INTRODUCTORY INFORMATION SYSTEMS COURSE REDESIGN: BETTER PREPARING BUSINESS STUDENTS

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ABSTRACT

Aim/Purpose	The dynamic nature of the information systems (IS) field presents educators with the perpetual challenge of keeping course offerings current and relevant. This paper describes the process at a College of Business (COB) to redesign the introductory IS course to better prepare students for advanced business classes and equip them with interdisciplinary knowledge and skills demanded in today's workplace.
Background	The course was previously in the Computer Science (CSC) Department, itself within the COB. However, an administrative restructuring resulted in the CSC department's removal from the COB and left the core course in limbo.
Methodology	This paper presents a case study using focus groups with students, faculty, and advisory council members to assess the value of the traditional introductory course. A survey was distributed to students after implementation of the newly developed course to assess the reception of the course.
Contribution	This paper provides an outline of the decision-making process leading to the course redesign of the introductory IS course, including the context and the process of a new course development. Practical suggestions for implementing and teaching an introductory IS course in a business school are given.
Findings	Focus group assessment revealed that stakeholders rated the existing introductory IS course of minimal value as students progressed through the COB program, and even less upon entering the workforce. The findings indicated a complete overhaul of the course was required.

Recommendations for Practitioners	The subject of technology sometimes requires more than a simple update to the curriculum. When signs point to the need for a complete overhaul, this paper gives practical guidance supplemented with relevant literature for other academicians to follow.
Impact on Society	Students are faced with increasing pressure to be proficient with the latest technology, in both the classroom where educators are trying to prepare them for the modern workplace, as well as the organization which faces an even greater pressure to leverage the latest technology. The newly designed introductory IS course provides students, and eventually organizations, a better measure of this proficiency.
Future Research	Future research on the efficacy of this new course design should include longitudinal data to determine the impact on graduates, and eventually the assessment of those graduates' performance in the workplace.
Keywords	curriculum design, course development, IS core course, technology

INTRODUCTION

One of the many challenges facing information systems (IS) educators is keeping course materials current in such a dynamic discipline. As technology continues to transform traditional business models with digital innovations, business students need to stay abreast of technological developments. Yet researchers note that many students do not get this foundation because the required core IS course is stuck in the past (Fichman, Dos Santos, & Zheng, 2014). Indeed, Akbulut and Looney (2009) posit that being exposed to updated technologies similar to those currently utilized in organizations can spur students' interest in IS courses, as opposed to technologies they are already familiar with. Keeping technologies updated presents an ongoing challenge to educators, however.

Another challenge is the continual need to establish the proper placement for IS within the education system. At our own institution, the introductory IS course was part of the business foundation and required of all business majors. As such, it fell somewhere in the middle of the various disciplines, with a brief look at how information systems are used by accounting, human resources, operations, marketing, and other functional areas of business. But it was previously a computer science (CSC) course, and a restructuring of the College of Business left the CSC department transferring to the College of Math and Science.

With the department in charge of this important business foundation course no longer in the COB and with the emphasis of the course primarily on the basics of hardware and software, the COB faculty felt the need to design a new replacement course. The existing course included basic introductory computer concepts in addition to an overview of office productivity software, common content among the introductory IS course in many institutions. As noted, a good portion of this focus was outdated at best. Of a greater concern was that the material seemed to no longer be directed toward the skills deemed most critical for business students to progress through the remainder of the business program or the workplace beyond.

The feedback from all constituents indicated that this instruction was falling short as most students already had a basic understanding of these concepts and software skills. However, while there was general agreement on what content was no longer valid, there was far less agreement on exactly what course content should be included. In this paper, we discuss the various steps undertaken in our course redevelopment process. We present the results of what was ultimately determined among the COB faculty as being the "best compromise content" for the new course, and initial reaction to the implementation of the redesigned course.

LITERATURE REVIEW

Similar to the debate over the identity crisis facing the IS field (Benbasat & Zmud, 2003), there is sometimes conflict and confusion over exactly what courses and content should fall under the domain of IS curriculum (Downey, McMurtrey, & Zeltmann, 2008). Moore (2013) noted the conflict by stating that IS curriculum should claim the project management course content frequently found in the domain of business schools. It is a common struggle for business programs to decide if the focus of a course that includes technology should be on technical IT skills or business skills, especially the introductory IS course. This also includes communication and interdisciplinary subject areas such as finance, accounting, and management, which are all touched upon in the introductory IS course.

