INFORMATION SYSTEMS EDUCATION JOURNAL

In this issue:

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INFORMATION SYSTEMS EDUCATION JOURNAL

Editors

Information Technology Management:
Course Re-design Using an
Assessment Driven Approach

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Abstract

One of the core courses in the IS2010 Model Curriculum Guideline is *IS Strategy, Management and Acquisition (ISMA).* The authors redesigned their pre-IS2010 model Information Technology Management (ITM) course to meet the skills development stated in the ISMA course. Since the IT discipline is changing rapidly, the technical content in the course needs constant refinement. Instead of starting with learning outcomes and related content for the course design, the authors suggest that the design process could start with learning outcomes and assessments and provide a broad content list with specifics determined by the assessments. They adapt a combination of ideas found in software product development for their evolving course redesign by focusing on assessments in the course. In this paper, the authors apply the test-first principle from agile system development for refining their ITM course to meet the academic intents of the ISMA course. They discuss all aspects of their redesigned ITM course resulting from their initial offering.

Keywords: IS2010 model curriculum, IS Management course, CS/CIS and MIS programs, Adaptation of Software Development and Testing Models

1. INTRODUCTION

The *IS Strategy, Management and Acquisition* (ISMA) core course in the IS2010 Model Curriculum (Topi, et al., 2010) is intended to provide the skills for managing and using IS effectively in any application domain. In addition, it also emphasizes the strategic use of IS for realizing competitive advantage (Pearlson & Saunders, 2010) and the service aspect of the IT function in an organization. At a higher level,

the course needs to address infrastructure (technology), application (IS) and practice (management). The specific topics/elements under these three areas change over time. For instance, as the technology changes, a manager of an IT function faces different challenges every year (Gartner, 2012). From the course design perspective, this makes it more difficult to specify the exact topics to be addressed in the technology area. Even the other two areas, IS

delivery and key issues to manage, vary with time due to changes in technology and practice. However, the generic concepts in all three areas are technology independent (Pearlson & Saunders, 2010).

The ITM course at the authors' institution was originally developed using the IS2000 Model Curriculum Guidelines and taught in a face-to-face format only. There were two primary reasons behind redesigning our program's ITM course. First, our CIS program is currently being redesigned to apply the curriculum recommendations presented in the IS2010 Model Curriculum. The second reason behind the modification is that we saw the need to offer the ITM course at our university online. In this paper, we describe the approach we took in the redesign process and present the observations from the first offering of the redesigned course.

We first provide a literature review concerning the characteristics of the ITM course as specified in the IS2010 Model Curriculum. A summary of the test-first principle in agile methodology briefly explains the ideas behind the use of this principle in the redesign of our ITM course. We then discuss the requirements of the course through a set of learning outcomes and the different types of assessments such as forums, homework, assignments involving research case analysis, and fieldwork for demonstrating the achievement of those learning outcomes. A list of broad course content is then provided as examples of the exposure needed for carrying out these assessments. Finally, we share the results of the first delivery of this redesigned course along with the end-of-course feedback from students. Suggestions from the feedback will be used for further refinements in the next cycle of course redesign.

2. LITERATURE REVIEW

We start our review by looking at the characteristics of the ISMA course that is specified in the IS2010 Model Curriculum. We then examine the skills specified for the ISMA course and how some IS programs are offering this course at their universities. This was done to help ensure that we developed an appropriate set of learning outcomes. Next, we summarize the test-first principle whose ideas are used in the redesign of our ITM course.

2.1 Nature of ITM

The IS 2010 Curriculum Guide provides a structured foundation for universities to use to develop and revise stronger IS programs. Based upon periodic reviews, the IS Curriculum Task Force came up with the current IS2010 model curriculum (Topi, et al., 2010) that is flexible, domain-independent and well structured. IS2010 specifies a set of structured outcome expectations starting with high-level IS capabilities which are translated into three categories of knowledge and skills: foundational, IS specific, and domain fundamentals. These capabilities provide the educational foundation for the seven core courses forming an IS program:

1. Foundations of Information Systems
2. Data and Information Management
3. Enterprise Architecture
4. IS Project Management
5. IT Infrastructure
6. Systems Analysis and Design
7. IS Strategy, Management and Acquisition.

