Innovating in the MIS Core Course – Bridging Business and Technology

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Innovating in the MIS Core Course – Bridging Business and Technology

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ABSTRACT
The challenge of teaching the MIS core course is markedly different from that of more advanced courses taken by MIS majors. In the MIS core course, the goals of bringing knowledge to non-MIS majors that they will find relevant yet grounding that knowledge in the core of the IS discipline, which to a significant degree is inescapably technical, have to be reconciled. Non-MIS majors typically want to know only about the business implications of IS, yet the business aspects of IS cannot be so neatly separated from the technology dimension of IS. This paper describes a pilot offering of the MIS core course where business majors had to work with software technology at a hands-on level. A survey was administered to the students and the data analyzed using multivariate analysis of variance and logistic regression techniques to assess learning outcomes in both the business and technology dimensions of IS.

Keywords
IS education, IS curriculum, IS literacy, learning outcomes, active learning, IS business dimension, IS technology dimension.

INTRODUCTION
Easton and Easton (2003) note that incoming business students have widely different backgrounds with respect to computer literacy. Baugh (2011) poses the question: “How do you teach it (IS) and keep the interest of your students?” This dilemma of keeping a course on management information systems (MIS) interesting and relevant to students of different backgrounds, most of whom have no interest in pursuing an IS career, comes to the fore in the MIS core course that is required of all business majors from finance to marketing to human resources management. Law (2003) has also taken note of the unique difficulty in designing MIS courses for students who have no interest in pursuing a professional IS career. However, regardless of the aptitude and background of individual students and their particular career interests, it is incumbent upon educational institutions that students are sufficiently computer and IS-literate to be able to face the challenges of a technological world. In the real world, the information technology (IT) underpinning businesses is relentlessly forging ahead at a rapid pace. This view of the necessity of making students computer and IS-literate regardless of their particular career inclinations is also echoed by Tsai (2002) and the National Association of Colleges and Employers (2011).

At this point, a closer look must be taken at what constitutes general computer and IS-literacy and the role of the MIS core course in contributing to that general literacy. The MIS core course is to be distinguished from basic computer applications courses where students learn how to use word processing, presentation, spreadsheet, and database software. The office productivity-oriented computer applications courses are part of the business student’s general education and are typically taken very early, such as in the first or second semester of the student’s freshman year. This however is not the MIS core course nor should the MIS core course be designed as simply an extended version of the computer applications course focusing on more advanced features of Microsoft Excel or Microsoft Access. There is a world of IS knowledge that all business students have to acquire that is over and above developing the skills to use office productivity tools. This additional layer of IS knowledge addresses the larger issues of IT strategy, business value, organizational impact, ethics, security, IT infrastructure, e-commerce, enterprise applications, globalization, and knowledge management. Various MIS textbooks such as Laudon and Laudon (2012), Valacich and Schneider (2010), and Kroenke (2011) provide a reasonably good coverage of these areas. Laudon and Laudon (2012) draw an important distinction between information systems literacy and computer literacy in that information systems literacy encompasses the larger issues enumerated above. Consequently, while the computer applications courses are targeted at acquiring computer literacy, the MIS core course must be targeted at IS literacy with the recognition that both are important and necessary. In addition, it should also be recognized that the MIS core course
is likely to be the last course that the non-MIS majors take in the computer and IS literacy set of courses, given that they would have to increasingly focus on their discipline-specific courses in finance, accounting, or marketing. Hence, much has to be accomplished in this final MIS course.

Acquiring IS literacy is properly viewed as a cognitive exercise that has both a business and a technology dimension to it. Laudon and Laudon (2012) in fact state that understanding and being able to use IS effectively “requires an understanding of the organization, management, and information technology shaping the systems”. The technology and the business thus constitute major parts of the IS knowledge gestalt.

Technology too must be effectively taught and absorbed by general business majors who may indeed move on to roles later in their professional careers where they will have to make decisions on aligning IT with business goals and strategies. An innate understanding of the technology will stand them in good stead in performing these roles. The question that arises is: How is technology best taught in this core MIS course? The active learning approach where students engage in some activity rather than passively listen to a lecture has long been viewed as particularly effective in learning (Bonwell and Eison, 1991). In terms of learning information technology, project-based hands-on work in a laboratory setting is a quintessential active learning method and is used widely. There are many examples of the use of project-based, hands-on laboratory activity in technical settings (Chen and Brabston, 2011). While these technically-oriented laboratory activities such as building a web site or configuring a LAN have worked well for those pursuing a technical career, there is much less evidence on how well general business students not interested in pursuing a technical career view such activities and how effectively they learn from them. The challenge of this course is to see if general business students can profit from a holistic business-technology approach where significant hands-on work with the technology is built into the course.