In an attempt to put the debate to rest, Plice and Reinig (2007) suggest a compromise somewhere between the two competing ends of the spectrum. IS scholars across the discipline recognize this need to redesign IS courses for students in the interests of both relevance and practicality (Akbulut & Looney, 2009; Downey et al., 2008; Fichman, et al., 2014; Gudigantala, 2013; Jafar, Anderson, & Abdullat, 2008; Kesner, Zack, Russell, & Dias, 2013; Koohang, Riley, Smith, & Floyd, 2010; McGann, Frost, Matta, & Huang, 2007). In redesigning an entire IS program, Koohang et al. (2010) noted that IT professionals today must be versatile in both technical abilities and have expertise in multiple domains within organizations. This finding in the literature confirmed the need for our own institution to redesign our core IS course, and contribute to the literature the insights presented in this case study.

The widely accepted IS2010 Model Curriculum (Topi et al., 2010) is frequently used to guide the redesign of entire IS programs (Surendran, Amer, & Schwieger, 2012). The IS2010 Model Curriculum is the third iteration of suggested course structure for information systems undergraduates, illustrating the difficulty in developing sustainable guidelines for the IS curriculum. The Foundations of Information Systems – the introductory IS course – is the bedrock of the IS 2010 Model Curriculum, with over 84% of schools requiring it for their IS majors (Yang, 2016). However, many business schools, such as our own, do not have IS majors as a part of their program. Recognizing that not all students in the business program will take more than the one required IS course means ensuring it will meet the many diverse needs of business majors and business leaders of tomorrow.

In the digital economy of today, professionals from a wide range of fields such as agribusiness, construction, and hospital administration as well as traditional business pursuits require the use of information systems to gain and maintain a competitive advantage. It is therefore important to effectively plan the course design of an introductory IS course that is beneficial for all students, even those who are not IS majors (Schwald, 2011). In a survey of business schools, Wang and Wang (2014) found that the introductory IS course was the most important technology course for non-IS majors, second only to database technology. Researchers note the critical need to renew and redesign this course to fit the needs of all business majors (Fichman et al., 2014; Schwald, 2011; Wang & Wang, 2104).

Fichman et al. (2014) call for a redesign of the core IS class, and a new approach to what students most need to know about IS from a business standpoint at a time when technology and digital innovation are transforming many traditional business models. Akbulut and Looney (2009) suggest that introductory IS courses should focus on state-of-the-art technologies that reflect current industry practices in order to remain relevant. Sidorova and Harden (2012) suggest that additionally, students, advisory board members, recruiters, and faculty are also important stakeholders of the IS identity who play a significant role in shaping the identity of the IS discipline, and therefore the IS curriculum. McHaney, Warkentin, Sachs, Pope, and Ormond (2015, p.41) point to accreditation of business programs by the Association to Advance Collegiate Schools of Business (AACSB) requiring "inputs from all appropriate constituencies which may include faculty, staff, administrators, students, faculty from non-business disciplines, alumni, and the business community served by the school."

Indeed, several researchers (Fichman et al., 2014; Jafar et al., 2008; Koohang et al., 2010; Surendra & Denton, 2009) also note the importance of designing IS curriculum for practical relevance. We believe that balancing the interests of the varied stakeholders of the IS discipline – students, recruiters, IS faculty, non-IS faculty, and IS practitioners – is a delicate art and that the debate will likely persist as the field continues to dynamically evolve. For our institution, however, the challenge was one that required an immediate solution due not only to the forces of technological change, but also to the restructuring of the CSC department within the university.

While the literature provides guidance for redesigning entire IS programs and even specific upper level IS courses, there is a paucity of research related to the development and redesign of the introductory IS course. This paper attempts to fill that gap by providing the process of redeveloping an introductory IS course that satisfies the needs of both adequate and updated technical content balanced with a broad overview of information systems and their impact in a business environment. This paper presents a case study of one institution resolving the domain of the introductory IS course in the business program, as well as the systematic process of developing the specific content that should be included in this course. Following the recommendations of McHaney et al. (2015) and Sidorova and Harden (2012), we sought feedback from multiple stakeholders, including students, advisory board members, recruiters, and faculty.