The overarching framework provides a list of specific IT knowledge, development and management skills that should be addressed in CIS program courses. Although many of these skills will be gained in multiple classes, the focus of this paper centers upon the seventh core course, "IS Strategy, Management and Acquisition." Those skills specifically focusing upon the IT skills needed by IT managers include the abilities to:

- Identify and design opportunities for IT-enabled organizational improvement;
- Analyze trade-offs;
- Manage ongoing information technology operations;
- Provide leadership and collaboration;
- Communicate effectively;
- Negotiate;
- Analyze and think critically in a creative and ethical manner; and
- Evaluate performance within a domain (Topi, et al., 2010).

A number of IS programs currently exist throughout the US and in universities in other parts of the world, listed under, perhaps, a variety of names. Several offer a course equivalent to the IS Strategy, Management and Acquisition course. Although it is relatively easy to find the description of these courses online, obtaining the course syllabi is more involved.

Georgia State University offers a course entitled "Management of Information Services" which appears to be in line with the seventh course of IS2010. In this course, students gain an understanding of "information systems planning, managing the information system infrastructure, justifying the information technology investments, the costing of services and networks, evaluating information system performance, alternative information system delivery modes, managing distributed and end user computing projects and operations management, systems security, and the management of information system professionals. (GSU, 2012)." Students' performance in the course is evaluated through exams, a paper, and class participation (GSU, 2012).

The University of North Carolina – Wilmington offers a course that seems similar to ISMA entitled "Information Analysis and Management" (MIS513). In this course, students gain knowledge about adding value to business through effective IT strategy, are exposed to community IT leaders, learn about IT Return on Investment and Total Cost of Ownership, and learn about IT management skills from the business and IT departments' perspectives. Application of concepts is provided through case analyses and role playing, homework assignments and situational projects (UNCW, 2012).

Appalachian State University has a course with a description similar to that of the ISMA course. In their "Strategy and Ethics" course (CIS 4620), students are exposed to the skills needed by an IT manager to lead an information systems organization. Students examine the role of IT in fulfilling business objectives and their impact on the organization as a whole as well as the role of the individuals involved in the process (ASU, 2012).

Quinnipiac University also offers an IS strategy course aligned with the characteristics of ISMA entitled CIS 600 – "Information Systems Strategy." According to the description of this course, students "…develop the ability to analyze and identify opportunities to improve the effectiveness of organizations through the use of appropriate information technologies. Technologies that influence organizational strategies, structure, risks and processes are emphasized" (Quinnipiac, 2012). Thus, this course also addresses some of the skills needed by the individuals responsible for organizational IT management.

From the above observations, the scope of the ISMA (in our case, ITM) seems to include the strategic and management aspects of IT deployment in an organization. In section 3, we present suitable learning outcomes that reflect this determination.

2.2 Agile Development Methodology - Test-First

We consider that ideas from the system development process can be adapted to the design of courses. Learning outcomes are the requirements of the course. We focus on the assessments that help demonstrate achievement of these learning outcomes. Hence, we find the agile methodology, where test-first is a key principle, more appropriate to adapt for our course redesign approach. We provide below, a very brief summary of the agile methodology and how this model has been used in areas other than system development.

As members of the computing science field, we are familiar with numerous models used to lend form and structure to the software development process. We encourage our students to learn and use these tools to develop a thorough, methodological approach to development from gathering business requirements to feedback and project closure. There are a number of approaches that we teach including the Waterfall model, prototyping, incremental approaches, the spiral model, object oriented programming as well as more time-sensitive approaches such as agile methodologies.

One of the foundational principles behind the "Agile Manifesto" (2001) states "At regular intervals, the team reflects on how to become more effective, then tunes and adjusts its behavior accordingly." Thus, one can see why the value of applying agile software development-based methodologies outside the realm of programming has not gone unnoticed (Bradley, 2009; Nanau, 2008). This test and evaluate principle, provides the underlying motivation behind its use (Figure 1). The process of identifying small goals, collecting and processing data about the progress towards those goals, and then evaluating the progress and acting upon the evaluation results has been found to be beneficial in multiple capacities.
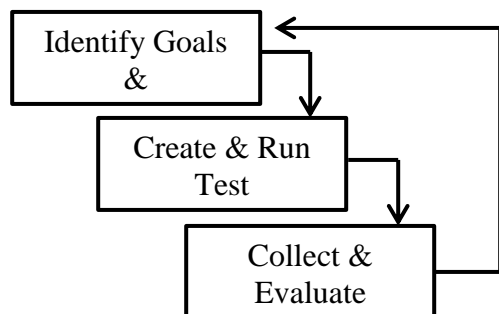
Figure 1 - Agile Methodology for Course

Bradley (2009) described the use of agile assessment methodologies to address program deficiencies identified in a reaccreditation review by the Higher Learning Commission (HLC). Bradley (2009) noted, "The HLC team's recommendations suggested:

- Developing measurable learning outcomes
- Obtaining quantitative data … [permitting] measurement
- Creating feedback loops … [allowing] … faculty to enhance education effectiveness through curricular and pedagogical improvement… (p. 10)".