MIS CORE COURSE DESIGN

The key goals of this MIS core course are:

1. Students will be able to describe how businesses use information systems (IS) to gain competitive advantage through achieving operational excellence, improved decision-making, and developing innovative products and services.
2. Students will be able to describe different aspects of information systems and technology including IT strategy, business value, organizational impact, ethics, IT infrastructure, security, e-commerce, enterprise applications, globalization, knowledge management, and building and managing information systems.
3. Students will be able to apply concepts learned in the course to the real-world by analyzing a number of real-world cases which focus on how technology can be used to achieve business objectives. The cases will also manifest the business value, organizational impact, and social implications of information systems and technology decisions.
4. Students will acquire a level of comfort with software and Internet technologies by working on a range of projects on web application design and development. As part of this goal, students will also acquire conversational familiarity with the terminology and language of IT.

In support of these goals, the textbook chosen for the course is Management Information Systems – Managing the Digital Firm by Laudon and Laudon (2012), which is notable for its emphasis on the business aspects of information systems and is rich in real-world cases. The business-oriented textbook is chosen particularly to address the needs of the non-MIS majors who do not plan on pursuing an IS career. Hence, this textbook grounds the class in primarily the business side of IS.

Various instructional methods are used in this course for communicating knowledge, engaging with students, and assessing their performance including: Power Point lectures, case studies, hands-on laboratory assignments, on-line quizzes and exams, and review sessions using clickers in the classroom. The Desire2Learn or D2L course management system is used in the course and all materials placed on D2L (Desire2Learn, 2012). The case studies are short cases taken from the Laudon and Laudon textbook (2010) focusing on the application of the concepts in a real-world setting. As information on the cases in the textbook is somewhat brief, students are asked to do further research on the case and dig deeper into the scenario described, the firm in question, other stakeholders, and the technologies involved. The quizzes and exams are placed on D2L and have to be taken in class over the campus wireless LAN. After the completion of each quiz or exam, the questions are reviewed in class using clickers which provides real-time feedback on the distribution of right and wrong answers. This provides an opportunity for discussion of the wrong answers. The case studies and the laboratory assignments are done in groups with the object of facilitating collaborative learning. Engendering collaborative learning is a key pedagogical approach used in this course given all the evidence that collaborative learning improves learning outcomes (Johnson, Johnson, and Smith, 1998).
As stated before, IS literacy is not purely about the business aspects of IT and there is a strong technology dimension to the IS discipline. So the more radical part of the design of the course is a set of hands-on laboratory projects that the students have to work on using Microsoft Visual Studio as the development tool. However, the goal of this course, as is emphasized to the students, is not to create web designers, programmers, or database administrators but to give general business majors a level of comfort with the technology. The hands-on laboratory assignments to be done with the instructor’s assistance is simply an active learning vehicle for understanding software and Internet technology. There is a 4-project sequence of laboratory assignments that students work on that is labeled ‘The Anatomy of a Web Application’. In other words, the students are taken on a tour of the three major layers of a software application: presentation, business logic, and the database layer. The students do not build a complete, integrated web application. Instead, the projects are discrete projects designed with the goal of giving students a feel for what goes on in the three primary layers of a web application. The specific projects in these layers are:

- **Presentation**: There are two projects in the presentation layer on building web sites using HTML and ASP (Active Server Pages) with text and images that describe the students’ college or university. The instructor demonstrates in class how to build simple HTML and ASP web sites using Visual Studio and the students can then modify the web sites built in class to fit the requirements of the assignments.

- **Business Logic**: The business logic layer is of course about programming in the traditional sense and exposure to this layer at a hands-on level is perhaps the most controversial when it comes to non-MIS majors. Hence, the approach taken with teaching about this layer is to de-emphasize the programming language aspects and instead focus attention on the conceptual core of a program, which is the algorithm that a program implements. After describing some basic capabilities of the C# language, the instructor shows how to build a simple C# program to find the sum of the first N integers. The students’ assignment is to modify this program to find the product of the first N integers, or the factorial of N; and also to determine the threshold value of N for which their program runs correctly by comparing the output of the program with the built-in function FACT in Excel for finding the factorial of a number.

