Embedding IT Service Management in the Academic Curriculum: A Cross-national Comparison[1]

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ABSTRACT
Universities have a responsibility to equip graduates with the knowledge and skills to be productive in their work environment. Recently, the discipline of IT Service Management has become globally recognized as critical to organizations. Academia appears to be lagging industry in providing education in this field. This paper describes the motivation, implementation, outcomes and challenges experienced by two universities, one in Australia and the other in Canada, in designing and offering an ITSM course. Using a narrative inquiry method, the authors share their experiences and compare these two cases. The outcomes of the analysis highlight the need for professional development of Faculty, consideration of the breadth and depth of content, and balancing of competing Academic goals. A list of lessons learned is formulated to assist other faculty members undertaking similar endeavors.

Keywords
IT Service Management, IT Infrastructure library, ISO/IEC 20000, curriculum design, reflective process.

INTRODUCTION
It is vitally important for universities to provide graduates with the knowledge and skills required by employers. Universities are encouraged to be more industry relevant, practically focused and to add value in tune with industry and government funding pressures (Jovanovic et al. 2006). IT service management (ITSM) is defined by Conger et al. (2008) as focusing on "defining, managing, and delivering IT services to support business goals and customer needs, usually in IT Operations" (p. 1). ITSM has become increasingly important as information systems play an essential role in public and private sector organizations. With the increased emphasis on IT governance, organizations need to ensure that they have effective processes and

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skilled staff in place to manage their significant investment in IT infrastructure. In fact, the fundamental function of the information technology (IT) profession is the cost effective provision of IT services that align with organizational strategy and meet the needs of the organization (Beachboard et al. 2007). Gartner estimates that 69 percent of the total IT budget in typical enterprises is spent on IT operations (Tracy et al. 2006). The IT Infrastructure Library (ITIL®) and the international standard for IT Service Management (ISO/IEC 20000) are recognized as providing best practice frameworks for IT service management and are globally adopted in public and private sector organizations.

An important feature of ITIL, which has facilitated its acceptance, is the internationally recognized certification of accredited ITIL training courses. Today, many consulting firms offer ITIL training in response to the demand for ITIL certified staff. Despite this sweeping adoption by industry, most academic institutions appear to be reluctant to include ITIL in their IT curriculum. Accompanying this is a general lack of interest by information systems researchers in ITIL adoption, as noted by Venkatraman and Conger: "The best practice processes and principles that are part of ITIL: Service Management, Service Delivery, Applications Management, etc. are very much in-line with the teaching objectives of MIS departments. Despite this, however, the level of understanding and interest of ITIL in academia, both on the research and teaching dimensions, significantly lags industry activity" (2006).

The University of Southern Queensland (USQ) in Australia and Carleton University in Canada are early adopters in offering ITSM courses in their curricula. The objective of this paper is to describe the motivation, implementation, outcomes and challenges of designing and offering an ITSM course. By sharing their experiences, presenting, and comparing these two cases, the authors identify the critical issues and lessons learned to assist other faculty members in the same endeavor.

Regarding the scope of this study, there are two distinct elements to be considered: firstly, the inclusion of IT service concepts in the curriculum, and following this, providing the opportunity for students to achieve industry certification for the de-facto standard ITIL v3 or the international standard ISO/IEC 20000.

The paper is structured as follows. The background section highlights the similarities between Australia and Canada as well as providing a brief introduction to ITIL and ITIL certification. The literature review reports previous studies on IT Service Management education and IT certification in Academic IT programs. The method section describes the approach taken in this study. The experiences from the Australian and Canadian universities are described individually and then compared in the discussion section to extract key issues. The conclusion summarizes the discussion and presents an agenda for future research.

BACKGROUND

This section provides a brief description of ITIL and introduces the industry certification scheme for ITSM professionals.

IT Infrastructure Library

The ITIL framework is the most widely accepted approach to managing IT services. ITIL is contained in a set of comprehensive and coherent publications providing descriptive guidance on best practice for ITSM, drawn from public and private sectors internationally. The first version was developed by a British Government agency in the 1980s to promote efficient and cost-effective IT operations within government controlled computing centers. The core processes described in Version 2 (published in 2002) included service delivery processes to manage service levels, finance, capacity, service continuity and availability, as well as service support management processes for service desk, incidents, problems, change, release and configuration. The current version (v3) was released in 2007 and takes a service lifecycle view. The framework is currently administered by the Office of Government Commerce (OGC) in the United Kingdom (UK) which has delegated authority to the APM Group to use OGC's intellectual property and issue licenses to training organizations.

ITIL v2 evolved to the international standard for IT service management (ISO/IEC 20000) - a formal and universal standard for organizations seeking to have their service management capabilities audited. Since it was ratified in December 2005 by the International Organization for Standardization (ISO), growth in its adoption has accelerated. As of March 2010, 469 organizations in 42 countries have registered their certification details on the itSMF International site (itSMF 2010). The ITIL resources provide a useful body of knowledge for achieving ISO/IEC 20000.

ITSM Professional Certification

As shown in Figure 1, worldwide the number of ITIL foundation certificates awarded has risen steadily during 2009 and more than one quarter of a million people have obtained ITIL Foundation certificates in the 14 months depicted. This graph does not include the ISO/IEC 20000 foundation certificates or the more advanced certificates for v2 Practitioner, v2 Service Manager, or v3 Intermediate.

