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Teaching Advanced Information Technology Skills to Masters of Accountancy Students

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Abstract

Information Technology skills are more important than ever for accountants. Brigham Young University has developed a comprehensive program to provide a strong education in systems and information technology to its accountants. This program has been developed over several years and is accomplished primarily through three courses dedicated exclusively to IT. Students are provided with a thorough foundation in both concepts and skills. A skills oriented course has been added to the curriculum to provide a final opportunity for students to enhance their skills before graduation.

Introduction

Accountants and the accounting profession have always been active consumers of information technology. The demand for increasing levels of IT competency in practitioners and accounting graduates is stronger than ever. Every professional accounting organization, including the AAA, IMA, IFAC, AICPA, and IIA, has developed guidelines and proposals for increased IT skills in their members. This quote from Management Accounting typifies the attitude in the profession: “The big success factor is realizing that accountants are information managers. Mastery of technology is seen as essential for the future. If you don’t stay current with the technology, your career is in jeopardy.” (Anastas, 1997).

Program at Brigham Young University

Program Organization

At Brigham Young University we have made several important changes over the last few years to respond to this need. The first major adjustment was an organizational change made about seven years ago. Prior to 1991 in the Marriott School of Management, the School of Accountancy (SOA) and the Department of Information Management (IM) were separate. In the SOA there were three faculty members whose responsibility was to teach information technology (IT) to undergraduate and graduate accounting students. Even though it seemed to work fairly well, it was difficult for these few faculty members to keep themselves current with the rapid change in IT. The IM department had its own information management program supported by eight faculty members.

In 1991 these two groups were combined into the School of Accountancy and Information Systems. The combined department has the responsibility of teaching both accounting students and maintaining an independent Information Systems Program. All the faculty in the SOAIS, both accounting and systems, work together very closely to define required student competencies and in curriculum development. It has been especially beneficial in relationships with the large accounting firms as their need for both systems educated accounting graduates and information system graduates has increased. Accounting students benefit from increased technical skills since more systems classes are available and visible to the accountants. This combined organization has also resulted in the systems students being better educated in accounting, controls, and business concepts.

Program Curriculum

There are three courses, of three semester hours each, that are required for all Master of Accountancy students. They are designed to give every Master of Accountancy (MAcc) student a strong background in IT. However, many MAcc students take additional systems classes as electives. The three courses consist of (1) Management Information Systems, (2) Accounting Information Systems, and (3) Information Systems Tools and Applications. In addition to these three focused classes, many other accounting classes contain specialized IT material that focuses on the unique requirements of that particular class.

Management Information Systems

The Management Information Systems class is the beginning class for all business and accounting majors. Two years ago this class underwent a major revision based on research that was done by faculty at BYU (Boyer, 1995). The purpose of the study was to determine the best content and pedagogy for this class. A questionnaire was developed to determine which concepts and skills were most important and useful to business and accounting graduates. The questionnaire contained 62 subtopics listed under sixteen main categories. It was sent to a large number of Marriott School graduates, including graduates of accountancy.
A sister questionnaire was sent to professional information systems managers in industry from Computerworld’s list of “Most Effective Users of Information Systems”. It asked these managers to answer the questionnaire based on their knowledge of information users in their respective corporations. Figure 1 shows the relative rankings of the top fifteen topics from the list of sixty-two included on the questionnaire.

As a result of this research the content and pedagogy of the class was completely redesigned. Currently the class is about 50% conceptual and 50% skills oriented. Obviously, it is impossible to give university students all the technical skills they need in one three hour class, but the class does introduce them to technology, reduces the computerphobia experienced by many students, and gives them a good foundation upon which to build. Some of the fundamental skills covered include operating systems, Email, Web Browsing, Building Web Pages, Spreadsheets, Database, Presentations and Communications. Some sample course syllabi can be found at http:// msm.byu.edu/students/courses/ISYS201/.

### Accounting Information Systems

The second class that is focused on teaching IT concepts and skills is embedded within the accounting core classes. The graduate accounting program at BYU is a five year integrated MAcc. During the third year, both fall and winter semesters, students enroll in a twelve-hour “accounting core” class. Approximately three to four semester hours of this class are dedicated to teaching IT concepts. The overall objective of the AIS portion of the accounting core is to teach students how to effectively design, use, and evaluate information systems as outlined in the American Accounting Association’s Bedford Committee report (AAA, 1986). In this class both Information Systems concepts and Information Technology skills are taught (Cherrington, 1994). Systems concepts include systems development life cycle, systems analysis, modeling, and system controls. Technology skills include more practice with the basic business application tools, spreadsheets, presentations, email, Lexis/Nexis, and some database. For more detail on the accounting core, including the technology component see http://msm.byu.edu/students/courses/AccJRCore/.

### Information Systems Tools and Applications

The purpose of the Information Systems Tools and Applications class is to allow students to refine and extend their skills in IT prior to graduation. It accommodates students who feel they need more practice time to completely master the basics, as well as those who are more confident and want an opportunity to learn more advanced features. The class is completely skills oriented. A large percentage of the class is conducted as a “hands-on” type of laboratory. Even the class lectures are oriented towards explaining the applications; how they function and how to use them.