- **Database**: In this layer, the students have to create a database table with courses they have taken, populate it with some rows, and then use SQL to extract information from it. The instructor first demonstrates all these steps in class. The SQL Server Express product which is provided as part of Microsoft Visual Studio is used in this project.

**DATA COLLECTION AND METHODOLOGY**

After the course, a survey is administered to the students to assess learning outcomes in the technology and business dimensions of IS. 5-point Likert scale items are used to determine if there has been an enhancement of knowledge in these dimensions. As an example, the assessment of enhancement of knowledge in the business dimension is measured by the pair of questions shown in Table 1. The full instrument is given in Appendix A. The data are analyzed using multivariate analysis of variance (MANOVA) to determine if there has been a shift in the business-technology space after the course as shown in Figure 1. Using MANOVA in this fashion to detect such a shift in the IS business-technology gestalt is also a novel use of the MANOVA technique (Stevens, 2002; Huberty and Olejnik, 2006).

The first hypothesis tested is the so-called omnibus test of MANOVA which is:

**Hypothesis 1:** There is a difference in the students’ perceived position in the business-technology knowledge space before and after taking the course.

In case the MANOVA omnibus test is positive, then it is followed by univariate ANOVA tests to determine which dimension, business or technology (or both), is causing the shift in the students’ position in the business-technology space.

**Hypothesis 2:** There is a difference in the students’ perceived knowledge in the business dimension of IS after taking the course.

**Hypothesis 3:** There is a difference in the students’ perceived knowledge in the technology dimension of IS after taking the course.
Before the course | I would rate my knowledge and understanding about the business aspects of information systems and information technology (IT) prior to taking this course as:
1. Having no knowledge whatsoever
2. Having very little knowledge
3. Just barely knowledgeable
4. Moderately knowledgeable
5. Highly knowledgeable

After the course | I would rate my knowledge and understanding about the business aspects of information systems and IT after taking this course as:
1. Having no knowledge whatsoever
2. Having very little knowledge
3. Just barely knowledgeable
4. Moderately knowledgeable
5. Highly knowledgeable

Table 1: Items for Measuring Knowledge Enhancement in Business Dimension

Figure 1: Shift in Students’ Position in Business-Technology Knowledge Space

Another view on the effectiveness of the course is to define course success relative to a student as the improvement of the student’s knowledge in at least one of the two dimensions of business and technology of IS literacy. The data collected is used to build this classification of students where an increase in the Likert-scale score before and after the course represents an improvement in the student’s knowledge in a particular dimension. The proportion of students for whom the course is successful is tested against some value \( \theta \) to gauge the extent of success of the course. This leads to the following hypothesis:

**Hypothesis 4:** The proportion of the students for whom the course is successful is greater than some value \( \theta \).

Hypothesis 4 is actually not a single hypothesis but a set of hypotheses where the value of the parameter \( \theta \) is varied over a range from a low to high value and the p-value of the hypothesis test is recorded as a function of \( \theta \). It was decided as part of
the *ex ante* structure of the hypotheses to be tested that $\theta$ would be varied from a low of 0.3 to a high of 0.8 in increments of 0.025. The threshold value of $\theta$ for which the p-value just falls below the level of significance of 0.05 for the hypothesis test then serves as an indication of the extent to which the course is successful.

Another type of analysis performed is to assess whether enhancement of knowledge in the business dimension and in the technology dimension for a student can be predicted based on the student’s perception of the effectiveness of various learning methods used in the course such as lectures, case studies, hands-on labs, tests, and in-class review sessions using clickers. Effectiveness of these instructional methods in meeting the learning objectives of this course is part of the data collected in the survey. These data are then used to estimate the following logistic regression models:

\[
\pi_{\text{bus}} = \frac{1}{1 + e^{-\left(\beta_0 + \beta_{\text{bus-lec}}X_{\text{lec}} + \beta_{\text{bus-case}}X_{\text{case}} + \beta_{\text{bus-lab}}X_{\text{lab}} + \beta_{\text{bus-test}}X_{\text{test}} + \beta_{\text{bus-click}}X_{\text{clicker}} \right)}}
\]

\[
\pi_{\text{tech}} = \frac{1}{1 + e^{-\left(\beta_0 + \beta_{\text{tech-lec}}X_{\text{lec}} + \beta_{\text{tech-case}}X_{\text{case}} + \beta_{\text{tech-lab}}X_{\text{lab}} + \beta_{\text{tech-test}}X_{\text{test}} + \beta_{\text{tech-click}}X_{\text{clicker}} \right)}}
\]