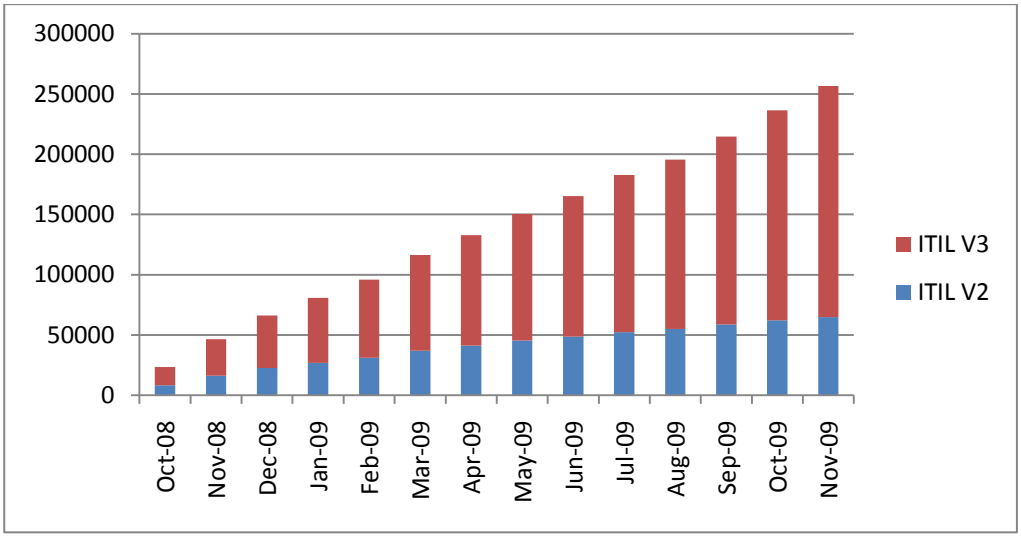


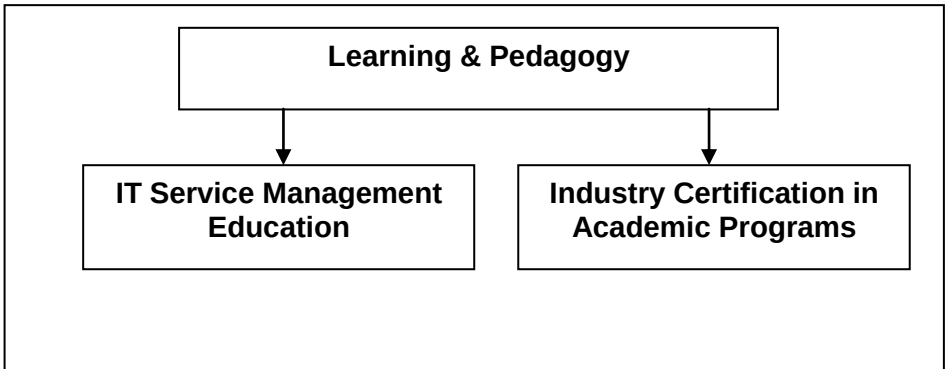
Figure 1.Cumulative Total of ITIL Foundation Certificates awarded Oct 2008-Nov 2009

(Derived from statistics provided by S. Campbell, February2, 2010)

To examine the demand from employers for ITIL skills, in March 2010, the authors queried popular websites for jobs requiring ITIL skills in Canada and Australia. Currently, according to Workopolis.com, there are 290 jobs requiring ITIL skills in Canada and 843 listed on Seek.com in Australia. These positions were in the areas of Help Desk/Support, project management, business analysis, software engineering, networking, and training (Seek Ltd 2010). This is a marked increase since May 2004 when Seek listed only 25 jobs in Australia asking for ITIL skills (Wilson 2004). These statistics confirm reports in industry press that certification has become a 'recruiting filter' in Australia as well as in Europe (Schuller et al. 2006; Wilson 2004).

LITERATURE

ITSM is a relatively new discipline so it comes as no surprise that there is very little academic literature on ITSM education in general or ITSM certification in particular. Figure 2 depicts the structure of the review of relevant literature commencing with the broad field of learning and pedagogy and progressing through the separate fields of ITSM education and Industry Certification in Academia to a narrow focus of ITSM Certification in Academic Programs.



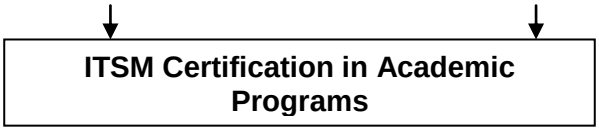


Figure 2. Literature review structure

Learning and Pedagogy

The history of learning and pedagogy is rich and diverse and a complete review is beyond the scope of this manuscript. Some of the earliest discussions of learning are embedded into modern day pedagogical approaches. For example, Aristotle felt that for a person to learn something, they actually had to do it (2004). This is consistent with constructivism and the "learning by doing" pedagogical approach (Duffy et al. 1992). Classical empiricism states that we can learn about two different things; matters of fact and matters of logic (relations between ideas) (Locke 1974). For matters of fact, people learn through observation and experimental reasoning. Alternatively people learn about relations between ideas through abstract reasoning. Kant posits that learning is the linkage between theory and practice, i.e. no matter how complete a theory is, there must something that connects and facilitates the theory into practice (1983). This is consistent with many institutions' views on university education. The underlying assumption of authentic learning is that course resources and activities are meaningful to students and therefore, students are motivated and develop critical thought.

The focus on experience and practice is rife throughout the literature on learning. For example, Dreyfus and Dreyfus (1986) feel that learning often occurs through trial and error and imitation of persons with more experience and expertise. To that extent, they propose five categories or states that learners move through as they acquire more skill. Those categories include: novice, advanced beginner, competent, proficient, and expert. Learning at the novice level usually lacks context and focuses on the acquisition of objective elements that are required to achieve a basic skill level. A learner transitions into the advanced beginner stage as they acquire some experience in the domain of concern and start to recognize the elements within some context. Competence occurs when learners can identify associations between the variety of situations that may be occurring in their environment and make analytical choices and decisions among alternatives. The movement to proficiency and through to expertise involves the use of intuition to effortlessly know what action to take based on a wealth of maturity and understanding garnered from large amounts of experience.

Recognizing the stage at which a learner is in becomes critical as it informs pedagogical approach and the associated content created to move learners along the expertise continuum. For a more complete review of different learning theories see Ramirez et al. (2009).

ITSM Education

Although ITSM has been included in the curriculum in a few countries (e.g. in The Netherlands) for many years, it has been largely ignored by most universities in the USA, UK, Canada or Australia. The need for Business Schools to provide ITSM education was recently stressed by Beachboard et al. (2007) who claimed that "with ever-increasing adoption of IT management 'best practices', industry now leads the academic community by recognizing the need for IT professionals educated in the IT service management (ITSM) processes -- processes directly associated with the delivery of high-quality, cost-effective IT services" (p.555). Industry representatives also strongly advocate the importance of including ITSM principles and concepts within IS curricula. The analysis of a survey conducted in conjunction with itSMF USA revealed there is demand for graduates of IT programs who are knowledgeable about IT service management practices with at least 15,000 jobs per year in the U.S. (Conger et al. 2009b). Based on interviews with IT Service Managers, Cater-Steel and Toleman (2009) reported that in Australia, ITIL skills have been included in position descriptions and are required of IT contractors in some large organizations.

Recently, some IS faculty members have advocated for ITSM concepts to be included in all stages of MIS programs. For example, after reviewing 23 texts used in Introductory IS courses, Conger and Pollard (2009a) concluded that although IT Service Management is a vital area, it is largely omitted from texts. They recommend a change in focus to recognize the role of IT in supporting business management, and the need to include process management. Furthermore, Pollard et al. see a need for ITSM to be integrated into Systems Analysis and Design courses (2010). In the USA, Idaho State University provides an increased focus on IT operational management issues through a capstone course that conceptualizes the enterprise management of IS as including both IS governance and IS management processes (Beachboard et al. 2005).

Awareness has been raised by two initiatives underway to transition ITSM into university pedagogy: IBM's Service Sciences, Management and Engineering (SSME) and itSMF (Galup et al. 2007). The IBM SSME initiative emphasizes undergraduate and graduate programs that focus on the development and support of Government and Business Services and the internal operations of the IT organization. The second initiative is being promoted by itSMF in the USA and Australia though annual academic forums to promote the development of academic programs focused on ITSM.

