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Active Learning and Student Engagement in the Business Curriculum: Excel Can be the Answer

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ABSTRACT

Business educators are struggling with how better to engage their students in the learning process. At the same time, stakeholders are reporting that business students are ill prepared in problem solving techniques and the effective use of spreadsheets. The systemic use of Excel as a teaching tool in the business curriculum may be the answer to both situations. This paper reviews how computer literacy (with a particular focus on spreadsheets) is addressed in a sample of AACSB accredited business schools. Three models are discerned and discussed. We then follow with an examination of how business faculties are using spreadsheets as a means of student engagement. The results of the literature search in this area are summarized and discussed. The paper concludes with recommendations and directions for future research and curriculum development.

INTRODUCTION

Educators have long recognized the need to revise our pedagogical approach for the new generation of business students. While socially technically savvy, as evidenced by their use of Facebook, Twitter and Google, these students are frequently not prepared to use technology as a tool, as students and as professionals, to address business problems. Creighton, Kiloyne, Tarver and Wright (2006) found college freshmen majoring in business were not able to complete a rudimentary spreadsheet problem. Students earned an average score of 27% on the Excel assignment, which consisted of totaling columns, entering formulas, formatting numbers and making a chart. A recent survey of finance managers found that only 17% believed their non-finance managers could link a cell in one worksheet to a formula in another spreadsheet in the same workbook (Serven, 2007). Even students' self-assessment of their spreadsheet skills is low and showing relatively slow improvement (Stoner, 2009).

While assessments of the spreadsheet skills of students and recent graduates are low, the business community continues to rank spreadsheet functionality in business situations as a critical need for new employees (Spiech, 2005; Stoner, 2009). As an additional indicator from the business community of the pervasive need for professionals to understand Excel, BarnesandNoble.com currently lists 325 different books (none textbooks) available supporting the use of Excel. While many business curriculums typically include a course or course segment on spreadsheets, business education has been slow to comprehensively incorporate spreadsheets as a fundamental and multi-disciplinary tool.

The engagement of students is not restricted to business education. From the sciences (Marshall and Nykamp, 2010; *Popkess and McDaniel, 2011*) to engineering (Heller, Beil, Dam and Hairum, 2010; Smith, Sheppard, Johnson and Johnson, 2005) to political science (Peters and Beeson, 2010), educators have been struggling with the issue of how to make students active participants in the learning process. When students are active participants in their own learning, whether via tutorials (Seal, Przasnyski, and Leon, 2010), cases (Springer and Borthick, 2007), discussion and activities (Coram, 2005; Serva and Fuller, 2004; Smith and Van Doren, 2004) or service learning (Ayer, Gartin, Lahoda, Veyon, Rushford and Neidermeyer, 2010; Eyler and Giles, 1997; Still and Clayton, 2004), students report higher satisfaction and/or better performance. Additionally, active learning shows improvements in short term retention as evidenced by higher test scores (Yoder and Hochevar, 2005). Of the many ways business faculty can employ active learning, the use of Excel for problem solving and analysis is among the most relevant and accessible. In addition to gaining the instructional benefits of active learning, students will be reinforcing their spreadsheet skills, which will serve them well in the job market and beyond. This paper seeks to examine to what extent spreadsheets are being taught and used in the business school curriculums, summarize the innovative ways in which Excel can be used as an active learning tool and propose directions for pedagogical development and research.

WHERE WE ARE

To what extent are business schools teaching and using Excel in the curriculum? To address that question a random number generator was used to select a random sample of 25 of the 477 domestic schools accredited by The Association to Advance Collegiate Schools of Business (AACSB) in the spring of 2010. We chose to focus on the Bachelor of Science in Management degree, thus eliminating three schools that did offer this degree. Of the remaining 22, we analyzed the curriculum and course catalog information from the individual school web pages to determine where spreadsheets were taught and used in the curriculum.

An examination of the descriptions of required courses indicated that although each school requires courses that teach the use of Excel, there is no consensus among schools as to the methodology. There appears to be three models that schools are using to address computer literacy, including spreadsheets. The most prevalent is the inclusion of Excel within a required lower division business course. Even within this model, there is a lack of consensus as to how to incorporate the teaching of Excel in the curriculum. In some cases, the course is Excel specific, but more likely, the use of Excel is one of several topics within the course. Credit for these courses range from \emptyset to 3 credits and course titles vary from "Computer Literacy Concepts for Business" to "Information Systems in Organizations". Note, that in some cases, the business school allows students to take a proficiency exam to waive a course requirement. The second model differs from the first only by requiring that students take a lower division course in computing outside of the business school. This method allows students to complete a general education requirement at the same time as developing computer literacy. The least common approach has computer literacy built into a university-wide requirement in that every student, regardless of major (i.e. business, humanities, social science) must demonstrate computer literacy. In this case, a proficiency exam must be passed. A summary of the school surveyed by computer literacy model is presented in Table 1. A detailed summary of the schools and curriculum models is provided in Appendix A.

Each of the methods listed below ensures that students have been exposed to Excel and can demonstrate some ability in the use of this software prior to the junior-level. Unfortunately, unless students routinely apply Excel in classes or projects, their ability to utilize it as a tool in making business decisions decreases significantly due to a lack of use. The situation is this: Students learn Excel

TABLE 1 SUMMARY OF SCHOOLS BY COMPUTER LITERACY MODEL			
Business Schools with Excel Embedded Within a Lower Division Business Course (Model 1)			
Appalachian State University DePaul University Indiana University Indiana University – Fort Wayne Kennesaw State University Loyola University Chicago Pennsylvania State University Saginaw Valley State University San Francisco State University Temple University University of Michigan University of Montevallo University of Nebraska University of Rhode Island University of Tennessee–Chattanooga Winston-Salem State University			
Business Schools with Excel Outside of Business School (Model 2)			
LaSalle University Loyola University Maryland Siena College University of Wisconsin–Whitewater			
Business Schools with Excel as Part of University Requirement (Model 3)			

Rowan University University of Houston – Victoria while as a freshman or sophomore in a specific class dedicated to Excel or information technology and are then expected to remember this two to three years later, upon graduation without consistent use of Excel in upper division classes. Fewer than 50% of the schools reviewed had an advanced course in problem-solving using Excel and of those that did; none of them were required courses for the management major. A recent study at an AACSB institution showed that the incorporation of spreadsheets in the curriculum lags behind word processing, presentation software and internet research applications. In addition, the use of spreadsheets is stronger in the accounting curriculum in than in the general business core (Varnon, 2010).

WHERE SOME OF US HAVE BEEN

The literature is rife with cases and notes, from the basic to the advanced, on using Excel in the business curriculum. While our review of the literature cannot be viewed as exhaustive, we found that nearly every business discipline is represented in published pedagogical papers in peer-review journals. Table 2 summarizes our findings of articles explaining innovative ways in which Excel is being used in the classroom in economics, finance, accounting, information systems, marketing, operations management and statistics. We have noted qualitative and quantitative outcomes of these teaching techniques and approaches if they were presented in the paper. Likewise, we have noted to what extent the technique, lesson or approach is pre-

TABLE 2 Summary of Innovative Spreadsheet Use in the Business Curriculum				
Citation	Торіс	Summary		
Chen (2007)	Overview of the use of pivot tables in summarizing data.	Although the examples are in Excel 2003, the concepts of variable selections, data summary, sorting, grouping, collapsing and filtering are readily transferable to other versions.		
Erfle (2001)	Describes how Excel is used as a teaching platform in managerial economics, where students do not necessarily have exposure to calculus, statistics or Excel. The course focuses on constrained optimization and econometric estimation	Labs begin with present value calculations (NOT the function) to introduce basic concepts such as writing formulas and absolute vs. relative cell addressing. Eventually students use Excel to examine linear and non-linear trends and do simple forecasting.		
	The author notes that some typical managerial topics are omitted due to the necessity to teach calculus, statistics and Excel from the ground up. The prominence and versatility of Excel make it the ideal learning platform, regardless.			
Friedman and Munter (2004)	This step-by-step practitioner focused article shows how a spreadsheet can be created for financial officers and accountants to identify unusual changes in financial statements.	Includes the usage of named cells, the IF, ABS and VLOOKUP functions, conditional formatting and data validation		
Ganesh and Paswah (2010)	Introduces spreadsheet based decision models in an undergraduate marketing course to expand their understanding of the financial accountability of the marketing role. The course, Marketing and Money, is taught with 50+ mini- cases and spreadsheet modules.	Two "how to" modules and ten concept modules include such topics as channel mark-ups, contribution analysis, the breakeven point and decision making under uncertainty. An illustrative example is provided.		
Gordon and Gordon (2009)	Graphical simulations for teaching introductory statistics concepts	Students can see a graphical representation of the population and the sample. They can change the population distribution and level of significance to explore the concepts of randomness and variation. The article provides the URL for downloading the Excel simulations.		
Hanna (2010)	Deming's funnel experiment to address system variation. The author uses the simulated experiment for class discussion and has found it to energize discussion and enhanced student retention of key concepts	Uses =RANDBETWEEN to generate x and y coordinates to simulate the funnel experiment. The spreadsheet also generates a control chart. Copies are available from the author by request.		
Jelen (2008)	A short article that attempts to address the confusion in Excel with dates stored as an integer number.	Introduces (with examples) functions for doing calculations with dates, including =DATEDIF, NETWORKINGDAYS and WORKDAYS.		

TABLE 2 Summary of Innovative Spreadsheet Use in the Business Curriculum				
Citation	Торіс	Summary		
Larson and Hsu (2010)	Analysis of Variance	Provides a good overview of ANOVA in Excel. Students are asked to solve single factor analysis of variance given only the sample summary statistics. Excel (and all other statistical packages) can no invoke ANOVA without input data. This article discusses a macro so that students can input the summary statistics and an artificial data set will be developed. The macro and instructions are available from the author upon request.		
Mangiero, Manley and Mollica (2010)	Dynamic spreadsheets were developed to show students the sensitivity of the solution to various parameter manipulations. Time value of money: the classic retirement annuity and capital structure: EBI – EPS analysis	This is NOT a guide for developing a dynamic spreadsheet; however, the file is available from the author (gmangiero@ iona.edu) upon request.		
Palocsay, Markham and Markham (2010)	Notes that Excel can provide practical and relevant business intelligence (BI) functionality at a fraction of the cost of higher end BI tools.	Provides examples and figures on sorting, filtering, pivot tables, pivot charts, linking a spreadsheet to a database and extracting and importing external data into Excel.		
Patterson, Harmel and Friesen, 2010	Develops a spreadsheet simulation to look at the win-loss probability in the Monty Hall Let's Make a Deal door selection problem.	The spreadsheet design, which includes macros, in discussed. A copy of the spreadsheet is available upon request from the author (mike.patterson@mwsu.edu).		
Paquette (2005)	Teaching note asks students to communicate sales and earnings performance graphically and numerically, using average and compound growth rates.	The problem is given in the Appendix and the teaching note discusses the calculations and use of graphics. Introduces more sophisticated, custom, graphing including Line-Column on two axis for working with two sets of time series data Uses the =GEOMEAN for calculating the geometric mean as a better measures of growth rate over multiple periods. Provides step-by-step instructions for fitting an exponential trend line to the data set.		
Price and Zhang (2007)	Outlines a 15-20 minute die-tossing classroom experiment to illustrate the central limit theorem	Students record the rolls of the die in a spreadsheet that generates histogram dynamically. The central limit theorem comes to life as the bell-shaped curve emerges as the number of samples and the sample size increase. The spreadsheet template is available from the authors.		
Serven (2007)	Although NOT a guide to using Excel in the budgeting process, this article does raise budgeting questions that can be addressed with a spreadsheet, such as what costs can be budgeted on a per head basis and how much will be saved in the budget by delaying a new hire 3 months.	Recognizes (and documents) that most managers cannot effectively use Excel to create and manage a budget and recommends other software solutions.		
Stout and Juras (2009)	Presents a case that requires students to complete as a cost-analysis project. Student analyze and model, linearly and non-linearly, the direct labor-hour consumption associated with the production of radar units. A model should be recommended for cost-estimation in the contract bidding process.	Presents a 6-page case and basic and optional requirements. Appendix A (3 pages) offers a tutorial on the learning curve model, a form of an exponential function. Appendix B (11 pages) covers using Excel 2007 to estimate linear and non- linear functions. Covers Excels regression tool and Solver as well as the functions =LINEST, INDEX, TREND, FORECAST and FDIST.		
Strulik (2004)	Demonstrates two core models of dynamic macroeconomics: the neoclassical growth model and the basic real business cycle model Suggests that use of Excel frees students from the tedious calculations and allows to spend their time on concepts, such as how changes in monetary policy, taxes, wage income and consumption affect investment, employment, inflation and growth.	Uses cell names, intermediate formulas, Goal Seek and =ABS (absolute value)		

IABLE 2 Summary of Innovative Spreadsheet Use in the Business Curriculum				
Citation	Торіс	Summary		
Thomas (2004)	Supports financial planners developing customized spreadsheet templates to offer clients greater control and flexibility to improve communication. The paper provides a generic development plan and emphasizes the need for testing. The advantages of Monte Carlo simulation and allowing for the incorporation of probability are discussed.	An illustrative case, using the @RISK add-on, is available from the author at frank.thomas@stockton.edu		
Togo (2004)	Three simulation risk analysis examples are presented in the paper: capital budgeting, budgeted cash flows and budgeted income statement. This technique can also be used for risk analysis associated with economic order quantity, costing, profit planning, cost-volume- profit planning and audit sampling	The add-in @RISK is used to model uncertainty of the input variables with 30+ probability distributions		

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sented in a turnkey manner. In many cases the authors provide, post or are willing to send the files to other educators.

The use of spreadsheets in the business curriculum offers a number of pedagogical benefits. The first is that by being active participants in the modeling or running of the analysis, students are more engaged and gain a firmer grasp of the material. For example, Springer and Borthick (2007) found that students who were taught with cognitive conflict tasks, problems for which there was no prescribed right answer, used higher-level thinking and achieved higher scores than students taught in the traditional manner. Rather than doing standard problem solving, the students in the experimental group were given business situations and asked to build spreadsheet models and analyze the affects of assumptions and decisions. Not only did these students perform better on the examination, they were also more likely to enroll in a higher level accounting course when taught with cognitive conflict method in the principles course. Using spreadsheets allows students to address larger and more realistic problems, engaging them in higher level learning thus moving from knowledge and comprehension to application, analysis and synthesis (Bloom, 1956).

A secondary benefit is that students further cultivate their spreadsheet skills, resulting in a positive impact on their future employment and productivity. While students may learn the spreadsheet basics in an introductory course, repetitive usage will solidify those skills and broaden their outlook on what spreadsheets can do. A review of the innovative uses of Excel in the business curriculum in Table 2 outlines a number of intermediate features that most business students would not typically be exposed to including filtering and database functions, linking multiple spreadsheets and linking spreadsheets to databases, calculations with dates, sophisticated graphing and statistical functions.

Finally, the adoption of Excel as a medium for active learning in business is relevant, feasible and accessible. Employers want to hire graduates who are computer literate, in general, and adept with spreadsheets, specifically. Excel is nearly universally available on campus and in the workplace. Active learning exercises are accessible and can be incorporated into many of the traditional business courses. In addition to the specific exercises reviewed in the prior table, Table 3 offers a list of sources of related data, problems, exercises and resources including selected practitioner journals that publish articles pertaining to the use of Excel in business situations. The course elements should increase the skills and knowledge of the application, rather than simply provide an illustration of the application's usage (Varnon, 2010).

A ROADMAP FOR GETTING THERE

While seemingly obvious, it is nonetheless the greatest barrier: both the students and faculty must be comfortable with the spreadsheet basics. It would be impossible to use Excel effectively as the tool for delivering higher-level concepts if those involved are not sufficiently confident in basics such as data entry and manipulation, writing formulas and formatting numbers and text. Time and again, studies have found that students are not proficient with spreadsheets (Awasthi, Bee, De Mello-e-Souza and Tinius, 2010; Hindi, Miller and Wenger, 2002). As indicated by our curriculum review, most schools are already at this point with 9.1% requiring a computer literacy exam as part of the general education requirement and 90.9% requiring a course in software applications. But what about

TABLE 3 Additional Resources on Using Excel as a Tool for Active Learning in the Business Curriculum

TEXTBOOKS

Textbooks, particularly those in more quantitative fields, are putting a greater emphasis on Excel. A cursory examination of the Pearson/Prentice Hall titles revealed many books, across the business disciplines, which make extensive use of Excel. The following is an illustrative list:

- Mastering Financial Mathematics in Microsoft Excel: A Practical Guide for Business Calculations (2011– ISBN-10: 0273730339 | ISBN-13: 9780273730330)
- Basic Marketing Research with Excel (2012–ISBN-10: 0135078229 | ISBN-13: 9780135078228
- Strategic Management: Concepts and Cases (2009–ISBN-10: 013607930X | ISBN-13: 9780136079309)
- Statistics for Managers Using MS Excel (2011–ISBN-10: 0137035195 | ISBN-13: 9780137035199)
- Quantitative Analysis for Management (2012–ISBN-10: 0132149117 | ISBN-13: 9780132149112)

WEBSITES AND DATA SETS

Bill Jelen writes applied and practical guides to using Excel in accounting and finance in Strategic Finance. Recent topics have included calculations with dates (see Table 2), custom sorts, naming ranges and highlighting outliers.

In addition to the hundreds of data sets available from textbook publishers, faculty could use data from a number of organizations and agencies such as U.S. Census Bureau (http://factfinder.census.gov) and the U.S. Bureau of Labor Statistics (http://www.data.gov). The University of Michigan publishes Statistical Resources on the WEB (http://www.lib.umich.edu/govdocs/stecon.html) which gives a comprehensive list of data sources and links.

SELECTED PRACTITIONER JOURNALS

Bank Technology News CPA Journal (The) CPA Technology Advisor Guardian (The) Information Week Internal Auditing Investment Weekly News Journal of Business Forecasting Meetings and Conventions Quality Progress Strategic Finance

the faculty? It is likely that many faculty have self-taught themselves Excel and have received limited formal training. While they may be able to accomplish known tasks, they may not know the full functionality of the tool. The release and university adoption of Excel 2010 is the perfect time to pursue faculty training and consider new textbook adoption. As more students arrive on campus with the new Office suite, the increase in backward compatibility issues will force universities to adopt Office 2010, including Excel 2010. This adoption of Office 2007/2010 from Office 2003 provides an excellent opportunity for faculty to pursue training and consider new textbook selections. This adoption can also act as a prime motivator for faculty to make the curriculum revisions needed to embed Excel in upper division courses.

CONCLUSIONS AND DIRECTIONS FOR RESEARCH

Most curriculums provide students with the basics of spreadsheets, either as a university wide requirement or as part of a required lower division course. Our preliminary examination of the curriculums of 22 AACSB business schools revealed significant lack of consensus as to how to embed the use of Excel in the curriculum. Researchers may choose to broaden this examination to seek a more complete picture. A review of teaching notes and articles unearthed a number of innovative ways Excel is being used in courses in the business curriculum. We have proposed employing spreadsheets in upper-level business classes can provide the mechanism to engage students in more active learning support higher level learning. While we have, anecdotally, seen these benefits in our classrooms, it has not been empirically addressed. Future research should build upon prior active learning research and seek to confirm the potential pedagogical success of using spreadsheets for student engagement in the learning process.

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APPENDIX A DETAILED SUMMARY OF SCHOOLS AND CURRICULUM MODELS				
Institution	Required Course(s) Containing Excel	Cr	Summarized Course Description	Model
Appalachian State University	CIS 2025 Personal Computing Effectiveness	3	This hands-on course provides students with the opportunity to understand the role of information technology to enhance the use of computer-based applications to achieve personal and professional goals. Upon successful completion of this course, students should be able to use application software such as Microsoft Excel, Word, Access, PowerPoint, FrontPage and Outlook to make better decisions and improve their individual skills, to conduct on-line research, and to study e-commerce. Other topics covered include the use of communication tools, emerging technologies and digital media, and security issues.	1
DePaul University	MIS 140 Management Information Systems	3	MIS 140 Management Information Systems (Formerly MiIS340) (Prerequisite: None)Management Information Systems addresses how information technology is used to support business operations and management, especially the use of spreadsheets in business applications to insure that students can analyze and present business data. Topics include strategic uses of IT, databases, data warehouse, decision support and artificial intelligence, e-commerce, systems development, IT infrastructure, security, emerging trends, social, ethical and legal considerations. (Formerly MIS 340) Prerequisite: None.	1
Indiana University	BUS K201 The Computer in Business, BUS X201 Technology	3,3	BUS-K 201 The Computer in Business Provides an introduction to the role of computers and other information technologies in business. After introducing basic concepts of computer use, course lectures focus on current technological innovation in social and business environments. The weekly discussion section focuses on functional computer literacy, which includes an introduction to and hands-on application of Microsoft Access and Microsoft Excel. BUS-X 201 consists of two components: a lab and a lecture. The lecture provides an introduction to a range of technologies currently deployed in organizations including a broad understanding of how technologies are deployed, their impact and potential, their strategic importance, and their impact on organizations and on society. The labs focus on technologies that transform data into usable information to enhance decision making. They rely heavily upon Microsoft Excel and, to a lesser extent, Microsoft Access to develop sophisticated data analysis and modeling tools.	1
Indiana University- Purdue Fort Wayne	BUS K200 Computer Literacy Concepts for Business, K211 Business Spreadsheets for Business (K212, K213 Database and Internet are part of the series)	Ø,1	Orientation to spreadsheet design and use from end-user / manager perspective. Topics include cell addressing through macro development	1

APPENDIX A DETAILED SUMMARY OF SCHOOLS AND CURRICULUM MODELS				
Institution	Required Course(s) Containing Excel	Cr	Summarized Course Description	Model
Kennesaw State University	BISM 2100 Business Information Systems and Communication	3	BISM 2100-Business Information Systems & Communication 3 Class Hours 0 Laboratory Hours 3 Credit Hours Prerequisite: ENGL 1101, three credit hours of MATH numbered 1101 or higher. This course assumes a basic proficiency in MS Office applications (Word, Excel, and Power Point. The Office for Undergraduate Business Programs has a list of the basic skills required; free training on those skills is available through Information Technology Services for students currently enrolled in any KSU course. Business information systems course designed to: (1) improve communications skills appropriate to the business setting; (2) expand proficiency in the use of business application software; and (3) introduce information technology concepts relevant to doing business in an electronic environment.	1
LaSalle University	CSC 151 Introduction to Computing Using Packages	3	Survey of computers and computer systems; problem- solving and computer applications for business and social science. Introduction to a PC-based Graphical User Interface/windowed operating system. Computer packages include a word processor, electronic spreadsheet, and presentation software. Internet use including electronic mail and the World Wide Web. Credit will only be given for one of CSC 151, CSC 152, and CSIT 154. Prerequisite: Computer Literacy.	2
Loyola University Chicago	ISOM 247 Computer Concepts and Applications	3	Focuses on using information technology to support business processes. The purpose and composition of information systems, the utilization of technology and hands-on experience in developing microcomputer business applications with productivity tools (Microsoft Excel and Access). Outcome: Understanding of using information technology to support business processes, and of developing business spreadsheet and database applications.	1
Pennsylvania State University	MIS 204 Introduction to Business Information Systems	3	Applications oriented course that provides an overview of (1) the role of information systems in business process design (2) the current technologies used for obtaining, storing, and communicating information in support of operations and decision-making within a business organization, and (3) the concepts and principles for programming, developing, and using popular spreadsheet and database tools. Applications focus on important problems and issues found in business disciplines, including accounting, finance, marketing, supply chain operations, and general management.	1
Rowan University	CS Ø1080 Computer Literacy MIS02.334 Management Information Systems	3,3	Students who have not demonstrated computer literacy at the time of admission to the university are required to complete CS Ø1080. (this course does not count towards degree requirements) MIS Ø2.334 is an upper division course in the business curriculum discussing computer file management, data storage, architecture etc. Uses extensive hands-on use of Office and the Internet.	3

APPENDIX A DETAILED SUMMARY OF SCHOOLS AND CURRICULUM MODELS				
Institution	Required Course(s) Containing Excel	Cr	Summarized Course Description	Model
Saginaw-Valley State University	ECON 151 Computer Applications in Business	2	Introductory course using standard software programs that frequently are encountered in business and management situations. Taught through microcomputers and terminals	1
San Francisco State University	ISYS 262 Introduction to Information Systems ISYS 363 Information Systems for Management	3,3	Application of information systems (IS) in a business environment. Topics include information technology (IT), networks and internetworks, types of information systems and their development, problem solving using end-user tools, and social impact of IT. Classwork, 2 units; laboratory, 1 unit. Information systems for management decision-making. Information system development from the end-user's perspective. Applications software used to develop solutions to business problems. Classwork, 2 units; laboratory, 1 unit	1
Siena College	CSIS Ø10 Microcomputer Applications or CSIS Ø11 Spreadsheet Problem Solving	3,1	CSIS 010 : Into to computers and applications using both character and graphical user interfaces. Topics will include hardware components; application software including word processing, spreadsheets, graphics and database management; data communications; issues in information systems such as privacy and security; computer operations; and networking. CSIS 011 : A lab- based introduction to problems, problem solving, and the kinds of problems amenable to spreadsheet solutions. Provides a foundation for analyzing business and decision support problems using spreadsheet technology. Typical techniques studies may include absolute and relative addressing, macros, and conditionals. Students will be expected to apply their skills to various business scenarios and cases.	2
Temple University	MIS 2101–Information Systems in Organizations	3	Explain the role of information technology as a business enabler and identify and explain management information systems applications. Evaluate the organizational fit and suitability of business applications and interpret the interaction between information technology, customers, processes, data, infrastructure, participants, and environment in an organization. Understand the ethical challenges of information technology and explain the evolving role of management information systems in the organization, and the role and careers of MIS professionals.	1
University of Houston–Victoria	BCIS 1305 Business Computer Applications (can be used to satisfy University Computer Literacy requirements COSC 3325 Information Systems in Organizations	3	 BCIS 1305: Computer terminology, hardware, software, operating systems, and information systems relating to the business environment. The main focus of this course is on business applications of software, including word processing, spreadsheets, databases, presentation graphics, and business-oriented utilization of the Internet. COSC 3225: An introduction to the functions of information systems in organization and their relationships to organizational objectives and structure. Studies of decision theory, quantitative procedures, system design and types of applications that are part of an information system. 	3

APPENDIX A DETAILED SUMMARY OF SCHOOLS AND CURRICULUM MODELS				
Institution	Required Course(s) Containing Excel	Cr	Summarized Course Description	Model
University of Michigan	BIT 200 Personal Productivity in Information Technology	1.5	Following the AACSB guidelines for undergraduate programs in business, this course focuses on the development of skills in the use of information technology. To that end, the course includes exercises and assignments that involve the use of spreadsheets (Excel), databases (Access and SQL), web development tools (FrontPage), and other software as appropriate.	1
University of Montevallo	MIS 161 Introduction to Computers	3	An up-to-date coverage of computers, application software, and their uses with an emphasis on personal computers, their operating systems and application software, such as word processing and spreadsheeting.	1
University of Nebraska	BSAD 150 Business Computer Applications	1	This is a basic skills computer course. It is designed to ensure that all CBA students know basic skills in Microsoft Word, PowerPoint, Access and Excel in order to complete assignments in future CBA courses. The course is eight weeks long and students are required to attend all class sessions. Throughout the course, students will work in groups to complete assigned projects and to take assessments. Students may test out of this course.	1
University of Rhode Island	BUS 110 Business Computing Applications	3	Applications, concepts and skills relevant to information technology in the context of the modern business environment. Topics include word processing, spreadsheet, presentation, and internet software.	1
University of Tennessee- Chattanooga	BMGT 100 Computers in Business	3	Introduction to the use of computers in business. Emphasizes spreadsheet and database applications, using microcomputer hardware and software. Also includes word processing and presentation software, Internet use, the basic structure and organization of a computer, ethical issues in computing, and the impact of computers on society.	1
University of Wisconsin– Whitewater	COMPSCI 162 Computer Applications	3	The goal of this course is the give the students a comfortable working knowledge of basic personal productivity software, especially those functions available in Microsoft Office 2007 including word processing, spreadsheets, data management, and presentation software.	2
Winston-Salem State University	MIS 1380 Microcomputer Applications	3	This course provides in-depth experience with spreadsheets and database software on microcomputers. A graphical operating environment such as Windows is used. Students are required to design and develop projects, which address common business problems. Relevant information systems concepts providing the foundations for advanced study in MIS are provided.	1

Transitioning to the Real World Through Problem-Based Learning: A Collaborative Approach to Teacher Preparation

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ABSTRACT

Problem-based learning (PBL) creates opportunities for authentic learning in teacher preparation programs. In addition to developing content knowledge and pedagogy, problem-based learning affords students the framework for a holistic, collaborative approach to solving several interconnected problems. As students move through the process of problem-solving, they take ownership of their learning and build self-confidence. This in-depth, guided learning opportunity with peers provides benefits beyond the university classroom and transfers directly into the real world. Students internalize problem-solving methods and are prepared to apply this knowledge not only in their classrooms, but in their personal lives as well.