Focus groups indicated that across the disciplines within the COB, the faculty agreed that the current CSC course included some material that was either outdated or irrelevant to subsequent courses in the business program as well as the workplace. Similarly, many advisory board members and company recruiters echoed a similar opinion in terms of new college hires and the skills they felt these graduates were lacking. Finally, the students themselves echoed the same concern about the content of the introductory IS course, suggesting it had become less than useful for them as they progressed through the COB program.

BACKGROUND

The Introductory to Information Systems course is a core course in most business schools, offering information systems concepts and application software skills to all business majors (Gudigantala, 2013). Previously, the structure of our COB included the Computer Science department with the introductory IS course taught by that department. However, an administrative restructuring resulted in the CSC department leaving the COB and joining the College of Sciences and Mathematics. This change left the COB with a desire to replace the current CSC course, reclaiming it within the domain of the business school. It also presented an opportunity to redesign the course as a Management Information Systems course with updated content for business students. This allowed us to incorporate components designed to address knowledge and skills deficiencies noted by faculty, students, and advisory council members.

The COB Undergraduate Curriculum Committee made a recommendation to create a Special Task Force with the charge of developing a proposal for a new course to replace the current CSC course in the business foundation requirements. As the existing CSC course would remain in the curriculum of the CSC department, this process first required justifying the unique need for a brand new course in the COB with content distinct from the existing CSC course. The Task Force consisted of a representative from each of the academic departments in the COB – Accounting, Business Communications and Legal Studies, Economics and Finance, and Management, Marketing, and International Business – to ensure the inter-disciplinary skills needed for each functional area of business would be addressed.

The description of the existing CSC course included phrases such as "Use of operating systems and business application software" and "A general study of computer[s] … from a business-oriented perspective." This description did indicate some part of what the Task Force ultimately wanted from the course. But it also included some aspects no longer desired and did not indicate the elements we felt

were critical to include in the course to meet our current needs. This situation led to the Task Force convening to begin the development of a new introductory IS course.

COURSE DEVELOPMENT PROCESS

ESTABLISH THE NEED

The Dean of the COB called a preliminary meeting to relay that various stakeholders of the COB – faculty, students, many members of the College Advisory Board, and even some recruiters – indicated that many business students were not well-equipped to handle spreadsheet tasks in some of the program's upper-level courses or entry-level positions that recruiters were trying to fill. During a meeting of the COB's Alumni Advisory Council, the members recounted numerous stories of their own lack of preparedness to meet the demands of their jobs with regard to these skills. The Dean requested that the course meet the need for all business students to have some basic IS knowledge as well as more advanced spreadsheet skills needed both for subsequent business courses and future job environments.

A Special Task Force was convened with a faculty representative from each department within the COB. During the first meeting, each member was asked to conduct a focus group with their own department's faculty to inquire about the specific skills they would like to see addressed in the introductory IS course. Additionally, focus groups were held with students in six junior level classes (total of 156 students) to assess their opinion regarding the content of the introductory IS course they had already taken.

The results of these focus group sessions with faculty and students revealed that the old model of this introductory course was not meeting the needs of either constituent, even though the course did have a business-oriented description. The faculty complained that students were not adequately prepared to perform some of the basic spreadsheet skills required for quantitative exercises in Accounting, Finance, Operations Management, and Economics courses. For intermediate skills, many professors found themselves having to use valuable class time teaching these spreadsheet concepts before they could begin teaching the actual course content. Other faculty quit assigning problems that required these skills.

The students complained that the bulk of the current introductory CSC course was focused on the concepts of basic computing, operating systems, and word processing skills that did not impact their remaining college career. Many students expressed disinterest in the course because those were concepts that most of them had mastered during their time in high school. When asked what areas they felt they should have more instruction in, the students overwhelmingly agreed that the coverage of spreadsheet skills was one in which the course was lacking. The students explained that other courses they had taken since that introductory CSC class required the use of spreadsheet skills they did not possess.

The results of the focus group sessions indicated an overwhelming support for greater data analytical skills. Both faculty and students reached the same conclusion as administrators and advisory council members had previously, that these skills represented a primary need of business majors that was not currently being met. With the need established, we turned our attention to the specific components that should be included in the redesigned course.