Certification in Academic IT Programs

Certification, licensing, and credentialing are used in professions such as law, accounting, education, healthcare, and engineering to restrict entry to the profession (Hunsinger et al. 2009). IT job seekers and professionals use voluntary certification to indicate their professional qualification in terms of skills and knowledge. According to Hunsinger (2009), the use of certification has been seen as indicating that the IT field is changing from a trade to a profession and planning to obtain appropriate

certification can be considered part of a career path and the opportunity for higher wages.

Within the IT industry, certification is a designation earned by an individual to verify their knowledge, skills and expertise within a particular area (White 2007). The certification process aims to provide the individual with a certain level of competency that is widely recognized by many organizations (Schlichting et al. 2004; White 2007). It verifies an awareness of specific knowledge and promotes the practical implementation of standards (Tripp 2002). It confirms that an individual possesses the skills required by an employer.

There are many compelling reasons why industry certification can be incorporated to benefit students in academic programs (White 2007). Firstly, graduates with certificates are more employable and more likely to be considered for promotion than those without (Schlichting et al. 2004). Secondly, as previously mentioned in relation to ITSM skills, there is evidence that new graduates are deficient in certain skill sets. Certification may help redress this deficiency (White 2007). IT certification is endorsed by professional bodies such as the Association of Computing Machinery (ACM) (IEEE et al. 2001).

The value of industry certificates for IT professionals was confirmed in a recent survey of Human Resources (HR) managers and IT employees in the United States: Wonacott (2003) found strong evidence of the increasing acceptance, prevalence and benefits of certification of IT staff in business and industry. The US study focused on certificates awarded by vendor organizations such as Microsoft and Cisco, as well as professional associations such as the Project Management Institute and the American Institute of Certified Public Accountants. The HR executives and IT employees reported that certificates related to IT education were of great benefit in the recruitment and job application process; both felt that an IT certificate was a clear signal of not only specific IT knowledge and skills, but also of desirable motivation and attitude (Wonacott 2003).

The competition between traditional education providers and the increasing number of private sector companies which provide education and training, assessment of competencies, and provision of credentials has received attention of community colleges in the US recently (Flynn 2001). Adelman (2001) perceives a "growing parallel universe in tertiary education" based on the success of private sector companies offering certification and claims they are contributing to a global "Information Technology Guild" (p.277).

On the other hand, industry certification has been viewed with some suspicion by Faculty members on account of lack of monitoring from government or accrediting organizations (Chan et al. 2005). Stein et al. (2005) raise the concern that industry certification programs are perceived as *training* and are therefore not *educative*. Kurtus (1999) discriminates between the two based on the location of the training:

"*Education* concerns remembering facts and understanding concepts. It is usually taught in school, although self-study is possible. *Training* concerns gaining skills and is taught either in trade schools or business training sessions". Further clarification from Tovey and Lawlor (2004) focuses on the timing of the training: "Training is concerned with the development of knowledge and skills to be used immediately, or in the very near future, and deals with developing people who already have, or who are just about to enter, a job" (2004).

It is recognized that integrating IT certification into degree courses presents a number of possible challenges (White 2007). Issues include course preparation, additional resources, training and support requirements, and requests from students for credit for completed certificates (Schlichting & Mason 2004).

ITSM Certification in Academic Programs

Although there are myriad accredited commercial providers offering ITIL training courses, after consulting colleagues and searching the internet, the authors found few universities are teaching ITSM based on ITIL. Apart from the two described in this study, the exceptions include Charles Sturt University (Rossi 2008) and Victoria University in Australia (Bentley 2006); University of Dallas Graduate School of Management (Thibodeau 2007), Florida Atlantic University, Appalachian State University, and Idaho State University in the USA; University of Bergen in Norway (Iden 2006); University of Delft (Netherlands), and Tecnológico de Monterrey (Mexico). It is not clear how many of these universities facilitate students' achievement of the ITIL or ISO/IEC 20000 certificates.

In fact, there is little published research to date on the experiences of Universities including certification alongside ITSM courses. Bentley and colleagues at Victoria University have provided examples of certification models and described how they included aspects of ITIL v2 across a range of courses, as depicted in Figure 3 (Bentley 2006; Jovanovic et al. 2006; Shackleton et al. 2008; Stein et al. 2005).

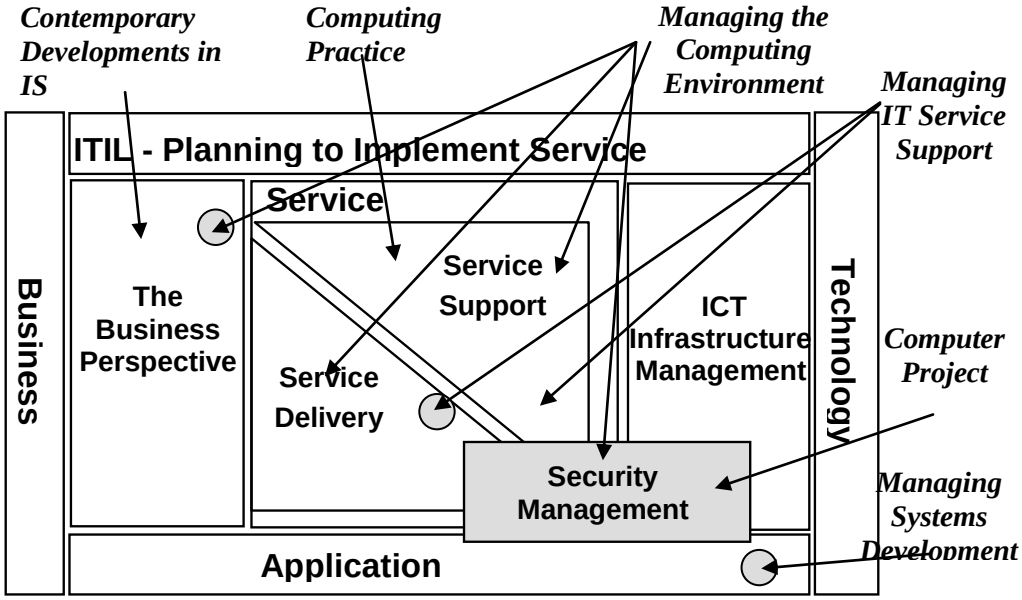


Figure 3: Mapping Courses to the ITIL v2 Framework (Bentley 2006)

As well as covering the ITIL concepts, Victoria University encourages students to enroll in an on-line ITIL certification course offered by a commercial provider and to sit the Foundation exam in parallel with the Bachelor of Business (Computer Systems Management) program as shown in Figure 4.

