SLM) which emphasizes how services are agreed and managed with service providers. This is considered much more practical as the course content is now based in "this is how you manage this area". Similarly, asset management, a crucial area of IT management, is now based on Service Asset and Configuration Management (SACM). Again, this emphasizes what needs to be done to manage assets.

The feedback from students in 2009 in terms of whether they appreciated learning ITIL and /or the content was mixed. Mostly, the working post-grads were very positive but everyone else was less enthused. Therefore, in 2010, a tutorial assignment was set for the students to research ITIL and its growth. This was then discussed in class together with the number of jobs in IT operations. The feedback from students in 2010 was much more positive and even. It is interesting to note that despite no contact between the two schools this unit has developed in a similar way to the Managing IT Service Support Unit described by Shackleton & Bentley (2008). In that case, they have included using a Help Desk software tool which would be an improvement to the Curtin course.

Week	Lecture/Seminar
1.	Introduction to the Unit Introduction to IT Governance/ITSM
2.	Service Management as a Practice
3.	Common Service Operation Activities
4.	Help Desk Management Help Desk Visit
5.	Incident Management
6.	Mid-Semester Test Problem Management
7.	Access Management Request Fulfillment Event Management
8.	Implementing ITIL
9.	Mobile Technology Management
10.	Outsourcing/Service Level Management
11.	Asset Lifecycle Management
12.	Revision

Table 1 -- IT Management Unit Content

SERVICE TRANSITION

This unit was developed to cover the transition from development into production. In semester 2, 2008 the first version of a systems implementation unit was run which covered topics such as organisational change management, benefits realization, quality management, testing, data conversion, installation, user training, support and help desk management, workplace design, occupational health and safety and post-implementation review and evaluation. For 2009, the help desk section was removed as it was now covered in the systems management unit. The feedback for this unit was very positive even before the incorporation of ITIL material, particularly from post-graduate students.

In 2010, the unit was evolved to base relevant sections on ITIL. The section on testing was based on the ITIL Service Validation and Testing process. The Post-Implementation Review section was based in ITIL Evaluation and the Installation and Data Conversion section now incorporates the ITIL Release and Deployment process. ITIL Change Management (CM) process was introduced and distinguished from Organizational Change management. With SACM covered in the operations unit, nearly all the Service Transition processes are now covered.

SERVICE STRATEGY

For the last decade, Strategic Planning for IS as a unit has only been taught at post-graduate level at Curtin. While it had its demise at under-graduate level, the post-graduate unit survived the putsch of 2000. Since 2004, the unit has followed a fairly traditional approach based on the Ward and Peppard (2002) textbook.

However, for semester 2, 2010 the last four weeks were devoted to the Service Strategy publication. Because the students had previously been exposed to ITIL in the systems management unit this was well received. The approach taken was to introduce ITIL concepts to the students and relate them back to the more traditional material. There was enough time to cover the Service Strategy concepts, activities and an overview of the three processes – Financial Management, Demand Management and Service Portfolio.

The students feedback was because concepts had been covered in the earlier material it easier to follow and understand the ITIL-based material. In some areas, such as customer market-space, value networks, financial management and portfolio management it provided a stronger, more practical approach than the earlier material but not losing the conceptual level overview.

Base the unit mostly in the Service Strategy publication for 2012 is being considered but is again hampered by the lack of a suitable text.

NEXT STEPS

The plan for 2012 is to be able to offer an ITIL Foundations unit that would enable the students to sit the ITIL Foundations Exam. To do this the School must undergo an accreditation process and meet three requirements of the accrediting agency, the APM Group (APMG):

i. Management Systems Assessment - the management and administration processes relating to the delivery of training and exams are be reviewed. This should be straight forward for any University to achieve.

ii. Course Material Assessment – review of the course materials. The assessment of materials involves a review of slides, handouts, sample papers and exercises, trainer and delegate notes and pre-course materials.

iii. Trainer Assessment – the trainers need to meet criteria including undertaking a number of ITIL training courses and be observed presenting sessions to students, including workshop and case study elements, preferably as part of a normal training course.

It is believed ITIL Certification will improve student's prospects with employers (Cater-Steel et al., 2010; Conger et al., 2009; Shackleton & Bentley, 2008).

Also, under discussion at the time of writing is an ITSM major at postgraduate level. This would begin with the Foundations unit and then look at ITIL in more detail. This appears more workable and already has a model in the ITIL Certification structure. With management support, there may also be the inclusion of ITIL based material in other units.