INTRODUCTION

Problem-based learning requires students to use content knowledge to solve real-world problems. It is an instructional tool that actively engages prospective teachers and forces them to approach problems from a teacher's standpoint. Learning becomes active and on-going as students seek additional resources to answer problems and to plan strategies (Levin, 2001).

The work of PBLs can often be traced back to the work of John Dewey. Dewey and his progressive movement asserted that students should be encouraged to investigate and create. When teachers link learning to real-life activities, learners are motivated and involved. Therefore, real learning becomes a natural result (Dewey, 1944).

Many medical schools are expanding on the work of Dewey by utilizing PBLs in their courses. PBLs were adopted by medical and dental schools originally in the 1960's as the preferable choice over the traditional medical school model (Polyzois, Claffey, & Mattheos, 2010). Instead of memorizing volumes of material, students were asked to participate in groups where they reviewed cases, conducted research, asked questions, and proposed treatment. This type of real-world learning helps students develop their diagnostic skills, while putting their content knowledge into practice. The goal is not solving the problem, but rather using the problem to increase medical students' knowledge base and ability to find the answer, much like they will be required to do as physicians (Wood, 2003).

PBLS IN HIGHER EDUCATION

Although PBLs were first implemented in medical education, Walker and Leary (2009) concluded that "PBL students either did as well as or better than their lecturebased counterparts, and they tended to do better when the subject matter was outside of medical education." Although PBLs have become a part of the K-12 curriculum, they have also found a home in higher education classrooms. The loose structure of the PBL offers opportunities for students to wrestle with complex levels of knowledge through analysis of the problem and synthesis of the research. PBLs enlighten students as to what they do not know, whereas lecture and limited hands-on classroom activity promotes the notion that students know more than they really do. The metacognitive frame of mind, essential to mature learning, is promoted through PBLs (Felder and Brent, 2004). Students identify needed information, retrieve it, analyze it, and synthesize it to determine if it is applicable to the problem. This in itself provides practice in developing skills that are portable to a variety of teaching and learning opportunities. Additionally, extended opportunities to participate in roles and performances in less structured environments prepare students for the real world of teaching (Lave and Wenger, 1991).

Current learning theories emphasize the deep learning that derives from situated learning in a social context. PBLs naturally adopt this approach to learning and provide the necessary practice and engagement for teacher candidates while they internalize this practice and hence are able to model this learning strategy in their own classrooms (Lave and Wenger, 1991). In addition, PBLs offer effective methods of assessment for teacher candidates. Students are given the opportunity to apply their knowledge, utilize critical thinking skills, and demonstrate understanding (Flynn, 2008).

The Tennessee Board of Regents (TBR) is the sixth-largest state university and community college system in the United States and prepares more than half of all teacher candidates in the state in the TBR six universities and thirteen community colleges. TBR has initiated a teacher education redesign called Ready2Teach with the goal of preparing future teachers who are ready to teach from the moment they enter the classroom. An important component of the Ready2Teach initiative is to incorporate PBLs in education and methods courses.

PARADIGM SHIFT

Transitioning to PBLs in the College of Education was predicated by the need to engage teacher candidates in authentic learning, collaboration, and analytical thinking during the final phase of their program. The ultimate goal was to develop teachers who value collaboration, solve problems, and have internalized methods of research and ways of thinking that will benefit them throughout their careers and lives.

The majority of coursework encountered by students during their freshman, sophomore, and junior years at the university follows the lecture, note-taking, and memorization model. This static model is not suitable for teacher candidates preparing for extended field experience and careers in teaching. PBLs provide an opportunity for engagement in deep learning through social support and collaboration. As students increase their content knowledge and analytical thinking skills, they adopt these habits for a life of learning. This is the key for success in the classroom.

READING METHODS CLASS

During the 2011 spring semester, students in a reading methods class in the College of Education in a university in middle Tennessee had the opportunity to fully engage in a multi-layered problem. Utilizing PBLs in pre-service reading methods classes is an effective strategy to prepare future teachers because it gives them many opportunities to work collaboratively to solve common problems they will face in their own reading classrooms.

Students were divided into teams of four and worked in these teams throughout the semester. Prior to receiving the PBL that would require much research, analysis, critical and creative thinking, students were given two brief warm-up problems to practice (Appendix A). After reading the problem, teams worked together to list what they knew based on the information they have been given, what they needed to find out, and identified any additional learning issues. One student was designated as the scribe to write down key points of the discussion and make notes to distribute to the rest of the groups. Another student was selected to be the leader to guide discussion and make sure everyone stayed on track. This activity was completed in class.

In addition to the warm-up PBLs, students learned about and practiced several reading strategies appropriate for students in kindergarten through sixth grade during the first six weeks of class. Brief case studies of individuals were also given out and analyzed by the PBL teams to determine appropriate reading strategies to use with each case. Three research articles were selected by the instructor to lay the groundwork for students to begin thinking about several aspects of the PBL. Students responded to the articles using the Six Habits of Comprehension (Zwiers, 2006). This process was previously modeled by the instructor and practiced by the students (Appendix B). As students worked toward solving the PBL, more research was initiated through the collaborative teams. A group discussion portal was set up for each team to post articles, comments, and notes from previous meetings, and allowed students to have virtual meetings and discussions outside of class meetings.

The actual PBL was given to teams during the sixth week of class (Appendix C). Five more articles were assigned and as students worked toward solving the PBL, more research was initiated and sought through the collaborative teams. A group discussion portal was set up for each team to post articles, comments, and notes from previous meetings. At the end of the semester each team presented its final project to the class. Although all teams had the same problem, each project was unique. Teams successfully identified the problems and determined a variety of ways to address them based on their research. District teaching guides developed by the teams provided strategies for improved reading instruction based on research and state standards.

As teams presented their projects it became clear that students had learned to link research-based reading strategies to state standards and classroom instruction. Projects indicated an understanding of the purpose of assessments. The rubric given to students early in the development of the project assisted them as they planned and explored the research (Appendix D). While carefully reading and assigning a score to each project with this same rubric, the significant learning fostered by the PBL became even more evident. The writing was fluid and thoughtful. Academic language was used appropriately and woven seamlessly throughout all aspects of the project.

In addition to the reading content knowledge students gained through this process, they were also compelled to think about and address other facets of teaching they will likely encounter in their own schools and classrooms. Students learned how to collaborate and work as a team. They had to think about involving parents, soliciting their input, and keeping them informed not only about their child's progress, but also about curriculum decisions. They learned how to address successes as well as failures in an inclusive, tactful manner.

As the demands and expectations of beginning teachers increase, teacher preparation programs must continually look for relevant ways to prepare teacher candidates. Utilizing PBLs in a reading methods course is one strategy that can encourage active learning, creative thinking, and practical application.

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APPENDIX A

Luisa is in the third grade at Stonybrook Elementary School. She came to America last year from Mexico with her parents who are migrant workers. She speaks broken English and does not associate with other children. Luisa loves to draw and paint, but does not seem interested in reading. There are few books in the classroom and when she goes to the school library, she must select books on her Accelerated Reader level. When she has time on the computer, Luisa likes to visit virtual art museums and look at paintings.

Facts List	Possible Problems	Need to Know
Reading Instruction Needs	How will I assess?	Reflection/ Next Steps

APPENDIX B

Comprehension Habits: There has been much research on reading comprehension strategies. You are familiar with the strategies of questioning, clarifying, predicting, and summarizing. Additional strategies that aid in comprehension are building schema, inferencing, synthesizing, and metacognition. Zwiers (2006) synthesized the research related to comprehension into six comprehension habits for students to internalize in order to monitor their reading comprehension. The habits Zwiers (2006) recommends are:

- 1. Organizing text information by sculpting the main idea and summarizing.
- 2. Connecting to background knowledge.
- 3. Making inferences and predictions.
- 4. Generating and answering questions.
- 5. Understanding and remembering word meanings.
- 6. Monitoring one's own comprehension.

Practice these habits with the following poem by Robert Frost:

Stopping By Woods On a Snowy Evening

Whose woods these are I think I know. His house is in the village though; He will not see me stopping here To watch his woods fill up with snow. My little horse must think it queer To stop without a farmhouse near Between the woods and frozen lake The darkest evening of the year. He gives his harness bells a shake To ask if there is some mistake. The only other sound's the sweep Of easy wind and downy flake. The woods are lovely, dark and deep. But I have promises to keep, And miles to go before I sleep, And miles to go before I sleep.

- 1. In one to two sentences state the main idea of the poem, then write a summary of the poem.
- 2. Do you have any schema (prior experience or knowledge) that helps you understand the meaning of the poem? Describe your experiences.
- 3. What inferences and predictions did you make as you read the poem?
- 4. What questions do you have? What answers do you have?
- 5. What strategies did you use to understand word meaning?
- 6. What steps did you take to monitor your comprehension?

APPENDIX C

PBL RDG 4030 Spring 2012

The Tennessee State Board of Education has established learning goals for students. The curriculum coordinator for the school district that employs you as a fifth-grade teacher notes that the district has been doing a good job promoting some of the components of a balanced literacy program. Some students come to fifth grade reading fluently. They are able to summarize what they have read and answer literal questions about fiction and non-fiction readings. The curriculum coordinator has also noted there are some gaps in students' reading and thinking abilities. Students do not dig deeper into what they are reading and vocabulary scores on state tests are somewhat low. They do not ask questions and are willing to accept things on face value. Students do not offer support for their viewpoints and have difficulty appreciating other viewpoints. Students believe that reading is for the reading class. The district administration has decided that there has been too much emphasis on basal readers and covering the material. The superintendent feels that asking each grade-level team to design a plan that incorporates a variety of innovative literacy techniques and higher-order thinking skills into classroom instruction will address this problem. Funds are available for purchasing books and other materials to accomplish these goals. The superintendent has asked that parents and interested others in the community be well-informed about the changes because some communities have been reluctant to support school reform.

You are on a team of fifth-grade teachers charged with integrating these goals into the district curriculum for fifth grade. Such work entails designing a district teaching guide in which you identify aspects of reading comprehension that need to be developed and how they can be fostered in fifth grade. Explain why the methods you have selected "fill the gaps" in students' reading and thinking abilities. You should include state standards that are addressed and how reading is integrated into other subject areas. Explain how you will know if students are learning and using the processes you identified, and provide a plan for keeping parents informed about the goals, process, content, and assessments presented in your restructuring.

Appendix D District Teaching Guide PBL							
Identifies the problem and six sub problems.	Identifies the problem and four to five sub problems.	Identifies the problem; three of less sub problems are identified.	1Ø				
Thoroughly addresses how each deficiency will be addressed. Re- search is provided to support each decision.	States how each identified deficien- cy will be addressed. Research sup- ports some decisions.	States how each identified defi- ciency will be addressed. Research is missing.	3Ø				
Includes several state standards that are aligned with the strategies included in the teaching guide.	Includes a few state standards that are aligned with the strategies.	Includes a few state standards that are not aligned with the strategies.	5				
Includes several methods to inte- grate reading into other subject areas. These methods are supported with research.	Includes a few methods to integrate reading into other subject areas. There is little research to support decisions.	Does not include methods to in- tegrate reading into other subject areas.	1Ø				
Thoroughly describes how student learning will be assessed to deter- mine if the plan is working.	Provides a general description of how students will be assessed.	Fails to address how students will be assessed.	1Ø				
Includes a detailed plan to initially inform parents of the curriculum change. More than one method to inform parents is included.	Includes a general plan to initially inform parents of curriculum change. Only one method to in- form parents is included.	Does not include a plan to inform parents of curriculum change.	1Ø				
Clearly addresses how parents will be informed of their child's prog- ress in the new curriculum.	Lacks specifics about how parents will be informed of child's progress.	Fails to include information about how parents will be informed of child's progress.	5				
Is well-written and free from spell- ing and grammatical errors.	Is not clearly written and contains some spelling and grammatical er- rors.	Is poorly written and contains sev- eral spelling and grammatical er- rors.	1Ø				
GROUP PBL PRESENTATION:							
Is creative and all team members participate. Team uses a visual aid and provides a handout to audi- ence.	Is creative, but not all team mem- bers participate. A visual aid is part of the presentation, but there is no handout.	Lacks creativity and not all team members participate. There is no visual aid, nor handout.	1Ø				

VARIABLES THAT CAN AFFECT STUDENT RATINGS OF THEIR PROFESSORS

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ABSTRACT

Attribution theory was applied to help predict the results of an experiment that examined the effects of three independent variables on students' ratings of their professors. The dependent variables were students' perceptions of whether the professor caused the students' grades and student satisfaction with their professor. The results suggest that when students expected "D"s, many of those students were likely to believe that their professor was the cause of why students received "D"s. Conversely, when students expected to receive "A"s fewer students were likely to believe that the professor caused students' grades. This finding is consistent with the prediction of attribution theory. Another finding was that students were more satisfied with a caring professor who gave the students "D"s than they were with an uncaring professor who gave students "A"s. Additionally, the results indicated that there was an interaction effect of students' grades and the caring of the professor on student satisfaction with the professor.

INTRODUCTION

For many years colleges/universities have sought student input into the process through which professors' teaching is rated. However, there are several problems with students rating professors' teaching. For example, teaching is a type of credence service (Deighton 1992). Therefore, students are likely to find it very difficult to accurately rate the quality/effectiveness of a professors' teaching.

The ability to accurately rate teaching would be enhanced if students had some specialized knowledge and/or training that focused on teaching. Unfortunately, few students have this specialized knowledge or training. Therefore, many students may simply lack a high level of ability to accurately rate the teaching of their professors. In particular, if the differences among professors' teaching are small, some students may lack the knowledge or training to accurately identify these small differences.

Another problem associated with students rating professors' teaching is that some students are likely to use variables to rate professors' teaching (e.g. students' grades, professors' ages and/or gender) that are inaccurate indicators of professors' teaching (Arbuckle & Williams 2003; Davis 1992). Therefore, it might be important to have additional indicators of professors' teaching (e g., student satisfaction with their professors) because students might be more able to accurately rate their satisfaction with their professors than rate professors' teaching.

After many years of research, it remains unclear whether students' grades affect students' ratings of professors' teaching. Some research indicates that student ratings are effected by students' grades (Clayson, Frost, & Sheffet 2006; Ewing 2012). Conversely, other research indicates that students' grades have virtually no affect students' ratings (Grant 2007; Centra 2003) of professors' teaching. Consequently, there is a need for additional research that can help resolve this controversy concerning whether students' grades affect student ratings of their professors. Additionally, at some universities students almost feel entitled to an "A" and students believe that professors need to justify any grade that is less than an "A" (Alper 1993). Consequently, there is a need for additional empirical evidence concerning students' ratings of professors when students receive a grade that is less than an "A."

Some professors might be reluctant to give students low grades because of the concern that students will retaliate by giving the professors low ratings on student ratings of the professors' teaching (e.g., Benton 2006). Indeed, the fear of this type of retaliation could be one of the causes of grade inflation. Although researchers (e.g., Clayson, Frost, & Sheffet 2006) indicate that there could be a reciprocity effect between students' grades and student ratings of professors, there is limited empirical evidence that identifies how likely to occur is this form of student retaliation. Additionally, there is little empirical evidence concerning whether there are variables that professors can use to moderate or prevent this type of retaliation. Consequently, it is important to acquire new empirical evidence concerning whether students are likely to believe that the professor caused students' grades and what actions professors can take to avoid being blamed when students' earn low grades. For example, if students believe that the professor caused the students' low grades, some students might retaliate. Conversely, if students do not believe (i.e., blame) that the professor was the cause of students' low grades, students might be less likely to retaliate.

One purpose of this paper is to provide empirical evidence that helps to identify the effects of students' grades, caring of the professor, and the amount of time the student spent on the course on whether students believe that the professor caused the students' grades. Evidence concerning the effects of students' grades is needed because whether grades affect student ratings of professors remains controversial. Empirical evidence concerning the effects of caring of the professor is needed because this variable might help prevent students from blaming the professor for the students' low grades. Empirical evidence concerning the effects of the amount of time students spent on the course is needed because it needs to be determined whether students consider this variable when rating their professors. Additionally, identifying the effects of these three variables might help provide a more comprehensive explanation of the cognitive process that students use when rating their professors.

Another purpose of this paper is to provide empirical evidence concerning whether attribution theory (Weiner 1980) can be applied to develop a deeper understanding of the cognitive process that students use when rating their professors. For example, can attribution theory help explain how students develop their perceptions of whether their professors caused students' grades and/or help explain how students develop their level of satisfaction with their professors? Rating student satisfaction with their professors is not a substitute for measuring student ratings of professors' teaching effectiveness. Instead, it could be used in conjunction with scales of professors teaching effectiveness to provide a more comprehensive understanding of the professors' performances in the classroom. Students' satisfaction with their professors may provide accurate, additional information concerning whether the professor is or is not an excellent teacher.

BACKGROUND

The Effects of Three Independent Variables

A caring professor is defined as a professor who demonstrates a real interest in the student becoming a successful individual and has real respect for the student (Deiro 2003). For example, if asked for advice, the professor is readily available to provide needed advice on the student's academic situation and/or on some personal situations, too. However, a caring professor understands his/her limitations, too. That is, the caring professor is a professor that in some situations should only be a sympathetic listener because he/ she is not a trained psychologist, trained psychiatrist nor a family counselor.

Students might experience a sense of gratitude toward a very caring professor because of the belief that being a very caring professor goes beyond the normal responsibilities of being a professor (Gotlieb & Milliman 2005;Hareli & Weiner 2002). Therefore, students might highly value a professor who is very caring. Attribution theory might be applied to help explain the effects of very caring professors and uncaring professors.

Attribution theory suggests that when situations are deemed successes (i.e., students expect "A"s) this will activate a different cognitive process than is activated when students are in a situation deemed a failure (i.e., students expect "D"s). The concept of defensive attributions (i.e., attributing an individual's successes to variables within the individual [e.g., how much time the student spent on the course, student's intelligence] and failures to variables outside of the individual [e.g., caring of the professor, bad luck]) is a general tendency of individuals (Schiffman & Kanuk 2010). This general tendency might be moderated by at least one variable when predicting the effects of grades on student perceptions of whether the professor caused the students' grades. That is, students might continue to experience the defensive attribution processes (attributing success [i.e., an "A"] to internal variables and attributing failure [i.e., a "D"], to external variables). However, if the professor is perceived as very caring, this perception might result in the students placing less blame for failure on a very caring professor and give some credit to a caring professor when the student experiences a success. This would occur because students might have a sense of gratitude toward a very caring professor (Gotlieb & Milliman 2005). Consequently, when students perceive the professor as very caring, this perception is likely to motivate students to look for other external variables and/or look at internal variables (e.g. how much time students spent on the course) that could be attributed as the cause of students' failures. Conversely, if the professor is perceived as uncaring, there is little motivation for students to look beyond the uncaring professor as the cause of the students' failure (i.e., "D.")

Identifying the effects of how much time the students spent on a course on students' perceptions of whether the professor caused the students' grades and on student satisfaction with the professor is necessary to provide a comprehensive test of attribution theory. That is, attribution theory indicates that an internal variable (i.e., how much time the student spent on the course) would have a greater effect when the students experience success ("A"s) in the course.

The previous discussion leads to the following hypotheses:

H₁ There will be statistically significant difference between students' perceptions of whether the professor caused the grade depending on whether the student expects a "D" or an "A." That is, attribution theory predicts that when students expect "D"s they will more strongly believe that the professor caused their grade than when they expect "A"s.

When a basic principle (i.e., defensive attribution) of a theory predicts a main effect, it is useful to determine whether the basic principle is supported by the empirical evidence. However, main effects have little meaning when there are predicted interaction effects. H₂ There will be a three-way interaction effect of students' grades, caring of the professor, and how much time the students spent on the course on students' perceptions that the professor caused the students' grades.

This three-way interaction would occur for two reasons. First, the effects of caring of the professor and how much time the student spent on the course would be different depending on whether the student expected an "A" or a "D." These differences would occur because when the student expects an "A" it activates the "success" type of information processing that is different from the type of information processing that activated when the student expects a "D" (i.e., the failure type of information processing). Second, when the professor is perceived as very caring, students' sense of gratitude toward the caring professor would affect attributions of whether the very caring professor caused the students grades (Gotlieb & Milliman 2005). Consequently, the effects of a caring professor would be different from the effects of an uncaring professor within the success (i.e., "A") information processing and the failure (i.e. "D") information processing system. H₂ to H₆ more clearly describes the predicted effects within the three-way interaction.

- H₃ When students expect "A"s and the professor is perceived as uncaring, the normal attribution information processing can be expected to occur. That is, students will focus on internal variables (e.g., their own activities) when deciding who caused their grades. Therefore, how much time the student spent on the class will affect student attributions of whether the professor caused the grade. That is, if the students spent twice the time they will more strongly believe that the uncaring professor caused the grade than if they spent half the time.
- H₄ When students expect "D"s and the professor is perceived as uncaring, students will attribute the failure to external variables (e.g., the professor) for their low grades. Within this condition, the basic defensive attribution processes will occur. That is, the uncaring professor will be perceived as responsible for the students' grades. How much time the student spent on the course will not affect

students' perceptions that the professor caused the students low grades.

- H5 When the professor is perceived as very caring, the basic attribution process will be moderated. A sense of gratitude toward the caring professor is the reason that these effects will occur. Consequently, students will give a caring professor some credit for their "A" regardless of how much time they spend on the course. Therefore, the difference between the effect of the student spending twice as much time and the student spending half as much time on whether the professor caused the student's grade would not be statistically significant.
- H6 When students expect "Ds" from the very caring professor there would be a statistically significant difference between students spending twice the time vs. half as much of the time on whether the professor caused the students' grade. That is, if the professor is very caring, students will look beyond the professor (e.g., external variables) and consider internal variables (i.e., how much times students spent on the course) when attributing the causes of their "D."
- H7 There would be a three-way interaction effect of students' grades, caring of the professor, and how much time students spent on the course on student satisfaction with the professor. This effect would be similar to the three-way interaction effect that occurs with students perceptions of whether the professor caused the students' grades.
- H8 Students will be more satisfied with a caring professor that gives students "D"s than they will be satisfied with an uncaring professor that gives students "A"s. This is a stringent test designed to help determine whether the effects of grades on student satisfaction with their professor is affected by how caring is the professor.

METHOD

Role Playing Methodology

Role playing using scenarios is an acceptable methodology for an experiment (Smith, Bolton, & Wagner 1999). One of the reasons it was used in this experiment was because the experiment required random assignment to treatments and some of the treatments would be unfair to some of the students. For example, it would be unfair to randomly give some students the expectation of a "D" in the class regardless of what the student did and then randomly give other students the expectation of an "A" regardless of what those students did in that class. Similarly, it would be unthinkable to randomly assign some students to a very caring professor while other students were randomly assigned to an uncaring professor. A similar problem existed with the amount of time spent on the course. However, these conditions could be created using scenarios and scenarios would not be unfair to the students.

Research Design

The research design was a 2 X 2 X 2 full factorial design. Additionally, there were two covariates in the experiment, the students' grade point averages and the class standing of the students. Students' grade point average needed to be controlled because "A" students might simply be more dissatisfied with a grade "D" than would be "C" students. Class standing needed to be controlled because freshman and sophomores taking mostly general education courses might have different expectations of their professors than would juniors and seniors who are taking mostly courses in their major. Each student was exposed to a single scenario. In the scenarios each student were told to assume that the student was "Pat." The name of "Pat" was selected because Pat is a name that is given to both genders. Therefore, students of both genders could easily identify with the name of "Pat" (Bendapudi & Leone 2003). The number of students that participated in the experiment was 170.

In one-half of the scenarios, students were told that "Pat" expected an "A" and in the other half, students were told that "Pat expected to receive a "D" in the class. In one-half of the scenarios, students were told that "Pat" spent twice as much time on this class as the student normally spent on a class, but in the other half of the scenarios, students were told Pat spent one-half the time on this class that "Pat" normally spent on a class. In one-half of the scenarios, the professor was described as very caring while in the other half of the scenarios the professor was described as very uncaring. Manipulation checks were done to examine whether the manipulations were perceived as intended. Students were asked, "How much time did Pat spend on the class." The end points of the seven-point scale were "very little time on the class" and a "lot more time than the usual class." The means of the two time treatments for the scale were 1.92 vs. 4.90, t = 13.27, p < .001. These results indicate that the time manipulation was done effectively. Students were asked to rate how caring the professor was on a seven-point scale. The end points of the scale were, "Professor was very caring" and "Professor was very uncaring." The means for the two treatments on this scale were 6.16 vs. 2.38, t = 23.12, p < .001. This result indicates that the caring manipulation was done effectively. Students were asked about what grade Pat expected to receive in the course. There were choices ranging from "A" to "F." Students who were exposed to the scenario in which Pat expected to receive an "A" selected "A" 94% of the time. Conversely, students exposed to the scenario in which Pat expected to receive a "D" selected "D" 91% of the time. Therefore, this manipulation check indicates that the grade manipulation was done effectively. Consequently, manipulation checks found that all of the manipulations were effective.

The four-item scale of whether the professor caused the grade was taken from a scale developed by Gotlieb and Milliman (2005). The scale items were the following: "Pat would believe that the effort that the professor put into teaching the class caused Pat to receive the ("A" [(Outstanding] or "D" [Failure]) grade. Pat would believe that the professor's teaching ability was the primary reason that Pat received this ("A" |Outstanding] or "D" [Failure]) grade. Pat would believe that the professor's ability as a communicator caused Pat to receive the ("A" [Outstanding] or "D" [Failure]) grade. Overall, Pat would believe that the professor was mostly responsible for the fact that Pat got a ("A" [Outstanding] or "D" [Failure]) grade for this course." Cronbach's Alpha for the scale was .89.

The three-item scale of satisfaction with the professors was taken from a scale developed by Oliver & Swan (1989). Subjects were asked, "Rate how Pat would feel about this professor. The end points for the first scale item were the following: "very satisfied with this professor vs. very dissatisfied with this professor." The end points for the second scale item were "very pleased with this professor vs. very displeased with this professor." The end points for the third scale item were, delighted with this professor vs. terrible with this professor." Cronbach's Alpha for the scale was .97. All of the scales exceeded the level of Cronbach's Alpha (i.e., 70) deemed appropriate for scales used in research (Nunnally & Bernstein 1996).

RESULTS

Hypothesis 1 was supported and this finding supports attribution theory. That is, there was a statistically significant difference as to student perceptions of whether the professor caused the grade between those students who expected an "A" vs. those students who expected a "D." For example, students more strongly believed that the professor caused the grade when they expected a "D" (Professor caused the grade M [D] = 4.18 vs. M [A] = 3.42, t = 3.53, p < .05).

Hypothesis 2 was supported and the finding supports attribution theory. There was a three-way interaction effect of students' grades, caring of the professor, and how much time the students spent on the course on students' perceptions that the professor caused the students grades. (F [1, 157] = 5.41, p< .05) That is, the effects of caring of the professor and how much time the student spent on the course would be different depending on whether the student expected an "A" or a "D." These differences might occur because when the student expects an "A" it is likely to activate the "success" type of information processing that is different from the type of information processing that occurs when the student expect "D"s (i.e., the failure type of information processing). There were differences in effects depending on whether the professor was described as very caring or uncaring, too.

Hypothesis 3 was supported and this finding supports attribution theory. That is, when students experience a success (e.g., "A"s) from an uncaring professor, students will focus internally (i.e., how much time students spend on the course) when attempting to determine the cause of that success. Student perceptions of whether the uncaring professor caused the grade depended on whether the student spent twice the time on the course or one-half the time on the course (M [twice the time] 2.92 vs. M [one-half the time] 2.24 t = 2.38, p < .05). Nevertheless, this finding suggests that students will not give much credit to the professor for an "A" when they perceived the professor as uncaring.

Hypothesis 4 was supported and this finding supports attribution theory. That is, when students expected a "D" and the professor was uncaring, there was no statistical difference between students spending twice the time and spending one-half the time on student attributions of whether the professor caused the student's grade (M [twice the time] 4.82 vs. M [one-half the time] 4.97, t = .403, p > .05). That is, students will not look to internal variables (how much time students' spent on the course) as the cause of failure (i.e. a "D"). Consequently, the uncaring professor is likely to be blamed for the students' "D"s regardless of the amount of time students spent on the course.