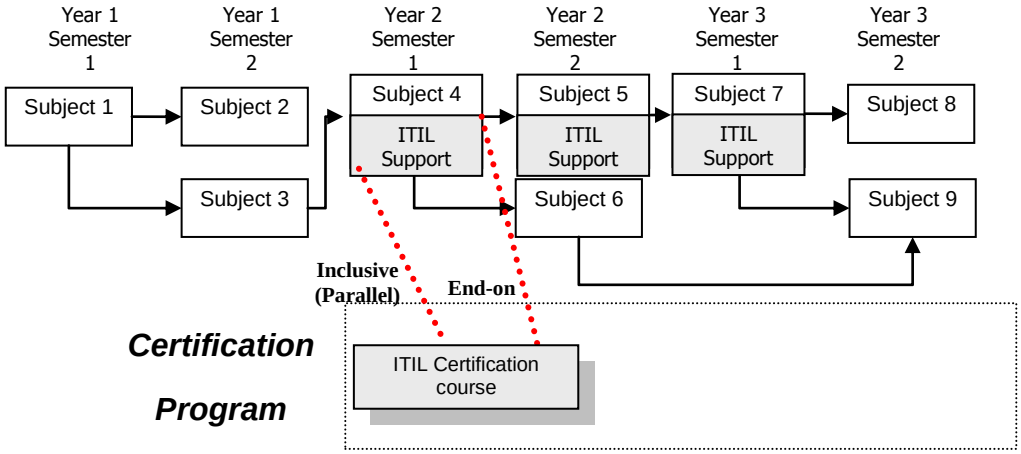


Figure 4: Certification Model Inclusive (Parallel)/End-on (Bentley 2006)

This study aims to redress the identified gap in the literature by describing the motivation, implementation, outcomes and challenges of designing and offering ITSM courses in Australia and Canada.

METHOD

The methodology used to conduct the research for this study was based on narrative inquiry with reflective processes as a means to document the experiences of the Australian and Canadian course leaders. The narrative inquiry approach entails the documentation and analysis of sequential personal accounts of a specific domain of discourse, allowing the research participant to tell his or her own story (Hunter 2004). Narrative inquiry has been used previously in Information Systems research, for example by Hunter and Tan (2001) to identify the major career path impacts of IS professionals.

As faculty members, we are encouraged to use reflective practice to prompt considered actions to enhance our teaching (Fry et al. 2009). This research was motivated by our desire to improve our ITSM courses. The authors met and discussed in detail our experiences in terms of the courses, materials, assessment, history, challenges, and outcomes. After agreeing on the format of the narratives each author individually prepared their account. We then reviewed the narratives and met again to discuss and refine the narratives and to compare and contrast the approaches and outcomes. Each of the authors then had a subsequent opportunity to review and comment on the narratives. Through this process we were able to gain deeper understanding of the relative benefits and drawbacks to the approaches that were undertaken.

AUSTRALIAN CASE

USQ Background

USQ is a regional Australian university with the main campus in Toowoomba and satellite campuses at Fraser Coast and Springfield. There are almost 25,000 students enrolled at USQ. Of this number, there is a strong international cohort with 2,000 international students on-campus and 5,000 external international students. The School of Information Systems in the Faculty of Business has a significant number of students from India and Pakistan enrolled through a partner in Sydney, as well as students in Hang Zhou China.

In terms of curriculum and accreditation of IT programs, Australia is represented on the International Professional Practice Partnership (IP3) taskforce. IP3 is an initiative of the International Federation of Information Processing (IFIP) to strengthen the ICT profession. IP3 accredits schemes for certification of professional status of member societies, effectively giving society members global recognition as ICT professionals. The IP3 taskforce includes the British Computer Society, the Australian Computer Society (ACS), the Canadian Information Processing Society (CIPS) and IEEE (CS). Internationally recognized certification for ICT professionals offers the chance for

much greater recognition of ICT disciplines and increases their professional status globally. IP3 is using the Skills Framework for the Information Age (SFIA) as a framework against which to accredit that the professional programs of member societies give a comprehensive and sophisticated picture of the ICT profession (SFIA 2008). This SFIA framework was produced by the SFIA Foundation, a not-for-profit body comprising a number of UK-based organizations, including the British Computer Society (Gregor et al. 2008).

In 2007, Australia signed the Seoul Accord which established a draft set of graduate attributes that would be expected of a program preparing students for entry to the ICT profession (Gregor et al. 2008).

In Australia, the ACS accredits IT programs based on its Core Body of Knowledge (Gregor et al. 2008). IT Service Management is explicitly recognized as a knowledge area in the ACS Core Body of Knowledge and SFIA (service provision, operation, user support) and includes 'roles concerned with the ongoing operation of IT in an organizational context and the structuring of the interactions of IT technical personnel with business customers and users' (Gregor et al. 2008).

ITSM Course

In 2005, in response to recommendations made from a review of USQ's Computer Services, the Department of Information Communication and Technology Services (DICTS) at USQ commenced adoption of ITIL. As training was being conducted on-site for USQ IT professionals, Faculty members in the School of Information Systems were invited to attend the ITIL v2 Foundations course. We realized at this point that ITSM was an important and neglected area of research and education. We signed a Memorandum of Understanding with itSMF Australia to undertake research at their National Conferences, and gained USQ approval in 2007 to offer a course in ITSM to undergraduate and postgraduate students.

In 2007, EXIN South Pacific offered the opportunity for two Faculty members to sit the pilot exam ISO/IEC 20000 Service Quality Management Foundation Certificate. In 2008 we participated in the pilot exam of four ISO/IEC 20000 Professional Level Certificates: Support of IT Services, Control of IT Services, Management and Improvement of ITSM Processes, Alignment of IT and the Business.

The first offer of the ITSM course commenced in July 2008. In line with the School's intention to include industry certification as appropriate, approval was sought from EXIN South Pacific to offer students the opportunity to achieve the internationally recognized ISO/IEC 20000 Foundation Certificate.

In developing the curriculum, efforts were made to ensure the USQ graduate qualities of discipline expertise (broader knowledge of IT field), and professional practice (ITSM skills) were incorporated by focussing on the development of particular skills such as professional literacy, problem-solving, written and oral communication, interpersonal skills, and management, planning and organisation skills. The

preparation of course materials was very time-consuming for the academics involved in the course team requiring in excess of 250 hours. As the course is offered in external mode, the materials need to be prepared and published prior to the commencement of the semester. In the absence of an ITSM textbook or instructor resources, we developed lecture slides, multiple choice questions, case studies and exam questions.

The ITSM course is a third level offer and students are enrolled in the Bachelor of Business (IT Management major), Bachelor of IT, or Master of IS programs. The ITSM course enables graduates to recognize the importance of ITSM and the need for effective processes to manage the significant investment in IT infrastructure. It explains the contribution of ITIL and ISO/IEC 20000 in providing best practice frameworks for IT service management. The course helps students understand the objectives, terminology, activities and associated roles and responsibilities to enable effective management of the service lifecycle. It provides skills for planning and management of IT service processes such as problem resolution, configuration and change control, release into the production environment, as well as promoting effective relationships between ICT and the business and their suppliers.