where

- $\pi_{\text{bus}}$ = probability that business dimension of IS knowledge is enhanced for the student
- $\pi_{\text{tech}}$ = probability that technology dimension of IS knowledge is enhanced for the student
- $X_{\text{lec}}$ = effectiveness score given to lectures by student
- $X_{\text{case}}$ = effectiveness score given to case studies by student
- $X_{\text{lab}}$ = effectiveness score given to labs by student
- $X_{\text{test}}$ = effectiveness score given to quizzes and exams by student
- $X_{\text{clicker}}$ = effectiveness score given to clicker review sessions by student

The utility of this analysis is that, in a future offering of the course, the section of the survey gathering information on the effectiveness of the instructional methods can additionally be administered at the middle of the semester to obtain preliminary values of the predicted $\pi_{\text{bus}}$ and $\pi_{\text{tech}}$. This information can then be used to predict the percentages of the students who are expected to succeed in enhancing their knowledge in the business dimension and the technology dimension of IS. It could be that the preliminary prediction is that students are succeeding in the business dimension but not the technology dimension. This information can then enable the instructor to tweak the remainder of the course to increase attention on the dimension that might be lagging behind.

It is expected that some of the $X_i$’s may indeed be correlated, for example, a good student who listens attentively in the lectures, works on the labs diligently, performs well in the tests and feels s/he has gainfully learnt something from the course may give high scores to all the instructional methods. Conversely, a student struggling in the course may feel that none of the methods were useful and give low scores to all of them. The issue of multicollinearity in multiple regression models is of course a well-known problem and various approaches have been suggested to address it (Johnston, 1984). The approach taken here is to retain those $X_i$’s in the model that are as significant as possible, or have low p-values, while maximizing the fit of the model using Akaike’s Information Criterion (AIC) (Burnham and Anderson, 2004).

**RESULTS**

For this pilot course, 57 usable surveys were returned out of a class of 73 students when the survey was administered at the end of the semester. This corresponds to a 78% response rate. The survey was completely anonymous and also entirely voluntary. It was also indicated to the students that there would be no extra credit for filling in and returning the survey.

**Analysis of Variance**

Table 2 gives the descriptive statistics for the level of knowledge in the two dimensions of business and technology. The descriptive statistics provide a prima-facie case for improvement in the students’ knowledge in both the business and the technology dimension. This is then tested via the MANOVA omnibus and the univariate ANOVA tests. Table 3 reports values of the Pillai, Hotelling-Lawley, Wilks, and Roy statistics along with their p-values for the MANOVA omnibus test.
Clearly, the MANOVA omnibus test for Hypothesis 1 is strongly significant indicating that the course indeed shifted the class’ average position in the business-technology knowledge space.

Next, the ANOVA tests are performed to determine if the knowledge enhancement is significant in each dimension. The ANOVA test results are shown in Table 4. As seen from Table 4, the univariate ANOVA tests are also strongly positive indicating that there was a difference in the class averages for knowledge in both the business and the technology dimension before and after the class. The strongly positive MANOVA and ANOVA tests in conjunction with the descriptive statistics lead to the statistically significant conclusion that the course did enhance knowledge in both the business and the technology dimension of IS.

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pillai</td>
<td>0.2144</td>
<td>$1.526 \times 10^{-6}$ ***</td>
</tr>
<tr>
<td>Hotelling-Lawley</td>
<td>0.27292</td>
<td>$1.526 \times 10^{-6}$ ***</td>
</tr>
<tr>
<td>Roy</td>
<td>0.27292</td>
<td>$1.526 \times 10^{-6}$ ***</td>
</tr>
<tr>
<td>Wilks</td>
<td>0.7856</td>
<td>$1.526 \times 10^{-6}$ ***</td>
</tr>
</tbody>
</table>

Table 3: MANOVA Test Results

<table>
<thead>
<tr>
<th>Business Dimension</th>
<th>Technology Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>F statistic</td>
<td>p-value</td>
</tr>
<tr>
<td>28.47</td>
<td>5.01 x 10^{-7} ***</td>
</tr>
</tbody>
</table>

Table 4: ANOVA Test Results

**Extent of Course Success**

Hypothesis 4 pertains to the extent of course success. This is measured by varying the parameter $\theta$, the population proportion of students who saw an increase in at least one of the two dimensions of business and technology knowledge, over the pre-fixed range of 0.3 to 0.8 in increments of 0.025. These results are mapped in Figure 2. Under the assumption that these hypotheses are being tested at a level of significance $\alpha$ of 0.05, the results show that Hypothesis 4 tests positive up to a $\theta$ of 0.7 and does not test positive at $\theta = 0.725$. Hence, we can state with a level of significance of 0.05 that the population proportion of students meeting with success in this course is about 70%.