H5 was supported. That is, when the professor is perceived as very caring, this perception appears to modify the attribution process. When students expect "As," and the professor is viewed a very caring the difference between the effect of the student spending twice as much time and the student spending half as much time on whether the professor caused the student's grade was not statistically significant (M [twice the time] 4.42 vs. M [one half time] 4.10, t = .832, p > .05). This result suggests that when a professor is very caring, students will look beyond internal variables (e.g., within themselves) when attempting to determine the causes of their success. Consequently, they are likely to give credit to very caring professors for their "A"s regardless of how much time they spent on the course.

Hypothesis 6 was supported. When students expected a "D" and the professor was very caring there was a statistically significant difference between whether the student spent twice the time or one-half the time on whether the professor caused the students' grades (M [twice the time] 4.00 vs. M [one half the time] 2.85, t= 3.42, p < .05). This result suggests that when the professor is perceived as very caring, students are likely to look at their own actions as possible causes of failure ("D"s), too.

Hypothesis 7 was not supported. The three-way interaction effect on students' satisfaction with their professors was not statistically significant (F [1,154] = 1.57, p > .05). The other two-way interactions were not statistically significant (time X caring F [1,154] = 1.05, p > .05 and time X grade F [1,154] = 1.54, p > .05). However, there was a statistically significant two-way interaction between students' grades and caring of the professor on students' satisfaction with their professors (F [1,154] = 3.91, p = .05). This twoway interaction effect indicates that the effect of students' grades on student satisfaction with their professor depends on how caring is the professor and vice versa. The two-way interaction is described in the next paragraph

When a professor is perceived as uncaring there is a lower level of satisfaction with that professor regardless of students' grades (Satisfaction with the professor M [uncaring professor who gave students "A"s] 3.22 vs. M (uncaring professor who gave students "D"s} 2.14. When the professor is very caring, the level of satisfaction with the professor is higher regardless of the grade and the difference between grades is greater, too. Satisfaction with the professor M (caring professor who gave students "A"s) 5.78 vs. M (caring professor who gave students "D"s) 4.04.

Hypothesis 8 was supported. That is, the results of the experiment indicate that students were more satisfied with a caring professor who gave the students "D"s than they were satisfied with an uncaring professor that gave the students "A"s (M [satisfaction with a caring professor who gave the students "D"s] 4.04 vs. M [satisfaction with a uncaring professor who gave the students "A"s] 3.22, t= 3.35, p < .05). This finding appears to provide support for the view that students feel a sense of gratitude toward a very caring professor. It also suggests that the effects of grades on student satisfaction with their professor is likely to affected by the extent to which the professor is perceived as very caring.

DISCUSSION

Student ratings of professors have been an integral element of higher education for many years. They will continue to have an influence on tenure, pay and promotion decisions concerning professors. Therefore, there is a need for a better understanding of the cognitive processes that students use when rating their professors. The
empirical evidence presented here could help to provide a greater understanding of those processes. Additionally, the empirical evidence presented here has provided additional information concerning the effects of some of those variables that are likely to influence student ratings of professors.

This research suggests that student ratings of professors can be influenced by at least one characteristic of the professor, the extent to which the professor is perceived as caring. This finding is consistent with previous research that suggests that other characteristics of professors (i.e., professor's age or gender) can influence student ratings. Additionally, research indicates that a professors' personality (Clayson & Sheffet 2006) can affect professors' ratings, too. This research suggests that students are likely to rate a very caring professor very differently from an uncaring professor.

This experiment provides additional empirical evidence which suggests that if a professor is viewed as very caring, that perception is likely to moderate the defensive attribution information processing that usually occurs. For example, a very caring professor is less likely to be blamed for a "D" than is an uncaring professor. Additionally, students are likely to give caring professors some credit for their "A"s, but give uncaring professor far less credit for the students' "A"s. Consequently, caring professors are likely to be rated differently (i.e., higher) than uncaring professors.

This research indicates that activities of the students (i.e., amount of time students spend on the class) can affect student ratings of their professors, too. This finding is consistent with previous research which suggests that students' ages or G.P.A. can affect students rating of their professors.

This experiment appears to provide some support for the view that the concept of defensive attribution can be applied to aid in understanding the cognitive process that students use when rating their professors. For example, the results of this experiment found that students are more likely to believe that the professor caused a "D" than they are likely to believe that the professor caused their grade of an "A."

This research suggests that students' grades might have a variety of effects on students' ratings of

their professors. For example, this experiment appears to support the idea that an "A" might activate a different type of information processing than does a "D." Additionally, this research provides one possible explanation of why the effects of grades on student ratings of professors have been inconsistent. That is, this research suggests that there can be interaction effects of grades and other variables on student rating of their professors. Consequently, there might be some classroom situations in which students' grades strongly affect student ratings of professors and other situations in which students' grades have little or virtually no affect student ratings of professors.

Some of the problems associated with students rating professors' teaching effectiveness might not exist or exists to a much lesser extent when students are asked to rate their satisfaction with their professors. For example, students have the ability to rate their satisfaction with their professors. Additionally, students do not need special training or knowledge to rate whether they are satisfied with their professors. Consequently, students should be able to more accurately rate their level of satisfaction with their professors than rate professors' teaching effectiveness. Therefore, adding a scale of student satisfaction with their professors to student evaluation forms could be very useful when rating professors' performance in the classroom.

It is unclear whether very few students or many students would give professors low student ratings as a form of retaliation for the professor giving students' low grades. However, this research suggests that if a professor is perceived as uncaring, retaliation for low grades is more likely to occur. If many students are likely to retaliate, then it is essential to identify the cognitive processes through which this retaliation occurs so that professors could take actions to possibly prevent student retaliation for low grades.

Student ratings might be the result of the effects of a variety of variables whose influences on student ratings have not been fully identified, too. This research has provided some empirical evidence concerning the effects of three of the variables that are likely to have significant effects on student ratings of their professors. However, given the importance of student ratings, this area of educational research needs much more research attention.

LIMITATIONS AND FUTURE RESEARCH

There are a number of limitations that are associated with this experiment. Role playing is an appropriate method for conducting research. However, the information that was gathered by this experiment is information concerning how subjects say they would respond to different classroom situations. When students actually experience those situations, they might respond differently than was indicated in this research. This paper reports the results of a single experiment. These results need to be interpreted cautiously because the results need to be confirmed by a series of experiments. This experiment was conducted at a midsize public university in the Mid West. This experiment needs to be replicated at a variety of public and private universities in other sections of the country, too. This research has provided some empirical evidence that appears to provide part of the foundation for developing a deeper understanding of the cognitive processes through which students rate their professors. Additionally, this paper appears to provide new insight in to the effects of students' grades, caring of the professor, and how much time students spent on the course on student evaluations of their professors. However, future research needs to provide a more comprehensive understanding of the cognitive processes that students use when rating their professors.

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GRADUATION RATES AND THE HIGHER EDUCATION DEMOGRAPHIC EVOLUTION

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ABSTRACT

In his 1918 orienting work, The Higher Learning in America, Veblen highlights two primary aims of the higher education institution: (a) scientific and scholarly inquiry, and (b) the instruction of students (Veblen, 1918). As of 2006, this overarching mission remained intact. In contemporary literature, a common measure of the efficacy of the latter of these two goals is an institution's graduation rates. Previous research asserts admissions criteria to be the dominant predictor of graduation rates. However, the nature of the higher education student is changing. Underrepresented populations, specifically non-traditional students, comprise a greater portion of an institution's student body than at any point in history. The impact of this evolution has yet to be adequately assessed in the graduation rate literature. Using OLS regression with data from the National Center for Education Statistics (IES) for thirty randomly selected land-grant universities, we investigate the extent to which admissions criteria remains the leading predictor of graduation rates when accounting for variables indicative of non-traditional and underrepresented students – such as the percentage of the student body above the age of twenty-five, the percentage of the student body receiving financial aid, part-time enrollment, and student to faculty ratio. Results indicate, while selection criteria play a role in graduation rates, the influence of non-traditional students on graduation rates is also notable.

Higher education in the U.S. historically was focused on educating the elite class in society (Hallinan, 2006). Since World War II, universities have focused increasingly on research and teaching a broader swath of society (Daniels, 1997). Since that period, higher education has increasingly become important to upward mobility in the U.S. (Ibarra, 2001). First-generation students from underrepresented populations began to gain access to higher education (Schofer & Myer, 2005). Higher education became a necessary but not sufficient condition for upward mobility (Collins, 1971). By the end of the 20th century, non-traditional students became increasingly important to higher education institutions (Allen & Seaman, 2008).

This background on the evolution of higher education is essential to understanding the development of theory on graduation rates. The tracking of graduation rates as an indicator of the higher education experience is a relatively new enterprise. Historically, higher education was reserved for the privileged few. Graduation rates were predictably high in this environment. In this environment there were few reasons for a student to not proceed through graduation (Bastedo & Gumport, 2003). Graduation rates became increasingly variable as a higher percentage of the population gained access to higher education (Schofer & Myer, 2005).

By the mid 1970s, graduation rates were an important topic of study within the sociology of education. Researchers hypothesized that the more integrated into the fabric of the institution students feel, the more likely they are to continue their studies and graduate.

(Tinto, 1975). By the 1990s, researchers began to focus on internal support factors such as the student to faculty ratio and access to financial aid. This work help to reorient the graduation rate debate toward admission criteria and the reputation of the admitting institution. Objective factors such as SAT scores and overall acceptance rate were directly linked to an institution's graduation rates (Ozga & Sukhnandan, 1998). Astin's (1997) study continued in this vein, applying qualitative measures to better understand the concept of "integration." While more grounded than Tinto's (1975) original work, pinning down the essence of integration proved elusive and the study's most meaningful contribution was in reifying the power of faculty to student ratios and admissions criteria as vital to understanding graduation rates.

Braxton et al (2000) studied students at a private institution and found that organizational attributes play an important role in determining retention and graduation rates.

Murtaugh, Burns, and Schuster (1999) analyzed retention at a large land grant institution and identified several steps that the university could take to improve retention, including finding that out-of state students were at greater risk than are in-state students. Their work also reinforced the relevance of admissions criteria as a leading indicator of graduation rates. Specifically, the better prepared a student is to enter the university environment (as evidenced by admissions test scores and high school course load, among other factors) the more she is to eventually complete her degree program.

By the mid 2000s, quantitative methods were being applied to specific components within the graduation rate puzzle. Singell and Stater (2006) looked at the relationship between students receiving financial aid and graduation rates at three large public institutions. Their results indicate that access to financial aid increases graduation rates. They also warn that policies aimed at curbing financial aid packages is likely to reduce graduation rates accordingly and decrease the rate of enrollments of underrepresented student populations (Singell & Stater, 2006).

Of note, the framework of the reports identified above leaned heavily on micro level analysis and single institution or small sample sizes were primarily deployed. Systemic conditions at single institutions were studied and recommendations were made to improve that institution's retention rates. Cross-institutional and larger sample studies are less common in the literature. The single case study approach can be particularly useful to the institutions. This study is aimed at helping to fill this comparative void; more specifically, it was undertaken to determine how a set of variables influence graduation rates hold across a sample of land grant institutions.

This study seeks to confirm whether factors previously tested as predictors of graduation rates hold in an analysis of a larger sample of institutions. In addition, it includes control variables reflecting changes in the student population over recent decades (e.g., increasing numbers of part time and non traditional students). Our first hypothesis has its roots in Tinto's (1975) early work on graduation rates. Since then research on smaller samples has found that admissions rigor is related to graduation rates. We seek to confirm this in a larger sample of land grant institutions and offer the following hypothesis.

Hypothesis 1: There is a positive relationship between admissions rigor and graduation rates. As admissions rigor increases, graduation rates also increase.

A primary component of the integration theory related to graduation rates is the ability for students to enjoy quality, regular interaction with faculty members. While variables such as "quality" are difficult to measure, the 'opportunity' for one-on-one interactions has become the standard measure. Theoretically, the higher the faculty to student ratio the more likely interaction between students and faculty is to occur. A natural extension of this reasoning is that less contact equates to less integration, and less integration can lead to less likelihood of retention through graduation. This would support Tinto's original assertion that integration influences graduation rates in higher education and that student to faculty ratios is appropriate measure of the same (Tinto, 1987). Therefore, we offer the following hypothesis.

Hypothesis 2: There is a negative relationship between faculty to student ratio and graduation rates. As faculty to student ratios increase, graduation rates increase.

Data and Method

In order to test these two hypotheses, data from the Center for Educational Statistics (IES) is considered for thirty land grant institutions. The institutions in the sample were selected at random from the original population in of one hundred and three institutions appearing in the 2006 IES data set. Of these one hundred and three institutions, twenty three were excluded as two year institutions. The remaining eighty included twenty institutions which had incomplete data for the class of 2006, so they were also excluded. The year 2006 is the most recent year for which sufficient data were available in order to construct a comprehensive, random sample and comparison group. In addition, it is the most recent year for which exit data on a graduating cohort included information for all of the independent variables included in the study. Because institutions of higher education experience change at a relatively slow pace, these data provide a robust source to test the hypotheses. The remaining sixty institutions were selected every other order to provide a random sample of the land grant institutions in the set. The unit of measurement is held strictly to the institutional level in this research.

Land grant institutions are interesting to this work for at least two reasons. Their mission originated in the ideal that higher education should be more accessible in underdeveloped parts of the country and, perhaps by extension, to underrepresented populations – though it must be noted that these populations tended to be homogeneous along racial and gender lines (Johnson, 1981). This understanding is germane to this study in that land grant institutions enjoy a long history of seeking to be inclusive, rather than exclusive like their private institution contemporaries. Given that multiple scholars have noted the relationship between integration, rigor and graduation rates, we are interested to find if rigor retains its significance in an exclusively land grant institution sample (Gumport, 2007).

Secondly, previous research efforts in the field have focused primarily on single or small sample case studies. Some scholars have tended towards private institutions for myriad reasons (examples may include institutional exclusivity, association capital gains, and funding parameters). Others have mixed institution types in their selected sample. This work is interested in better understanding the theoretical integrity of previous graduation rate research when applied to an exclusively land grant institutional sample. In this manner, new insights are gained while dealing with a sample that tests comparable institutions – helping to minimize the exogenous influences in the study.

Both hypotheses are adequately tested for the purposes of this work through OLS regression analysis of the data collected from IES. Of primary interest is to understand the statistical significance of each of the independent variables relative to the graduation rates of the institutional sample, controlling for other factors.

A series of models were developed to isolate the impact of individual variables, while controlling for other factors. In total, four models were run and analyzed. Testing for collinearity through VIF analysis revealed the independent variables selected to be comfortably below the higher education research standard threshold of 4, with no reading exceeding VIF 1.5.

The final OLS regression model included the following independent variables 75th SAT critical reasoning scores (admissions rigor) and faculty to student ratio. In addition, we controlled for percentage of students applying that are admitted, part-time retention rates, percent of study body receiving financial aid, and percent of students who are over the age 25 (non-traditional students). The dependent variable is the graduation rate of undergraduate students.

Analysis of Results

Table 1 provides an overview of the regression results.

Table 1 (Y) Dependent Variable: Graduation rates and Model Progression		
Independent Variables		
	Ø.7894	
Admissions Rigor	<i>b</i> = -Ø.ØØØ2Ø	
	$se = \emptyset. \emptyset \emptyset \emptyset 74$	
	Ø.Ø631 *	
Faculty/Student Ratio	<i>b</i> = Ø.Ø2686	
	se = Ø.14257	
	Ø.194 7	
Financial Aid	b = -0.30439	
	se = Ø.22911	
	Ø.8519	
Percent Admitted	<i>b</i> = -Ø.ØØ2Ø5	
	se = Ø.ØØØ7Ø9	
	Ø.Ø472 **	
Part-time Retention Rates	<i>b</i> = Ø.22991	
	se = Ø.11073	
	Ø.ØØ56 **	
Non-traditional students	<i>b</i> = -43.18523	
	se = 14.4Ø331	
	$R^2 = \emptyset.5181$	
*Statistically Significant at $p \le .10$ **Statistically Significant at $p \le .05$		

There are several notable insights when analyzing the outputs from these models. The primary goal of this study was to test whether admissions rigor, is a statistically significant predictor of graduation rates. The current study does not support this traditional finding. Admissions rigor was not a statistically significant predictor of graduation rates; support was not found for Hypothesis 1. However, we did find modest support for Hypothesis 2 (at the $p \le .10$ level). Faculty to student ratio is a positive, statistically significant predictor of graduation rates.

The data also indicate that non-traditional students may have much to contribute to our understanding of graduation rates. Specifically, the parameter estimate (b) for nontraditional students is negative and statistically significant (at the $p \le .05$ level). This highlights that non-traditional students, negatively influence graduation rates in a notable manner (Daniels, 1997). As Tinto (1975) argues, these students likely are not fully integrated into the higher education experience and, therefore, are less likely to graduate.

It is not obvious admissions rigor is not statistically significant in our model. One reason may be that the nature of rigor, in general, is not fully captured in the SAT reading deployed in this analysis.

DISCUSSION AND CONCLUSION

This study was designed to contribute to the discussion of graduation rates in two ways. First, to understand the relevance of the variables utilized in popular theoretical models when applied exclusively to a sample of land grand institutions. Second, this study sought to analyze the extent to which graduation rates are influenced by the increases of non-traditional students that has occurred since the early 1990s (Stamps, 1998).

The results of our regression analysis provide some support that the variables consistently cited in the higher education literature appropriately capture the influences on graduation rates. However, admissions rigor appears to be decreasing in importance. Thus, though great care was given to tightly align our variables with previous theory while controlling for other factors, it is important to concede this study is limited to the extent it may omit variables that are germane to graduation rates. One example may be additional measures of rigor, such as preparatory school course load.

The negative influence of non-traditional students on graduation rates in this sample is logical. Non-traditional students tend to have more life events to contend with than non-traditional students. Related, their status as a minority may contribute to a desire to remove themselves from a less comfortable situation. Both scenarios beg further understanding as to how traditional universities can better integrate this growing segment of the student population. Likewise, this trend may provide clues into the rapid acceleration of non-traditional higher education institutional models.

Regarding testing as a criterion for admission, its unclear significance to graduation rates begs an important question regarding how the higher education system is to deal with those who come from backgrounds that do not lend themselves to preparatory work for such admissions tests, but who exhibit alternative forms of intelligence and ambition. Tracking graduation rate outcomes for students who exhibit lower test scores but embody some combination of elements that would point to capability of successfully completing a college degree (such as emotional intelligence quotient, clarity of career direction, and creative thinking) are important measures to understand. There are some noteworthy limitations to this study. It represents a snapshot of a single graduating class of students, as opposed to a longitudinal comparative view of multiple classes over a series of years. This prohibits it from accounting for changes over time. A longitudinal approach is likely to yield a trend view that makes understanding questions of omitted variables, endogenous selection and exogenous selection constraints more available. Further, researchers are encouraged to build on the multi-institution approach of this study by increasing the sample sizes and comparative lenses through which graduation rates have historically been studied.

Sharpening our view of the outliers in this sample may also yield important benefits. For example, is the nontraditional drag on graduation rates revealed in this study occurring along gendered lines? Are non-traditional students leaving higher education altogether or are they moving to alternatives that better fit their lifestyle constraints?

The constraints in one study can point to opportunities in subsequent work. This study is no different. We have highlighted just a few areas in which derivative work to this study can be developed. If the efficacy of higher education is to ultimately be measured by graduation rates, then few topics within higher education are more vital to fully understand.

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Recapturing Our Minds, Reclaiming Higher Learning: A Review of R. P. Keeling's and R. H. Hersh's *"We're Losing Our Minds: Rethinking American Higher Education*"

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1 We're Losing Our Minds: Rethinking American Higher Education. New York, NY: Palgrave Macmillan (2012).

The bevy of recent appraisals exemplified in books, journal articles across academic disciplines, and commissioned reports bemoaning the crises in American higher education are as damning as they are recurring. From Arum and Roksa's (2010) *Academically Adrift* to the Spellings Commission (2006) and its indictment against grades as a reliable indicator of learning, higher education in the U.S. has been under increased public scrutiny and the subject of fierce critique of late, even while tuition levels and demand for degrees continue to rise.

Situating their conversation within a growing weltanschauung that the world is becoming "flat"-to borrow from Friedman (2007)—and intellectual capital is integral to a changing globalized marketplace with emerging superpowers, Keeling and Hersh (2012) lay forth a bold claim in We're Losing Our Minds: undergraduate education in the U.S. is sapping minds because learning is no longer the primary focus or essence of colleges and universities. "Intoxicated by magazine and college guide rankings, most colleges and universities have lost track of learning as the only educational outcome that really matters" (p. 13). The authors advance that this systemic crisis, though well documented (even before "A Nation at Risk" in the 1980s), requires rethinking higher education, such that a paradigmatic shift and deliberate action will take place across institutions of all types.

What is needed, Keeling and Hersh argue, is a reinstatement of higher *learning* to higher education, beginning with conversations at the local, institutional, and national level that involve an intentional and extensive reexamination of the priorities and prevailing institutional culture of postsecondary education: "Rethinking higher education means questioning the entire pantheon of assumptions, principles, priorities, values, organizational structures, reward systems, and usual and customary practices that are the common foundation for undergraduate programs" (p. 151).

Taking an orientation that is at once critical, sociocultural, and sociopsychological (with some wit for good measure), Keeling and Hersh advance a compelling vision surveying higher education that cuts right to the heart of the matter: fanaticism with rankings, research funding, status, "benchmarks," simple metrics, and a teachingcentric model of instruction that confuses teaching with learning (equating them as the same and horribly assessing both) has led to an overarching national phenomenon of relegating students' learning from a top priority to an after-thought in the pursuit of delivering degrees as commodities.

The "consumers" are accommodated by watered-down expectations and standards, grade inflation, and a dominant paradigm that has come to view college as passing enough classes and accruing enough credits to get a degree, often without substantial development, change, or learning involved. Maintaining a dry sense of humor in the face of this crisis, Keeling and Hersh state, "sitting passively through college while simply finishing the growth of long bones is a waste of both individual and collective time and resources" (p. 8).

However, as educators are sometimes apt to do, the authors do not blame the students, but rather the institutional culture that permeates most colleges and universities today. The culture they describe is one that elevates athletics, new facilities, branding, research revenue and obsession with outputs (such as graduation rates, facultyto-student ratio, etc.) over academics, integrated and coherent learning (both in and out of the classroom), teaching and mentoring, and assessment that measures student learning. Comparing the educational landscape with the ever-more costly U.S. health care system, the authors note that just as health care has become unwieldy because of an ethic of treating illness rather than promoting health, higher education has become short-sighted and problematic in its emphasis on entrepreneurship and research rather than on educating students and promoting learning (its *raison d'être*). Underlying this late capitalist business model of higher education (and what the authors argue is a teaching-centric institutional culture) is the faulty assumption that collapses learning into teaching; if teaching occurs, learning happens. This theory allows the conveyor belt to keep moving, the customers delivered to matriculation.

Keeling and Hersh are quick to dispel the notion that GPA and degrees indicate student learning, offering a conceptualization of learning as a transformative process in which students become qualitatively different people, honing their cognitive and emotional intelligence and ability to inquire about and critically consume information in a global economy. "Making the sanguine but dangerous assumption that passing grades equal learning, most colleges and universities do not adequately support, measure, or strive to improve learning itself" (p. 14).

This gap in fostering and assessing meaningful student learning is made wider by a system that all-too-often relies upon course evaluations at the end of the semester, "reward systems that privilege almost every other faculty activity over teaching, advising, and mentoring undergraduates" (p. 15), and educational programming that overwhelmingly places the onus squarely on the student to make sense of disjointed learning experiences. In this dominant teaching-centric worldview, schools "take responsibility for delivering instruction through courses, programs, and teaching, with students being held solely accountable for learning...This perspective sees a university as a kind of bank with intellectual assets that are available for students, but it is entirely the students' responsibility to identify, qualify, and use those assets effectively" (p. 19). Drawing upon and extending Paulo Freire's banking metaphor, Keeling and Hersh assert, "In a powerful educational culture, teaching and learning are truly everybody's business—and that business is conducted day in and day out" (p. 120).

But how to get back to (or reclaim) a powerful educational culture becomes the issue, and the authors' call to action is not an incremental one (or one that involves tweaks to the current system). In order to reclaim the true purpose of a college or university—"to create a rich and powerful learning environment that offers appropriate challenges, demanding teaching, supportive mentoring, and constructive feedback" (p. 117)—the driving concerns must be quality and value, not cost and efficiency, and the change in culture must be large and enduring. Learning must become the touchstone for decision making at all levels of the institution and across institutions.

The main problem, the authors maintain, is that the quality and quantity of learning have severely declined as educating students has lost its rightful place as the top priority. To get back on track will require "substantial and fundamental change to occur-for there to be a broad reconsideration and renewal of values, priorities, and operating principles throughout higher education" (p. 161). To elucidate what a paradigmatic turn toward learnercentered institutional culture could look like, Keeling and Hersh offer a framework (in chapters six and seven) for rethinking American higher education with principles and policy/programming suggestions that are to be taken together and all at once, not picked through for what is convenient or most manageable within the current system. The principles are undergirded by an intentional emphasis on holistic, cumulative, coherent learning that is integrated, challenging, and engaging—a far cry from an emphasis on issuing degrees as deliverables.

In the authors' utopian vision of serious learning, gone is the traditional classroom where "instruction is mostly lecture-driven and learning, to the extent that it occurs, is mostly a passive, receptive enterprise. In other words, students should come to class, listen carefully, take notes, and be grateful" (p. $2\emptyset$). A large part of the broad change necessary in academia will involve faculty in terms of what is expected of them, how they are rewarded, and collective conversations on core curricula, assessment based on student learning, and opportunities for professional development that take the stigma out of seeking pedagogical support.

For student learning to be more cohesive and successive (and for undergraduate education to regain its emphasis on learning), the authors propose that faculty of all levels discuss notions of an integrated general education, rigorous and comprehensive assessment that goes beyond summative evaluations, codified policies on faculty work, learning-centered promotion/tenure criteria, continuous faculty development, and tighter coupling of academic and student affairs (see pp. 171-175 for additional reform/ renewal details).

Keeling and Hersh castigate the "publish or perish" mentality that privileges research over teaching and service, and the trend toward hiring a contingent workforce for general and lower division courses while full-time and tenured faculty are pulled from those formative courses to focus on research, graduate education, and other activities outside of undergraduate student life. In essence, they argue that the current educational situation is such that higher education in general and the faculty in particular is no longer focused on its most important responsibiliy student learning:

What is required is change in the entrenched attitudes, priorities, and cultures of colleges and universities; we must challenge watered-down undergraduate curricula, ineffective teaching methods, and the lowered expectations and standards that reduce students to passive consumers, demanding little of themselves or their institutions and expecting to be spoon-fed rather than required to actively engage in an education that is both demanding and transforming. (p. 23)

Keeling and Hersh's plan for rethinking higher education is bold, grounded in solutions that are disruptive to the prevailing institutional culture (but not new), and decidedly "not incremental. It is not small scale. It will not be easy, fast, or painless. Everything colleges and universities do that is not teaching and learning deserves new scrutiny" (p. 151, original emphasis). The possible problem with the authors' plan is that it constitutes such a massive critique and confrontation involving embedded, vested interests (such as those of alumni, athletics, teachers who don't want to change, trustees and administrators who do care about magazine rankings first and foremost, etc.) that what the authors call for—a complete rethinking and retooling of higher education from the institutional to the national level—seems overly idealistic and perhaps out of reach, at least in terms of immediate and decisive policies and reform.

A discussion could indeed take place across America, but we would do well to question what voices might be louder (and have more financial and social backing) than the now-marginalized argument that rankings, facilities, degrees, and grades aren't what really matters; learning is what matters. Isn't a degree evidence of learning, some might (still) ask? What would the NCAA have to say on the matter? Helicopter parents and students upset with the new challenges, standards, and expectations? Alumni associations? Administrators concerned with the dip in retention and other metrics and worried about the institutional brand?

Another limitation in Keeling and Hersh's analysis is that it heavily examines the problem (higher learning removed from higher education) from a university vantage point. The phrase "colleges and universities" is used frequently, but the authors' focus on publishing and promotion, facilities and athletics, speaks largely to the experience of mid-major to large universities (R1 and R2 institutions) rather than smaller colleges, satellite campuses, and the many variations of community college in the U.S.