The first offering of the course in 2008 used an ITIL v2 book (Palmer 2005) supplemented by the standard ISO/IEC 20000. With the release of ITIL v3, the text was changed in 2009 to align more closely with the standard (Van Bon et al. 2008) but students complained that the style of the book was terse and difficult to read. To provide relief regarding the expense of the textbook, e-book access was trialed in 2009 but was not popular with students due to printing restrictions. For the 2010 offer, we are including ITIL v3 (Van Bon et al. 2007) while maintaining the focus on the international standard. Each year, approximately 170 students complete the course.

The School of Information Systems has also focused on research into ITSM and has conducted surveys at the itSMF Australia National Conferences 2005-2009 and case studies. In 2008 we secured funding through the Australian Research Council (ARC) for a Linkage Project with Queensland Health and itSMF Australia as industry partners. The ARC project PhD student is developing a performance management framework for ITSM which can be used to measure the performance and benefits (financial and non financial) from ITSM initiatives and has become a valuable member of the ITSM course team.

Pedagogy

Subscribing to the teaching philosophy of authentic learning (Downes 2007), the course materials, lectures, activities and assessment are framed around ‘real life’ constructs and include case-studies and involvement of ITSM professionals. Students are encouraged to relate their own experiences as consumers of IT services to the materials presented. One of the key innovations of the ITSM course is the focus on service. Student learning is enhanced because students are motivated believing that

ITSM is relevant to both IT and Business**:** *"I whole-heartedly believe that universities should offer ITSM as a core subject in the Bachelor of IT and Bachelor of Business. Any student who intends to work for a reasonably sized organisation either in Australia or overseas needs an understanding of this field" (student JL, 2010); "this knowledge is essential as I progress in the IT area" (student TP, 2009).*

This course is one of a handful world-wide that recognizes the paradigm shift for IT functions as it deemphasizes the development and management of IT assets and focuses on the provision of quality end-to-end IT services. Regardless of whether students work in IT currently or in the future, it is vital that they achieve a basic knowledge of service management as the service industry now dominates our economy. Student TW confirms the importance of the client focus: *"IT service management is crucial for success regardless if you are working in an internal department or servicing external clients. Studying ITSM provided me with some excellent frameworks for providing exemplary services to clients. The ITSM course at USQ offered a practical and industry aligned approach and I have found the material extremely useful in my work life" (2010).*

Aspects of professional literacy are also addressed: *"the understanding gained by students of how an IT department does and should work is extremely valuable. Those intending to go into the IT industry can hit the ground running. Those that may not move into the industry still gain benefit as they can better liaise with IT support staff and potentially use the knowledge gained in their own areas of work"* (student HM, 2010). Furthermore, students engage with the course materials as the link between theory and practice is explicit: *"provides the Foundation not only as a base to link to the real life and live environment, but whatever we learn from this course we can apply to our working environment immediately"* (Feedback form, 2009).

The scope of the course is broad, covering all the ITSM processes. Students report the broad focus is valuable to prepare them for a variety of specific roles*: "from my work experience it is so important for every part of the IT team, technical and non-technical, to know the basic concepts because change management is a huge part to get right in our team and it took everyone a really long time to understand and follow"* (student AT, 2010).

Skills acquired by students contribute to IT projects: *"ITSM directly relates to my work as an IT Project Manager. The projects I deliver will always affect Service Levels, and the knowledge of how this concept of 'Service Delivery' ties in with the delivery of my project, greatly assists in the acceptance of my project deliverables and ensuring the best solution is presented to the client"* (student TJ, 2009).

Innovative technology is used to enhance learning for both on-campus and external students. For example, podcasts of all lectures are provided via the online Study Desk and professionally video-recorded interviews with the USQ CTO and six IT service managers are video-streamed to students. The Australian students find these resources

valuable: '*the audio lecture recordings were a godsend. It really helps external students know what is presented along with the slides'; 'Please keep going with podcasts in future'.* On the other hand, the students in Hang Zhou find it difficult to follow the audio recordings and prefer the written materials. The online Study Desk includes a discussion forum for weekly posts from students to discuss case studies. Assessment in the course comprises multiple choice tests in week 3 and week 6, a major assignment (case study) in week 9 and a final exam at end of semester. The final exam includes a multiple choice test and case study. Students are provided with the case study in advance of the exam.

Industry Certification

Students who can access campuses in Toowoomba, Brisbane and Sydney are encouraged to sit the EXIN exam through USQ in the revision week prior to the start of examination period. Students in other locations are advised that the exam is widely available at Prometric testing centers. The EXIN certificate is optional and does not affect their final grade in the course.

Offering the international certificate required a formal contract between USQ and a licensed examination institute. To achieve accreditation from EXIN International as an accredited course provider and examination centre, it was necessary for USQ to pass a rigorous audit. This involved developing and providing thorough documentation to EXIN of the course content, enrolment and examination procedures, and mapping the course content to the examination syllabus. In total, the accreditation process involved more than 150 hours of Faculty time. An Education discount offered by EXIN South Pacific enables USQ to offer the ISO/IEC 20000 Foundation Certificate examination at half the market rate to students enrolled in the ITSM course. To reach this point, faculty members needed to attend training courses to update their skills. The EXIN examination comprises 40 multiple choice questions to be completed in one hour. Exams are tightly controlled by EXIN to maintain the integrity. It is a closed book exam with the pass mark set at 65%.

The development of the business model to offer the certificate examinations also required effort. It was not possible to offer the examinations at no cost to the students so a process for registration, payment and receipt needed to be designed and implemented within USQ's Financial guidelines. A process for scheduling of the examinations also needed to be developed as the examination is in addition to USQ's scheduled course assessment.

To date, 19 students have attempted the Foundation Certificate and 14 have achieved the 65% needed to pass the examination. Feedback from students confirms that the certificate being highly valued by industry adds value to university qualifications: *"Achieving industry recognised certificates as part of a university course is a rare opportunity that greatly increases the value of my degree … The company I work for (as do most professional organisations) look extremely highly on Industry Certified training to complement classroom learning in University, as it gives graduates*

knowledge that would otherwise cost the company thousands of dollars and many years of training" (student TJ, 2009).