**Logistic Regression Models**

Two logistic regression models are estimated for predicting the probabilities $P_{bus}$ and $P_{tech}$ of success in enhancing knowledge in the business and the technology dimension of IS (Equations 1 and 2). The objective in model selection is to obtain a model with good characteristics in that the variables in the model should have regression coefficients with low $p$-
values and also that the AIC of the selected model should be the lowest among the various candidate models explored. First those variables among the set \(X_{lec}, X_{case}, X_{lab}, X_{test}\), and \(X_{clicker}\) are found that are statistically significant if they are used individually in the logistic regression. Then combinations of the variables found to be individually statistically significant are explored to choose the best model. As can be seen from Table 6, model 4 offers the best combination of low p-values of the regression coefficients, as they in fact continue to be significant at the 0.1 level, and the lowest AIC among the various models. The \(X_{case}\) and \(X_{clicker}\) variables are neither individually significant nor do they improve AIC if added to the model with \(X_{lec}\) and \(X_{lab}\). Hence, the final model chosen for the logistic regression of the dichotomous variable of enhancement of knowledge in the business dimension of IS is:

\[
\log \frac{\frac{p_{elec}}{1-p_{elec}}}{\frac{p_{lab}}{1-p_{lab}}} = -1.679 + 0.5616X_{elec} + 0.4616X_{lab}
\]  

(3)

Using Equation (3), the predictive performance of the model is shown in Table 7. The model correctly predicted 41 + 6 (= 47) out of 57 cases for an overall predictive performance rate of 82.46%, which is a strong performance.

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictor Variables</th>
<th>Regression Coefficient p-values</th>
<th>Model AIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>(X_{lec})</td>
<td>(p_{lec} = 0.0161**)</td>
<td>61</td>
</tr>
<tr>
<td>2</td>
<td>(X_{lab})</td>
<td>(p_{lab} = 0.0199**)</td>
<td>61.779</td>
</tr>
<tr>
<td>3</td>
<td>(X_{test})</td>
<td>(p_{test} = 0.022**)</td>
<td>61.589</td>
</tr>
<tr>
<td>4</td>
<td>(X_{lec}, X_{lab})</td>
<td>(p_{lec} = 0.0668*, (p_{lab} = 0.0977*)</td>
<td>60.195</td>
</tr>
<tr>
<td>5</td>
<td>(X_{lec}, X_{test})</td>
<td>(p_{lec} = 0.156, p_{test} = 0.225)</td>
<td>61.474</td>
</tr>
<tr>
<td>6</td>
<td>(X_{lab}, X_{test})</td>
<td>(p_{lab} = 0.217, p_{test} = 0.189)</td>
<td>62.02</td>
</tr>
<tr>
<td>7</td>
<td>(X_{lec}, X_{lab}, X_{test})</td>
<td>(p_{lec} = 0.1585, p_{lab} = 0.2224, p_{test} = 0.617)</td>
<td>61.994</td>
</tr>
</tbody>
</table>

** significant at 0.05 level, * significant at 0.1 level

Table 6: Logistic Regression Candidate Models for Business Dimension of IS Knowledge
Predicted Enhanced Predicted Did Not Enhance
Actually Enhanced 41 2
Actually Did Not Enhance 8 6

Table 7: Classification Performance of Business Dimension Knowledge Model

The candidate logistic regression models for the technology dimension of IS knowledge are shown in Table 8. Models 1 and 4 have the lowest AICs and both were explored for their classification error rate performance. Model 4 was found to have the better error rate performance. Hence, that is the model selected for the logistic regression of enhancement of knowledge in the technology dimension of IS. The $X_{can}$ and $X_{clique}$ variables are neither individually significant nor do they improve AIC if added to the model with $X_{lec}$ and $X_{lab}$. The final model selected is given in Equation (4). It should be noted that the predictor variable $X_{lab}$ does not have a statistically significant regression coefficient in this model because of the multicollinearity issue discussed earlier.

$$\log\left( \frac{p_{tech}}{1 - p_{tech}} \right) = -2.013 + 0.6525X_{lec} + 0.2842X_{lab}$$

The classification performance of the model is shown in Table 9. For the enhancement of knowledge in the technology dimension, the model correctly predicted 31 + 8 (= 39) of 57 cases for an overall predictive performance of 68.42%.