While the overuse of metrics, poor assessment tools, and grades/credits as evidence of learning are a problem that

every institution must deal with in some way, the authors mostly survey the issue from a university window. In their four examples of undergraduate models of higher education (pp. 127-130), each example (except the first, which exemplifies storied, classical liberal arts colleges) refers to universities. While several books could be written on rethinking higher education in community colleges alone, the authors needed to pay more attention to this extremely important area of postsecondary education in *We're Losing Our Minds*, especially since they call for a nationwide commitment.

For those who are both genuinely interested in reexamining and reforming higher education and invested in the work that such a reconceptualization and paradigm-shift will require, Keeling and Hersh's text will be beneficial and insightful. The authors forcefully support the growing finding that students are graduating college at declining rates without having learned much, and offer sound principles and policy suggestions for reconstructing an institutional culture of learning. The question is whether enough people are ready to recapture higher learning as the top priority of all colleges and universities, and whether this can be instituted (in a nonincremental way) amid the myriad disciplinary perspectives and vested interests within and around academia.

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An Empirical Look at Business Students' Attitudes towards Laptop Computers in the Classroom

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ABSTRACT

Mobile computing technology has proliferated across university campuses with the goals of enhancing student learning outcomes and making courses more accessible. An increasing amount of research has been conducted about mobile computing's benefits in classroom settings. Yet, the research is still in its infancy. The purpose of this paper is to add to the base of knowledge related to business student attitudes and opinions about laptop technology, particularly passive versus required use in the classroom. Implications of this study's results will provide value to pedagogical policy makers, business educators, and mobile computing developers.

Attitudinal and demographic survey data was collected from a sample of business students regarding the use of laptops in the classroom. Attitudinal data were derived from questions about course design, general laptop satisfaction, and potential benefits of laptop use, in addition to demographic and categorical data. Descriptive statistics are presented in addition to some statistical comparisons across demographic and categorical segments of the sample.

INTRODUCTION

Computing technology's integration into business and education is nearly universal. Use of mobile devices and computing technology in education and business has increased in the recent past, but considered to be in a "state of infancy" (Powering Up Change, 2010; Motiwalla, 2007). The benefits of incorporating computing technology into education are thought to be many with its primary use in curricula as a pedagogical tool intended to engage students in learning and enhance the educational experience (Efaw, Hampton, and Martinez, 2004). As a result of the widespread use of computing technology, movement toward mobile computing, and expectations of enhancing the educational experience, numerous universities have embraced computer technology utilizing a variety of means for its incorporation. A number of studies have been conducted concerning the benefits of utilizing mobile computing technology, (Hawkes and Hategekimina, 2009-2010; Efaw, Hampton, and Martinez, 2004; Turman and Shrodt, 2005; Barak, Lipson, and Sherman, 2006; Fried, 2008). However, the results have been mixed and there is no largescale empirical data providing real proof of the impact of mobile devices on learning (Powering Up Change, 2010). In addition, there is a body of research regarding faculty perceptions and concerns related to incorporating computing technology into the curricula (Efaw, Hampton, and Martinez, 2004; Parker, Bianchi, and Cheah, 2008). Other studies have explored student perceptions of mobile computing (Rosen and Weil, 1995; Annan-Coultas, 2012). The missing piece, however, is research related to student perceptions and attitudes related to incorporating

mobile computing technology within a particular type of classroom. In particular, the evidence related to business student perceptions of mobile computing is sparse, at best. General attitudes regarding business classroom laptop use were studied and categorized in Wergin, Tracy, and Dykstra (2011). However, a rigorous statistical evaluation of business student attitudes and perceptions remains unexplored. Thus, business student attitudes and perceptions about such technology are unclear. The purpose of this study is to examine student attitudes about laptops in the business classroom and their opinions about policies requiring business students to bring laptop computers to class. The subtle difference between educational use of laptops and requiring them in class is explored. A scaled response questionnaire was used to gain an understanding of student attitudes and opinions, as well as to collect relevant demographic data.

LITERATURE REVIEW

What is mobile computing? According to Corbeil and Valdes-Corbeil (2007), it is the "application of small, portable, and wireless computing and communication devices." As the definition implies, universities desiring to implement mobile computing are faced with three main concerns. First, the institution would need to heavily invest in creating a wireless campus and require student ownership or access to some type of mobile computing device. Second, the administration should consider the benefits of incorporating the technology against the costs, which would include conversion to wireless, increased security protections, and faculty development, for example (Cossey, 2005). Third, faculty concerns include questions regarding whether student learning is enhanced and student engagement is increased (Hawkes and Hategekimina, 2009-2010). In addition, classroom management concerns include the potential loss of student focus on learning and therefore increased dishonesty, technical difficulties, using classroom time, and need for course development (Moallem, Kermani, and Chen, 2005; Shim and Shim, 2000-01; Efaw, Hampton, and Martinez, 2004). A review of the literature related to computing technology in education revealed a 1998 study about student perceptions of multimedia in undergraduate classrooms (Nowaczyk, Santos, and Partron, 1998), a 2009 study on age and gender differences related to acceptance of mobile learning (Wang, Wu, and Wang, 2009), and a 2010 German study researching factors which impact secondary student acceptance of E-learning systems which found perceived usefulness is critical to student acceptance of an E-Learning system (Friedrich and Hron, 2010).

Friedrich and Hron's (2010) study focused on high school student acceptance of interactive learning modules and

learning management systems. They found that perceived usefulness of the modules and systems was a significant positive predictor of pupil's acceptance while computer related attitudes were not predictors of acceptance of learning management systems. Nowaczyk, Santos, and Patron (1998) focused on student perceptions related to incorporating multimedia, specifically, text, graphics and video, into undergraduate collegiate classrooms. Interestingly, neither study focused upon college student perceptions of mobile computing and required use of laptops in the college classroom.

Other studies have focused on student intent to use mobile computing technology and perceptions about the impact of mobile computing on student learning. For example, Moran, Hawkes, and El Gayar (2010) incorporated a modified "unified theory of acceptance and use of technology" (UTAUT) to evaluate selected elements which contribute to students' behavioral intent to use Tablet PC's. UTAUT is model of information technology acceptance based upon four core determinants of IT behavior and four moderators of key relationships (Venkatesh, Morris, Davis, and Davis, 2003). Those core elements include performance expectancy, effort expectancy, social influence, and facilitating conditions, while the four moderators are gender, age, experience, and voluntariness of use. These basic elements were indirectly incorporated into the research instrument for this study.

Wang, Wu, and Wang (2009) conducted research related to age and gender differences and student acceptance of mobile learning. They found "performance expectancy, effort expectancy, social influence, perceived playfulness, & self-management of learning were all significant determinants of behavioral intention to use m[obile]-learning" (Wang, Wu, and Wang, 2009). In addition, they found that age acted as a moderator between effort expectancy and social influence and the intention to use mobile computing; however, neither age nor gender had a direct influence on the intention to use mobile computing. These findings suggest that older students' effort expectancy and social influence are stronger predictors of the intention to use mobile computing than for younger students. The findings of their study were limited to respondents from Taiwan and expectations related to use of mobile computing for learning. The study did not incorporate current actual computer usage behavior, a wide variety of demographic characteristics, or student perceptions related to requiring laptop computers to be brought to class.

Other research suggests that gender differences may influence the acceptance of mobile computing. Ong and Lai (2006) suggest that males are more influenced by their perceptions of e-learning usefulness or utility, while females are more influenced by their perceptions of computer self-efficacy and ease of use. This research suggests that males tend to view computer use from an external or utilitarian view, such that they are concerned with the benefit of the computing initiative. On the other hand, females tend to hold an internal view, such that they have a greater concern regarding their ability to be proficient with the technology.

Moallem, Kermani, and Chen (2005) conducted a survey related to classroom use of personal data assistants (PDAs) for problem solving and clicker type pre- and post-tests. They found students believed the use of this type of technology influenced their learning, enhanced their involvement, and increased their motivation. Specifically, the researchers found that the class dynamics changed from a lecture based environment to a collaborative, student centered learning environment. Students also indicated the most important facet of mobile computing was the ability to receive instant feedback from classroom instruction. For example, online quizzes and exams were deemed much more relevant and useful to the students because they could receive their grades and feedback much quicker than they could in a traditional classroom setting. As such, this research found that both faculty and students had a greater appreciation for mobile computing, and preferred it to a classroom that does not facilitate mobile computing. Challenges discovered in this research included increased student frustration with Internet access, as well as security and student dishonesty where some students were able to use mobile computing technology to access information while taking quizzes and exams (Moallem, Kermani, and Chen, 2005).

The review of the literature related to computing technology in education has revealed little research about business student perceptions and attitudes related to mobile computing technology usage within the classroom. Consequently, the purpose of this study is to examine business student attitudes towards laptop use in the classroom.

METHODOLOGY

The study was conducted within an AACSB-International accredited school of business at a mid-sized Midwestern doctoral granting liberal arts residential university. Survey questionnaires were administered to undergraduate business students in required business courses. Some students were enrolled in more than one required business course. To ensure students did not complete more than one questionnaire, students were given the following instruction: "[i]f you have already completed this questionnaire, please do not complete this one and return the questionnaire." A total of 401 useable student questionnaires were received which comprises approximately 57% of the residential business student body. Laptops are generally available at the business school surveyed. The building is completely wireless and over half of the classrooms have Ethernet ports at every seat. Most of the students have their own laptops (96%), but students may use a limited number of university-owned laptops from carts available in the classroom. Every classroom is a "smart room" equipped with a variety of computer and projection equipment, in addition to "clicker" technology and a full sound system. The overwhelming majority of the faculty utilizes the university's course management system (available in the classroom). The university has participated in a mobile computing initiative since 2009.

Table 1 shows the demographic characteristics of the survey respondents. Age was segmented at age 24 as a proxy measure for traditional versus nontraditional student status. GPA was segmented evenly in increments of Ø.5. A GPA of 2.5 or higher is required for admission status to the business school surveyed. In addition a 2.0 GPA is an institutional requirement for graduation. This divided the students into proxy student categories of: excellent, good, fair, poor, and failing. ACT scores required at this school are segmented to correspond to academic potential: excellent, good, fair, and poor. Employment was segmented to correspond to: full-time, more than half time, substantial part-time, limited part-time, and not working. Other demographic characteristics were segmented on a logical basis.

The survey questionnaire, which is available in the Appendix, was originally developed by the Center for Teaching and Learning for the purpose of evaluating a mobile computing initiative deployed by the university. Several survey questions were modified to include related questions about required laptop usage in class and additional demographic items. The survey asked business students to:

- describe their attitudes about nine items related to use of laptops in the classroom (original survey questions),
- describe their opinions about five items related to use of laptops in the classroom should laptop use be required in the classroom (adapted survey questions),
- indicate their laptop ownership and laptop usage (empirical data)
- compare faculty and student digital citizenship and knowledge (attitudinal data), and
- respond to seven demographic characteristic questions.

Students were asked to indicate on a five-point Likert scale their attitudes about nine items related to laptops in the classroom and their opinions related to a course require-

TABLE 1 Demographic Characteristics				
Characteristic	Number (%)	Characteristic	Number (%)	
Gender:	1	GPA:		
Male	238 (59.4%)	< 2.Ø	Ø (Ø%)	
Female	163 (40.6%)	2.0-2.49	21 (5.2%)	
Age:		2.5-2.99	88 (21.9%)	
< 24 years	363 (90.5%)	3.0-3.49	166 (41.5%)	
> 24 years	38 (9.5%)	3.5-4.0	126 (31.4%)	
Ave. Age	21.2	Ave. GPA	3.19	
Class:		ACT:		
Freshman	43 (10.7%)	Ø-2Ø	5Ø (12.5%)	
Sophomore	122 (3Ø.4%)	21-23	97 (24.2%)	
Junior	11Ø (27.4%)	24-26	148 (36.9%)	
Senior	126 (31.4%)	27+	1Ø6 (26.4%)	
Major:		Ave. ACT 24.3		
Accounting	96 (23.9%)	Employment (hrs/wk)		
Economics	24 (6.Ø%)	Ø	178 (44.4%)	
Finance	45 (11.2%)	1-10	61 (15.2%)	
Health Services Administration	48 (12.0%)	11-20	95 (23.7%)	
Human Resource Management	1Ø (2.5%)	21-30	45 (11.2%)	
Management	81 (2Ø.2%)	> 30	22 (5.5%)	
Marketing	45 (11.2%)	Ave. (hrs./wk.)	10.6	
Undeclared	52 (13.0%)			

ment to bring laptops to the classroom. The scale ranged from (1) strongly disagree to (5) strongly agree or from (1) never to (5) often. The laptop ownership and usage items were binomial and required a "yes" or "no" answer. The questions related to digital citizenship and knowledge were also binomial and required a "you" or "instructor" answer.

General significance tests included one sample t-tests conducted for differences from neutral for the five-point Likert items. Statistical significance on these items indicates a disposition to one end of the scale. Single sample proportion tests were used for the binomial items for differences from fifty percent. Statistical significance on these items indicates a statistical majority. Four statistical tests were used for the demographic analysis. For demographic data with two values two sample t-tests were used to test for differences between means on the Likert scale questions, and two sample proportion tests were used for differences between proportions on the binomial questions. For demographic data with more than two values one-way ANOVA tests were used to determine if overall statistical differences existed, and Tukey's simultaneous confidence intervals were used to demonstrate statistical differences for specific demographic items. According to Hahn and Meeker, to "achieve the appropriate use of statistics one needs to have differences that are BOTH statistically significant and practical for decision making" (Hahn and Meeker, 1993). In large samples such as with this study statistical significance is relatively common. However, the results are only meaningful if their interpretation is of practical importance. For example, the mean for question M3 in Table 2 below is statistically different than the midpoint (3 on the 5-point Likert scale). Although the 3.18 average is statistically different from neutral it is only a marginally practical difference from a managerial or policy-making perspective.

RESULTS

Overall, 17 of 18 items tested resulted in statistical and/ or practical significance. Table 2 provides the summary results of general significance, displaying the mean and pvalue ($\alpha = \emptyset.05$) of student responses to each questionnaire item and whether or not the item was practically significant. For the Likert scale questions a difference from the center of the scale of at least Ø.30 indicates a clear practical difference for implementation of laptop use in the classroom. In other words student opinions clearly favor one direction of the tested attitude/opinion. A difference of Ø.15-Ø.29 indicates a marginally practical difference. This can be interpreted as most business students (but not overwhelmingly) favor one direction of the tested attitude/opinion. A difference of less than Ø.15 indicates no practical difference. This can be interpreted that business students generally are indifferent as a group to one direction of the tested attitude/opinion.

The statistical results indicate that business students generally believe laptops in class can be: linked to learning objectives; well integrated into a course; enjoyable to use in class. Students also generally believe that laptops are

TABLE 2 GENERAL SIGNIFICANCE TESTS			
	Survey Item		Practical Significant?
M1	Laptop use in class linked to learning objectives.	3.39 (Ø.ØØØ)	Yes
M2	Laptop use enhances classroom experience.	3.27 (Ø.ØØØ)	Marginally
M3	Laptop use = more effective/efficient learning.	3.18 (Ø.ØØ1)	Marginally
M4	Laptop use can be well integrated into a course.	3.75 (0.000)	Yes
M5	I will enjoy using a laptop in class.	3.59 (0.000)	Yes
M6	Outside class I enjoy a laptop to help me learn.	4.20 (0.000)	Yes
M7	How often do you use laptops during class?	2.14 (0.000)	Yes
M8	Should laptops be used in class more, less, same?	3.30 (0.000)	Yes
M9	How often do you use laptops in class for outside activity?	3.32 (Ø.ØØØ)	Yes
M1Ø	Do you own a laptop?	0.96 (0.000)	Yes
M11	Do you regularly bring it to class?	0.20 (0.000)	Yes
M12	Requiring a laptop in class increases participation.	2.61 (0.000)	Yes
M13	Requiring a laptop in class will prepare me for a career.	3.09 (0.126)	No
M14	Requiring a laptop in class will help creativity.	2.76 (Ø.ØØØ)	Marginally
M15	Requiring a laptop in class will improve my grade.	2.64 (0.000)	Yes
M16	Requiring a laptop in class will be a distraction.	3.91 (0.000)	Yes
M17	Who is a better digital citizen, your instructor or you?	0.76 (0.000)	Yes
M18	Who knows more about technology in your field?	0.68 (0.000)	Yes

helpful in learning outside of class. Students generally do not use laptops in their current classes, but think that they should be used more often. Students also believe that although they use laptops in class for outside activities, laptops would only marginally enhance the classroom experience and learning effectiveness/efficiency. These results seem to at least partially validate previous results (Efaw, Hampton, and Martinez, 2004) with respect to the benefists of incorporating mobile technology into the business classroom.

The survey revealed that 95.8% of students own a laptop. However, only 19.7% regularly brought a laptop to class. The question of requiring a laptop in class yielded some interesting results. While business students felt generally positively about using laptops in class, requiring one generally made the students feel that it would not increase participation/engagement, would not impact their career preparation, would not increase their creativity, and would not improve their grade in the course. While business students use laptops for outside activities inside the classroom, they felt requiring laptops in class would be a distraction. These results seem to indicate that requiring laptops does not consistently lead to the positive student learning outcomes, confirming the findings from Fried (2008). The results also support the finding that perceived usefulness is critical to student acceptance (Friedrich and Hron, 2010).

Students also felt strongly that they were better "digital citizens" and knew more about technology in the business field than their instructors. Taken at face value this finding is difficult to interpret. While today's students are certainly in general more savvy than faculty with consumer technology and mobile computing, business technology and computing applications (other than presentation and word processing) are not students' strengths. Anecdotally, many faculty believe students are ill-prepared to use spreadsheets, databases, and statistical packages prior to exposure in business courses.

In general, it appears that business students like the idea of using laptops in class and/or for educational purposes. However, they do not see the value of or want to be compelled to bring laptops to class. It would seem to indicate that the elements of the UTAUT model (Moran, Hawkes, and El Gayar, 2010) are not independent, at least with respect to laptop technology in the business classroom.

Some differences were found when tests were performed using demographic segmentation. The differences are discussed below by demographic category. There were no significant differences based on hours worked per week.

Results by Gender

Approximately 95.8% percent of all students own a laptop. However, females were more likely than males to own a laptop. In fact, 98.8% of the females owned a laptop (p-value = $\emptyset.005$). Females were more likely than males to believe requiring computers in the classroom would be a distraction (p-value = $\emptyset.044$).

Results by Class

There were ten items with significant differences based on ANOVA tests with Tukey's simultaneous 95% confidence intervals. Sophomores are more likely than Juniors to agree that laptop use in the classroom can be directly linked to course learning objectives (p-value = $\emptyset.\emptyset\emptyset8$), that it will enhance the student's classroom experience (p-value = $\emptyset.\emptyset16$), and that it will allow more effective/efficient learning (p-value = $\emptyset.\emptyset\emptyset9$). Sophomores also more strongly enjoyed using laptops outside of class to help them learn than Juniors (p-value = $\emptyset.\emptyset45$). Sophomores felt more strongly than Juniors and Seniors that laptops can be well integrated into a course (p-value = $\emptyset.\emptyset\emptyset\emptyset$). Freshmen and Sophomores were more likely to enjoy using a laptop in class than Juniors and Seniors (p-value = $\emptyset.\emptyset13$). It is not surprising then that Juniors and Seniors are more likely to disagree that requiring laptops in the classroom will increase class participation and engagement (p-value $= \emptyset.\emptyset\emptyset5$) and prepare them for a future career (p-value = 0.003) as opposed to Sophomores. Freshmen are more likely than Juniors and Seniors, while Sophomores are more likely than Seniors to believe requiring laptops in the classroom will help with the student's creativity and creative thinking (p-value = $\emptyset.\emptyset\emptyset2$). These results partially support the finding of Hawkes and Hategekimina (2009-2010) with respect to Freshman. Finally, there were decreasing means from Freshmen to Seniors with regard to laptop ownership. One hundred percent of Freshmen respondents indicated they owned a laptop while only 92% of Seniors indicated they owned a laptop (p-value = 0.042).

Results by Major

There were nine items with significant differences based on ANOVA tests with Tukey's simultaneous 95% confidence intervals. Undeclared students are more likely than Finance students to believe laptops could be well integrated into a course (p-value = $\emptyset.\emptyset46$). Accounting students were less likely to enjoy using a laptop in class than undeclared students (p-value = $\emptyset.\emptyset41$). Health Services Administration, Management, Marketing, and Undeclared students generally enjoy using computers outside of class for learning than Human Resource Management students (p-value = $\emptyset.\emptyset\emptyset$). Accounting students were less likely to bring laptops to class compared to Marketing students. (p-value = $\emptyset.\emptyset39$) Accounting, Management, and Economics majors were less likely to use laptops in class compared to Marketing students (p-value = $\emptyset.\emptyset\emptyset\emptyset$). Accounting students were less likely than Finance students to use laptops in class for non-class activities (p-value = 0.049). Accounting students were less likely than Undeclared students to think required laptops in the classroom will 1) improve their grade (p-value = $\emptyset.\emptyset15$) and 2) help their creativity and creative thinking (p-value = $\emptyset.\emptyset21$). Accounting, Finance, Health Services Administration, and Economics students were less likely to think requiring a laptop would increase class participation/engagement (p-value = $\emptyset.\emptyset12$). Lastly, Marketing students are less likely to bring their laptops to class than Human Resource Management students (p-value = $\emptyset.\emptyset369$).

Results by Age

Traditional students (younger than 24 years of age) were more likely to use computers for non-classroom related activities while non-traditional students (24 years old or older) were more likely to seldom or never use computers for non-classroom related activities (p-value = $\emptyset.\emptyset26$). This is consistent with the results from Wang, Wu, and Wang (2009). Traditional students believed they would know more than the instructor about technology use in their filed at the end of the semester while non-traditional students were neutral (p-value = $\emptyset.\emptyset22$).

Results by Grade Point Average (GPA)

There were four items with significant differences. Fair students (2.5-2.99 GPA) were more likely to believe laptops should be used more often in the classroom while Good and Excellent students 3.0 GPA or higher) thought classroom laptop usage should be about the same as current (p-value = 0.004). Fair students were more likely to believe requiring laptops in class would sometimes increase class participation/engagement while Excellent students (3.5 GPA or higher) were less likely (p-value = 0.022). Fair students were also more likely to believe requiring laptops in class would sometimes increase their creativity/creative thinking while Excellent students were less likely (p-value = 0.004). Finally, Fair students were more likely to believe requiring laptops in class would sometimes increase their class grade while Good and Excellent students were less likely (p-value = 0.006).

Results by ACT

The lower the student's ACT score, the more likely the student is to agree that laptop use in class can be directly linked to course learning objectives (p-value = $\emptyset.\emptyset46$).

DISCUSSION AND CONCLUSION

Statistically significant and practical differences occurred for 13 of 18 items, and for all demographic categories except hours worked per week. Nearly all students own a laptop while all Freshmen owned one. Business students enjoy using laptops outside of class to assist with their learning and Sophomores have the most positive attitudes toward laptop use.

There are several challenges related to using laptops as an effective implementation tool for mobile computing. Of most importance, students do not always bring their laptops to class. In fact, less than 20% of the respondents regularly bring their laptops to class. Students believe laptops in the classroom will fairly often be a distraction and, overall, they rarely think laptops in class will increase their class participation, engagement, and grade. Finally, Accounting majors are least likely to bring laptops to class, think it would aide with their thinking, or improve their grade.

In conclusion, laptop technology is ubiquitous and business students enjoy using them for learning. However, because students do not believe requiring laptops in the classroom will benefit the student, laptops in the classroom will be a distraction, and they do not regularly bring their laptops to the classroom, instructors would be wise to design their courses to integrate mobile computing into their courses at selected points or by expanding out-ofclassroom laptop experiences.

FUTURE RESEARCH

The results of this study are not truly generalizable across disciplines. Therefore, further research is required to acquire a profile of student perceptions of laptop use in education and the classroom. The authors will be collecting data from students across academic units and majors with a goal of determining differences among the academic units and majors. Additional research is needed to determine whether there are similarities between universities with differing characteristics, such as student enrollment, student diversity, etc., and in other geographic areas.

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		Appendix			
Please	circle the number that best describes	your attitudes abo	ut laptops in the classr	oom.	
M1	Laptop use in class can be directly	inked to the cours	e learning objectives.		
	l Strongly disagree	2	3 Neutral	4	5 Strongly agree
M2	Laptop use in class will enhance th	e classroom experi	ence.		07.0
	1 1	2	3	4	5
M2	Strongly disagree	learn mare offers	Neutral		Strongly agree
W13	Laptop use in class will allow me to		³	y4	5
/	Strongly disagree		Neutral		Strongly agree
M4	Laptop use can be well integrated i	nto a course.	2	4	-
	l Strongly disagree	2	3 Neutral	4	5 Strongly agree
M5	I will enjoy using a laptop in class.				00
		2	3	4	5
M6	Generally (outside of class) Leniov	using computers to	help me learn		Strongly agree
WIO			³	4	5
	Strongly disagree		Neutral		Strongly agree
M7	How often do you use laptops in yo	our current classes	(during class)?	4	-
	1 Never	2	5 Sometimes	4	Often
M8	Should laptops be used more in cla	ss, less in class, or a	bout the same as now	?	
		2	3	4	5
М9	How often did you use your lapton	s in class for non-c	lassroom related activ	ities?	Use more often
1017	1 low often and you use your haptop	2 2	3	4	5
	Never		Sometimes		Often
M10	Do you own a laptop? Do you regularly bring it to class?	Yes No Yes No			
	Do you regularly bring it to classi	100 110			
Please	circle the number which best describ	es your opinion if y	you were required to be	ring a laptop con	puter to class.
M12	Requiring a laptop in class increase	class participation	n/engagement?	4	5
	1 Strongly disagree	2	3 Neutral	4	5 Strongly agree
M13	Requiring a laptop in class will hel	o me prepare for m	v future career?		
		2	3	4	5
N/14	Strongly disagree		Neutral		Strongly agree
M14	Requiring a laptop in class will help	² your creativity/cr		4	5
	Strongly disagree		Neutral		Strongly agree
M15	Requiring a laptop in class will imp	prove your grade in	class?	,	_
	1 Strongly disagree	2	3 Neutral	4	5 Strongly agree
M16	Requiring a laptop in class would b	e a distraction?			0.0
		2	3	4	5
M17	Who is a better digital citizen you	or your instructor	Neutral		Vou Instructor
M117	Who will know more shout toohn	logy use in your f	ald at the and of the ac	mostor voltor	Tou Instructor
WI10	who will know more about techno	nogy use in your n	eid at the end of the se	inester, you or	You Instructor
	your instructor:				
Demog	graphic Information				
1	Gender (M or F):	M F			
2	Current Class Level (check one):	Fr. Soph. Ir.	Sr.		
3	Major	- <u>-</u> J.			
J.	Hrs Employed /Weels		_		
4	A		_		
	Age:		_		
6	GPA (4 pt scale):		_		
	ACT Score				

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FINANCIAL MANAGEMENT FOR NONPROFIT ORGANIZATIONS: Uses and Applications in a Social Entrepreneurship Curriculum

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ABSTRACT

Social Entrepreneurship (SE) programs have been expanding over the past decade. The emergence of this new discipline can be attributed to two overlapping factors. Students (particularly business students) have expressed an increased desire to blend values, ethics and social causes into their own vocations. At the same time, the nonprofit and public sectors are rapidly adopting the language, practices and paradigms of business. These two forces have set the stage for a rapid expansion of SE programs across US universities. A review of colleges and universities reveals more than 500 professors teaching courses related to SE. Additionally, over the past five years, the Dell Social Innovation Challenge has logged more than 15,000 student competitors from 105 countries.

Despite its expansion, a core body of knowledge is not yet solidified for this emerging field. SE is still an interdisciplinary exercise; drawing from business, public policy, and the social sciences. Consequently, there is still enormous variation across universities in program goals, content coverage, and teaching methodology. Specialized academic conferences, new journals, and countless numbers of papers, are all attempting to define the boundaries of the discipline, standardize content coverage, and explore useful pedagogical tools to move the discipline forward.

This paper contributes to this ongoing conversation by describing the SE program at Samford University's Brock School of Business. The first section of the paper offers a brief overview of the program including its philosophy and core elements. The second section describes in more detail one key piece of our curriculum, the Financial Management for Nonprofit Organizations course. This course was a more recent addition to our SE program. The paper concludes by summarizing the contributions of this course to the strategic goals of Samford's SE program.

PROGRAM OVERVIEW

The Social Entrepreneurship program at Samford University was launched in 2006 as an interdisciplinary course. Significant student and community demand soon resulted in an expansion to a multi-course concentration in 2007. The SE program at Samford is housed within the Brock School of Business. This was a deliberate philosophical choice. SE programs across the country are roughly split evenly between business schools, public policy schools, and other academic units.