DEVELOP COURSE COMPONENTS

The Task Force drew the conclusion, based on the preliminary assessment delivered by the Dean and reinforced by the focus groups with faculty and students, to make spreadsheet skills a primary component of the new course, with a business oriented focus on productivity enhancements provided by information systems. One of the first tasks included selecting a name for the course which conveyed

the new emphasis on productivity, yet kept the business focus on management information systems. The new name chosen was "Management Productivity Systems."

The next step was to develop a course description that conveyed an objective reflecting the new direction of the Management Productivity Systems course, but also distinguishing it from the current introductory CSC course. The CSC course description used phrases such as "Use of operating systems and business application software" and "A general study of computer[s]…from a business-oriented perspective," and therefore presented somewhat of a struggle for the Task Force to find a description that was both appropriate and unique. We wanted the new course to also have a "business-oriented perspective," and there would indeed be some "business application software" covered in the course.

However, we knew that we were developing a vastly different course from the one currently being taught. We wanted to emphasize the focus on data that would be processed with spreadsheet software, but spreadsheet skills were not the only material the course would cover. There was concern that students also be able to take the data manipulated in the spreadsheet program and display it in a report document or presentation application. However, we wanted something that conveyed the major focus on data and its use in managerial decision-making. After several rounds of revisions, the Task Force settled on the following:

> **Course Description:**
>
> *Introduction to information system concepts encountered in various business disciplines. Emphasis on productivity software skills with focus on techniques for gathering business information as well as structuring, manipulating, and presenting data to support managerial decision making in a business environment.*

Having the name and course description settled, the work of defining exactly which concepts to include in the course material began. A good amount of time and energy was spent debating which content areas would be covered in the new course. One issue that arose was the familiar dilemma encountered in many IS courses of whether the content should focus more on technical IT skills or business skills, including communication and interdisciplinary subject areas such as finance, accounting and management. Pierson, Kruck, and Teer (2008) present a comparison of the names of IS education courses in business schools in the US as compared to three years previously. The comparison shows that the names are many and varied, but that the programs themselves remain fairly stable.

With that thought in mind, the Task Force reviewed the course names and descriptions of introductory IS courses from six peer institutions in our region. Although there was some variation among the institutions in terms of course name and description, there were some commonalities as well. Three of the institutions reviewed used the phrase "Computer Applications" in the course title. The word "Business" also appeared in three of the course names. "Computer" or "Microcomputer" appeared in all six of the courses reviewed. Our institution did not use the word "Computer" in the existing introductory CSC course, nor did we adopt it for the new proposed course. We wanted less focus on the computer itself, and more on the productivity a computer affords a business. A list of course names and key phrases from the course descriptions examined is contained in Table 1.

This review of courses from neighboring institutions as well as our own current introductory IS course guided the discussion on content that we felt was critical to include in the newly proposed course as well as the content we felt was no longer relevant. The task force balanced and prioritized the needs of the multiple stakeholders with the limited time afforded a three credit hour course. Lists were collected from each member of the Task Force containing the items their departments' faculty indicated were most important to include. These lists were then merged and edited in conjunction with the contents of several textbooks on spreadsheet skills.

Table 1. Introductory IS course name and descriptions from peer institutions

Institution	Course title	Key phrases in description
1	Business Computer Applications	• computer terminology • hardware • software • operating systems • business applications of software
2	Introduction to Computer Applications	• personal computer application • in the business environment
3	Business Computer Applications	• computer terminology • hardware • software • operating systems • business applications of software
4	Introduction to Computers	• computer literacy • basic computing concepts
5	Introduction to Microcomputer Applications	• advanced information technology skills • office productivity software
6	Introduction to Computers in Business	• introductory concepts of computing in business • computer history and programming

The Task Force felt that rather than focusing on specific features of the software which can and do change easily over time, the focus should be on the business application of those skills. Therefore, we decided to go with a textbook that was based on various business projects, each requiring the learning of specific skills in order to process the data using real world examples. We included specific content areas that could and would be reinforced in subsequent classes and sought faculty commitment towards integrating these areas into their classes.

In addition to spreadsheet skills, the second component of the course was "introduction to information system concepts encountered in various business disciplines." Again, several introductory IS textbooks were reviewed, involving a good deal of communication with the textbook publishers, since the course would be divided between software skills focused on business productivity and IS topics. All of the textbook publishers were willing to customize a book, pulling only the topics desired for the new course.