The utility of these logistic regression models is that the portion of the survey on the effectiveness of the instructional methods can also be administered at the mid-point of the semester to get an early idea of the percentages of the students likely to succeed in enhancing knowledge in the business and technology dimensions of IS. Armed with this information, the instructor can make some changes to the course for the balance of the semester.

<table>
<thead>
<tr>
<th>Model</th>
<th>Predictor Variables</th>
<th>Regression Coefficient p-values</th>
<th>Model AIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$X_{lec}$</td>
<td>$p_{lec} = 0.0059**$</td>
<td>69.263</td>
</tr>
<tr>
<td>2</td>
<td>$X_{lab}$</td>
<td>$p_{lab} = 0.0523*$</td>
<td>73.924</td>
</tr>
<tr>
<td>3</td>
<td>$X_{test}$</td>
<td>$p_{test} = 0.0254**$</td>
<td>72.457</td>
</tr>
<tr>
<td>4</td>
<td>$X_{lec}, X_{lab}$</td>
<td>$p_{lec} = 0.0192**, p_{lab} = 0.2258$</td>
<td>69.961</td>
</tr>
<tr>
<td>5</td>
<td>$X_{lec}, X_{test}$</td>
<td>$p_{lec} = 0.0522*, p_{test} = 0.3658$</td>
<td>70.447</td>
</tr>
<tr>
<td>6</td>
<td>$X_{lab}, X_{test}$</td>
<td>$p_{lab} = 0.401, p_{test} = 0.145$</td>
<td>73.746</td>
</tr>
<tr>
<td>7</td>
<td>$X_{lec}, X_{lab}, X_{test}$</td>
<td>$p_{lec} = 0.0534, p_{lab} = 0.4179, p_{test} = 0.677$</td>
<td>71.787</td>
</tr>
</tbody>
</table>

Table 8: Logistic Regression Candidate Models for Business Dimension of IS Knowledge

<table>
<thead>
<tr>
<th>Actually Enhanced</th>
<th>Predicted Enhanced</th>
<th>Predicted Did Not Enhance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actually Enhanced</td>
<td>41</td>
<td>2</td>
</tr>
<tr>
<td>Actually Did Not Enhance</td>
<td>8</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 9: Classification Performance of Technology Dimension Knowledge Model
CONCLUSION

This article describes the pilot offering of an MIS core course taken by all business majors. Students in the MIS core course come from all disciplines ranging from finance to marketing and many do not have the slightest interest in pursuing a career in IS. Quite understandably, they baulk at any attempt to make programmers out of them. Consequently, business schools have to tread carefully in how they design their MIS core course in order to retain the interest of a diverse group of students and ensure that this course remains relevant to their future career goals and aspirations. While relevance to a broad and diverse student body must be a hallmark of the MIS core course, it is also true that the MIS discipline is to a significant degree about the technology. Authors of widely-used MIS textbooks such as Laudon and Laudon (2012) in fact emphasize that there are three dimensions to understanding information systems and how to use them, these being the organization, management, and technology dimensions. IS literacy is thus about understanding the business-technology gestalt of IS. This course brings a holistic understanding of the IS discipline to students through a variety of instructional methods.

The innovative aspect of this course is that it strives to give general business majors a more technical exposure to MIS. The course incorporates a significant hands-on component of working on software projects in the laboratory in a unique way that provides students with a feel for the anatomy of a web application without necessarily building a complete working application.

The course was largely successful in bringing this holistic understanding and enhancing students’ knowledge in the business and the technology dimension of IS. Its success was validated by the robust statistical analysis using MANOVA/ANOVA techniques that showed very clearly that gains were made by students in enhancing their knowledge in both the business and the technology dimension of IS. Furthermore, the analysis also showed that about 70% of the students met with success in this course. So the general business students by and large were able to rise to the challenge of this course and it is hoped that the knowledge they gained will stand them in good stead in an increasingly technological world.

REFERENCES


**Appendix A**

The appendix is available from the authors upon request.