At Samford, we made the deliberate choice not to offer a distinct major in SE. Instead, students major in a traditional business discipline (economics, finance, management, accounting, or marketing). This is consistent with our belief that the majority of issues faced by a social entrepreneur are common to all types of business. Instead, our students layer additional coursework on top of their majors in the form of a twelve credit hour concentration to address additional topics that are idiosyncratic to social enterprise.

The first iteration of Samford's SE program included: a general SE course, a traditional entrepreneurship course, a financial management for nonprofit entities course, and an internship experience at an operating social enterprise. The sequence emphasized topics such as: community needs analysis, program design, financial management, and assessment techniques that are distinct from traditional business curriculum. Students generated their own venture plans and often competed in university sponsored business plan competitions.

Subsequently, an interdisciplinary minor in Social Entrepreneurship was added. We found that students from across the university, who might not typically display an interest in the traditional business minor, were more likely to see a connection between their own vocational aspirations and the ideal of Social Enterprise. Currently the SE program serves students from fine arts, social sciences, and our social work programs who have a desire to add basic business skills to their degree plans.

The focus of both the concentration and the minor is the formation of a new social enterprise. Students form into groups of common interest to generate a new venture plan. When considering a new venture, students weigh the alternatives to traditional for-profit organizational forms (sole-proprietorships, partnerships, or LLC's) versus the nonprofit organizational form. Our students also consider new hybrid forms, such as L3C's, B Corporations, or Community Interest Companies.

The vast majority of students develop plans for the nonprofit organizations. The nonprofit organizational form (as organized under \$501(c)(3) of the tax code) enjoys several tax advantages, including the ability to offer donors a charitable tax deduction. However, the nonprofit form also has a host of additional setup, reporting, and operational requirements that are distinct from its forprofit counterparts. Nonprofit formation, governance, and financial reporting are not topics typically offered within a traditional business curriculum. Demand from students as well as requests from the nonprofit community for more trained workers prompted the development of the Financial Management for Nonprofits course described in the next section.

THE FINANCIAL MANAGEMENT COMPONENT

There is a significant amount of research and antidotal evidence that indicates that a huge number of not-for -profit (NFP) entities are poorly managed financially. Many others who are not necessarily poorly managed from a financial standpoint do not do a good job of accurately reporting the results of their activities on their financial statements. As a result, it is highly likely that many allocation decisions made by those who support NFPs (individuals, foundations, governments) are made based on inaccurate or incomplete information which likely results in an inefficient allocation of resources within the NFP sector.

In recent years the Internal Revenue Service has increased the amount of resources devoted to policing the NFP sector. At least part of the motivation for this action is based on the desire to improve financial reporting in the NFP sector which should promote more efficient activities by the industry. The number of NFP entities has exploded in recent years. This expansion is another reason that the federal government has felt it necessary to devote more resources to the NFP industry in spite of the fact that NFPs generate virtually no tax revenues for the government.

Poor financial management and improper financial reporting within the NFP sector is, to some degree, understandable. Those individuals who are operating NFPs are often doing so because of a passion that they have for some underserved or disadvantaged group. It is their passion for a cause that has gotten them into a position of responsibility, not their managerial skills or financial acumen. Because the objective of an NFP entity has nothing to do with generating a profit, there is often little appreciation for the importance of proper financial management and reporting by those who serve as managers of NFPs. In addition, because those who provide financial support to NFPs do not do so with the expectation of any financial return, they too are often uninterested in financial reports of the NFPs. Those individuals and organizations are instead often focused on activities and/or various other types of non-financial results that, at least to them, demonstrate the effectiveness of the NFP to which they contribute. Consequently, there is often no internal or external group to provide a focus on appropriate financial reporting and/or the efficient management of financial resources.

This problem is being addressed, at least to some extent, at universities that have programs in place to train those interested in making contributions through the NFP sector. While the Brock School of Business is not unique in offering a course that deals with the financial management side of NFPs, our review of similar programs reveals that we are in the minority and that there are some unique aspects about our course. First, our course is taught by a Full Professor of Accounting with extensive non-profit financial management experience. Secondly, the course uses a mixture of outside NFP sector speakers, class lectures, and experiential exercises to deliver course content. The course, ACCT 384: Financial Management of Not-for-Profit Entities (see Exhibit 1 for a sample syllabus) is a standard three hour course that is intended for students who are not accounting majors. Accounting majors are allowed to enroll in the class, but the class will not count toward the accounting requirement for those pursuing the accounting major. The course is designed to familiarize students with the financial reporting framework of NFP entities, including some critical cost classification issues, and train them in dealing with some of the more thorny financial issues that NFPs must deal with on a regular basis. The course is divided into eleven major sections as follows:

- 1. NFP Financial Reporting Model
- 2. How to Apply to Become a 501(c)(3)
- 3. NFP Tax Issues
- 4. Evaluating NFP Financial Health
- 5. Budgeting in an NFP
- 6. Identifying and Developing NFP Resources
- 7. NFP Internal Control Issues
- 8. Developing a Banking Relationship
- 9. Audits Versus Reviews Versus Compilations
- 10. Involvement of the Board of Directors in Financial Management Issues
- 11. Field Study

NFP Financial Reporting Model

The Financial Accounting Standards Board (FASB) is the organization that is responsible for determining generally accepted accounting principles (GAAP) for all non-governmental entities. FASB has specified a specific reporting model for NFPs that is different from the reporting model for for-profit entities. Accounting courses that students complete as a part of the required curriculum in business schools throughout the US, including those at Samford, do not address the reporting model for NFPs, focusing entirely instead on the reporting model of for-profit entities. Consequently, even NFP managers who have a business degree would generally have had no exposure in their formal education to the financial reporting model for NFP organizations. ACCT 384 directly addresses that deficiency. Students spend approximately 20% of the class studying the how to prepare financial statements for an NFP in accordance with GAAP and how to read and interpret those statements. Significant time is spent on the presentation of revenues, the proper classification

of expenses, the manner in which equity is presented on the balance sheet of an NFP and what such classifications mean, and how assets and liabilities are classified.

One of the primary areas of focus in this section of the course is the importance of classifying expenses as either program, management and general, or fund-raising on the face of the operating statement. Numerous users of NFP financial statements spend a great deal of time and energy studying the relationship between such factors as how much of the resources of the NFP are provided by public support versus resources earned by the NFP in revenue producing activities; what is the relationship between the amount of resources expended for programs versus the amount spent for fund- raising and general management; how much in fund-raising cost does the NFP spend to generate one dollar of contribution. Critical decisions related to the allocation of resources to NFPs or whether or not an organization is spending donor dollars appropriately are made based on such analysis. A significant body of research indicates that preparers of NFP financial statements do a very poor job of properly classifying costs among program, management and general, and fundraising categories on the face of the operating statements. Rules promulgated by FASB related to such cost classification are very detailed and specific. Most executives of NFPs have no knowledge of those classification rules and, consequently, do a poor job of properly classifying cost on the financial statement of the entities they manage. Unlike many for-profit entities, NFPs often do not have highly trained accounting staff members and do not have their financial statements audited by an independent CPA on an annual basis. As a result, it is likely that those using financial information of NFP organizations to make decisions about which such organizations to support based on financial efficiency criteria are making poor decisions based on erroneous data. By educating those who will become managers of NFPs about GAAP rules, such inappropriate decisions should be minimized or eliminated.

Applying to Become a 501(c)(3)

A practicing CPA who specializes in the NFP industry serves as a guest lecturer on this topic and walks the students through the process of becoming a 501(c)(3) organization. The CPA discusses the nuances of preparing the Federal Form 1023, including which organizations are not required to file the form and the primary issues that can prevent the IRS from approving an organization's application. Students are also made aware of the importance of seeking certain types of approval from various state agencies that are frequently necessary to operate as an entity which solicits contributions from the general public. This portion of the class also addresses the various types of NFP organizations and the advantages and disadvantages of each of those organizations types. As a result of his numerous years of practice, the CPA discusses several actual issues that he has faced in attempting to obtain tax exempt status for client organizations and how those issues were resolved.

NFP Tax Issues

As stated earlier, NFP organizations must deal with some unique, and sometimes complex, tax issues even though they are, technically, tax exempt entities. In order to receive and maintain the designation as a tax exempt organization, NFPs are required to comply with numerous criteria. This part of the course focuses on what organizations must do in order to meet those criteria.

Part of the approach in this section of the course is to walk the students through the Form 990 tax form that larger tax exempt organizations must file with the IRS each year. This form includes eleven separate sections. Only four of those sections involve the presentation of financial statements and related schedules of financial data. The other seven sections of the form require the filer to disclose information about such issues as its mission and purpose, major accomplishments during the year, the compensation it pays to its officers and/or other related parties, its governance and management policies. Most of the non-financial information is used by the IRS to evaluate whether the filer is conducting its activities in a manner that justifies its tax exempt status. In addition to the instructor, a practicing CPA who specializes in the NFP industry addresses the class and provides numerous examples of how failure to properly understand and address the issues that are required to be reported on Form 990 have negatively impacted NFP organizations with whom she has worked in her own practice.

One of the activities that any tax exempt organization must carefully monitor and report is unrelated business income (UBI). A common practice among NFP organizations is to engage in fund-raising activities that are designed to provide resources to support the program activities in which the NFP is primarily engaged even though those activities are not otherwise related to the mission of the organization. For example, many Boy Scout troupes have annual Christmas tree sales to support many of the activities of the troupe for the entire year. However, the IRS monitors such activities very closely because the granting of tax exempt status is not intended to allow the tax exempt organization to engage in direct competition with organizations that do not have tax exempt status and, therefore, are subject to taxes to which NFPs are not. NFP organizations would have a competitive advantage

over their for-profit counterparts in such circumstances. Many NFP executives assume that if the proceeds of such activities are used entirely to support the primary mission of the NFP, such activities are not of concern to the IRS. That is not the case. There are numerous IRS rules about how much UBI a NFP can generate, how to avoid revenues generated from fund-raising activities from being considered UBI by the IRS, and the tax forms that an NFP must file if it generates UBI above a certain threshold in any given year. The penalties that can result from an NFP organization being involved in too much UBI activity or failing to declare and pay tax on such income can be quite severe and numerous examples exist of NFP organizations unknowingly getting involved in inappropriate UBI activities. Obviously, it is very important for those who manage NFP organizations to be aware of the rules and regulations related to UBI activity. Students in ACCT 384 are thoroughly versed in those requirements.

Significant time is also spent in the course on other activities that, if engaged in by a tax exempt organization, would cause the NFP to lose its tax exempt status. Such activities include involvement in political campaigns, involvement in lobbying activities, benefitting related parties, engaging in any activity that is illegal or violates fundamental public policy, and the failure to file appropriate annual information with the IRS. IRS rules related to such activities can be fairly detailed. For example, *any* involvement in a political campaign by an organization will result in the revocation of tax exempt status. IRS regulations spell out in detail what constitutes involvement. For example, if an NFP invites a political candidate to speak at an organizational meeting about their candidacy or issues related to the campaign without providing equal time in the same, or an equivalent, forum to all other candidates in that race, the organization's tax exempt status would be revoked. On the other hand, some lobbying activities by an NFP are permissible as long as they are not "significant." The IRS provides alternatives for determining whether lobbying activities are considered significant. These types of issues are addressed in this course.

Evaluating NFP Financial Health

This section of the course focuses on two separate subject areas. One of those areas deals with how a manager might evaluate, for their own purposes, the financial strength of an NFP. NFPs differ from for-profits in some respects when evaluating financial health. For example, equity (assets less liabilities) is generally considered a positive for a for-profit entity. However, for an NFP that is not necessarily true. It can be argued that an NFP organization should be using (and not accumulating) resources that it generates to benefit those that the organization was established to assist or benefit. Therefore, any significant accumulation of equity would indicate an improper use of resources. Such issues are discussed and various ways of evaluating the financial strength of NFPs are presented and explained.

The second component of this section deals with the functioning of organizations that are commonly referred as "watchdog organizations" that operate in the NFP arena. These watchdog organizations have various procedures for rating NFP organizations for the benefit of donors and potential donors. Much of their ratings consist of evaluations of financial factors such as the percentage of total expenditures that are devoted to program activities versus the percentage of expenditures devoted to fund-raising activities. There are three primary watchdog organizations (Charity Navigator; BBB Wise Giving Alliance; The American Institute of Philanthropy / CharityWatch) and each of them has its own evaluation approach. It has been demonstrated that the ratings published by these organizations can have a significant impact on the ability of an NFP to raise contributions from the general public and foundations. Some professional organizations and individuals have vigorously criticized these watchdog organizations' ratings as procedurally flawed and inappropriate. As a part of the class, students are required to research and report on the methodology of each of the three major watchdog organizations. The students also read articles critical of the approaches used. An open discussion occurs in the class about the perceived value of the watchdog evaluations and the validity of the criticism of their approaches.

Budgeting in an NFP

In this section of the course students are taught the importance of and the approaches to the budgeting process. In many respects, the budgeting process in an NFP organization is the same as that for a for-profit entity. However, there are some differences and those differences are addressed in the discussion of basic mechanics. A guest speaker from a local NFP is also used to discuss the budgeting process used by her organization and how important the budget information is in managing the organization on a daily basis.

Identifying and Developing NFP Resources

An individual who has served as the executive director of the Alabama Association of Non-Profits and as a development officer in several NFP organizations is used in a guest speaker capacity to discuss numerous issues related to fund-raising. This portion of the course includes a discussion of the various sources of NFP resources, how to identify and access those resources, donor cultivation, and various ethical issues that will likely need to be addressed as a part of fund-raising activities.

NFP Internal Control Issues

It is argued by some that NFP organizations have a higher incidence of fraud than any other industry. While this may seem counterintuitive at first glance, there are several reasons why there is a high rate of fraud in the industry. One of the reasons that NFP organization tend to be susceptible to fraud is that NFP organizations frequently lack the ability to properly segregate duties, particularly those within the accounting and finance functions, because of the small number of staff members working at many NFP operations.

In ACCT 384, students are made aware of fraud problems within many NFP organizations and the importance of proper internal controls to reduce the risk of such fraud. Approaches to address the lack of segregation of duties that exist in many NFPs are outlined and other critical processes are discussed as well.

In addition, a practicing CPA who specializes in the NFP industry serves as a guest lecturer and provides numerous examples of fraud that he has either identified or assisted his clients in addressing. The presentation by the CPA also addressing how proper internal controls could have reduced the impact or prevented the frauds identified from occurring altogether. The presentation by both the professor and the guest lecturer emphasize that it is responsibility of the management and board of directors of the NFP to ensure that a proper system of internal control is implemented.

Developing a Banking Relationship

Like most any other business, quality NFP organizations spend a good bit of time managing cash flows. In most NFP activities, the timing of revenue streams are seldom matched with the expenditures incurred in supporting operating activities. This is often even more true with NFPs than for-profit operations. Consequently, it is important for NFP organizations to have a quality relationship with a banking institution that allows them to work through the disparity between the timing of revenues and expenses.

The nature of the NFP industry often results in banks using approaches to evaluate the amount of credit that they are willing to extend to NFP organizations and the cost that they charge for that credit that are unique to the NFP industry. In ACCT 384 a director of NFP activities of a large regional bank serves as a guest lecturer to explain to the students the criteria used by banks to evaluate lending to an NFP and the actions that NFP managers should take to facilitate a quality banking relationship. It is invaluable for students to understand how banks make lending decisions when they deal with NFP organizations, given the unique character of that decision process. Such knowledge should allow any NFP manager to more effectively manage the credit relationship with its lender.

Audits Versus Reviews Versus Compilations

Based on the professor's own professional experience, few managers of small to medium sized NFPs have an understanding of the differences between and the value of audits, reviews, and compilations offered by independent CPA firms. This section of the class specifically addresses the nature and value of an audit, a review, and a compilation. Students are made aware of the level of assurance provided by the independent CPA in each of those engagements, the relative cost of each of those services, and what value each level of service provides the NFP in the marketplace. How an NFP should go about choosing which of those levels of service would be most appropriate is discussed in some detail.

Involvement of the Board of Directors (BOD) in Financial Management Issues

This part of the course is taught primarily by an attorney who is an expert in NFP legal issues. The focus in this section is the fiduciary responsibilities of the BOD in an NFP environment. The legal doctrine of Care, Loyalty, and Obedience (CLO) that has been established by numerous pieces of legislation and case law is explained. Much of the CLO doctrine involves the BOD's responsibilities related to their involvement in financial matters of the organizations on whose board they serve. It is made clear in this part of the course that management has a responsibility to actively engage the BOD in numerous matters related to financial management and the BOD has a fiduciary responsibility to seek active involvement in those matters. For example, the BOD should always review the NFP's Form 990 before it is filed, regularly review the NFP's financial statements, and be actively engaged in such matters as the evaluation of whether the manner in which the entity is spending its money is in line with the stated mission of the NFP.

In this part of the class students are assigned several articles to read and discuss and a comprehensive case dealing with the activities of the BOD in fulfilling its fiduciary duties related to the oversight of an NFP's management of its financial resources is used to bring alive the discussion of the CLO doctrine.

Field Study

Toward the latter one third of the course, students are assigned the responsibility of completing a field study of a local NFP organization and reporting their findings back to the class. The firms that are evaluated are identified by the professor with the assistance of the Executive Director of the Alabama Association of Non-Profits. The firms selected participate on a voluntary basis. Those organizations are, generally, mid-sized firms that are headquartered in Birmingham, Alabama. Students are divided into teams of three students and are required to visit the firms to which they are assigned. On these visits the students interview the executive director and normally the individual who serves in the capacity of chief accounting officer. In some cases, the NFPs will also include their independent accountant in the interview. To facilitate the interview process, students use a questionnaire (Exhibit 2) that has been developed during the last few terms that ACCT 384 has been offered. Student are encouraged to add questions to the conversation as the interview progresses in order to gain insight into issues that might be raised by responses to questions on the pre-prepared document.

During the last three class periods of the semester, each group is required to make a presentation to the class on their findings. These presentations involve the students identifying the things related to financial management that the NFP organization does well, things that they do not do well, and suggestions to address those areas of weakness that were identified. Each member of a group is required to actively participate in the oral presentation. Each group of students must also submit a paper that summarizes the history and mission of the organization with which they worked, their discussions with NFP personnel, their findings, and their recommendations for improvement. Students then address questions from their fellow students and the professor after their presentations are completed.

Students seem to very much enjoy visiting directly with the NFP organizations. The field study seems to bring to life many issues that have been previously discussed in class. During the question and answer period the professor vigorously pursues certain issues addressed by the students in their presentation or issues that they failed to address. This question and answer process seems to be very productive in that it often makes the students realize that they do not have complete understanding of certain of the topics that they have addressed (or should have addressed) in their field study. These sessions have proven to result in numerous "ah ha" moments in which students developed a more complete understanding and appreciation of issues that have previously been addressed during the course.

FINAL THOUGHTS

The proceeding sections have detailed the ways in which Samford University's Brock School of Business has integrated a Financial Management of Not-for-Profit Entities course into a Social Entrepreneurship curriculum along with a detailed description of the course content and teaching objectives and strategies. For academic units considering adding a program in Social Entrepreneurship this paper can serve as a starting point for curriculum design and potentially guide integration or inclusion of a Financial Management course within a Social Entrepreneurship program at either the major, minor, or concentration level.

	Exhibit 1 ACCT 384 Syllabus			
	ACCT 384 – FINANCIAL MANAGEMENT OF NFP ENTITIES FALL 2012 (DBH 216) DR. LOWELL BROOM			
DATE	TOPIC TO BE COVERED	RELATED MATERIALS		
August 27 M	Introduction and Course Organization			
29 W	NFP Environment			
30 F	No Class			
Sept 3 M	Labor Day Holiday – No Class			
5 W	NFP Financial Reporting Model			
7 F	NFP Financial Reporting Model			
10 M	NFP Financial Reporting Model			
12 W	NFP Financial Reporting Model			
14 F	No Class			
17 M	NFP Financial Reporting Model			
19 W	Applying to Become a 501(c)(3) and NFP Tax Issues-Jeff Chandler, CPA, Partner with Borland, Benefield			
21 F	No Class			
24 M	NFP Tax Issues			
26 W	NFP Tax Issues			
28 F	No Class			
Oct 1 M	NFP Tax Issues			
3 W	Exam – NFP Financial Reporting Model and Tax Issues			
5 F	No Class			
8 M	Fall Break – No Class			
10 W	Review Exam			
12 F	Evaluating NFP Financial Health			
15 M	Evaluating NFP Financial Health			
17 W	Evaluating NFP Financial Health-Rating the Raters			
19 F	No Class			
22 M	NFP Budgeting Issues			
24 W	NFP Budgeting Issues-Karen Peterlin, CEO of Kids One Transport			

Exhibit 1 ACCT 384 Syllabus		
26 F	No Class	
29 M	Evaluation of NFP Financial Health-Developing a Questionnaire	
31 W	Identifying Sources of NFP Revenues – CEO of Alabama Association of Non-Profits	
Nov 2 F	No Class	
5 M	Evaluation of NFP Financial Health – Developing a Questionnaire/Audits vs. Review vs. Compilations	
7 W	NFP Internal Control Issues	
9 F	No Class	
12 M	NFP Internal Control Issues – Jeff Chandler, CPA, Partner with Borland, Benefield	
14 W	Differences Between NFP & For Profit Finance –Jim Wooten, Executive Director of IPC Foundation	
16 F	No Class	
19 M	Developing a Banking Relationship – Jessica Payne, Director of NFP Banking for Regions Bank	
21 W	Thanksgiving Holidays	
23 F	Thanksgiving Holidays	
26 M	Involvement of the BOD in Financial Management of NFPs – Shannon Lisenby of Bradley, Arant	
28 W	Involvement of the BOD in Financial Management of NFPs – Shannon Lisenby of Bradley, Arant	
30 F	No Class	
Dec 3 M	Presentations of Case Studies	
5 W	Presentations of Case Studies	
7 F	Presentations of Case Studies	
12 W	Final Exam 8:00 AM – 10:00 AM	

FINANCIAL MANAGEMENT OF NFP ENTITIES CLASS POLICIES DR. LOWELL BROOM SAMFORD UNIVERSITY

I. COURSE LEARNING OBJECTIVES:

- 1. Develop the ability to read and understand financial statements of a NFP entity prepared in accordance with Generally Accepted Accounting Principles.
- 2. Develop the ability to identify the basic content of tax returns that must be filed by 501(c)(3) entities.
- 3. Develop the ability to identify common issues that could cause 501(c)(3) entities to lose their tax exempt status and/or the confidence of the public, including contributors.
- 4. Develop the ability to conduct basic procedures to evaluate the financial health of NFP entities.
- 5. Develop the ability to apply basic processes related to budgeting for NFP entities and recognize the importance of budgetary control in the NFP arena.

EXHIBIT 1 ACCT 384 Syllabus

- 6. Develop the ability to identify basic internal control procedures and describe the importance of such procedures in effectively operating a NFP entity.
- 7. Develop the ability to identify the ways in which the oversight group such as the board of directors should be engaged in the financial management of NFP entities.
- 8. Develop the ability to describe issues that should be considered when making a decision about the benefits of an independent audit and the selection of an auditor
- 9. Develop the ability to relate the content of an independent external auditor's report to the evaluation of the financial health of a NFP entity.
- 10. Develop the ability to describe the various types of audits to which a NFP entity could be subject.
- 11. Develop the ability to identify issues that should be considered when selecting financial software for a NFP entity.
- 12. Develop the ability to indentify, access, and use various sources of information that offer assistance in the financial management and evaluation of NFP organizations including information offered by Guidestar, the Internal Revenue Service, National Council of Non-Profit Associations, the Independent Sector, the Panel on the Non Profit Sector, American Institute of CPAs, BBB Wise Giving Alliance, and the National Assembly of Health and Human Service Organizations.

II. Grading System:

Students will be assigned a grade based on their performance in three areas as follows:

		Course Grade	Points Required
Exams	One Third	А	90% of Total Possible
Projects/Assignments	One Third	В	80% of Total Possible
Class Participation	One Third	С	70% of Total Possible
		D	60% of Total Possible
		F	Below 60% of Total Possible

III. Makeup Exams:

If a student misses an exam, the impact on the student's grade will be determined based on the circumstances. If the absence is excused, a make-up exam will be scheduled at the discretion of the professor. What constitutes an acceptable excuse will be determined solely by the professor. If the absence is determined to be unexcused, several options will be considered including assigning the student a grade of zero on the exam, assigning the student additional work to substitute for the missed exam, or increasing the weight of other components used to determine the student's course grade. Circumstances that would normally be considered excused absences would be conflicts created because of the student's participation in a previously scheduled University activity (baseball, basketball, debates, choir, etc.) when such participation by the student is required by the University or sponsoring School or Department and the professor is notified of the conflict in advance of the scheduled examination, illness supported by a valid doctor's excuse, or death of a close relative.

EXHIBIT 1 ACCT 384 Syllabus

IV. Class Attendance and Participation:

Class attendance is important to successful performance in this course. As noted above, class participation will constitute one third of a student's course grade. Class attendance and active participation in class discussions in a professional manner that gives evidence that the student has read assigned material and has listened to classroom presentations by the professor, professional guests, and fellow students is what is defined as class participation. Professional student conduct during class includes actions such as refraining from any use of cell phones during class, remaining in class for the entire class period, not communicating directly with other class members during class in a way that is disrespectful of other members of the class and/or the professor. Any unexcused absences above one during the term will have a negative effect on the student's class participation grade. The larger number of unexcused absences above one, the larger the negative effect on the student's grade. Excused absences above two during the term will negatively affect the student's grade in the same manner as described above.

V. Office Hours:

The professor will maintain regular office hours (303A) at the following times: 2:30 p.m. to 3:30 p.m. on Mondays and Wednesdays as well as 9 AM until 10:30 AM on Tuesdays and Thursdays. Students should feel free to meet with the professor at these hours without appointment and/or any other time the professor is available.

VI. Outside Assignments:

At various times during the semester assignments that must be completed outside of regular class hours will be announced by the professor. The nature of those assignments and time frames for completion will be announced by the professor during regular class periods. Students who are absent from class are still responsible for timely completion of out of class assignments. Make-up assignments or time extensions for these assignments may be given at the instructor's discretion.

VII. Schedule Adjustments Not Subject to University Control

Inclement weather or other events beyond the control of the University that might cause risk or danger to students, faculty, and staff may occasionally result in changes to normal University operations, including cancellation of classes or events. In such circumstances the calendar schedule may be adjusted.

VIII. Academic Honesty

We value a campus community that encourages personal growth and academic development in an atmosphere of positive Christian influence. We affirm the necessity of academic standards of conduct that allow students and faculty to live and study together. We value the fair and efficient administration of these standards of conduct.

- Samford University Code of Values

No form of academic dishonesty will be tolerated. This includes, but is not limited to, cheating on exams, misrepresentation, presenting as your own the work of another, etc. In accordance with the procedures outlined in the student handbook, I will file a Values Violation Incident Report concerning any individual(s) suspected of violating Samford University's Integrity Policy as it appears in the student handbook. Please read and familiarize yourselves with this policy.

IX. Students With Disabilities Seeking Accommodations

Samford University complies with Section 504 of the Rehabilitation Act and the Americans with Disabilities Act. Students with disabilities who seek accommodations must make their request through the Director of Disability Resources located in the Career Development Center in Room 205 of the University Center, or by calling 726-4078 or 726-2980. A faculty member will only grant reasonable accommodations upon notification from the Director of Disability Resources.

THIS SYLLABUS MAY BE REVISED AT THE DISCRETION OF THE PROFESSOR

EXHIBIT 2 FIELD STUDY INTERVIEW QUESTIONS

ACCT 384 Questionnaire

Cost/Revenue Classification and Reporting Issues

- 1. From what sources do you obtain the funds necessary to support your organization?
- 2. How do you solicit funds from those sources?

(From this point forward separately address each type of solicitation effort (Mail Solicitation, Grantwriting, Special Events) that the organization indicates that it uses, employing questions 3 through 6 below, as appropriate. Should the organization use fundraising approaches other than those three, ask how the costs associated with those approaches are determined and classified on the financial statements.)

Mail Solicitation

- 3. How are the costs associate with the mail out classified on your financial statements? Are any of the costs treated as program costs? If so, how do you determine how much of the costs are classified as program costs? If not, why?
- 4. Do you distribute premiums (gifts) during any of your solicitation efforts? If so, how is the cost associated with the premiums classified on your financial statements? (Ask additional questions as necessary to determine if the premiums are included in the original mail out, are distributed only to those that give, and whether or not the premiums are of nominal value or are significant in relation to the value of the gift.)