Many students are motivated to succeed in their study as they believe the certificate enhances their career prospects: "*I consider the certificate an asset that will improve my employment prospects" (student JL, 2010); "my goal is to eventually be employed as a network administrator and ITSM is essential to me achieving that goal" (student JL, 2010); "Because I wanted an additional certificate to show that I knew the concepts. I was very interested in this role at my work and I wanted to have something as proof for my resume" (student AT, 2010).*

From an assessment perspective, the industry certificate provided an opportunity to consolidate and test knowledge: *"the exam also served to cement my own knowledge of the subject matter for both university assessment and implementation in the real world" (student HM, 2010); "it is good at the end of studying something to test your knowledge and I liked having that challenge" (student AT, 2010).*

Also, students appreciated the expertise of faculty members*: "it makes more sense to get these certificates at university where I have access to experts in this field that can guide me through the material rather than doing it on my own" (student JL, 2010).*

Feedback from industry stakeholders also confirms the value of the course and certificate. Local employer Mr Trevor Henderson, owner of Downs Microsystems confirms the course provides students with valuable skills: *"One of my staff members is a USQ student who has completed the ITSM course and certificate: now I encourage other IT Service staff to enrol in the USQ ITSM course" (email, 2010).* A sentiment backed up by Ms Campbell, Area Manager for EXIN South Pacific: *"The integration of ITIL Foundation and ISO20000 has been innovative and a vital link in raising the profile of best practice in ITSM for the higher education sector. As a result IT graduates from USQ understand the significance of world best practice in ITSM which will benefit the industry as a whole. " (email, 2010).*

Challenges

The main challenges encountered to date relate to the course materials and the lack of a suitable text book and teaching materials. The continual upgrading of standards such as ITIL and ISO/IEC 20000 make it difficult to keep the course materials and academic skills up to date. The cost of the Foundation exam for students (currently US$150) could not be borne by the university and may be prohibitive for many students, however regardless of whether students elect to sit the exam or not, it is a career advantage for graduates to have covered the concepts. As a result, graduates are job-ready with the skills sought by employers.

Initially we hoped to include hands-on use of an ITSM tool to give students experience with state-of-the-art systems for configuration management. This idea was

abandoned as providing access for external students was problematic and the extent of the essential course materials did not leave time to teach a complex ITSM tool.

Preparing the required documentation to achieve EXIN accreditation was more time-consuming than anticipated but is expected to provide rewards in the future as the School of Information Systems is now incorporating industry certification into other courses e.g. security and SAP.

Future Directions

In the future, more case studies will be incorporated into the materials and industry resources such as webinars will be used to stimulate discussion amongst students. As students have enquired about more advanced courses in ITSM we are considering an ITSM specialization within the Master of Information Systems program.

CANADIAN CASE

Carleton University Background

Carleton is located in Ottawa, Canada and has approximately 23,000 students from over 100 different countries. The Sprott School of Business has approximately 3,500 undergraduate, 96 MBA , and 56 Ph.D. locally enrolled students.

In terms of curriculum and accreditation of IT programs, Canada has representatives on the International Professional Practice Partnership (IP3) taskforce and is a signatory to the Seoul Accord. Computer Science programs at Canadian Universities are accredited by the Canadian Information Processing Society (CIPS). Information Systems programs often refer to the AIS and ACM curricula.

ITSM at Sprott

The genesis of ITSM in the Sprott curricula began in September 2007 when two faculty members attended the ITSMF USA Academic Forum in Charlotte, North Carolina. In May 2008, the IS faculty met on numerous occasions and decided to try and integrate service concepts throughout both the undergraduate and MBA curriculum. There was also a general expressed interest in pursuing research in the ITSM domain. Two IS faculty members (different from the previous two) attended the itSMF USA Academic Forum in September 2008 and one of those, along with an additional faculty member became ITIL v.3 certified in December 2008. The first course incorporating ITSM at Sprott was the Fundamentals of IT Service Management course in the MBA program. It is a core course taken by all MBA students and was first offered in October 2008. In January 2009, Sprott began offering a 3rd year elective course in ITSM at the undergraduate level. The pre-requisites to the course were designed to be minimal making it accessible to all interested Business students. Twenty students enrolled in the January 2009 offering.

Pedagogy

The undergraduate course takes the perspective that customer-centric end-to-end business processes need to be developed and aligned with an organization's strategy and subsequently delivered as and supported with IT services. To that extent, the course is comprised of two macro components. The first component focuses on understanding business processes; process modeling, analysis and improvement; and process standardization. The second component focuses primarily on ITIL v.3 and on preparing students to take the v.3 certification exam.

The process component of the course is very pragmatic and focuses on teaching and providing the students a process modeling tool-kit that can be applied to a variety of different situations. The students learn how to model workflows and processes and subsequently analyze said processes using a variety of techniques reflecting time, cost and frustration lenses (Madison 2005). From a pedagogical viewpoint, the design of this component follows a "*learning by doing*" perspective. This is enabled by a large assignment where each student group is assigned a process internal to the University to map, analyze, and improve. Students are required to interview and elicit the as-is process from multiple stakeholders. All assigned processes are cross-functional. Example processes that have been analyzed include student course registration, teaching assistant assignment, and MBA acceptance. A criticism of the "*learning by doing*" approach is that students' (as novices) cognitive schemas are not sufficiently developed to understand and integrate newly generated knowledge (Sweller 1988). To address this, we ensure that lectures provided appropriate background in the appropriate tools and techniques so the benefits of "*learning by doing*" can be enabled. In addition, by assigning processes internal to the university some students may have familiarity with the different activities, decisions and control points inherent in the assigned process. The process component also includes extant practitioner readings that highlight the increasing importance of business processes within industry (Davenport 2005; Hammer 2007). The process component is concluded with an in-class case exercise (CVS Pharmacies) as well as with a take home midterm assignment comprised of two additional case analyses. There is no in-class written exam.

The transition from the business process component to the ITIL component of the course is accomplished via standard lecture material showing logical linkages between necessary IT services to enable core value-generating business processes. In teaching ITIL, we attempt to prepare the students to write the ITIL v.3 foundation exam as well as contextualize core ITSM concepts via in class examples and cases. Representatives from Carleton's IT organization, Computer and Communication Services (CCS), come to the classroom and give an overview of how they have interpreted and adopted the ITIL framework within their organization. This is a helpful and beneficial lecture for the students. We also make every attempt to bring in at least one additional industry guest lecturer to speak to the students about practical experiences with ITIL.

The students write two sample ITIL v.3 foundation exams in-class but we do not offer certification. The students are encouraged to write the certification exam (at their own expense at a local exam centre) once they have completed the course. In addition the students are given an assignment where they need to decompose at least two services from the CCS service catalog into configuration items (CI) and detail linkages between the aforementioned CIs as well as describe what types of information should be collected about each CI. The students are also expected to review and synthesize ITSM literature as part of the course deliverables.

A recent email from a student in the first cohort validates the importance of integrating ITSM into Business School curricula:

> *"At [my workplace] they already were doing Change Management, a bit of Release Management and had a Help Desk before I came in, but my team is in charge of upgrading all of these processes and introducing many more such as SLM and Service Request. We have just bought a new tool that we hope to implement soon. Basically, I never expected it but ITIL has become my entire work life!"*

In September 2009 we started introducing fundamentals of services and service management into our introductory IS course which is taken by all Business students. These concepts are introduced in the context of petGRO, a fictional company that was created for the purposes of teaching IS concepts to undergraduate business students. For the duration of the course, students are assigned to one of 14 petGRO functional areas. The students are required to complete a small assignment where they identify and describe two services that their functional area would provide to other functional areas within petGRO. The concepts of customer, value, ownership and risk are emphasized.