Bradley (2009) further mentioned that elements of agile methodology assessment and feedback were used in multiple fields, including social work.

In Nanau's article (2008) regarding quality and agile software development methodologies, the author noted the importance of incorporating quality-enhancing measures into the process and how agile methodologies lent themselves well to this mindset. Rather than focusing upon the quality of the final product, the author suggested that the quality of the entire process and underlying sub-processes be analyzed and improved during the development process (Nanau, 2008). Agile development's employment of swift, cyclical iterations meshes well with multiple domains and areas undergoing process improvements.

This notion was evident to IBM's Center for Advanced Learning as they realized the value of agile methodologies to enhance their corporate educational programs. IBM was faced with the challenge of providing up-to-date, work-embedded, social training delivered in a variety

of platforms to mobile employees (Groves, et al., 2012). While they formerly had used the sequential ADDIE (analyze, design, develop, implement, and evaluate) process to produce learning resources, they found the speed of agile methodologies to be more accommodating (Groves, et al., 2012). IBM, much like universities of higher education, found that learning design, technology, and the learning experience were changing (Groves et al., 2012).

2.3 Course Redesign

The first motivation for our program's course redesign was the inclusion of the ISMA course in the IS2010 Model Curricula. The second motivation had to do with offering this course on-line. This aspect mainly affected the facilitation process - affecting the way in which learning outcome assessments were to be carried out - rather than the course requirements and the nature of assessments. We provide a brief summary of the redesign process on the on-line course.

Current economic conditions are forcing many colleges and universities to find ways to operate more efficiently with decreasing numbers of resources. The current term associated with this move toward increased effectiveness, on the campus of the authors' institution, is "Course Redesign." Our university defines Course Redesign as "the process of redesigning whole courses to achieve better learning outcomes by taking advantage of the capabilities of information technology…" while getting students actively involved in the learning process (CSTL, 2012).

The process of redesigning courses, at the authors' institution, emphasizes the use of readily available software, opportunities for on-demand education provision, individualized student assistance, multi-mode instructional tools, greater use of automated course assistance resources such as online homework tools, quizzes, and exams, and a heavy emphasis on assessment and monitoring of student learning outcomes.

Thus, the idea centers upon engaging the students in the learning process with the assistance of information technology. Our university caters to students in 25 counties. The goal of the redesigned course is to efficiently teach more students through greater use of technology while effectively meeting

educational goals. Goal achievement is monitored through multiple assessments over the course of the learning process.

2.4 Test-First Philosophy of Agile Programming

The test-first philosophy of agile programming lends itself well in the redesigning of courses to provide a more outcome-based, learner-centered approach to education. Tort, Olive, & Sancho (2011) noted that, in applying Test-Driven Conceptual Modeling to the development process, three kinds of tasks are utilized: (1) a test is written that should be passable, (2) the schema may need to be changed to pass the test, and (3) the schema may need to be refactored to improve its qualities.

Applying this test-first principle in course design leads to consideration of the major assessments used to address the concepts. The content is identified to ensure that there is enough exposure to the essential background material for carrying out these assessments. A variety of assessments can then be planned and administered including forums, homework, major and minor assignments (both individual and team-based), presentations, quizzes, and exams. In the following section, the authors describe the student learning outcomes (SLOs) for the ISMA course equivalent at their university, Information Technology Management (ITM), as well as the assessments that have been used in their test first approach to learning.

3. LEARNING OUTCOMES AND COURSE ASSESSMENTS

As described in Section 2.1, the IS2010 Model Curriculum designates specific skills to be addressed in the ISMA core course. In this section, the authors illustrate how they have addressed those skills in the description of the course at their institution in terms of student learning outcomes. Opportunities for students to develop and demonstrate these skills are made available through associated assessments.