Grant-writing

5. Are the costs associated with grant writing separately determined and classified as fund-raising cost on your financial statements?

Special Events

6. Do the participants in the special events receive anything of value (a meal, entertainment, etc) in return for their participation? If so, how is the value of such items (and the associated revenue) classified on your financial statements?

Other Issues

- 7. Do you use the services of volunteers? If yes, is the value of contributed services recognized on your financial statements? If no, why not? If yes, why and how is the value of the donated services recognized calculated?
- 8. Do you conduct activities designed to solicit volunteer services? If so, how are the costs associated with such solicitation activities classified on your financial statements?
- 9. Does your executive director participate in program and/or fundraising activities as well as performing general and administrative duties? If yes, do you allocate a portion of the ED's salary and benefits to program and fundraising on your financial statements? If yes, how are those allocations determined?
- 10. Do any of the organizations employees (other than the ED) perform activities that are a component of more than one functional category (management and general, fundraising, program)? If yes, is the salary and benefits of such employees allocated to each of those functional categories and how is that allocation determined?
- 11. Do you incur any other (non-employee) costs that are allocated among functional categories (program, fundraising, management and general)? If yes, how are those allocations made?

Tax Issues

12. Is your financial support provided from a large group of supporters or does it come from a small group of individuals/organizations?

- 13. Do you file a tax return on an annual basis? If no, which one (990, 990EZ, 990N)? If no, why not?
- 14. Do conduct evaluations of the effectiveness of your programs? If so, can you give us some specific details of those evaluations?
- 15. Do you track individual donations and send individual acknowledgement of gifts to the donors?
- 16. Do you receive gifts of tangible property other than cash? If yes, how do you recognize those gifts on your financial statements?
- 17. If you receive a promise to give in future years, when (which fiscal year) do you recognize revenue from that gift on your financial statements? What impact does such a gift have on your net assets on your financial statements?
- 18. What process is used to determine compensation levels for your employees and the executive director?
- 19. Does your Board review your financial statements/tax return before the tax return is filed?
- 20. Does your Board regularly review your mission statement?
- 21. Do you have a Conflict of Interest Policy? If yes, how is it enforced?
- 22. Do you have a whistle blower policy/process?
- **23**. Do you generate any funds by selling products or services (including advertising in your publications)? If yes, do you report that as unrelated business income on your tax return? If no, why not?
- 24. Does your organization engage in any activities that could be considered political in nature?
- 25. Does your organization engage in any activities that could be considered lobbying?

Budget Process Issues

- 26. Do you prepare an annual budget? If yes, who is involved, what is the basic process?
- 27. Do you use the budget on an ongoing basis during the year to monitor organizational activities?

Internal Control Issues

- 28. Do individuals who have access to cash also have access to the accounting records (including donor records)?
- 29. Who responds to questions that donors might have regarding their gifts?
- 30. What is the process for making cash disbursements related to organizational activities?
Cyberinfrastructure for Undergraduate STEM Education¹

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ABSTRACT

Cyberinfrastructure (CI) is a term that usually appears in scientific research, but rarely to be noticed as a scientific education tool. In this paper, I describe a transformative Cyberinfrastructure-based strategy to improve Science, Technology, Engineering and Mathematics (STEM) education at one of the historically black colleges. This strategy is built on two arms (i) infusing CI in STEM introductory courses and (ii) building a community of practice around CI among STEM faculty and students. The paper presents the framework of applying computational thinking elements as a pathway to use CI in education, and tactics put to create CI-based community of practice. Presented plan will be helpful for other to use computational thinking elements and CI resources for STEM disciplines.

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INTRODUCTION

Over the last two decades, new computational technologies, information, and communication, have evolved creating comprehensive cyberinfrastructure (CI) systems and resources. The term Cyberinfrastrurec (CI) was coined in late 1990 and then when the Atkins report was published in 2003, this term became the buzz word that explains many of the revolutionized advances in Science and Engineering (Atkins et al., 2003). Based on Berman(2005), CI is defined as

"...the new research environments that support advanced data acquisition, data storage, data management, data integration, data mining, data visualization and other computing and information processing services over the Internet. In scientific usage, cyberinfrastructure is a technological solution to the problem of efficiently connecting data, computers, and people with the goal of enabling derivation of novel scientific theories and knowledge". (p. 1).

To clarify more what the term CI means, a joint report of the EDUCASE Campus Cyberinfrastructre Working Group and the Coalition for Academic Scientific Computation generated a broader definition of CI as:

"Cyberinfrastrcutre consists of computational systems, data and information managements, advanced instruments, visualization environments, and people, all linked together by software and advanced networks to improve scholarly productivity and enable knowledge breakthroughs and discoveries not otherwise possible" (EDUCASE, 2009).

Recent reports show that CI-systems impact how Science, Technology, Engineering and Mathematics (STEM) research is conducted. However fewer applications are noticed in utilizing CI resources in classroom as a scientific education tool. As large number of agencies including the National Science Foundation (NSF), Department of Defense (DOD), Department of Energy (DOE), and Central Intelligence Agency (CIA) are leveraging this technologybased infrastructure as a tool for scientific discoveries, it has become clear that there is an urgent need to train the future STEM workforce on CI and its capabilities for profession, education and research. More importantly, it is crucial to broaden the participation of diverse groups of people as users of cyberinfrastructure and making sure under-presented populations are introduced to and trained on CI systems. This paper describes the strategy put by Philander Smith College, one of the historically black colleges and universities (HBCUs) in Arkansas, to transform STEM education via a CI-based strategy by (i) immerse CI resources and concepts in STEM education; and (ii) create a community of practice among STEM faculty and students. The rest of the paper in structured as follows. Next section describes the CI state at Philander Smith College. Then, I present the CI-based strategy in

improving STEM education. Finally, the paper ends with conclusion.

CI STATE AT PHILANDER SMITH COLLEGE

Philander Smith College is a four-year liberal arts private college and the oldest Historically Colleges and Universities (HBCU) of Arkansas, established in 1877. The Division of Natural and Physical Sciences of Philander Smith has been actively engaged in CI-based efforts to improve STEM education. The division collaborated with University of Arkansas at Pine Bluff in implementing the Arkansas Cyberinfrastructure Minority Training Education Consortium (AMC-TEC) that was awarded from 2010 to 2012. The AMC-TEC project addressed the national challenge the nation faces with respect to producing a workforce that is capable of serious science using national CI resources (Walker et al., 2012). The backbone of the project is CI-based resource of Arkansas represented by the Arkansas Research and Education Optical Network (ARE-ON) project and other national resources. Arkansas invested 10 million dollars in implementing the ARE-ON as a statewide high speed optical networking services to all four-year public universities within Arkansas, for research, education, telehealth services and emergency preparedness. As most of the universities of Arkansas were aware of the ARE-ON as an advanced cyberinfrastructure, a limited number truly knew how to best utilize this resource for education. The AMC-TEC project was designed to engage the two HBCUs to participate in CIbased approach in teaching and research (for more details, see Walker et al., 2012). As Philander Smith implemented the core goals of the project, it became apparent that STEM faculties need more intensive training on other CI platforms and more customized strategy on how to best infuse CI Resources across STEM courses.

TRANSFORMATIVE CYBERINFRASTRUCTURE-BASED STRATEGY IN STEM

The Division of Natural and Physical Sciences offers degree programs in General Science, Biology, Chemistry, Applied Mathematics, and Computer Science, serving more than of 240 students. The division has an articulation agreement with the University of Arkansas at Fayetteville for the completion of a Bachelor of Science degree in any of Chemical Engineering, Civil Engineering, Computer Engineering, Electrical Engineering, Industrial Engineering, or Mechanical Engineering through the 3/2 Program. The Division strives to train and prepare its STEM students to pursue graduate studies or professional careers in STEM. The Division has a number of initiatives and projects to improve STEM education, students' academic performance and graduation rates. One key project is the National Science Foundation's HBCU-UP II project that is awarded on 2012 for five years. The project aims onto: (i) Provide multi-module interdisciplinary expository research opportunities for STEM students; (ii) Transform STEM education by CI-based strategy; (iii) Improve the readiness of incoming high school students in the areas of STEM via its Science Technology and Engineering Preparatory Program (STEPP). In this paper, I focus on the second goal and I describe a systematic framework to transform STEM education by using CI resources and concepts.

INJECT CI-RESOURCES IN GATE-KEEPING COURSES ACROSS STEM

A growing number of academic institutions are making extensive use of computational methods in STEM fields. Computational science has been recognized as the third leg of science for more than 30 years (Apon et al., 2010). To prepare students for a future of complex knowledge, reasoning, and problem solving with multidimensional data and sophisticated representations, students must acquire different kinds of knowledge and thinking skills than those emphasized previously (Biswas et al., 2001). Traditional instructional delivery that does not utilize computation was found to be linked significantly to students' low performance and thereby attrition. As such, in this project, they key component is to improve STEM education by using CI resources in STEM introductory courses. The framework is built as a two-phase implementation plan. Phase one aims to integrate Computational Thinking (CT) elements in introductory courses of STEM, while phase two introduces students and faculty to CI resources along with CT basic concepts simultaneously.

In her seminal article, Wing (2006), argues that Computational Thinking (CT) should be one of the fundamental intellectual skill set and an essential part in education. "Computational thinking is a fundamental skill for everyone, not just for computer scientists. To reading, writing, and arithmetic, we should add computational thinking to every child's analytical ability" (Wing, 2006). CT is defined as "the thought and processes involved in formulating problems and their solutions so that the solutions are represented in a form that can effective carried out by an information processing agent (Wing, 2011). In using CT across different STEM courses, the following definition of CT is applied "Computational thinking is an approach to problem solving, which uses abstraction to create algorithmic solutions that can be automated with computational processes". Accordingly, the key elements of CT, which are: (i) Abstraction; (ii) Data, (iii) Retrieving; (iv)Algorithms; (v)Design; (vi)Evaluation and (vii) visualization, are integrated in STEM courses. Techniques to teach CT basic elements are: problem decomposition, pattern recognition, pattern generalization to define abstractions (The National Academies, 2011), algorithm design, and data analysis; design solutions, evaluation and visualization. For the first phase, the courses of Biology I, Biology II, Genetics, Chemistry I, Chemistry II, Applied Computer Science, Internet Resources , Programming I, Programming II, College Algebra, Calculus I, and Calculus II are delivered with CT in mind. Then, CI resources and concepts are integrated in STEM courses, along with the CT in pedagogical practices.

CREATE A CYBERINFRASTRUCTURE-BASED COMMUNITY OF PRACTICE AMONG STEM FACULTY

Research shows that student learning can be improved when instructors move from traditional style instruction to interactive instruction applying computational approaches (Handelsman et al., 2004). Also, it has been reported that creating communities of practice enhances sharing successful practices among community members. Communities of practice are defined as, "...groups of people who share a passion for something that they know how to do, and who interact regularly in order to learn how to do it better" (Wegner, 2004, p. 2). In Communities of Practice (COP), social learning systems are formed, where practitioners connect to solve problems, share ideas, set standards, build tools, and develop relationships with peers and stakeholders (Eckert, 2006). Because they are inherently boundary-crossing entities, COP are a particularly appropriate structural model for cross-agency and crosssector collaborations within this domain (Wegner, 2009). Any COP has to have four common characteristics:(i) defined domain of the community and its practices; (ii) relationship building activities among members to form their community; (iii) shared practices to develop a shared repertoire of shared, resources, experiences, strategies, tools and any activity that can contribute to building the shared practice (Wegner, 2009); and (iv) community sphere, in which participants communicate, meet and collaborate. This sphere might be a physical one such as the case when teachers meet for professional development, virtual, as the case of CI-based platforms, or hybrid, when people meet face-t-face and virtually with their community peers to share practices and knowledge. Regardless of type, size, structure or domain, scope, dynamicity, and visibility of COP, it all should have these four characteristics in one form or another. The theory of COP forms a basis for understanding social learning systems (Wegner, 2000) and its application has been found in organizations, governments, businesses, education, professional associations, civic life, nations, and the web (Wegner, 2009). This influencing theory has become the foundation of creating social learning systems and managing shared knowledge. As Wegner et al. (2002) noted, one of the key issues to design successful communities of practice, is to nurture aliveness within these communities. This can be achieved through generating "... enough excitement, relevance, and value to attract and engage members".

Motivated by this approach, the project offers STEM faculty comprehensive training on CT elements and CI resources via a number of workshops. Additionally, an annual CI Day is held annually for the period of the project inviting speakers from industry, universities and research labs to present their use of CI and share their achievements. By this, it is expected that a human infrastructure (Lee et al., 2006) is built around CI, its concepts and resources. For 2013, Philander held its second CI Day inviting speakers from different local, regional and national organizations. Over 180 attendees attended the CI Day from STEM and non-STEM areas. The topics discussed are about the ARE-ON project and its use for teaching and research, visualization techniques and the use of CI for visualization in genetics research, CI application for medical sciences, CI use in engineering education and research, CI use in undergraduate education by minority servicing institutions, CI use in research in Arkansas and CI national resources and its use in STEM in multidisciplinary approach. In addition the Director of the Computer Information Services of Philander presented the Information Technology infrastructure and its capabilities. Also, STEM faculty shared their experiences in applying CT in their teaching and using CI resources (Swaid, 2013).

CONCLUSION

The value of CI to research has been reported (e.g., Bietz and Lee, 2011; Mukherejee et al., 2012), however, still the usage of these scientific informational infrastructure for education is not fully realized. This paper outlines the strategy of HBCU-UP II project of Philander Smith to improve STEM education by a transformative CI-Based strategy. The value of such resources holds great promise in improving the learning experiences for STEM students. By using available resources, reliable technology and robust services, an inquiry-based approach to learning can be the key to motivate students, and positively impact their achievements and enthusiasm for STEM. Computational thinking and cyberinfrastructure resources might be one way to prepare an adequate supply of quailed workers for employment in STEM fields, who are capable of solving complex problems. According to Albert Einstein,

"[T]he significant problems we face cannot be solved at the same level of thinking we were at when created them. Yes, Indeed.

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Flipping the Classroom: An Empirical Study Examining Student Learning

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ABSTRACT

Flipping the classroom is the latest reported teaching technique to improve student learning at all levels. Prior studies showed significant increases in learning by employing this technique. However, an examination of the previous studies indicates significant flaws in the testing procedure controls. Moreover, most studies were based on anecdotal observations and not quantitative methods of analysis.

This studied examined the true learning improvements attributed to the flipped classroom method. The results indicate that flipping the classroom did improve the test scores for 14% of the students and 88% of the students self-reported that the flipped classroom resulted in more effective learning. However, overall class test scores did not support that flipping the classroom improved the entire class. In fact, 81.5% of the students showed no significant improvement and 3.7% showed lower test scores using the flipped classroom method.

The flipped classroom does have the benefit of increasing time on task for the student by using technology to increase learning time outside the classroom. However, this technique is only effective because students spend more time learning the material. Any method that gives more time to learn the material will result in increased learning. The true value of the flipped classroom appears to be not in the method but in the use of technology to increase the time students spend learning.

INTRODUCTION

"Flipping the classroom" are the latest buzzwords in academics from K-12 to college teaching. Flipping the classroom is where instruction is moved outside the classroom giving time in the class to increase the depth of learning. The current technique is to place resources online, such as video lectures, allowing the student to learn the material before entering the classroom. The classroom time is now spent working with the students and answering questions to further student knowledge.

There are repeated claims that this technique improved student learning at all levels. However, an examination of peer reviewed research articles shows no empirical support for these claims. Moreover, the results claimed in non-peer reviewed articles are suspicious because the research data is undocumented and only descriptive statistics were reported.

This paper examines the effectiveness of flipping the classroom on a freshman college class under controlled conditions using a paired sampling technique. Through controlled standardized testing, the learning results of flipping the classroom are properly evaluated.

LITERATURE REVIEW

Although flipping the classroom may have taken place in similar forms, the first published article on flipping the classroom using modern techniques of online videos was in 2002 (Foertsch, Moses, Strikwerda, & Litzkow, 2002). In the study, online videos and accompanying material replaced traditional lectures. Lecture time was used for interactive discussion and problem solving. Students self reported liking the learning method better than the large traditional lecture classroom setting. However, no research was done on whether this improved student learning.

The Khan Academy in 2006 progressed the idea of moving learning outside the classroom by founding a non-profit educational website that offered 4,000 micro lectures on various academic subjects (Khan Academy, 2013). The venture was funded by the Gates Foundation to make education more available to the public through online resources. Although the Khan Academy does not offer the flipped classroom teaching, the Khan videos were the basis of many flipped classroom experiments that later developed. With the flipped learning method developing, Strayer (2007), examined how students felt about the new learning environment. In his dissertation, Strayer surveyed college level students in statistics courses at Ohio State University. Although Strayer found students were uncomfortable with the learn methods, Strayer never examined whether student learning increased using the flipped classroom method.

In 2012, the research on flipping the classroom took off, mostly due to the work of Bergmann and Sams in their journal article "Before you flip consider this" and their book, Flip Your Classroom. The journal article detailed the history of flipping the classroom and gave guidelines for academics on how they could use this technique (Bergmann & Sams, Before you flip, consider this, 2012). A full-length book followed up the journal article giving examples of the flip technique (Bergmann & Sams, Flip Your Classroom, 2012). The articles and book gave detailed instructions to implement a flipped classroom and why flipping would improve student learning. The specific reasons given for flipping the classroom are: students don't feel classroom time is being dumbed down, the digital world changed how students learn, students are becoming multitaskers, increased student-teacher interaction, increased student-to-student interaction, increased studentto-world interaction, students can work ahead or at own pace, instruction time is flexible to fit into student's schedule and when student is most alert, gives instructor more one-on-one time with struggling students, aids special needs students by allowing repetition of lecture or slowing of lecture, allows instructors to cover more material in class, leverages technology to increase student interaction or active learning, allows teachers to get to know students better, allows students of different abilities to learn in the same class, aids in classroom management, allows parents to help and monitor student activity, and aids students who miss classes due to illness or other factors (Bergmann & Sams, Flip Your Classroom, 2012).

Brunsell (2011), verified some of Bergmann and Sams work finding that flipping his chemistry class increased one-on-one interaction and student learning. However, Brunsell's work relied on anecdotal observation and not quantitative methods of analysis. In 2012, Berrett described the process of flipping the classroom and reported that it increases interactive learning, group work and peer instruction. However, he provided no research to confirm his statements.

From 2010-2012, there were a number of articles that reported on personal experiences with flipping the classroom. Alvarez (2010), described its use in high school physics courses. Ogurek (2010), used an early Dunn and Dunn learning style model in elementary school classes. Corbyn (2012), used MOOC (Massive Open Online Courses) as the out of class online lectures. Stephens (2012), used social media to supplement out of class learning. In addition, Semple (2013), examined teaching library science in a flipped version. However, none of these works analyzed if student learning increased because of using this new method.

It seemed that flipping the classroom was generating its own buzz in learning journals. Both the Economist (Flipping the Classroom, 2011) and Phi Delta Kappan (Flipping Classrooms, 2011) magazines did short stories about the techniques. The magazines touted this as the new and upcoming method of learning but provided little supporting evidence of its effectiveness.

The teaching website www.techlearning.com attempted to quantify the impact that flipping the classroom had on teachers and students through an online survey. Their self reported results indicated that teacher job satisfaction improved by 88%, student satisfaction improved by 80% and 67% of students reported better test scores (What Do Teachers Who've Flipped Their Classrooms Have to Report, 2012). However, no data or testing procedures were provided in the one page graphic summary of the results they published.

All this hype appears to be based on one research study that showed student learning increased in a flipped classroom. The study is Fulton's (2012) journal article on "The Flipped Classroom: Transforming Education at Byron High School." A review of this study showed a serious fault in controlling related variables. In 2010, Byron High School was trying to increase student scores on standardized exams without increasing cost to the school. The teachers flipped the classroom and developed online instructional videos for students to watch before class. Then during class, teachers did more one-on-one problem solving. The results reported a 9.8% increase in calculus scores, a 6.1% increase in precalculus scores and a 5.1% increase in algebra scores. In addition, end of grade State math competency scores increased from 29.9% to 65.6% using the flipped classroom (Fulton, The Flipped Classroom: Transforming Education at Byron High School, 2012). On the surface, these results seem remarkable. However, there was also a change in textbooks at the time. Before the flipped classroom experiment, teachers complained the math textbooks being used were outdated and did not contain the material that the State exam tested. When the teachers created the instructional videos, they based the instruction on the material that was on the State exam and not what was in the outdated textbook. Therefore, one group used outdated textbooks that did not cover the material being tested. The other group used the online instruction tailored to the exam questions. This major

change in instructional quality is not accounted for in the research. One is left wondering if the improvement was due to better instructional material or the teaching technique of flipping the classroom.

The Fulton study is also suspect because it did not use any analysis technique in reporting the results. The results were reported as simple descriptive statistics of class means. However, an examination of the available data indicates wide variances within the control and test groups. The mean scores varied over time and the control and test group results crossed at several points. This wide swing in variance would probably cause a t-test of means to be insignificant.

The literature review strongly indicates that no real research has been done to verify that flipping the classroom increases student learning. Most articles only describe the experience or are reprints. This has lead to a split opinion in academia if this technique is beneficial to student learning. Some critics attacked the technique on several fronts to include the digital divide issue that students do not have necessary access at home and that increasing the school workload at homework negatively affect the student and family time (Nielsen, 2012). Based on the conflict and lack of literature support, it is important to empirically examine if flipping the classroom increases student learning.

METHODOLOGY

Increased learning from flipping the classroom takes place in two main areas, the pre-class work where students view online videos and material and the advanced in-class work that furthers the understanding of the material. The preclass learning is similar to any online program available. Therefore, the added learning, espoused in the flipped method, occurs during the advanced in-class time.

To accurately measure the increase in learning taking place in class, a pre and post-test technique is used. Starting three days before the class, students can access the Blackboard online learning system and view videos and online material at their own pace. In addition, the textbook material is always available for the student. Within that three-day period, the students take a standardized exam on the material at a time of their choosing. The students then attend the in-class learning session. In the two-hour class, a short (10-minute) overview of the key material is given. Students then work in groups to address the advanced application of the material. This is done through group work, simulations, case studies and problem sets. The instructor works with groups and individuals one-on-one to answer questions and direct learning to key objectives. Selected groups then present their work to the class for open class discussion defending their optimal solutions. Class size was kept small $(n=3\emptyset)$ to allow the instructor enough interaction time. Within three days after the in-class time, the student takes a standardized posttest on the material. Figure 1 represents the study process.

To neutralize grading bias, the pre and post-test are multiple-choice questions taken randomly from the book publishers test bank. Analysis of the results is done using multiple sources of measure. For quantitative results and to analyze overall success, the class mean of the pre and post-tests are analyzed using a paired two-sample means t-test. Further breakdown of the results examine each in-



dividual student's pre and post-tests using the same-paired two-sample means t-test. This yields the percentage of students who showed increased learning from the flipped classroom technique. Qualitative results are obtained using two sources. Instructor observations are the first source. During the in-class time, the instructor observes learning demonstrated by the students. Secondly, students were given an end of class survey asking to rate the class, learning style and knowledge acquired. The survey contains both numerically scored and open ended questions to gain further insights.

RESULTS AND ANALYSIS

The total number of students who completed the study was 27. The study contained 21 pre and 21 post-tests giving 567 control data points and 567 testing data points for the paired sample testing. Each lesson module correlated with one chapter of the course textbook, which averaged approximately 20 pages of material in the freshman level marketing field. The course length was 11 weeks with two, two-hour class meetings per week for a total of 44 hours of in-class flipped instruction. Table 1 lists the results for the individual students and Table 2 is a summary of class results.

The results indicate that 14.8% of the students showed significant knowledge gains from the flipped classroom instruction and 81.5% showed no significant improvement. There was even one student that showed a significant decrease in performance from the flipped classroom.

The overall class mean increased by 1.48 percentage points but the increase was not significant at the 0.05 level.

Observation by the instructor indicated the following: students were better prepared to discuss material in class, students appeared to show deeper understanding of the material based on their verbal discussions of the topic, and groups presented and defended case solutions better than previous classes not using a flipped classroom.

Open ended questions on the student survey indicated that 88% of the students felt the flipped classroom was a more effective learning style. Students cited an increased interest in learning, more in-class interaction and class projects that resulted in a deeper understanding of the material.

The student survey contained eight critical questions to access how a flipped classroom affected the student. Scoring for the Likert scale responses were compared to previous sores for this class and the instructor. Table 3 examines the eight questions and if the flipped classroom scored better or worse than previous non-flipped classroom courses.

TABLE 1 SUMMARY OF INDIVIDUAL RESULTS						
Student	Pre-Test Mean	Post-Test Mean	Mean Improvement	t-test Significance		
1	76.75	81.00	4.25	Ø.158		
2	74.00	80.53	6.53*	Ø.Ø37		
3	69.25	66.5Ø	-2.75	Ø.226		
4	50.42	50.53	Ø.11	Ø.494		
5	69.33	67.78	-1.56	Ø.362		
6	82.75	87.38	4.63	Ø.229		
7	75.50	80.24	4.74	0.079		
8	80.00	74.72	-5.28*	0.045		
9	74.75	78.33	3.58	Ø.141		
1Ø	65.25	71.50	6.25	Ø.Ø58		
11	77.50	79.71	2.21	0.307		
12	33.00	33.57	Ø.57	Ø.463		
13	82.69	68.42	-14.27	0.063		
14	81.67	78.81	-2.86	Ø.2Ø4		
15	75.75	72.86	-2.89	Ø.196		
16	74.00	77.14	3.14	Ø.12Ø		
17	68.53	75.48	6.95*	0.047		
18	73.75	70.24	-3.51	Ø.247		
19	58.75	66.67	7.92*	0.045		
2Ø	78.24	77.22	-1.01	Ø.425		
21	61.92	59.00	-2.92	0.320		
22	74.29	80.48	6.19	0.056		
23	77.00	77.62	Ø.62	Ø.416		
24	58.53	64.76	6.23	0.104		
25	76.84	78.33	1.49	Ø.319		
26	76.19	79.29	3.10	Ø.135		
27	78.57	86.94	8.37*	0.008		
Class Avg.	71.30	72.78	1.47	Ø.16Ø		
* Note: the increase is not significant at the 0.05 level.						

Student survey results showed increases in that the materials were presented in logical order, greater material availability and good use of class time. This is consistent with prior observations in the flipped classroom. However, student scores decreased in several areas.

TABLE 2 Summary of Class Results				
Overall Class Mean Score Increase	1.48 Percentage Points *			
Percentage of Students With Significant Mean Score Improvements	14.8%			
Percentage of Students with No Significant Mean Score Improvements	81.5%			
Percentage of Students With Significant Mean Score Declines	3.7%			
* indicates significant change in mean at th of significance	ne Ø.Ø5 level			

TABLE 3 STUDENT SURVEY RESULTS				
Question	Results for Flipped Classroom			
The course material was presented in a logical order.	10.0% increase			
The assigned readings helped me to learn the course material.	10.0% decrease			
The way the course was organized helped me to learn the material.	11.Ø% decrease			
The instructor presented a variety of activities that got me involved in learning.	9.0% decrease			
My scored on the exams, homework, and other graded assignments accurately reflected how much I actually learned.	14.0% decrease			
The exams, homework, and other graded assignments were fair.	4.Ø% decrease			
Materials for out-of-class learning activities were available when needed.	3.3% increase			
The instructor consistently made good use of the entire class period	10.5% increase			

Students' scores decreased by 10% on the usefulness of the reading material. This may be due to the students thinking this referred only to the textbook and not the available online material. Therefore, on the next survey a more specific question needs to be crafted to evaluate the usefulness of the online material since 45.5% of the students specifically mentioned that the online material was one of the key components in their learning. It is interesting that there was an 11% decline on student perception that the format of the flipped classroom did not help them learn the material when 88% of the students specifically mentioned that the flipped classroom was effective in increasing their understanding of the material. There seems to be a numeric disconnect between the students written comments and their numeric score they selected.

The key finding was that there was a 14% decrease in the student score that the testing used accurately measured what they learned and a 4% decline in test fairness scores. Although 70% of the final grade was measured using traditional multiple-choice exams, 30% of the grade was based on in-class presentations and project work.

CONCLUSION

Flipping the classroom did improve the test scores for 14% of the students and 88% of the students self-reported that the flipped classroom resulted in more effective learning. However, overall class testing scores do not support that flipping the classroom improved the entire class. In fact, 81.5% of the students showed no improvement and 3.7% showed lower test scores using the flipped classroom method.