The second offering of the ITSM undergraduate class was offered in January 2010 semester. The course remains fundamentally unchanged from the initial offering. Thirty four students enrolled. These numbers are very positive for an elective course (in comparison with other 3rd year electives). While students from all business concentrations have enrolled in the course, 80-90% of the students are from the IS and Operations Management concentrations. The course will become part of the core of the Information Systems concentration starting in the 2010-11 academic year and will be required for all IS students.

In the MBA, the Fundamentals of IT Service Management course is designed to provide students with an understanding of the key issues and trends in IT service management. It adopts a senior manager's perspective and focuses on managerial decision-making about the acquisition, deployment and use of IT services in organizations. The service perspective is emphasized and reinforced. The course begins with a lecture on the nature of service systems and positions ITSM in the larger framework of service systems. Other topics covered including leading and

managing IT services, and building and governing the IT service organization. Two lectures focus specifically on the IT Service Life Cycle and Functions and Processes of IT service Management using ITIL version 3. Here students are exposed to ITIL and its functions and processes. Our intention is to bring awareness and understanding rather than to prepare them for any type of ITIL Certification. The course ends with a focus on IT service performance and risk management.

The MBA ITSM course is delivered through a mixture of lectures and case studies. The lectures highlight issues and concepts in IT service management which can then be incorporated in the analyses of cases, typically done by students working in groups. Students are also provided with additional practitioner-oriented resources including links to relevant websites and videos focusing on ITSM.

A key feature of the MBA ITSM course is the final project which involves the development of a ITSM teaching case. With the paucity of good ITSM teaching cases we felt it would be beneficial to tap into the knowledge and skills of our MBA students many of whom (particularly the part-time students) are managers in private and public sector organizations. They are tasked with writing a realistic case, the best of which could be further developed for publication and use by us and other faculty members. Since the inception of the program all 88 students have written a teaching case. Students have indicated that participating in the course and doing the teaching case has been beneficial to their work as well.

"…my experiences with your course and this project in particular have led me to believe that adding the extended OPAS module is not in the [organization's] best interests for many reasons – and I was such a strong proponent of adding it last season!" MBA Student.

Challenges

In the undergraduate course, explaining the process component and the high-level concepts of transitioning organizations to a service perspective has not been difficult. However, teaching ITIL v.3 is extremely challenging. Put bluntly, the material is dry and to properly prepare the students to write the certification exam necessitates detailed coverage of concepts and nomenclature. This creates an environment where course goals are often misaligned, i.e. preparing for the certification exam requires focus on terminology, definitions and rote learning which may not be aligned with deep learning of core ITSM concepts. We are constantly trying to balance these competing goals keeping in mind the best interests of the students. In addition, available books on ITIL v.3 summarize the framework into content that is difficult for the students to read, absorb and maintain. Cases that focus on ITSM concepts are hard to find and instructors are often faced with retro-fitting other IT cases to emphasize a core ITSM or ITIL process. To date it has been difficult to get the students to take the certification exam on completion of the course.

In the MBA, we have not focused on the details of ITIL v.3, specifically because the material is so dry and dense. At the outset, we hoped to provide more detailed coverage of the material but quickly found that there was no appropriate text that properly contextualized the material in an accessible form. We therefore decided to keep the focus on the high-level concepts because most of our students would not be interested in ITIL in a detailed sense. This particularly true for those students who hold senior management responsibility in organizations. These same students, however, are able to relate to the concepts being taught in the course and are able to apply them to situations they encounter on the job.

Future Directions

For the undergraduate course, we are in the process of generating an integrated example using a fictional internal IT Organization of a University to contextualize the core ITIL v.3 processes. The concept is to follow initiation of an IT Service that students would be familiar within an academic environment from Service Strategy, into Design, Transition, Operation and Continual Service Improvement. In addition we are considering introducing weekly quizzes of 8-10 ITIL v.3-based multiple choice questions (to simulate the foundation exam), based on that week's lectures and readings. The quizzes will draw partially from content not discussed in class but based on ITIL v.3 readings. The purpose is to offload the learning of some of the definitional and nomenclature-based ITIL material outside of the classroom, and allow additional in-class time to focus on core ITSM concepts and contextualized discussion and interaction.

For the MBA, we are working to develop the ITSM teaching cases into documents that can be published in an appropriate journal. By doing this we hope to provide accessible cases for those teaching in this subject area.

DISCUSSION - INTERNATIONAL COMPARISON

Although there are some differences in the way USQ and Sprott have implemented ITSM in their curriculum, they followed a similar journey. The salient points from the cases are summarised as shown in Table 1 and key issues discussed.

	Australian Case	**Canadian Case Undergraduate***	**Canadian Case MBA**
Student Demographics			
University total students	25,000	23,000	23,000
No. ITSM Students / yr	170	27	45
Domestic / Intl.	Primarily international	Primarily domestic	Domestic
Full time / Part	Both	Primarily full time	Both

time			
Traditional UG / Mature	UG/PG	Traditional UG	PG
Course	CIS3008	BUSI 3405	ITIS 5401
First offered	July 2008	January 2009	October 2008
Focus	ISO/IEC 20000 and ITIL	Broad view including: business process mapping, analyses, and improvement; and ITIL v3	Strategic perspective on ITSM, case analyses, ITIL, teaching case development
Delivery mode	Distance mode and on-campus	Face-to-face	Face-to-face
Materials	Van Bon book, SIO/IEC 20000 standard, ppts, podcasts, videos, case studies.	Ppt slides, cases, guest speakers	Broadbent and Kitzis book, ITIL v.3 Introduction, ppts, guest speakers, cases, videos.
Assessment	MCQs, Assignment (case study), Exam	Assignments, case analyses, literature review and synthesis, ITIL v.3 practice exams	Group case analyses, individual case summaries, teaching case development
Certification Exam	Offered at 3 USQ campuses or Prometric offices	Local Consultant	N/A
Faculty PD	4x ITIL v2 foundations 3x ISO 20K Foundations 2x ISO 20K professional level	2x ITIL v3 Foundations	ITSMF Academic Forum, self-learning,
Challenges	EXIN International accreditation as course provider and exam centre.	Book, competing goals, certification exam, dry material, lack of cases	ITIL book,
Moving Forward	Offer ITIL v3 exams. Incorporate more case studies.	Comprehensive contextualized IT service example, weekly quizzes, engage more with local itSMF chapter	Publishing teaching cases developed by students.
*Note: does not include data about Intro IS course			

Table 1. Comparison USQ and Sprott courses and experience

Professional Development for Faculty Members

It is recognized that the roles of those who teach in higher education are complex and multifaceted. As Faculty members, we have contractual obligations to pursue excellence in several directions: teaching, research and scholarship, supervision,

administration and management, and maintenance of standing and provision of service in a profession (Fry et al. 2009). In fast-changing fields such as information systems, professional development is critical for Faculty to continually update their knowledge and skills. Certain individual obligations suffer at the expense of progress in others. When undertaking new curricula development in ITSM, professional development (PD) becomes critical. At Sprott we were fortunate to have strong support for ITSM PD. Funding was provided to attend the ITSM academic forum, for an ITIL training course, and for taking the ITIL certification exam. Unless you have practitioner experience with ITIL, we highly recommend taking a training course. It provides an opportunity to receive the ITIL material structured in a way to facilitate passing the certification exam. While we do not endorse structuring the University course to facilitate passing the examination, it is beneficial to experience the approach taken by commercial training providers. Professional development may also occur more informally for faculty members participating in local and national ITSM forums and workshops. By attending these meetings Faculty can become familiar with some of the more recent developments in the field as well as meet key local and national players who can provide links to industry and serve as guest speakers in the classroom.