3.1 Student Learning Outcomes

As part of the authors' university approved syllabus format, course syllabi must contain a section (entitled "Learning Outcomes") describing what students can expect to learn once they have successfully completed the course. From the discussions under section 2.1,

we realize that the ITM course addresses the strategic management aspects of deploying IT effectively. Identification of strategic application is the starting point. In this, knowledge of current technological developments – both hardware and software – from the deployment point of view has a significant role. Managing the development or procurement of applications and the operations relating to the delivery of IT services is an important component. With these thoughts in mind, the following learning outcomes were identified for the authors' ITM course. By the end of the course, students should be able to:

1. Identify the scope of and key issues in IT Management
2. Apply strategic framework analysis tools for identifying strategic IT solutions for an organization
3. Evaluate computing platforms and communications networks from planning perspectives
4. Evaluate strategies for implementing (acquiring) IT-based business solutions
5. Examine customer service and information security management issues
6. Develop an IT strategic plan (an additional requirement for the students taking the course for graduate credit)

While the above student learning outcomes (SLOs) consider technical and managerial skills the course addresses, the course includes additional SLOs to address professional skills. By the end of the course, students should be able to:

1. Work in a team environment, prepare and present a consultancy report for an IT unit in an organization with suggestions for improvements.
2. Prepare a technology appraisal report highlighting the application of recent technological developments.

From the course design point of view, the SLOs are the requirements. Skills associated with the aforementioned SLOs are to be learned over the course of the semester. Applying the agile development approach to course redesign, the following subsection describes the assessments and deliverables that were identified for this course

3.2 Assessments and Deliverables

A combination of both small and large assessments was developed for the course requiring the students to complete the work both individually and as members of teams. The course assessments are listed in Table 1.

Table – 1: Assessment

Assessment
Homework
Forums
Strategic Framework Analysis for an Organization
Technology Appraisal (Infrastructure)
Case Study Analysis – IT Solution Implementation/Acquisition
Consultancy Report for an IT Unit
Strategic Planning for an IT unit (for Grads)
Exams – 2 (Mid-term and Final)

3.2.1 Frequent Small Assessments

With the online course delivery format, smaller assessments, such as homework and forum submissions, are essential to the learning process. These types of small assessments help to ensure that the online students keep up with course content coverage, learn the concepts being addressed, and are introduced to recent technology trends. These assessments can be easily modified in future course offerings to accommodate current technical news and events, as well as changes in technology and industry practices beyond the textbook. Thus, these small assessments help to ensure the currency of the course while, at the same time, providing a means for applying the test-first concept. Students are forced to look for recent information, not necessarily available in a textbook, for addressing these small assessments in a timely manner. Samples of the small homework and forum assessments are provided in Appendix-A.

3.2.2 Large Longer Term Assessments

The bigger, longer term assessments are designed to ensure the development of practical skills. Descriptions for each of the large assessments are provided below with individual assignment descriptions provided in Appendix-B.

Strategic Framework Analysis: In this assessment, students use strategic models to analyze a business and evaluate their application of IT to operations. Students gain an understanding of the strategic frameworks as they work to develop the deliverable for the assigned project.

Technology Appraisal: In this assessment, students gain valuable knowledge about new technology as they study and research a topic of their choosing. Students must understand the technology well enough to write a thorough report, make a presentation to the class, and answer audience questions about the topic.

Case Study Analysis – IT Solution Implementation/Acquisition: This long term assessment asks students to read three separate system analysis and design cases and determine the reasoning behind the three different case outcomes. Students examine the cases from the perspective of: what went right, what went wrong, what could have been done better, what should be kept for future implementations, and what could be done to correct the situation.

Consultancy Report for an IT Unit: This longer term assessment is to be completed by teams of two students. In this assessment, students gain both technical and professional skills by visiting the IT department within an organization and evaluating its operations. Students analyze and assess the operations in order to write a detailed report and provide a presentation.

Strategic Planning for an IT Unit: Students work in teams to visit and analyze the IT operations at an organization of their choosing. They essentially apply and build upon the skills that they have gained throughout the semester as they completed previous assessments. Teams develop a detailed strategic plan that can be administered for their client and then present their findings.

3.2.3 Exams

The two exams included in the course each consist primarily of reflective questions designed to apply concepts to real-world situations. For instance, some of the questions centered around cases that focused on the importance of applying standards during system development, the role of steering committees in strategic IT deployment (rather than focusing on current operation issues), and the importance of maintaining currency in technical areas through training and professional development.