There appears to be conflicting data between self-reported learning and actual measured learning taking place. One reason may be the standardized testing method that is commonly employed. Does standardized multiple choice testing accurately measure deeper learning? Although this is a question relevant to the study, it is beyond the scope of the research.

In general, the flipped classroom is not showing the significant increases in learning reported by the Byron High School study. Although flipping the classroom does work for some students, it does not appear to increase learning in all students as reported.

Although this was a small study and sample size is a concern, the testing method was tightly controlled to measure only the increases in learning from the flipped classroom and not the pre-work or additional out of class work required of the students. It makes logical sense, that any method that increases time spent learning would increase material understanding. It appears that the flipped classroom works by increasing the total time a student spends on the material. Therefore, the flipping the classroom method does not significantly increase learning but using technology to increase learning time does.

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The Global Links Program: Building Pedagogy in Social Entrepreneurship for Positive Impact in Iraq

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ABSTRACT

In this paper we offer a model that seeks to develop an entrepreneurial ecosystem as a portfolio approach to economic development through ongoing partnerships vs. one-off initiatives that may serve as a prototype for economic development in transitional economies. The model, developed by Tupperware Brands, Rollins College, and the U.S. Department of State Secretary of Global Women's Issues, known as the Global Links Program, connects partners in the United States and Iraq and rests on the principle that by improving the status of women through application of social entrepreneurship – in education and practice - nations will build a stronger, more self-sufficient economic system. To demonstrate how Global Links creates a self-sustaining system of economic entrepreneurship we focus on the educational initiatives and pedagogical development that will be required for the larger system to function efficiently and effectively. We conclude with propositions and a discussion of potential future research.

In 2009 the World Economic Forum (WEF) emphasized the importance of entrepreneurs, entrepreneurship, and entrepreneurial ecosystems in building strong national and global economies (Wilson, Mariotti, Rabuzzi, Vyakarnam, & Sepulveda, 2009). The report offered many important calls to action, including the need for a portfolio approach to economic development through ongoing partnerships vs. one-off initiatives. In developing an ecosystem and the critical educational initiatives necessary to build and maintain it, explicit roles for government, academic institutions, and business are specified.

In this paper we offer a model that seeks to develop such an ecosystem. The Global Links Program, developed by Tupperware Brands, Rollins College, and the U.S. Department of State Secretary of Global Women's Issues, embodies the spirit and mechanisms of the WEF ideas and may serve as a prototype for economic development in transitional economies. The program rests on the principle that by improving the status of women through application of social entrepreneurship – in education and practice–nations will build a stronger, more self-sufficient economic system. To demonstrate how Global Links creates a self-sustaining system of economic entrepreneurship we focus on the educational initiatives and pedagogical development that will be required for the larger system to function efficiently and effectively. To achieve this objective, we divide the paper into three sections. In the first section we set the context for the ecosystem by discussing Iraq as an economy rebuilding itself through a strong educational infrastructure with a fragile, newly emerging private sector. We emphasize the immediate need for a citizenry skilled in techniques, philosophies, and approaches that will be successful in a competitive global marketplace that also balance societal needs. Next, we describe current pedagogy of business education in Iraq based on the study of the Global Links education partner in Iraq, University of Babylon, College of Administration and Economics. In this section of the paper we focus on the need for pedagogical change in order to embrace a more entrepreneurial focus with particular attention to the tenets of social entrepreneurship. Having set the context for the Global Links Program, we continue by describing the Program and its potential to addresses the need for personal, organizational, and societal change to permanently

and positively influence women's lives through economic empowerment. Following these sections we develop a set of propositions for specific actions that the Global Links Scholar can pursue to develop the educational and community relationships necessary for an effective entrepreneurial ecosystem. Finally we conclude by outlining the action plan for the Global Links Scholar at her University in Iraq, including suggested measurements for the propositions. These suggestions form the basis of future research endeavors.

IRAQ: ADVANCING EDUCATIONAL STRENGTHS TO MEET ECONOMIC CHALLENGES

Today one is hard pressed to think of a nation more overrun with one-off initiatives and a lack of cooperation among key drivers of economic growth (i.e., academic institutions, private business, and government) than Iraq. Despite this instability in Iraq, the belief in education as a foundation for growth remains strong. Recently, Davis (2012) noted that most educators outside the Middle East are ill informed about Iraqi higher education policies, practices, and accomplishments. Based on his comprehensive assessment of business schools in Iraq, he concluded that the enormous demand outstrips the capacity of professors and current infrastructure. Furthermore, while the desire and energy to re-emerge as a premier education destination is evident in professors and the Ministry of Higher Education, much work must be done to improve classroom technology and advance teaching styles. Davis boldly states: "The existing pedagogical style is nearly entirely instructor-centered; our report recommends that schools adopt a more student-centered pedagogical approach" $(p.4\emptyset)$. This centralized structure is not only evident in higher education; the U.S. Department of Commerce concludes that "Iraq's transition from a centrally-run economy to a more market-oriented one has been slow and uneven" (U.S. Commercial Service, 2012, p.3). Both reports reason that despite strong projected economic growth over the next several years, there is an immediate need for leaders skilled in methods, attitudes, and skills that will be successful in a competitive, decentralized, global marketplace. In other words, to accomplish the projected economic improvements, a new equilibrium is needed with more holistic, sustainable methods based on engaged leaders and citizenry. In the next sections we review the current situation in the Iraqi economy in more detail and discuss education models currently used at the focal institution, University of Babylon, College of Administration and Economics.

Iraqi Economy

Iraq straddles the Tigris and Euphrates rivers with territory stretching from the Arabic Gulf to the Anti-Taurus Mountains. For those wishing to influence the Arab region, this strategic location has made the country an important political and economic entity throughout ancient and modern history. Various foreign rulers controlled the territory until Iraq became a republic in 1958. The Ba'ath (Renaissance) party came to power in 1968 and in 1972 consolidated ownership of the country's rich oil reserves, its primary export. Several wars within its borders (i.e., Kurdish independence), and with neighbors (e.g., Iran, Kuwait) and western powers (e.g., U. S., Great Britain) throughout the twentieth and into the twenty-first century have cumulatively devastated Iraq's economy. A complex political and economic landscape has come into being since the fall of Saddam Hussein in 2003. Experts concur that there is great potential on the horizon for the country though much work is needed to rebuild institutional frameworks necessary for development. (For more information see BBC Iraq Profile http://www.bbc.co.uk/ news/world-middle-east-14542954).

The oil sector continues to dominate Iraq's economy, currently providing an estimated 90% of foreign exchange earnings. Data from 2011 suggest the country's oil production averages about 2.5 million barrels per day, of which about 2.0 million barrels per day are exported (CIA World Factbook 2011); the Iraqi Government plans to dramatically increase production and export capacity over the next decade. The IMF and World Bank play a significant role in the Iraqi economy including the facilitation of funds pledged by various nations. In February 2010, the two agencies approved almost \$4 billion in support to Iraq, focusing on assisting the Iraqi Government to maintain macroeconomic stability and mitigate the country's vulnerability to external shocks due to volatility in global oil markets (CIA World Factbook 2011). A summary of statistics most relevant to the focus of this research are summarized in Table 1.

The Education System in Iraq

British rule and American influence blend together to form the current structure of the Iraqi education system. Each of the eighteen provinces of Iraq has its own director of education. The establishment of these directors was an important move toward decentralization of the general education system, with more power slowly being given to the provincial authorities. Iraq's compulsory education is parceled into primary (grades 1–6); intermediate (grades 7–9); secondary, both general and vocational schools (grades 10–12); and higher education. The national Coun-

TABLE 1 IRAQI POPULATION, ECONOMIC, AND EDUCATION STATISTICS				
Population	31,129,225 (2012 est.)			
Population Below Poverty Line	25% (2008 est.)			
Population growth rate	2.345% (2Ø12 est.)			
GDP– purchasing power parity	\$127.20 billion (2011 est.)			
GDP– real growth rate	9.6% (2011 est.)			
GDP per capita, PPP	\$3,562 (2010 est.)			
Corruption Perception Index	175 out of 183			
Ease of Doing Business Rankings	152 out of 181 (2008 figure)			
Freedom of the Press	144 out of 196			
Literacy (age 15+ can read/write)	78.2% of population 86% male 70.6% female (2010 est.)			
School Life Expectancy (total years of schooling -pri- mary to tertiary- a child can expect to receive)	Total population–10 years Male 11 years Female 8 years			

Note: data are in 2011 US dollars

Sources: CIA World Factbook (https://www.cia.gov/ library/publications/the-world-factbook/geos/iz.html), Global Edge (http://globaledge.msu.edu/Countries/ Iraq)

cil of Higher Education controls all twenty-two public universities and various affiliated institutes. Although the Ministry of Higher Education has recently recognized private colleges and universities, a national principle that all levels of education are free exists. Languages of instruction in universities predominantly include Arabic and English. The academic year runs from September to June and is broken into two semesters of equal length.

University admissions are centrally controlled and acceptance is highly competitive. Most bachelor's degrees take four years to complete though some highly-technical degrees require more time. Postgraduate study and Master's degrees are available in many disciplines throughout the country and PhD degrees can be earned in several universities across various fields. Grading, advancement and transfers between universities are highly regulated and centralized (Sikhi, 2008).

University of Babylon: College of Administration and Economics

The University of Babylon is located in the ancient city of Babylon, Iraq one of the most important archaeological areas in the world. As a state controlled university with 20 colleges and six research centers, it is built on a historical heritage of scientific inquiry reaching back to seventh century. University leaders constructed an educational mission to be pioneers in serving the community through high-quality scientific research with a vision of international cooperation. A self-conducted SWOT analysis (available on the University's website) reveals strengths in reputation, location, as well as breadth and depth of academic programs from bachelor to doctorate levels. While the university's main weakness relates to the incomplete infrastructure due to the ongoing conflict, faculty training also needs attention. In recognizing its weak relations with both the public and private sectors in Iraq and the global economic community, the administration seeks opportunities for faculty and student development.

While the University was founded in 1991, the College of Administration and Economics was established in 2005 with the departments of Industrial Management and Monetary / Financial Sciences. In 2012 the department of Industrial Management opened its first graduate-level program with students beginning in October of the same year. The college is relatively large, serving approximately 420 students (45% female) with twenty-nine faculty members. The mission of the college is the renewal and creativity in teaching styles through the development of scientific resources to respond to the important changes in different fields of scientific knowledge including administration and economics. This focus on creativity and adaptation to changes in the fields gave the college a framework to implement new pedagogy and community interface needed to build a strong entrepreneurial ecosystem. As such, when an opportunity presented itself for one of its leading professors in operations management and organizational change to participate in a program emphasizing social entrepreneurship theory and practice, support was offered. After receiving permission from Iraq's Ministry of Education for a one-year training program, arrangements were made for the inaugural Global Links Scholar to arrive in Orlando. Arrival and program kick-off was set for January 2012.

PEDAGOGY DEVELOPMENT FOR SOCIAL ENTREPRENEURSHIP IN IRAQ

The November 2011 USAID (2011) report concludes that weak institutional capacities, limited benchmarking on best practices, and insufficient cross-section collaboration

(i.e., government-business-education) severely impede further economic development in Iraq. The agency calls for sustainable, innovative programs to galvanize eager, educated youth that can provide access to resources and enable scalability. One way to provide such replicable, credible initiatives is through an increased emphasis on entrepreneurial education within the colleges and universities currently rebuilding themselves in Iraq. In December 2011, three universities became members of Association to Advance Collegiate Schools of Business (AACSB International); the fact that entrepreneurship is taught at nearly every AACSB accredited school (Katz, 2003) coupled with the reality demanding innovation and creative solutions to system-wide problems leads one to conclude that entrepreneurial education is likely to grow in Iraqi higher-education institutions. In developing this new curriculum, administrators and faculty must develop both appropriate content and teaching methods to ensure the full development of Iraq's future workforce.

Educational Content

Currently, Iraqi education within business schools is blatantly oriented towards the "take-a-job" mentality (Kourilsky, 1995). Both the content and the instructor-center approach (H. J. Davis, 2012) convey an attitude that students careers will be working for the government (i.e., public sector) or a large business entity. Such approaches encourage a mindset where students see themselves "taking a job" that someone else has already created rather than developing an economic engine for creating jobs for themselves and others. Entrepreneurship education then is about developing both mindsets and skillsets.

Before discussing the educational aspects of entrepreneurship one must have consensus on meanings. The definitions of entrepreneur and entrepreneurship are as diverse as their application. Whether entrepreneurs are seen as agents of change (Schumpeter, 1975) or exploiters of change (Drucker, 1995) they are generally believed to relentlessly apply themselves to see and seize opportunities despite impending risk. To do so they must marshal and commit resources to pursue the identified opportunity and generally create and operate an organization to implement the opportunity (Sahlman & Stevenson, 1992). Such individuals and organizations exist within a context and pursue some desired outcome. Entrepreneurship education succeeds when it effectively address each area of entrepreneurship (opportunity recognition, marshaling of resources in presence of risk, and building an organizational venture (see Mueller & Goic, 2003)) while creating an understanding of environmental constraints and opportunities.

Kourilsky (1995) developed the entrepreneurship implementation and support pyramid model (Figure 1) to capture the individual, the mindset, and the context of entrepreneurship education. The initiator in the model represents the entrepreneurs themselves. These are the individuals who perceive and snatch opportunities while balancing the risk through tenacious application of divergent thinking. The pool of initiators within any given society is small though societal characteristics and education can increase their number and efficacy (Mueller & Conway Dato-on, 2008). As initiators move from idea to development stage they surround themselves with entrepreneurial thinkers who share the vision for solving the challenge and offer their resources to achieve the mutually desired outcome. Kourilsky (1995) labels this group as the development team. Both the initiators and the related development teams require support from the constituency (i.e., stakeholders) who, though not necessarily entrepreneurs themselves, appreciate their qualities and accomplishments. The constituency creates a supportive context (e.g., policies, infrastructure) within which entrepreneurs and their ventures can succeed. Taken together, the initiators, development teams, and constituencies comprise the main players in an entrepreneurial ecosystem.

Education is needed across all three levels of Kourilsky's (1995) pyramid. At the constituency level economic policies and free-market principles are covered. General organization principles of planning, leading, organizing, and controlling and their accompanying skillsets are taught in most business management curriculum thus encompassing the development team level competencies. The use of student-centered teaching techniques can facilitate understanding of teamwork necessary for success at this pyramid's mid-level. The key to nurturing entrepreneurs and reaping the benefits (i.e., job creation) entrepreneurial start-ups bring society result from effective teaching of initiator skills and mindsets (Kourilsky 1995). More recent research supports the claim that teaching entrepreneurship does positively impact societies. Nilsson (2012) found those who studied entrepreneurship are more likely to establish organizations, to form several organization, and to create larger organizations, all of which positively affect societal context in which entrepreneurial endeavors live and grow.

While teaching entrepreneurship in the business context is well established and researched, today's youth are looking for more than just an opportunity to make money. They want to align their hearts and their heads for greater impact; they want to work with purpose (Galinsky & Nuxoll, 2011). Taking this market-driven desire into consideration leading business schools began to look beyond traditional entrepreneurship to the rapidly growing field of social entrepreneurship. Recent research substantiates



the benefits derived by incorporating the study of social entrepreneurship in business curricula (Smith, Barr, Barbosa, & Kickul, 2008; Tracey & Phillips, 2007).

Social entrepreneurship, a relatively new but burgeoning field in academia (Short, Moss, & Lumpkin, 2009) – if not in practice–is defined by several scholars in unique, yet overlapping ways (S. Davis, 2002; Peredo & McLean, 2006). The key differentiating factor between traditional entrepreneurship and social entrepreneurship is the expectation the entrepreneur or initiator has from the outset. The social entrepreneur "neither anticipates nor organizes to create substantial financial profit for his or her investors Instead, the social entrepreneur aims for value in the form of large-scale transformational benefit that accrues either to a significant segment of society or to society at large" (Martin & Osberg, 2007, p. 34).

With the plethora of definitions in mind and the distinguishing factor between traditional and social entrepreneurs we converge on a demarcation of the concept. For the purpose of this paper, when discussing social entrepreneurship we emphasize the importance of creating and sustaining *social* value (Dees, 2001) while recognizing that creating *economic* value is critical to ensuring organizational and community sustainability (Mair & Marti, 2006). Incorporating these thoughts, we define social entrepreneurship as recognizing opportunities to solve societal problems by utilizing entrepreneurial concepts to create, organize and manage an enterprise, whether for-profit or not-for-profit, that improves society (Rowe & Conway Dato-on, 2012). At the heart of social entrepreneurship is the search for enduring solutions for societal problems, which calls for a climate conducive to collaboration. Such a climate is created through the development and maintenance of an entrepreneurial ecosystem with multiple stakeholders (Wilson, et al., 2009). Within this ecosystem government, corporations, non-governmental (i.e., nonprofit), and educational institutions all play critical roles.

Educational Methods

Having delineated definitions for key concepts in the entrepreneurial domain, described a model for teaching components of entrepreneurship, and highlighted recent trends in the study of social entrepreneurship we conclude the dialog of "what to teach" and "why it is important" and now turn to a discussion of "how to teach." In other words, how can universities – particularly business colleges – apply social entrepreneurship pedagogy to teach students entrepreneurial processes that address local needs based on asset mapping of their own community?

Pedagogy such as grounded learning (Schwarz, 1985), service learning (Bringle & Steinberg, 2010) and experiential learning (Kolb, 1984) have been found particularly effective to support entrepreneurial education initiatives. Each of these approaches shares the concept of "learning by doing," though the setting may differ. The four basic characteristics common to these approaches include: (1) real world experience, (2) learning transfer – from instructor to student and student to instructor as well as to-and-from university to community, (3) theory and practice integration, and (4) students taking responsibility for their own learning (Schwarz, 1985).

While a deep discussion of these pedagogies is beyond the scope of this paper, a few examples of how "learning by doing" has been successfully implemented at other business colleges seems appropriate. Conway Dato-on and Gassenheimer (2010) discuss positive results for students, professors, and community partners in their live class-based projects with local organizations. The authors outline specific methodology and learning outcomes for applying service-learning approaches to teach marketing management and market research while providing an excellent example of ecosystem development for continued networking among the essential partners in economic development (i.e., businesses, nonprofit organizations, and educational institutions).

Specific to the social entrepreneurship domain, Smith and colleagues (2008) explain the use of, Edun LIVE on Campus, as a "living" business that developed a partnership between the school and an existing social enterprise. The result "was the creation of a t-shirt business [on campus] which used shirts produced by Edun LIVE in sub-Saharan Africa through fair trade practices. As such, the students engaged in the real life experience of launching and developing a social venture from scratch" (Smith, et al., 2008, p. 346). Together these studies serve as models for developing sustainable, scalable partnerships that can lead to ecosystems of economic development that serve the needs of multiple stakeholders (i.e., students, universities, businesses, entrepreneurs, nonprofits, and society).

Recalling Davis' (2012) comments about the heavy reliance on instructor-centered pedagogy in Iraq, "learning by doing" pedagogies-adapted for culturally appropriate application - seem to offer methods by which learning and teaching can become more student-centered. A pedagogical model for such instruction can be found in the triangular model of quality community service depicted in Figure 2. This model emphasizes the integration and overlap of the elements of direct service, education, and reflection – all of which are new pedagogical approaches for Iraqi business schools. This new education model will move students away from rote memorization and encourage them to question the status quo – essential first steps in developing entrepreneurs. To implement these pedagogies educators and university administrators require training and benchmarking of successful endeavors in order to restructure and employ them within their own context. To assist in the development of this new education model and implement changes across Iraq, the Global Links Program was developed.

THE GLOBAL LINKS PROGRAM: EMPOWERING WOMEN THROUGH EDUCATION AND OPPORTUNITY

In January 2011, Tupperware Brands executives along with other leaders of industry visited Iraq as a part of a Task Force for Business and Stability Operations (TFB-SO) and Business Executives for National Security delegation. Tupperware Brands' leaders observed that as a previously centralized economy, Iraq did not have a smallto-medium enterprise (SME) sector or a robust entrepreneurial class. Believing that a peaceful and successful Iraq must cultivate a middle class and empower women, an underutilized human asset in the country, Tupperware Brands sought a solution through which a new ecosystem of on-going partnerships could be built. Based on the belief that educational institutions are a critical cog in this ecosystem and motivated by visits to Iraqi Universities, Tupperware Brands decided to sponsor a university professor to visit the United States in a year-long "learn and return" program. The professor would spend a majority of her time with the academic partner in the U.S. with a summer externship at Tupperware Brands. The "trainthe-trainer" idea was envisioned to provide the Iraqi professor the guidance and skills in order for her to return to Iraq to teach and empower other women (students, fellow faculty, and community partners) to contribute to the future of their country. The program's outcome would be a plan, developed by the professor in consultation with the U.S. university faculty mentor, for social entrepreneurship curricular and co-curricular activities and a careerdevelopment center based on the concept of "making" vs. "taking" a job (Kourilsky, 1995).

To enable the vision and build a sustainable solution, Tupperware Brands secured partnerships to combine resources and expertise. Trusted partners were needed both in Iraq and in the U.S. Since the initial visit in 2011 was sponsored by the U.S. government with the U.S. Department of State as a facilitator of many in-country arrangements, the Iraqi desk in the Department of State seemed like a logical, reliable partner to identify reputable Iraqi universities and screen applicants. In 2009, the Department of State's Secretary Hilary Clinton had developed an Office of Global Women's Issues (S/GWI) where the program found a strategic home. Under the leadership of U.S. Ambassador-at-Large for Global Women's Issues Melanne Verveer, the S/GWI "seeks to ensure that women's issues are fully integrated in the formulation and conduct of U.S. foreign policy. The Office of Global Women's Issues works to promote stability, peace, and development by empowering women politically, socially, and economically around the world" (http://www.state.gov/s/gwi/).



In searching for an academic partner in the U.S., Tupperware Brands' CEO turned to his local partner, Rollins College, Crummer Graduate School of Business. Rollins was an ideal partner both because of its location near Tupperware Brands' corporate headquarters in Orlando, FL and because the program aligned perfectly with the college's mission to "educate students for global citizenship and responsible leadership, empowering graduates to pursue meaningful lives and productive careers," with the guiding principles of "excellence, innovation, and community" (http://www.rollins.edu/why-rollins/mission.html). Furthermore, the Rollins MBA program was small, personal and motivated by its mission to "prepare students to be both managers and leaders who will add value to their organizations and communities" (http:// www.rollins.edu/mba/why-rollins/mission.html), with an excellent reputation for international business knowledge, faculty, and partnerships. The three partners joined together with the identified scholar at the University of Babylon College of Administration and Economics to form an ecosystem through which the pedagogical and larger system wide changes could be made.

PROPOSITIONS

Based on the preceding discussion of Iraq's educational and economic context along with pedagogies of entrepreneurship we develop the following propositions for actions to be taken in Iraq with the long-term goals of developing a robust entrepreneurial class that can cultivate a middle class and empower women to improve economic stability in the country. The focus is on women, an underutilized human asset in the country, due to the severe challenges faced by the estimated one million Iraqi war widows and female heads of households (Kramer, 2011) and research demonstrating that educational investment programs targeting women have a greater impact across communities (Prahalad, 2005; Schwartz, 2012). The lessons, experiences, and skills the Iraqi scholar learned through her year-long participation in the Global Links Program form the foundation of the propositions and serve as the continued support through which actions can be taken and goals completed.

- Proposition 1: The development of social entrepreneurship classes within Babylon University's College of Administration and Economics will increase the entrepreneurial self-efficacy and eventual entrepreneurial action of students who participate in the classes.
- Proposition 2: The use of "learning by doing" pedagogies in social entrepreneurship classes within Babylon University's College of Administration and Economics will increase student engagement and retention of key concepts.
- Proposition 3: The creation and delivery of career development skill seminars within Babylon University's College of Administration and Economics will improve preparedness of students for creation and acceptance of jobs in the private sector.
- Proposition 4: The Global Links Program will create an ecosystem that brings together Iraqi educators and students as partners with nonprofit organizations to implement educational opportunities that improve the economic situation of targeted female artisans/entrepreneurs.

NEW LEARNING AND PLAN OF ACTION UPON RETURN TO IRAQ

The Global Links Program produced change for all partners in the ecosystem: the scholar, Rollins College, and Tupperware Brands, with the latter two experiencing both organizational and individual growth. The following paragraphs cover the main outcomes and next steps for each of the partners.

The scholar gained insights into pedagogy, program development, and business practices that will be applied in Iraq both within Babylon University and its surrounding community. For example, the scholar plans to implement curricular changes within her class to incorporate active learning as outlined in the pedagogy section of this manuscript and pictured in Figures 1 and 2. Among these strategies the scholar believes team work, case study, engaged problem solving, role playing, group discussion, and cooperative student projects for selected community partners are most applicable to the College of Administration and Economics at Babylon University. These instructional strategies that the scholar seeks to mirror Davis' (2012) call for a more student-centered pedagogical approach and can improve many skills for students such as creativity, motivation, retention, and self-confidence. Such skills are essential for success in today's competitive, decentralized, global marketplace as well as to assist in building a vibrant private sector in Iraq.

Beyond the classroom, the scholar looks to connect with the community in two profound ways. First, based on her experience at Tupperware Brands she will pursue her own entrepreneurial skills with a new business model in the local female community through direct selling. This kind of job is flexible and does not require higher education but it will necessitate training women (sales force) about interpersonal skills in order to build confidence – here she sees an opportunity to create service learning projects for her students. As Tupperware Brands confidently states in its company credo "With confidence comes influence, with influence comes change." The scholar states her vision as "women learning from other women and being inspired to look inside themselves and find their own source of confidence." Moreover, this model is very applicable to Iraq because it enables women to work individually at home or together in safe places, provides them with market-driven skills training, and links them directly as a unified sales force. This business model can contribute to creating economic opportunity for Iraqi women and to advance business innovation in Iraq while reducing poverty and spurring economic growth.

The scholar has also built a network to connect her experience in the United States to an international nongovernmental organization (INGO) in Iraq, Women for Women International (WfWI). Upon returning to Iraq, she will serve as project partner with WfWI in response to the U.S. Department of State's Economic Support Fund proposal sponsored, in part, by the Tupperware Brands Global Links Program. As a partner, the scholar will select students who have been taught in the newly developed courses outlined above to travel to WfWI's training centers in Karbala and Baghdad to mentor groups of new participants in advanced business topics. Under her academic leadership, approximately 20-25 students per year from the University of Babylon College of Administration and Economics will serve as mentors and advisors to new project participants who wish to receive additional business coaching. Depending on the women's needs and interests, she may also engage student mentors from the University of Karbala and the University of Baghdad. These efforts to train and educate women to generate income and earn sustainable livelihoods will focus on Iraqi war widows and single female heads of households, numbering nearly two million, who continue to face severe social and economic exclusion (Iraq Ministry of women's Affairs, 2011). This initiative also strengthens the SME sector while helping build a robust entrepreneurial class.

Both Rollins College and Tupperware Brands have been fundamentally changed by this newly developed ecosystem social entrepreneurship. At Rollins, faculty and students alike gained through a deeper relationship with a leading corporate citizen, Tupperware Brands. The relationship will move into Global Links Program Phase Two with the intent to host students from the University of Babylon in the upcoming year. The selected students will work with Rollins MBA students to develop social enterprise business plans based on identified needs in Babylon's community. Tupperware Brands' leaders will serve as professional mentors to the teams to share a thorough understanding of appropriate, scalable business models based on peer-to-peer interface.

Additionally, preparations are being undertaken to standardize a Global Links Program blueprint to enable duplication across other private-public partnerships with different colleges and companies in various countries across the globe. The vision is to have new partners use the Rollins-Tupperware Brands partner platform to build their own Global Links Program in communities throughout the United States. Just as Tupperware Brands has successful grown its sales force to a global powerhouse, so it envisions growing the Global Links Program into a powerful movement for empowering women through economic development.

Finally, the Global Links Program addresses the World Economic Forum report (2009) by increasing the visibility and availability of entrepreneurial education and social entrepreneurial enterprises within an ecosystem that has the capacity to build Iraq into a stronger nation, economically and socially. The Program provides a model through which new, learner-centered pedagogies can be employed to teach social entrepreneurship and other business topics to students eager to move from rote learning to applicable skill in order to "make" their career (Kourilsky, 1995).

PROPOSED OUTCOME MEASUREMENT

The primary purpose of this paper was to demonstrate how the Global Links Program creates a self-sustaining system of economic entrepreneurship with a focus on the educational initiatives and pedagogical development that will be required for the larger system to function efficiently. The outcomes of the Program itself must wait until the Global Scholar returns to Iraq and institutes new curricular and co-curricular activities learned through participation in Global Links (i.e., the learn and return model). As such, while this paper serves to describe the pedagogical and social entrepreneurial foundations necessary to develop an inclusive ecosystem in Iraq, it also serves as a platform for future empirical studies based on the propositions offered. The following paragraphs offer suggestions for this future research.