Breadth Versus Depth of Content

At Sprott, the decision to incorporate process mapping, analysis, and improvement into the undergraduate ITSM course was multi-faceted. Most IT services are designed to support business processes so a logical linkage exists. In addition, teaching business processes necessitates discussion about metrics, measurement, controls, performance and improvement – all these concepts are fundamental to ITSM and ITIL. Like most IS programs worldwide, enrolments in the IS concentration remain low. By including a broader view of services and incorporating business process, multiple concentrations are served. In particular the ITSM course is popular with the Operations Management students. These students bring a different perspective to the classroom than the IS students which enriches all stakeholders' experiences. In particular, the Operations Management students are familiar with quality concepts, Six Sigma, and Lean which are highly relevant to discussions about IT services. The MBA course benefits from having experienced managers (particularly those in the part-time program). Consequently, we are able to take a more broad strategic perspective on ITSM.

On the other hand, the USQ ITSM course is positioned within the undergraduate academic curriculum among courses such as information security, systems analysis and design, and database design and implementation. At the postgraduate level in the Master of Information Systems, it can be studied alongside IT project management, business intelligence systems and global information systems strategy. The USQ course has focused on thorough treatment of the international standard while highlighting the need for non-IT staff to understand IT service management from a client/user perspective, e.g. negotiating service level agreements.

Competing Academic Goals

Certification certainly increases the employability of graduating students, and the promise of preparing students to be certified has been anecdotally proven to entice students to enrol into ITSM courses. However, we caution faculty members wishing to pursue a certification approach to their ITSM courses to not let the end goal of the certification examination overtake sound pedagogical principles. The certification examination is a multiple choice test and assesses the first two levels (knowledge and comprehension) of Bloom's hierarchy of education objectives (Bloom 1956).

Our experiences have shown that a curriculum overly focused on certification does not resonate well with students, and that sufficient time has to be allocated to appropriately contextualize material. The three academics who developed and delivered the ITSM courses are all senior academics with extensive experience as practitioners as well as lecturers. Our opinion is that students who do not have any work experience, and thus are novices, have trouble absorbing materials that are focused on the certification exam. They lack the experience to properly contextualize the course content and in general are not able to see the big picture and create linkages between the various ITSM concepts. Students who have even a little experience (advanced beginners) working in an IS shop demonstrate a much better understanding of the material, are more participative, and regularly refer to examples they experience in their working life and relate it to the course content. Curricula designed explicitly to prepare students for certification must be used to augment rather than replace more interactive experiences where focus can be given to the application, analysis, and synthesis of ITSM concepts and their practical significance in organizations unless the incoming students have relevant work experience. For students coming into ITSM courses with no work experience, it is critical that they are given tasks and cases that simulate real world experiences so they can properly absorb the materials directly related to the certification exam.

CONCLUSIONS

In this paper we have described the motivation, implementation, outcomes, and challenges of designing and offering an ITSM course in a university curriculum. The experiences of two universities, one in Australia and one in Canada are compared. This cross-national comparison highlighted a number of similarities as well as a few differences between the courses in the different settings. In both instances a key goal of developing the ITSM courses was to re-orient students' conceptions of IT services provision in organizations in a bid to enabling graduates to function productively in service-oriented workplaces. While ITSM had its genesis in the practitioner realm efforts were made to embed the content of practitioner-oriented ITSM practices (such as those contained in ITIL v.3 or ISO 20000) within a broader service systems framework. By doing this we were able to provide students with the academic tools to critically assess the implications of adopting ITSM practices in organizations while providing them with an understanding of those practices and how they are applied in business settings.

This paper has provided an opportunity to evaluate the approach taken implement ITSM in the curriculum and the resultant student outcomes. There are very few reported accounts of universities including ITSM in the curriculum and this provides guidance to others, and in so doing responds to the call by Adelman (2001) for comparative curriculum studies. Consistent with many of the earlier presented learning theories, our experiences with teaching ITSM suggest that context and work experience is critical in moving the students along the learning continuum. Unlike many IS subdisciplines such as database and IT infrastructure, ITSM is holistic and integrative in nature and is thus more reliant on either work experience, or a pedagogical approach that simulates work experience and context, to properly understand it and its implications within an organization.

The outcomes of the analysis highlight the need for professional development of Faculty, consideration of the breadth and depth of content, and balancing of competing academic goals. It suggests that while certification may be beneficial to students in their job-entry, it should not be allowed to overwhelm the academic imperatives of university education. Certification should be viewed as a useful complement and not an end in itself.

Lessons Learned

Based on our experience, we offer the following advice to help others who are considering a similar endeavor:

- Take steps to encourage and fund industry certification of faculty members.
- Engage your local itSMF chapter to access guest speakers and provide opportunities for case studies and research projects.
- Build a network with other faculty members interested in ITSM, for example, the AIS Special Interest Group on Services (AIS 2009) and the itSMF USA Academic Forum.
- Be careful that certification does not drive the pedagogy, but let it augment and add value to the content.
- Introduce services and processes early in the curriculum.
- To bring ITSM theory to life, use cases studies for teaching and assessment.

Feedback from students who are currently working in the field indicate the important contribution ITSM knowledge can make in the workplace. Practicing managers are encouraged to develop their understanding of ITSM as this will help shape their decision making around IT service provision in organizations.

For any university prepared to include ITSM concepts, there are many benefits possible. As well as the promise of an increase in the number of student enrolments and subsequent income, the reputation of the university could be enhanced as it would be seen as providing knowledge and skills in demand throughout the global business community. Students will come out of the programs with the capacity both to critique and apply concepts learned in real-world settings making them immediately valuable

to prospective employers. Furthermore, as demonstrated by the research partnership between USQ and itSMF Australia, opportunities for research would be encouraged and enhanced between the university and local business community (Rossi 2006).

Limitations and Future Directions

Several limitations as associated with this study. The courses used in this comparison have only been offered for a couple of years. Consequently there has been limited opportunity for substantive feedback from graduates employed in industry. While there is some anecdotal evidence suggesting the beneficial impact of the courses a more formal survey of graduates would be useful in drawing further conclusions. More formal evaluation may take the form of pre-graduation and post-graduation assessment of students' perceptions of the relevance and benefit of the courses. Since the comparison was between only two university programs the findings could be further strengthened by including other programs from different universities in the future studies.

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Notes

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