4. COURSE TOPICS

Based on the Student Learning Outcomes for the course and the major assessments used to address those SLOs, a list of high-level topics was prepared. Initially the topics considered included:

1. Strategic frameworks (for IT deployment in an organization)
2. IT Infrastructure (computer hardware and communications networks, and related technologies)
3. Planning and control techniques for IT-based solutions/application development
4. Current trends in the provision of IT services to customers.
5. Issues relating to Information Assurance and Personnel (Human Resources)
6. IT Strategic plan (for graduate students)

A delivery plan for these concepts with additional details is provided in Appendix-C. The content of the assessments assist in determining the specific sub-topics to be addressed for each major concept. For instance, three specific models are considered under strategic frameworks. The second topic is broad as it is intended to provide an overview of the basics of both computer and communication technologies and system software and database management. It is also important to incorporate an exposure to current trends during the course. The web sites of certain textbooks (for instance, Turban and Volonino, 2011) include technology guides for topics such as computer hardware, telecommunications, software (systems and applications), data & database, and systems and analysis. The assigned forum assessments and homework questions required the students to learn and assess recent and important developments in IT infrastructure. For instance, the forums/ homework contained questions on QR and RFID and their implications for future business services and strategic applications.

5. RESULTS OF FIRST DELIVERY

The first offering of the redesigned ITM course was offered online during the Spring 2012 semester. Sixteen students were enrolled in the course including two students who were taking the course for graduate level credit. The 14 undergraduate students included 4 CIS majors and 10 business majors. The course was offered purely on-line.

At the end of the course, students were asked to rate their levels of skill development and knowledge acquisition for the online ITM course. The five-point Likert scale survey questions focused on the six learning outcomes described in Section 3.1. (The response range included: 1. definitely disagree; 2. disagree; 3. not sure; 4 agree; 5.defintely agree.) On average, the students considered that the course helped them in learning how to apply strategic frameworks for identifying systems of strategic nature, evaluating strategies for building/acquiring IT solutions, and identifying key issues in IT management. The higher ratings in the last two learning outcomes could be attributed to the opportunity they had in preparing consultancy reports for real organizations instead of carrying out an assignment based on case studies.

Although the response rate was only 50%, students' responses provided valuable feedback for future course offerings concerning both course content and online facilitation. The learning outcome results (from the five-point Likert scale) are presented in Table-2.

Feedback from the survey respondents indicated that many students would have preferred to take this course in a face-to-face format. This opinion may be a result of the students feeling that the course lacked necessary interpersonal interaction. At present, we are using a home-grown Learning Management System (LMS) that may not provide the interpersonal support that commercial versions provide. Our university is preparing to transition to a commercial LMS product within the next two years.

Table-2: Student Perceptions

Learning Outcome	Rating
Identify scope and key issues in ITM	4.1
Apply strategic framework	4.0
Evaluate new technologies	3.9
Evaluate strategies for building or acquiring IT based solutions	4.1
Examine customer service and information assurance issues	4.4
Develop an IT strategic plan (2 MBA students)	4.5

In the consultancy assignment, students worked in pairs. This assignment could be carried out better if both students could visit the organization that they were studying. In many cases, only one of the students in the team was able to visit while the other took part remotely. Offering the course in an on-line format thus had

an impact on students' perceptions. However, these difficulties could be overcome through appropriate tools.

Examining the students' performance in the various assignments, six of the sixteen students turned in consistently professional work. Most of the students responded well to three of the five major assessments: strategic framework analysis, case study analysis relating to system development/acquisition, and consultancy report. These are important skills that are to be attained from this course. Some students indicated a desire to have more discussion on technology while others felt that the course material was rather extensive. In addition, some students seemed to have enjoyed the research-intensive nature of the course. Students also seemed to enjoy the opportunity to interact with real-life professionals for the consultancy report assessment. Quite a few suggestions from the students focused on increasing the levels of interaction as well as incorporating audio/video files with the PowerPoint slides. The feedback was very valuable in directing future course offerings and improving the online format. However, the key takeaway from the survey responses was that a greater level of interpersonal interaction needs to be incorporated into the course in the future which could be accomplished via the use of webinars and audio clips to go along with the PowerPoint slides.

6. FUTURE WORK AND CONCLUSION

In addressing the requirements of the IS2010 Model Curriculum for the ISMA core course, we took an assessment driven approach for the redesign of our ITM course. This approach is conceptually similar to the test-first principle used in agile system development methodology. The learning outcomes are analogous to the system requirements and the assessments, to the tests.

It is important to note that we started with the SLOs first (which are the course requirements) and then designed the appropriate assessments to help achieve those outcomes. Six broad topics were identified (section 4) to acquire sufficient knowledge to carry out these assessments. This was a departure from selecting the topics first in the course design process.