LESSONS LEARNED

Comparing Curtin's efforts to the other research, it appears that rather than having two approaches to the implementation of ITSM/ITIL into the curriculum, there are two stages. The first stage is the incorporation of ITIL material into relevant units. As units are added and evolved, a School would then be in a position to offer an entire ITSM major. This is reflected in the three of the four other papers on this subject (Bentley, 2006; Cater-Steel et al., 2010; Shackleton & Bentley, 2008). It is suggested this is a sensible approach as the amount of effort to start developing an ITSM major would be overwhelming. There is no evidence the author could find of anyone adopting this approach.

Schools considering integrating ITIL would be best served at looking what elements of ITIL could be included in their current units and evolve their offerings over time to a full major in ITSM. For example, IT Security units may consider the ITIL processes for Information Security Management or IT Service Continuity Management. Units on analysis and design may be well served to consider ITIL's Service Design principles.

The ITIL material is not of itself suitable for teaching to students because it assumes prior knowledge. If good teaching takes students from the unknown to the known, then course material needs to provide the background for why things are done. Generally, the concepts are introduced in their more traditional form. This then forms the basis for the ITIL material which

teaches how things are done. Over the weeks of semester, there needs to be reinforcement of basic concepts and terminology. Other solutions for engagement can include additional readings, guest speakers and visits e.g. to a Help Desk.

CHALLENGES

There are still no concrete plans for incorporating the Service Design or Continual Service Improvement publications. The following challenges indicate the difficulties associated with moving forward in these areas.

A significant challenge referred to by all the other authors is the lack of textbooks. For the initial Service Operations unit a text by Addy (2007) was used but proved difficult as it related to Version 2. However, issues with texts has been rectified with a range of cut-down versions of the ITIL publications being produced by Van Haren publishing e.g. (van Bon et al., 2008).

As noted by others (Bentley, 2006; Shackleton & Bentley, 2008) one of the challenges for academics is acquiring enough knowledge and experience to be able to teach and design ITIL content effectively. There are two options – self study and training courses – but neither of these are simple solutions.

The author suggests that typically academics design and teach units based on self study together with prior experience and available textbooks. With no texts available and limited prior experience, the self study approach with ITIL is very time consuming. The best sources for in-depth knowledge are the ITIL books themselves. However, approximately 250 pages of detailed and sometimes abstract concepts for each of the five books is daunting.

The other alternative is training courses. However these are expensive and cost up to US$800 per day. In developing the author, the School will have invested over US$10,000 by September 2011. If an institution seeks to become accredited to offer the ITIL Foundation Certificate, this cost is mandatory and does not include the fees for accreditation.

In addition, the itSM (sic) Foundation, offers seminars and conferences on ITSM and ITIL and may be good sources of further knowledge and assistance.

OTHER STAFF MEMBERS AND PREVAILING VIEW OF IS

Among the author's colleagues, there is little understanding of ITSM concepts, ITIL and how it might relate to information systems as a discipline. Very few staff had heard of ITIL and almost none have any explicit understanding. During a presentation by the author to his colleagues about ITIL it was noted the local electricity utility company was a keen adopter of ITIL. One Professor then queried why this had not resulted in an improvement to his electrical service.

Another example is the review of a unit concerned with IT security. It was suggested to the colleague that he could replace much of the current material with ITIL based content. He declined saying the unit would be updated to reflect the ISO/IEC 20000 standard. It was not appreciated that while the "standard" could be taught, content based on ITIL was the "what to do" to reach the standard.

School's seeking to include ITSM into the curriculum would be advised to have an explicit strategy and plan to which all staff are agreeable and/or accountable, ITIL Foundations training for staff, and a timetable agreed for the introduction of the various ITIL process into a range of units. At Curtin, the introduction has been a singular effort and this makes implementation slower.

CONCLUSION

For many IS schools the question of whether to teach ITSM concepts may mean a more radical departure from current course content than was the case at Curtin. The question for many IS schools is whether their courses are covering all IS industry requirements? Or, as suggested by Cater-Steele, Conger, Pollard and others, there is a gap between academia and industry.

Rephrasing the question, if ITIL is truly a best practice framework as defined by industry, and ITIL is not being taught, then what is being taught instead? At Curtin the initial momentum was from industry. It would appear it IS course changes may need to be considered and these may need departure from traditional IS courses and the ACM model curriculum (Conger, 2009).

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