We faced the familiar dilemma of trying to balance the technical requirements of the course content with a focus on IS issues in a business environment. Granger, Dick, Jacobson, and Slyke (2007) suggest that even though technical skills are still considered important for a COB graduate, there has been an indication from CIOs that there is a desperate need for employees with project management expertise, as well as enterprise (or cross-disciplinary) knowledge, industry knowledge, and customer oriented business skills. Jafar et al. (2008) also suggest a link be made between the business and technical requirements that fulfill the technology requirements and satisfy corporate recruiting needs. After once again discussing the needs of a COB graduate, we settled on the following topics as the course objectives:

Student Learning Outcomes – Upon completion, the student should be able to:

- Demonstrate familiarity with organizational issues of Information Systems (security, networking, ethics)

- Describe how Information Systems can provide businesses with efficiencies and help create a competitive advantage
- Import manipulated data into word processing or presentation applications
- Perform basic functions related to spreadsheets including creating and formatting tables, charts, and templates
- Import data from a database application for spreadsheet processing
- Apply functions in formulas (statistical, financial, logical, and lookup) and analyze data with charts and what-if analysis tools
- Use advanced spreadsheet techniques (sorting, filtering, custom data formats, styles, and templates)
- Use Business Analytics tools in spreadsheet software

With a course name, course description, textbooks, and Student Learning Outcomes established, a syllabus was drawn up with a timeline outlining the various topics to be covered. Those topics include the main components of management information systems, which include people, information and information technology. The focus on IS issues that impact a business meant including the major systems used in businesses such as enterprise resource planning systems as well as the underlying structures that support those systems. Those underlying structures include databases, data warehouses and data mining tools.

With a major focus on spreadsheet skills, a discussion of business analytics and decision support systems was easily integrated into the list of topics for the new course. Naturally, a discussion of the largest information system (the internet), e-commerce, and the associated business models were also included. The importance of including information ethics was emphasized at this point as well. Additionally, issues involved in networking and security were deemed essential topics to give students an understanding of the importance of information ownership and the accompanying responsibilities that go with it, including business continuity plans. To conclude the course, a discussion of the latest trends in information systems would be required, since the dynamic nature of the field was the very impetus for redeveloping this introductory IS course.

Once all the documentation was in place, it was presented to the Undergraduate Curriculum Committee, which informally voted to proceed with the proposal. The next step in the process involved completing a formal proposal request to the University Curriculum Committee. This involved the completion and submission of an application in which the cursory information regarding course name, number, description, credit hours, prerequisites, etc. was given. In addition, the justification for creating a new course was required. Our responses to the questions demonstrating that this was indeed a unique course, and specifically different from the existing CSC course are contained in Table 2.

Table 2. Description of criteria designating the new course "unique"

Application question	Response to University Curriculum Committee
What is the primary reason you are creating this course?	*To introduce students to management information systems and management productivity systems needed to address deficiencies and expectancies in both areas.*
How does this course differ from similar courses being offered …?	*This course fills gaps in student knowledge of management information systems as identified by the major field test (a standardized exit exam taken by all business majors). This course also provides in-depth exposure to management productivity systems, primarily spreadsheet analytical techniques that have been most requested by employers and faculty. No other course provides this.*

RESULTS OF REDESIGNED COURSE

The Task Force completed its mission of developing and formally proposing a new introductory IS course to replace the existing CSC course in the COB. The University Curriculum Committee received the proposal and approved its inclusion in the curriculum the following academic year. The first sections of the new Management Productivity Systems (MGT 272) course were taught in Spring 2016 in a phased in approach to honor the degree requirements of previous academic year catalogs. Enrollment was strong, with many students who already completed the old required introductory CSC course opting to take the new, redesigned introductory IS course as an elective. These students enrolled in the course simply because they felt the need to acquire the skills being taught in this course to do better in their remaining time in the business program as well as to be more competitive in the marketplace upon graduation.

The COB has approximately 1700-1800 students, roughly requiring 450 students a year to complete the business foundation courses that are required of all business majors. The first semester the new MGT 272 course was taught, enrollment was 125 students, almost doubling the following semester to 240 students. The course is now required of all business majors, with the grace period for previous degree plans now expired. The required students (approximately 450 per year) plus a few who realize the benefit of the data analysis tools spreadsheets provide and therefore elect to take the course, enroll each semester.