In this course redesign, the focus was on assessments appropriate for achieving the learning outcomes. A variety of assessments were used in this course with increasing complexities. We were able to make use of our experience in facilitating the capstone project course where we use client-sponsored projects in designing two assignments that involved studying real organizations. The consultancy report for all students and the strategic system planning report for the MBA students certainly helped the students in achieving the goals of this course. Redesigning the course for on-line offering required considerable changes to both the facilitation process and the types of assessments administered. We found the assessments driven approach to be valuable for redesigning assessments and course content. However, we still need to address the facilitation issues when offering the course on-line. Availability of a full-featured LMS and considerable training in using the LMS are essential to successful online course offerings. In our first offering of the redesigned ITM course, the students responded favorably. Through survey feedback, we realize the importance of increasing the level of interaction throughout the course.

In the face-to-face version of the course, the main assessment around which the course focuses is studying the operations of an IT unit and preparing a consultancy report for possible improvement. In the redesigned online version of this course, we were able to maintain this significant assessment with minor modifications. While most students responded well to this very demanding assessment, a few had difficulty in identifying a client organization and collaborating properly. Some pre-planning (identifying organizations for such studies before the course starts) is in order for future offerings.

In this paper, we discussed the first iteration of the cycle in designing and delivering a course on IT Management. Based on student feedback, further refinements will be made to the course content, assessments and the facilitation process. Since the requirements may not change that frequently, such refinements in the second cycle of the redesign will be minor and mostly confined to the facilitation process. If this course is offered on-line again, additional methods of interpersonal contact will be incorporated throughout the course.

7. REFERENCES

Agile Manifesto (2001). Retrieved June 5, 2012 from http://agilemanifesto.org/principles.html

Appalachian State University Walker College of Business Undergraduate Bulletin Retrieved June 4, 2012 from http://www.registrar.appstate.edu/catalogs/10_11_undergrad/12_collegeofbusiness.pdf

Bradley, W. (2009). Horizontal Assessment. *Assessment Update*, 21(3), 10-11.

Center for Scholarship in Teaching and Learning. Course Redesign. Retrieved June 4, 2012 from http://cstl.semo.edu/cstl/

Georgia State University (2012). CIS4620 Course description. Retrieved June 4, 2012 from http://www.cis.gsu.edu/cis/cis/program/syllabus/undergraduate/CIS4620.asp

Groves, A., Rickelman, C., Cassarino, C., & Hall, M. J. (2012). Are You Ready for agile Learning Design?. *T & D Magazine*, *66*(3), 46-51.

Gartner Survey Report (2012). Retrieved June 4, 2012 from http://www.gartner.com/it/page.jsp?id=1897514.

Nănău, C. (2008). Quality Problem in IT Projects. *Bulletin of the Transilvania University Of Brasov, Series III: Mathematics, Informatics, Physics*, *1*(50), 531-540.

Quinnipiac University Undergraduate Course Bulletin (2012). Retrieved June 4, 2012 from http://www.quinnipiac.edu/academics/courses-and-schedules/course-finder/course-finderlist/coursedetail?ID=3754&Subject=&Where=&What=&CrsTerm=&spxTitle=&spxDesc=&Online=.

Pearlson, K. E., and Saunders, C. S. (2010). Managing and Using Information Systems: A Strategic Approach. 4th Edition, John Wiley & Sons, Hoboken, NJ.

Topi. H., Valacich, J. S., Wright, R. T., Kaiser, K., Nunamaker, J. F., Sipior, J. C., & de Vreede, G. J. (2010). IS 2010: Curriculum Guidelines for Undergraduate Degree Programs in Information Systems. *Communications of the Association of Information Systems*, *26*(18), 360-429. Retrieved June 1, 2012 from http://www.acm.org/education/curricula/IS%202010%20ACM%20final.pdf

Tort, A., Olivé, A., & Sancho, M. (2011). An approach to test-driven development of conceptual schemas. *Data & Knowledge Engineering*, *70*(12), 1088-1111.

Turban, E. and Volonino, L. (2011). *Information Technology for Management: Improving strategic and Operational Performance*, John Wiley & Sons, Hoboken, NJ.