The class is a required class for all MAcc students. Other graduate students in the Marriott School and advanced undergraduate students can take the class as an elective. This makes it difficult to teach because there is tremendous variation in the skill level of entering students. Some students, like MBAs and MPAs, may come from a humanities undergraduate program with very little IT experience. On the other hand, most of the MAcc students come into the class with substantial background in systems and IT.

In order to meet the needs of all students in this class, regardless of their skill level, the class is presented in a cafeteria style. The class is divided into eight major themes based on different applications. Each theme is then further divided into two to six modules. The modules range from simple basic concepts and skills in the application to advanced techniques. Each student must write a contract within the first two weeks of class and select the modules they plan to complete. Each module is weighted as to amount of work required to complete. Students chose the number of modules required for a three semester-hour class. They also develop a schedule of completion dates for these modules. Each module is a self-contained unit. Each has a tutorial and applicable homework assignments. A description of the eight themes follows. Syllabus pages can be found at http://msm.byu.edu/students/courses/ISYS580/.

#### Operating Systems

The objective of this theme is to ensure that students understand and can utilize the capabilities of operating systems. There are two modules: one addresses Windows95/NT and the other covers Unix. Completing these modules gives students a much higher comfort level and ability to utilize the full potential of their computers.

#### Internet and HTML

In today’s “connected” environment, most students know how to “surf the net”. However, this continues to be a rapidly changing environment. There are three modules in this theme, which range from surfing and research basics to HTML and building personal web pages that include applets, sophisticated graphics and multimedia. More advanced students also learn how to include forms, CGI-BIN programs, and dynamic interfaces to databases.
Database. Almost all students understand how to use a database system, but very few understand the underlying concepts. Consequently, despite the fact that this is a skills class, this theme includes theory to help the students develop a structure and understanding for the skills. There are six modules in this theme. One module illustrates the use of a CASE (Computer Assisted Software Engineering) and how to do data modeling. Another teaches SQL (Structured Query Language), which is the industry standard language for database access. One advanced module teaches students how to generate ad hoc reports from a relational database. Then there are three modules on Microsoft Access. In these modules, the students learn to develop a complete database application with forms, reports and executable programs.

Presentation. One of the necessary skills for all people in business is to be able to communicate well. Today’s computer tools enhance this ability, and it is advantageous to know how to utilize the tools. The four modules in this theme let the students hone their audio/video presentation skills as well as their written and desktop publishing skills. The two applications used are MS PowerPoint and MS Word. By this time, most MAcc students are well prepared in these areas and do not choose to complete these modules. However, an occasional student will select the advanced modules to really learn how to make multimedia presentations or to do fancy desktop publishing.

Analysis. The Analysis theme provides practice in data analysis. There are five modules in this theme. The first four represent increasing levels of difficulty using Microsoft Excel. Beginning modules review spreadsheet functions; the more advanced ones get into data analysis, scenarios, and advanced macros. The fifth module is a fairly extensive review of statistical analysis of data. It involves both a conceptual review of the uses of the different statistical tests and practice exercises using a statistical package to calculate them.

Programming. Many of the advanced MAcc students are interested in how to do programming. This theme contains four modules (some rather large) which teach them how to write simple programs in Visual Basic. This is a popular theme for those who want to understand how to do component programming in Visual Basic to access various types of files and databases.

Accounting. Frequently accounting students get lots of accounting theory, but have few opportunities to actually set up an accounting system for a company with a chart of accounts, transactions and reporting capabilities. In this theme there are two modules for two separate accounting packages. Great Plains Dynamics provides experience on a large client/server accounting system. The second module on QuickBooks Pro gives experience on a smaller company type of system.

Self-Directed. This theme has only one module. The student defines the module himself. Upon agreement with the professor, special software packages can be learned or particular IT skills can be developed.

Future Directions

This class is always being revised. As students come to the university better prepared, and as they develop higher IT skills during their early studies, there is less of a need for the beginning modules. As a result, more advanced modules are being developed on existing and new themes. Some new themes currently being developed are (1) more advanced Internet skills such as dynamic web pages, (2) systems that support collaborative work, (3) project management tools, and (4) general auditing software. Other themes not currently under development but which may be addressed in the future include such tools as data warehousing OLAP tools. This is a skills oriented class, but it is interesting to note that, as students practice and enhance their skills, they actually strengthen their conceptual understanding.

It is hoped that this class will be more and more compatible with distance learning over the Internet. Currently some modules are textbook-based tutorials and require the student to buy a text. In addition, the lectures are still given in class. However on-going development is being done to make the lectures into video clips that can also be accessed over the Internet. Already all schedules and assignments can be accessed over the Web, and some modules consist of tutorials on the Web.

This class has evolved over several semesters to where it is today. It seems to fill a very important need for accounting graduates to be well prepared in Information Technology.

References

References will be furnished on request from the author (robert_jackson@byu.edu).