METHODOLOGY

In addition to the focus groups conducted with stakeholders and the review of the peer institutions noted previously, the students in the first semester of the new course were surveyed to gauge their perceptions of the course and their skill level both at the beginning of the course and again at the end of the course using an online survey tool. Extra credit was offered to the students for completing the survey. From the 125 students enrolled in the first semester, a total of 107 responses were received for a response rate of 86%. Of those responses, two users did not agree to participate and three gave incomplete responses, resulting in those five records being deleted. That left 102 usable responses, for a 95% usable response rate.

Demographics of the respondents are presented in Table 3 and reflect the overall demographics of the college with a small majority of male students. What differed was the distribution of classifications with one-third of the students classified as juniors or seniors in a course designed primarily for freshmen or sophomores. That distribution speaks to the desire for students to take advantage of the opportunity to acquire skills deemed important not only by advisory council members, recruiters, and faculty with in the COB, but also by the students themselves. The overwhelming majority of respondents were in the age category of 18-24 years.

Survey respondents were asked, "*Were you required to take a course based on office productivity software skills in high school?*" Another surprising finding is that only 43% of students reported they were required to do so. This could be related to high schools noting that the content of these courses had become less than useful, as we did. Next, they were asked, "*Have you ever taken any course based on productivity software skills, whether in high school, college or elsewhere?*" Perhaps even more interesting, almost two-thirds, or 63% of students did, however, take such a course even though they were not required to.

Respondents were then asked, "*If you have never taken any class on office productivity software, do you feel that you still have some knowledge and proficiency in office productivity software skills?*" Of the students who never took a course in office productivity software (38%), an overwhelming majority of those students (89%) indicated that they felt they still had some knowledge and proficiency in office productivity software skills. This speaks to the ubiquitous nature of these productivity software applications and the many methods easily available for acquiring proficiency in obtaining at least some level of skills.

Table 3. Demographics

Gender	
Male	52
Female	48
Classification	
Freshman	31
Sophomore	37
Junior	25
Senior	6
Age	
18-24	95
25-34	4
35-44	1
45-54	0
55 and up	1

Respondents were then asked whether they had any training in specific productivity software applications, including word processing, spreadsheet, database, and presentation software. Notably, word processing and presentation software were the most frequently cited applications in which students had received some training, with two-thirds or more receiving some training in them. However, as we noted in our initial assessment of our own introductory IS course, spreadsheet skills were most often cited as the most critical for progressing through the business program and into the career beyond. Almost half of respondents reported never having any training in this area, which reinforced our realization of the need to redesign the course with more focus on this particular skill set. The results of those with previous training in specific productivity applications are shown in Table 4.

Table 4. Students with prior training in productivity applications

Software application	Training received
Word processing	66%
Spreadsheet	54%
Database	33%
Presentation	72%

Next, the students were asked "*Please indicate your degree of skill level with each productivity application,*" on a scale from 1 to 7, with 1 = No skill, 4 = Average skill, and 7 = Expert skill. Not surprisingly, the results are closely correlated to the students with training in each specific software application. Students ranked presentation software as the application in which they had the highest level of skill, while database software was the application where they had the lowest skill. The results of the average reported skill level in each application are shown in Table 5.

Table 5. Student skill level in specific productivity applications

Software application	Skill level (mean)
Word processing	4.46
Spreadsheet	3.51
Database	2.94
Presentation	4.48

In the last sections, the survey respondents were asked to, "*Rate your opinion of the importance that skill in each of the following office productivity software applications has on **achieving your college degree**.*" To help them navigate their college experience, the students ranked presentation software as the most critical with 40% of respondents selecting it. This is likely due to the number of projects they are required to present throughout the COB program. However, following closely behind was productivity software, with 39% of respondents ranking it as the most critical productivity software application. Word processing was trailing in terms of importance to college, with 33% and 31% respectively of respondents believing they were critical.

Finally, the survey respondents were asked to, "*Rate your opinion of the importance that skill in each of the following office productivity software applications has on **achieving your career goals**.*" When deciding which productivity software application was most critical to the success of their professional career, the results were slightly different, with 48% of respondents finding spreadsheet software most critical. Presentation software was the second most critical skill for the workplace, with 46% selecting it. As before in terms of their college career, word processing (40%) and database (35%) skills were considered by the students to be the least critical for their professional career.