University of North Carolina – Wilmington (2012). MIS513 Syllabus. Retrieved June 4, 2012 from http://csbapp.csb.uncw.edu/janickit/MBA513/MBA513.pdf

Editor's Note:

This paper was selected for inclusion in the journal as a ISECON 2012 Distinguished Paper. The acceptance rate is typically 7% for this category of paper based on blind reviews from six or more peers including three or more former best papers authors who did not submit a paper in 2012.

Appendix-A: Smaller Assessments (Homework and Forum Topics)

Assessments consist of Forums, Homework, and Assignments. Sample assessments are presented below.

I. Forums: Sample Forums:
1. **Forum 0:** Introduction: Students introduce themselves
2. **Forum-1:** Discuss how the 2D codes (e.g. QR – Quick Response) in conjunction with other technologies (like mobile) could be used in different businesses. In particular, focus on possible strategic applications.
3. **Forum-2:** Technologies that influence developments in IT
    Listed below are some of the technologies. Not all of them are to do with computing. However, these technologies influence developments in computing technology. I want you to discuss in Forum-3 on how any of these technologies is affecting / influencing the developments in computing and communications technologies. The book may not discuss these technologies; so you have to use other resources (especially web) for finding appropriate information. Technologies: Fibre Optics, Optical Data storage, Internet & Web, Photovoltaic cells, Nanotechnology, Micromechanics, Microwaves, Advanced Satellites, Lasers, Superconductors, Biotechnology, Genetic Engineering.
4. **Forum-3:** Discuss RFID and its uses (focus on its practical applications)
5. **Forum-4:** ERP. Many organizations started using ERPs during the Y2K time period. You may discuss the different aspects of ERPs; what do they have in them; what are some of the ERP products available on the market; the pros and cons of using such systems.
6. **Forum 5:** System Development Methodologies. Compare the agile approach with the conventional heavy-duty system development approach. Discuss the strengths and weaknesses.
7. **Forum 6:** Services. Discuss some of the annoyances a help desk faces
8. **Forum 7:** Security. Discuss the roles of organizations such as NSA, SANS, CERT, NIST

II. Homework:

Considerable reading assignments were assigned every week as part of the homework assessments. Students were asked to submit answers to specific questions from reading material. Reading material consisted of technology guides on computer hardware, telecommunications, software (systems and applications), data & database, and systems and analysis; handouts on strategic framework and systems development; publications on ERP implementation, and project management.

Example Homework: Computer and Communication Technology
Study the two tech guides on computer hardware and telecommunications (and data communications).
1. Describe two ways in which we could integrate the mobile devices and Tablet PCs in a work environment (or in a class-room situation).
2. Briefly describe two applications for supercomputers.
3. What are some of the advantages of using fiber-optic cables in communications? Make sure to include its important characteristics in your discussion.

Appendix-B: Larger Assessments

Assignment-1: Application of Strategic Frameworks: Due on:

Introduction
The organization you will consider in this assignment is Charles Schwab Corporation. Use material given in class. You will apply the Value Chain Model, Five-Forces Model, and Weisman's Model to analyze Schwab and discuss the application of IT in Schwab. Use additional material for gaining a better understanding of the application domain (may be needed for value chain). Specific outputs: Value Chain Model 20%; Five Forces Model,30%; Wiseman's Model 30%; Discussion (2 pages 20%)

Assessment-2: Technology Appraisal Report: Due on:

Introduction
IT management looks at two aspects: technology and its relevance to business. We need to know what a technology is, how it works, what are its limitations, its pros and cons in relation to other technologies, and its viability for business applications (i.e., its potential to serve as part of a business solution). So here is an assessment to let you explore the world of technology!

Tools and assignment
In this assessment, you will study one new / emerging / refined technology of your choice in computing or communication (hardware or software or practice) area. You can pick up a topic from the IEEE spectrum magazines (library resources) for this exercise. If necessary, you will explore the topic further using the web and other sources. You need to present the material you have learned to the class (10 minutes). You will also summarize your research in a technology appraisal report (5 pages) highlighting its relevance in IT management. The report should be in your own words. Specific output: Presentation: 20% and   Technology Appraisal Report 80%

Assessment-3: System Development – Case study analysis

Introduction
System development is a complex process. Several projects have failed in the past. In this assessment, you will examine three cases in systems development and answer the following six questions.

(Note: We do not list the cases here. However, one case is about a successful system development; second system is considered a failure; and the third system was developed by students in their capstone course. Questions relate to system architecture, strategic partnership in system development, development methodology, interaction between stakeholders, what went wrong in a project, and possible remedial actions)

Assessment-4: IT/IS Review Consultancy – Assignment:

Introduction:
This assignment is concerned with the review of IS/IT Services in an organization (medium or large) of your choice. The focus will be on the Operation and Support Services aspects. In this exercise, you will study the IS/IT Services and prepare a Review Report highlighting the major strengths and identifying areas requiring improvement. A content list for the Review Report is given below. You will also make a presentation (20 Minutes) of your findings to the class. You will provide a brief (3-pages) handout to participants that summarizes your presentation.

You will carry out this assignment with one other student. You will jointly submit a single report and jointly make the presentation. (Professional appearance is necessary for your visits. Remember you are representing the University and the company could be a prospective employer.)

Description of Tasks:
Choose an organization that has an IS/IT Department. Collect information on the Computing and
Communication Network and Applications Architecture provided by the IS/IT Department. Review the
IS/IT Operations and Support Service functions. Your review report will contain a(n):

- Executive Summary

- Observation
        -- Brief Description of the hardware facilities (computers, networks, and platforms)
        -- Brief Description of the application systems (structure of applications)
        -- Organization of the Operation and Support Service functions
        (For all the above three, use suitable diagrams.)

- Assessment (your own) concerning
        -- Performance of Customer Support function
        -- Key Information Assurance Measures in Place
(Here use the concepts you learned in the course regarding customer service and IT security)

- Recommendations for improving the IS/IT Operations / Services

Distribution of Points (Total Points:100)
Review Report: 80   Presentations: 20
        Summary   10
        Observation   30
        Assessment   25
        Recommendations   15

Assessment 5 (For Grad Credit):
Strategic Planning Consultancy Report and Presentation

Introduction:
This assignment is 20% of your assessment for the ITM course. You will work in a group (all the
members get the same points) for this assignment as it involves fieldwork. It is concerned with the
preparation of a strategic plan for the IS/IT function in an organization (small to medium size) of your
choice. (Consider a specific unit, if it happens to be a large organization.) In this assignment, you will
get an opportunity to apply the implementation issues pertaining to IS strategic planning. The tasks
include identifying strategic system(s) in the business context, repositioning of IS/IT function (to use
the system properly), and preparing IS/IT strategic plan and delivery plan for the system solution.

Description of Task:

Choose an organization that has an IS/IT Department. First, identify a strategic information system in
the business context. Carry out an initial investigation for preparing a Strategic IS plan in line with
the Organization's Mission. Carry out the necessary activities leading to the preparation of the
Strategic Plan Report that includes the implementation of the identified strategic information system.
These could be: mapping of current and future architectures for infrastructure and applications,
developing Migration Plans including reorganization of the IS/IT unit; and preparing a change
management plan for using the implemented system, and the delivery plans for the implementation of
the strategic system. You will also present the highlights of your report to the class.

1) Strategic Plan Report (Preparation of a report that includes the following topics): (80%)
   • Executive Summary
   • Brief description of identified strategic information system (or strategic application of
     Information Technology)
   • Existing systems and proposed application (application area and technology infrastructure)

- Analysis of the chosen strategic information application using frameworks such as Five force/ Wiseman and/or Value Chain
- Cost and Benefit Summary (estimates) for the proposed system
- Organizational change management plans (to realize the system benefit)
- Delivery Plans for the proposed system.
- Guidelines (and criteria) for reviewing the implemented system after a year.

2) Class presentation of highlights of the Report   (20%)

Appendix –C: Concepts

Introduction: Progression to an Information-age and IS/IT growth; Strategic importance of IT; Processes in IT; Key IT Management issues
Business Solutions Planning: Corporate Information System Architecture; Strategic frameworks, Contents of a Strategic Plan
Impact of Computer Platforms in Planning: Applications & Tech. interactions; Computer platform planning {Application of Strategic Framework Assignment}
Impact of Communications in Planning: Communications Networks: Network planning
Applications Development Management: Software Engineering concepts, IT Project Planning and Control {Technology appraisal report and presentation}
Alternatives Applications in System Development and Acquisition Management (Mid-Term)
Operations and Maintenance Management: Network & Application Systems Maintenance {Case Study analysis report relating to system development and acquisition}
Service Management: SLA, User Support; Performance monitoring
Change Management: User and IT responsibilities
Information Security Management: Aspects of security, Risk
ISM: Control and protection– Information Assurance and Contingency planning
Human Resource: Teamwork, Professional Consultancy report on a real-world IT Operation and Strategic Planning (for Graduate credit only)
Final Exam