DISCUSSION

The results of the survey confirmed what the task force discovered in the course development process. Namely, that the students already had a fairly good grasp of word processing and presentation software skills, but not as much mastery of spreadsheet software skills. Additionally, it reinforced the belief that spreadsheet skills were deemed most critical to their future success in both college and the workplace. This reinforced our decision to focus on those skills in the newly developed IS core course, but still left the familiar problem of teaching a particular technology to a group of students with widely varying skill levels.

We consulted with several publishers regarding the content of the course, and reviewed several texts that covered spreadsheets by way of project based exercises. Knowing we would be dealing with such drastically different skill levels, it was important to find a tool to help each student progress at their own pace. There are several different applications that simulate a spreadsheet environment, and allow students to first observe, then practice, and finally apply each new software skill. After testing some of these, we selected a system that integrated well with our learning management system, as we would also have to offer the course for online delivery.

Initial implementation was not without some challenges, which were dealt with in the usual trial and error method of any new course offering. The biggest challenge was with the new simulated spreadsheet software training system. As with any new system implementation, there was a learning curve for the faculty as well as the students. We spent some time in the first semester with the publisher and their technical support team, working out the issues.

The course is entering its third year, during which time a new version of the training system software (and productivity software suite) was introduced. The course is running smoothly for the faculty and students, and the feedback has been overwhelmingly positive. Students indicate they are better pre-

pared for future courses in the COB and faculty indicate that students are doing better in courses that utilize spreadsheet software.

Some faculty have redesigned their own courses in Accounting and Economics as a result of the new core IS course to include more advanced spreadsheet skills. It is too early to get feedback from advisory board members or recruiters. But initial impressions from discussions with a few has been positive as they agree this was the necessary direction to go. Akbulut and Looney (2009) note that incorporating more sophisticated technologies in introductory IS courses can serve to not only increase student success in the classroom, but also can help students become more attractive to recruiters. With the call for the critical need to renew and redesign the introductory IS course to fit the needs of all business majors (Fichman et al., 2014; Schwald, 2011; Wang & Wang, 2104), we are confident that we are giving our students a stronger foundation as they move forward in both their college and professional careers.

In addition, some of our feeder institutions have since contacted us to evaluate their own courses and determine if they will be accepted as a substitute for our new MGT 272 Management Productivity Systems. Initially, their core introductory IS course was not deemed an equitable substitute, primarily because it did not cover as many advanced spreadsheet skills. The IS content was still basically current and sufficient, but the business productivity software was outdated. In the past year, however, some of those institutions have followed our own example and redesigned their course in a similar fashion. We view this as further confirmation of our decision to redesign our course as we did.

CONCLUSION

This paper presents a case study at a College of Business with an identified need to re-examine the introductory IS course for the undergraduate student population. The highly dynamic nature of the IS field demands that content must frequently be updated. However, a restructuring of the departments within the COB and the College of Math and Science led to both a challenge and an opportunity to not only reclaim this course for the COB, but also to completely redesign it and develop a brand new course, customized to the current needs of our stakeholders. Many of those stakeholders indicated that the current course was insufficient to fill the requirements of our various constituents.

The overall outcome from this redesigned core IS course has been positive, with feedback from faculty, students, and advisory board members indicating that it is well received. The process was long, customary in the realm of academia, and not without several challenges along the way. However, we feel we have a good product for our students and our business program. We are looking forward to the feedback from other stakeholders in the future, such as our advisory council members and recruiters. We are confident that our graduates will reach them better prepared to enter the workforce ready to be productive employees.

One limitation of this paper is that we did not empirically test the opinions of our constituents before making the decision to redesign the course, relying instead on anecdotal feedback from focus groups to gather our conclusions. Another limitation is the focus on only one institution's experiences and therefore our own experience may not be generally applicable to other institutions. With the course taught for the first time in 2016, there will be a unique opportunity to begin longitudinal data collection to empirically test the impact of the restructured course material.

However, as the IS field continues to evolve at a rapid pace, at a minimum our experience serves as a cautionary tale of the need to continually monitor the content of our courses. While our situation was unique in light of the departmental restructuring, it was a rather common occurrence that the content of an information systems course required fairly extensive overhauling. Other institutions may find that their own introductory IS courses are somewhat outdated and may need a similar transformation to meet the needs of their own stakeholders. They may find that it is in their best interest to evaluate those courses to make an informed decision. This paper provides a detailed blueprint of

the steps involved in that process for those in colleges of business to follow and extends the literature on the need to continually update courses that teach technology.

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