TomeasureProposition1theGlobalLinksScholar,together with the Rollins College faculty mentor, will conduct survey research using measures of entrepreneurial self efficacy (Mueller & Conway Dato-on, 2008; Sequeira, Mueller, & McGee, 2007)Stephen L.</author><author>Conway Dato-on, Mary</author></authors></contributors><ti tles><title>Gender-Role Orientation As a Determinant Of Entrepreneurial Self-Efficacy</title><secondarytitle>Journal of Developmental Entrepreneurship</ secondary-title></titles><periodical><full-title>Journal Developmental Entrepreneurship</full-title></ of periodical><pages>3-20</pages><volume>13</ volume><number>1</number><dates><year>2008</ year></dates><urls></urls></record></Cite></End-Note> with students taking the newly developed social entrepreneurship classes and compare results to control groups from other classes offered at Babylon University's College of Administration and Economics.

Proposition 2 will be measured in two ways. First, student evaluations and feedback on the use of new pedagogies in classes will be gathered to ascertain participants' reactions. Second, comparisons of test results on key course topics will be made to determine if differences exists in retention across the different pedagogical approaches. We anticipate that students who joined the "learning by doing" classes will have better comprehension and retention than those engaged in traditional, teacher-centric classes.

The third proposition involves an entirely new class both in format and subject area. To date, no courses specifically covering career management skills or topics have been offered at Babylon University's College of Administration and Economics. As such, we will have no comparison basis for students who complete this class. To measure results of the class we will use student feedback tools and track student interviews and hiring results. Overtime we expect that those who successfully completed the course will have better results in terms of number of interviews, entrepreneurial endeavors, and job offers.

Proposition 4 deals with the creation of the ecosystem itself. The ongoing relationship between the University, WfWI, students, and artisans represents the ecosystem and measures must be developed to assess its effectiveness. Thus the final proposition will be measured using results derived from the planned project with Women for Women International (WfWI) and the Global Links Scholar. Process measures will include the number of WfWI female artisans partnered with students from classes at Babylon University's College of Administration and Economics as well as the length and nature of interactions between students and artisans. Outcomes to be evaluated in Proposition 4 include assessment tests given to artisans gauging their understanding of entrepreneurial topics covered in the partnership, changes in business operations post-interactions, comparative results in artisans' sales pre and post interaction, and increase in number of female artisans in the targeted regions.

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Using Laptop Computers in Class: A Student Motivation Perspective

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ABSTRACT

This study examined the reasons why students choose to take laptop computers into college classes. The model involved the individual student choice involving opportunity, ability and motivation. The resulting model demonstrated how some (primary) factors, such as effective learning, directly impact the laptop usage choice, and other factors indirectly impact the choice, such as Internet activity and access to information. This study found that most students choose to bring computers to class for sound educational reasons, which contradicts what many instructors believe to be true.

INTRODUCTION

Much research today has focused on whether laptop use in class furthers the goals of the course from the instructor's perspective [Straub, 2009]. In contrast, this study investigates the goals of the students as they choose to use a laptop in a class. Are students taking laptops to class to have something to do during a boring lecture or to keep in touch with friends via Facebook? Or are they taking laptops to class because they expect doing so will enhance their learning experience? This paper looks at this issue from the student motivation perspective.

CONCEPTUAL FRAMEWORK

Technology in today's classrooms is accepted as commonplace, as the number of universities and colleges utilizing technology continues to increase (Weaver et al., 2005; Wagner, 2005; Campbell et al., 2003). Much research has been done to demonstrate that technology in the classroom has a notable impact on learning, and adoption, and diffusion theories have been researched for many years. Looking at the research from the computer science framework, technology adoption has been widely studied and modeled using Technology Acceptance Model (TAM) and its extension Universal Technology Adoption and Use Theory (UTAUT) (Venkatesh et al., 2003). These models examined and compiled variables in academia when considering laptop requirements at a major university, TAM focused on perceived usefulness and perceived ease of use for the student and UTAUT factors in extrinsic motivators (Elwood et al., 2006).

Results of research involving teaching practices and pedagogies using laptops have claimed that increased studentcentered teaching, increased tool-based teaching, and increased amounts of meaningful uses of technology across a wide range of educational contexts were seen in conjunction with laptop implementation and professional development (Dawson et al., 2008; Skolnik et al., 2008; Baylor et al., 2002). An application of technology specific to a particular type of classroom setting (e.g. a macroeconomics course) and the subsequent pedagogical implications regarding active learning were found to be successful using laptops, tablet computers and clickers (Alexander, 2004; Campbell et al., 2003; Wagner, 2005; Demb et al., 2004; Ilacqua et al., 2007). Fried researched whether technology in and of itself is a help or hindrance in the academic learning process and the outcome of her work suggests the latter (Fried, 2008).

The question of whether technology, particularly mobile devices such as laptop computers, should be in the classroom has started to gather momentum (Bugeja, 2007; Fried, 2008; Young, 2009). Some schools require, or provide students with, laptop computers in order to promote their computer literacy (Rola, 2002; Olsen, 2001; Walters et al., 1998). An article in the Chronicle of Higher Education (Young, 2009) indicated that some faculty are moving rapidly to the other end of the spectrum and outlawing technology in their classrooms altogether. They noted the bombardment of students by external technologies and instead employ the Socratic discussion pedagogy, which has not been seen for years in some classrooms. Other schools leave it up to the student to choose whether to bring laptops to class.

Technology is a common element of the classroom experience, but research has shown that the impact made can be construed as positive or negative, depending upon the situation and environmental circumstances (Straub, 2009). Straub's compilation, analysis and synthesis, considers all prior research in this area and notes the limitation of many of these theories when applied in an academic setting. This paper looks beyond these issues and addresses Straub's question of why a student would choose to use technology in an academic setting.

What are the elements that influence the decision of some students to bring laptops to class? This question can be framed in the context of what motivates individuals to act. Managers are concerned with motivating people to perform at the highest possible levels to achieve the best results. In the field of management, motivation is thought to be the set of forces that causes people to engage in one behavior over an alternative behavior (Steers et al., 1996). The motivation can be extrinsic, where according to selfattribution theory, it is heuristically undesirable to look for internal causes for one's behavior, and instead reasons for engaging in activities are perceived and inferred from the environment, such as the instructor. (Bem, 1967) The motivation can also be intrinsic. According to the concept of personal causation, people are motivated to pursue activities when they must feel that they are the cause of their actions. (deCharms, 1968)

Some students may be motivated to use technology and consequently driven to bring laptops to class. What is it that prevents other students from using laptops in class? To investigate these sources of motivations, we proposed the following hypotheses:

Hypothesis 1: Students chose to bring laptops to class to enhance class related activities rather than to engage in Internet or other communication behaviors. Hypothesis 2: The instructor's acceptance and use of technology will be a primary factor that affects a student's choice to use a laptop in class.

Since the purpose of this study was to better understand why college students choose to use laptop computers during their classes, it specifically looked at the factors involved from the students' points of view. This project focused on the extent to which various factors lead to the students' motivation to use a laptop in the classroom. Although student self-reporting here suggests it may introduce possible bias into the study, student self-judgments may actually be more accurate in gathering these types of internal reasoning because they may include relevant and valid information that is not available to others (Funder, 1989). The belief that self-perceptions typically correspond with perceptions by others has also served as a theoretical basis for the use of self-reports as data in psychological research (Cheek, 1982; McCrae & Costa, 1989). Over-estimates are also more likely to be found if the self-assessments contribute to the student's grade in a course (Boud & Falchikov, 1989), where in the current study they do not.

Opportunity (environment) was defined as the extent to which students have access to laptop computers usable in class. In addition, issues of appropriate software as well as classroom accommodations and classroom technology were included. Ability was defined in terms of technology self-efficacy. Self-efficacy is defined as students' beliefs about their capabilities to accomplish a task (Bandura, 1997). Self-efficacy has been defined by many researchers to apply specifically to the use of computers in various venues. Motivation was defined as the students' desire or readiness to take laptop computers to class and to use it during the class sessions.

This research was designed to understand and identify the relationships between multiple components of motivation. A student might choose to bring a laptop to class to enhance his or her learning. However, another source of motivation might be the student's desire to maintain social connections with friends during the class sessions.

METHODOLOGIES AND FINDINGS

A survey questionnaire was used to collect the data for this study. The questionnaire was administered in multiple classes. The respondents were undergraduate and graduate students in a business school within a private midwestern university. The classes were selected because the researchers observed that many students brought laptop computers to classes and the instructors neither required nor prohibited their use in the classes. The survey questionnaire was constructed using question items to which respondents were asked to indicate level of agreement or disagreement on a seven-point Likert Scale. The items addressed the three elements of the study: opportunity, ability, and motivation. The dependent variable in this study is where respondents were asked to "estimate in how many class meetings you have used a laptop computer this semester." This will be subsequently referred to as Used in Class – UIC. The survey was administered during the eighth week of the semester with 393 students participating.

The research goal was to focus on discovering the motivation of respondents; therefore those who indicated that they had either low opportunity or low ability to bring a laptop to class were removed from the study by the researchers. This allowed for the focal point to stay on varying reasons of motivation that are not altered by those who may have a seemingly low level of motivation that is actually due to lack of opportunity or ability that restricts the student. Accordingly, a subset of the original dataset was used for analysis with only those respondents whose average opportunity score was a 7 out of 7 (identifying that they did in fact have access to a laptop that was available to be brought to class) and whose average ability score was a 6 out of 7 or higher (classifying them as high in the ability to know how to use the programs on their computer and how to access the university wireless internet). The items which were used to measure opportunity and ability are listed in Appendix A, along with their reliability coefficients, quantified as Cronbach's alphas (Cronbach, 1951). Both the opportunity and ability measures appeared reliable with alpha values well above the accepted Ø.7 standard (Santos, 1999). The final dataset used for analysis of motivation factors included 194 respondents. This data was analyzed via the Statistical Package for the Social Sciences (SPSS) 15 and AMOS version 19. Significance throughout the analysis was determined using an alpha = 0.05.

The demographic summary of the sample is shown in Table 1. A question regarding demographics was whether there were any relationships between demographic factors and laptop use in class. The null hypothesis is that there are no relationships. The alternative hypotheses are that one or more demographic variables influence the use of a laptop in a class. The results are shown in Table 2.

The results show that these demographic variables have no significant differences among their groups in terms of laptop usage. Since there are no significant differences present among any subgroup, the data will remain combined for all subsequent analysis. Analysis of the dataset obtained in this study involved various descriptive statistics, ANOVA, factor analysis, correlation analysis, and structural equation modeling.

The responses to the various items were analyzed using factor analysis in order to achieve data reduction. The results of which led to nine components, which are summarized below and itemized by question in Appendix B. The reliability coefficients, Cronbach's alphas, which are measures that test the extent to which multiple indicators for a latent variable or component belong together, are provided below for each component.

TABLE 1Survey Sample Demographics- OPP + ABILITY cases only, n=194									
Demographic	Category Number (%)								
C 1	Female	87	44.8						
Gender	Male	107	55.2						
	Freshman	14	7.2						
	Sophomore	24	12.4						
Education	Junior	68	35.1						
Level	Senior	45	23.2						
	Graduate	43	22.2						
	On- Campus	48	24.7						
Residential Status	Off- Campus	118	6Ø.8						
	At Home	28	14.4						

TABLE 2 LAPTOP USE – OPP + ABILITY CASES ONLY. N=194

				-	
Demographic	Category	Average times used	ANOVA F	Signif- icance	
Candan	Female	8.126	0.06	Ø.329	
Gender	Male	6.383	0.96		
	Freshman	6.143			
	Sophomore	3.333			
Education	Junior	5.574	2.13	0.079	
	Senior	11.089			
	Graduate	8.047			
Residential	On- Campus	4.792	1.86	Ø.159	
Status	Off- Campus	8.517	1.00		
	At Home	5.536			

- Effective Learning (alpha = .958)—consists of 14 items, examination of these suggests that all are part of what most would consider positive items regarding learning in the classroom. They include working with and organizing materials, communication with the instructor, elements of learning, and effective use of time.
- Internet Activity (alpha = .884)—consists of four items, all of which involve using the laptop in class to visit the Internet to do things not typically part of the classroom activity. These include reading email, communicating with others, and visiting web sites.
- Access to Information (alpha = .897)—includes three items, which involve information searching, accessing, and processing.
- Embarrassment (alpha = .785)—includes three items, which involve the student's perception should something go wrong or should others be watching.
- Instructor (alpha = .702)—consists of four items, all of which involve the students' classroom instructors. Elements include permission to use, encouragement to use, and instructor use of the technology.
- Expectations (alpha = .633)—consists of three items, these involve others, friends, parents/family, and the school, and the norm for using a laptop in class.
- Distraction (alpha = .787)—consists of three items, which include an assessment of distraction for the student, the instructor, or a classmate.
- Network Issues (alpha = .798)—includes only two items, both of which deal with risk and reliability of using networks in the classroom.
- Laptop Loss (alpha = .713)—includes only two items, both of which involve risk of loss of the laptop due to damage or theft.

One component, Expectations, had an alpha lower than preferred, but it was not unexpected with only three factor items. It also met the requirements of the loading levels set forth by Hair et al. who call loadings above .6 "high" and those below .4 "low" (Hair et al., 1998). The alpha was not improved by any item's deletion, so we included all items.

Component variables as the averages of the individual items in each component were then created. A correlation matrix, showing the strength and direction of the correlations between these nine components and the dependent variable of UIC, were created. These correlations are shown below in Table 3. It can be seen from this table that there were a number of significant relationships that existed between the components and UIC as expressed by the correlation values shown. Several expected correlations were evident. For example, the correlation between UIC and Embarrassment was negative. It is expected that if the anticipated outcome of using a laptop in class would be embarrassment, that students would be less likely to use a laptop in class. The components typically considered objectionable by an instructor (engaging in Internet Activity during class to email or visit web sites and causing a Distraction for themselves or others) have significant negative correlations with UIC and with Effective Learning.

Effective Learning also had significantly positive strong correlations with Access to Information, Expectations, and Used in Class. Access to Information implies that when students feel they have increased information available, they will have a raised level of organization and will be able to effectively use their time in a way that will maximize learning. Expectations leads us to see that when others encourage the student to bring their laptop to class, they believe that these outside persons have the expectation that this will lead to Effective Learning, thus the student does as well. Effective Learning had a strong positive relationship to the frequency with which the student used a laptop In Class. When their beliefs are strong that the laptop will better their ability to locate, organize, and process the information that is presented in class, they are more likely to bring the laptop.

Our final analysis was to look at how all of the components come together to predict Used In Class (UIC). Structural Equation Modeling (SEM) was done to predict classroom laptop usage through a structural model that maps out the relationships between the nine latent variables that were identified using factor analysis and the Ability component (Kline, 2005). The benefit of structural equation modeling was that it could incorporate more complex relationships than ordinary regression and that individual variables could act as independent (or exogenous) and dependent (or endogenous) variables simultaneously. These structural equations are designed to represent all causal relationships among the variables in the model. Maximum likelihood estimates are arrived at through an iterative procedure that attempts to maximize the likelihood that values of the criterion variable will be correctly predicted. Unlike ordinary least squares (OLS), SEM also could account for non-causal covariance between exogenous variables. The fact that the interaction of two normally distributed variables is often itself not normally distributed causes problems in most estimation methods that have normality as a basic distributional assumption, such as maximum likelihood, which we are using in SEM (Schumacker et al, 1995). Although interaction terms are therefore not modeled in our equations, the model did take into account all mediation effects between any variables that may be present. This mediation allowed for more causal relationships between variables than OLS and it captured the total effects of one variable on another

TABLE 3 CORRELATIONS AND DESCRIPTIVE STATISTICS – OPP + ABILITY CASES ONLY, N=194										
	UIC	LEARN	INT	INFO	EMB	INST	EXP	DIST	NET	LOSS
Used in Class (UIC)										
Motivation Constructs		_								
Effective Learning (LEARN)	.379ª		_							
Internet Activity (INTACT)	185 ª	338ª								
Access to Information (INFO)	.161 ^b	.478 ª	.Ø58							
Embarrassment (EMB)	151 ^b	127 °	.295ª	069						
Instructor (INST)	.Ø55	.023	.059	115	Ø13					
Expectations (EXP)	.134°	.472ª	054	.268ª	097	.294ª				
Distraction (DIST)	3Ø1ª	557 ª	.388ª	236ª	.426ª	Ø31	229ª			
Network Issues (NET)	158 ^b	152 ^b	.194ª	127 °	.294ª	105	057	.289ª		
Loss of Laptop (LOSS)	179 ^b	209ª	.247ª	117	.431 ª	041	093	.399ª	.348ª	
Mean	7.16	4.77	4.89	6.25	2.52	4.80	3.36	3.49	2.51	2.34
Std. Deviation	12.34	1.30	1.56	1.Ø1	1.34	1.01	1.22	1.53	1.48	1.41
^a p<0.01; ^b p<0.05; ^c p<0.10.										

through any possible direct or indirect effects that may occur.

The final structural model shown was built by starting with all direct effects in the original model, model trimming by removing insignificant paths, then model building by adding any recommended paths from modification indices, changing only one parameter at a time. Modification indices are statistics that recommend path arrows that are absent from the model that would lead to better model fit by reducing the Chi-square. Maximum likelihood estimation was used to produce the standardized coefficient estimates, with similar interpretations as regression coefficients, for each path in the model. Total effects are found by adding together a factor's direct and indirect effects that contribute to an endogenous variable. As an example, in our model, let's suppose that we wanted to compute the total effect that Access Information has on Effective Learning (see Figure 1):

We see that some of these equations must be solved and their values substituted into other formulas to resolve the

Figure 1 An Example of the Model

Direct Effect: AccessInfor> EffectiveLearn = Ø.33
Indirect Effects: AccessInfor> Distraction> EffectiveLearn = $(26)^{*}(32) = \emptyset.\emptyset8$
AccessInfor> Distraction> Expectations> EffectiveLearn = $(26)^{*}(16)^{*}(.30) = 0.01$
AccessInfor> Expectations> EffectiveLearn = $(.27)^*(.30) = 0.08$
Total Effect: $0.33 + 0.08 + 0.01 + 0.08 = 0.50$
In addition, if we wanted to write out the structural equations that would create UIC, they would look like this:
UIC = Ø.38*(EffectiveLearn)
$EffectiveLearn = \emptyset.33^*(AccessInfor) - \emptyset.32^*(Distraction) + \emptyset.30^*(Expectations) - \emptyset.21^*(InternetAct) + \emptyset.30^*(Expectations) + \emptyset.30^*(Expectat$
$Distraction = -\emptyset.26^{*}(AccessInfo) + \emptyset.4\emptyset^{*}(InternetAct)$
$Expectations = -\emptyset.16^{*}(Distraction) + \emptyset.27^{*}(AccessInfor) + \emptyset.32^{*}(Instructor)$

complete picture of the effect that individual variables have and then proceed with sequential substitution until we end with UIC.

The final model was evaluated using multiple goodnessof-fit statistics to ensure good fit. Chi-square is a measure of discrepancy in SEM and thus good model fit is illustrated when the p-value is high (above Ø.Ø5) (Kline, 2005). The p-value for the Chi-square of our model was Ø.27, indicating good model fit. The comparative fit index (CFI) compares the existing model fit with a null model which assumes the variables in the model are uncorrelated. The CFI ranges from \emptyset to 1 and a value greater than \emptyset .9 implies excellent model fit (Bentler et al., 1987). The CFI for our model was Ø.989, indicating excellent model fit for the variables shown. Root mean square error of approximation (RMSEA) is a discrepancy measure per degree of freedom that does not require comparison with a null model. Good model fit is indicated when RMSEA is less than or equal to Ø.05 (Schumacker et al, 2004). The RM-SEA for the existing model was Ø.Ø26, indicating that the amount of error present was quite small.

We begin with a few noteworthy attributes of the resulting model shown in Figure 1. First, the only motivation component that is directly related to UIC was Effective Learning. This relationship was positive, as expected. This supported our first hypothesis that students bring laptops to class for the goal of accomplishing class related activities, Effective Learning, and not to engage in Internet or other communication behaviors. This will be discussed further below, as well as a probe of other components of the motivations to this behavior.

The second significant feature of the model was the relationship between Effective Learning and four other components. When Effective Learning was considered as a dependent variable, it was discovered that other components had strong relationships with this dependent, or endogenous, variable. Access to Information, Distraction, Expectations, and Internet Activity all have significant relationships with Effective Learning as shown. Access to Information and Expectations were both positive. Not surprisingly, the components Distraction and Internet Activity were both negative.



This result suggested that four components, Access to Information, Distraction, Expectations, and Internet Activity, do not directly relate to UIC, but rather they appear to relate indirectly to UIC through their relationship with Effective Learning. For example, students reporting higher Internet Activity would be students reporting lower Effective Learning, which would, in turn, lower the likelihood of taking and using a laptop in class. Students reporting higher Distraction would be students reporting lower Effective Learning, which would, in turn, lower the likelihood of taking and using a laptop in class. In the same way, students reporting higher Access to Information and Expectations would report higher Effective Learning and an increased likelihood of taking and using a laptop in class.

Looking at Embarrassment, we see that Laptop Loss and Distraction had direct relationships with it. Both had the expected positive relationship, indicating that the more likely the student was to be either experiencing or causing a distraction during class or likely to lose their laptop, the more likely they are to feel embarrassed. However, Embarrassment does not have a direct relationship with UIC, neither do Laptop Loss or Distraction. Neither Laptop Loss nor Embarrassment has any effect, direct or indirect, with UIC. This implies that the student's perceived embarrassment due to other students' judgment is minimal. Distraction also had only an indirect effect on UIC through its negative effect on Effective Learning.

The final aspect of the model in Figure 2 to be discussed is in regards to our second hypothesis, the Instructor component. Notice that this component only connected to the model through a relationship with Expectations, which is positive. During the analysis, we were struck with the fact that Instructor seemed not to have any direct significant relationship with UIC, Effective Learning, or with any other components. Rather, the values show a positive impact on Expectations, which in turn positively impacts Effective Learning, which finally positively impacts UIC. These results show partial support for our second hypothesis that the Instructor's usage of technology and perceived desire for students to use technology will be a factor that affects students using laptops in class. The Instructor effect was felt upon the students through their perceived external Expectations which can increase their desire to achieve Effective Learning and thus bring their laptop to class. This Instructor effect was merely felt by UIC in an indirect and not a direct way.

The R-squared values are shown in Figure 2 for endogenous variables in the model. These R-squared values represent the proportion of variance that is being explained for that variable by our model. Although the model was found to be significant, only 15% of the variation in UIC is being

explained by our model. This implies that there may be additional variables that affect whether a student brings a laptop to class that are not currently being considered. Understanding these additional variables will be a focus of future research. We do see a high level of explained variation for Effective Learning using our model through its high R-square value of Ø.57. This shows that the survey questions and subsequent components chosen are successful at encompassing the attributes that are present in this Effective Learning variable. It is noted here that an index labeled AIC (Akaike's Information Criterion) was used to compare various models' goodness of fit. The model with the lowest AIC value is considered to have the best fit (Burnham et al., 1998). Our model, with Instructor in the front of the structural model, was chosen because it has an AIC of 98.862; other plausible models with the effect of Instructor expressed in varying locations all had higher AIC values, such as 108.311 and 110.375.

Conclusions

This study found that, when viewed from the student's perspective, instructor behavior seems not to be the primary driver in the student's decision to bring a laptop for use in class. The students in this study appear to have been motivated more by their own drive to achieve effective learning habits during the class period and any components that would enable that goal to be accomplished. They saw the usefulness of the laptop as enhancing their own participation in the course. As instructors, perhaps providing tips on how to incorporate their technology to enhance their in-class learning, would further serve to encourage the students to maximize their effective learning potential.

One possible limitation to the current study is that it surveyed only students within a college of business and thus would not be representative of the college student population as a whole. Further study may benefit from focusing on whether different pedagogies or instructor motivators might further impact, either positively or negatively, laptop use in class from the student's perspective. Another area to study further would be laptop loss and networking issues as these relate to the Embarrassment component and whether there are issues not currently investigated related to these topics that would in fact negatively impact laptop use in class.

These results have revealed that motivations of students to bring the computer to class include personal preference, wanting to take notes on the computer, looking up information on specific material, and the like. Students seem not to be motivated by a desire to access social functions that would be a distraction to the class. That is, many students choose to bring computers to class for sound educational reasons, which contradict what many instructors believe to be true.

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APPENDIX A

Opportunity – Alpha =.901

- I have access to a laptop computer that I can take to my classes.
- I have software on my laptop computer that I could use during my classes.

Ability – Alpha = .874

- I feel confident that I could better record information during a class using a laptop computer.
- I feel confident setting up and using a laptop computer during a class.
- I feel confident using the networking facilities in a classroom to connect a laptop.
- I feel confident choosing the appropriate software to use on a laptop during a class.
- I feel confident using a laptop to connect to the Blackboard system during a class.
- I feel confident using a laptop to download and/or access class materials during a class.
- I feel confident using Microsoft Word to record notes of a class discussion.
- I feel confident using Microsoft PowerPoint to follow a class presentation.
- I feel confident using Microsoft PowerPoint to record notes of a class discussion.
- I feel confident using Microsoft Excel to follow a class presentation.

APPENDIX B

Effective Learning – Alpha = .958

- Using a laptop computer during a class would allow me to more easily locate relevant materials.
- Using a laptop computer during a class would allow me to more easily use relevant materials.
- Using a laptop computer during a class would allow me to better capture all of the information presented.
- Using a laptop computer during a class would allow me to better process the information presented.

- Using a laptop computer during a class would allow me to better summarize the most important information presented.
- Using a laptop computer during a class would allow me to better communicate with the instructor.
- Using a laptop computer during a class would enhance my learning of the subject matter of the class.
- Using a laptop computer during classes would enhance my learning in general.
- Using a laptop computer during classes would improve my problem solving skills.
- Using a laptop computer during classes would improve my critical thinking skills.
- Using a laptop computer during classes would improve my analysis skills.
- Using a laptop computer during a class would allow me to better organize and process information.
- Using a laptop computer during a class would give me an opportunity to better participate in the class.
- Using a laptop computer during a class would allow me to better use my time to get everything done.

Internet Activity – Alpha = .884

- If I used a laptop computer during a class, I would be likely to read email messages.
- If I used a laptop computer during a class, I would be likely to create and send email messages.
- If I used a laptop computer during a class, I would be likely to visit one or more web sites.
- If I used a laptop computer during a class, I would be likely to exchange text messages with others.

Access to Information – Alpha = .897

- Using a laptop computer during a class would give me access to more information.
- Using a laptop computer during a class would give me easier access to information.
- Using a laptop computer during a class would allow me to more quickly search for information.

Embarrassment – Alpha = .785

• Using a laptop computer during a class would be embarrassing if something were to go wrong.

- Using a laptop computer during a class would be embarrassing if another student were to see what was on my screen.
- Using a laptop computer during a class would be difficult because of other students watching me.

Instructor – Alpha = .702

- My instructors allow students to use a laptop during class.
- My instructors encourage students to use a laptop during class.
- My instructors are adept in the utilization of information technology in their classes.
- My instructors integrate information technology into their courses.

Expectations – Alpha = .633

- Many of my friends use their laptop computers during a class.
- My parents and/or family expect me to use a laptop during class.
- My university, college, or school encourages the use of laptop computers during a class.

Distraction – Alpha = .787

- I feel that my using a laptop in a class would be a distraction for me personally.
- I feel that my using a laptop in a class would be a distraction for other students in the class.
- I feel that my using a laptop in a class would be a distraction for the instructor

Network Issues – Alpha = .798

- I feel that network connections available in classrooms are risky to use.
- I feel that network connections available in classrooms are not reliable.

Laptop Loss – Alpha = .713

- I feel that I could damage or lose track of a laptop if I took one to a class.
- I feel that someone could steal a laptop from me if I took one to class.

JOINT CONFERENCE May 21st, 22nd and 23rd 2014 in Nashville, TN at the Holiday Inn Vanderbilt

Academic Business World International Conference (ABWIC.org)

The aim of Academic Business World is to promote inclusiveness in research by offering a forum for the discussion of research in early stages as well as research that may differ from 'traditional' paradigms. We wish our conferences to have a reputation for providing a peer-reviewed venue that is open to the full range of researchers in business as well as reference disciplines within the social sciences.

Business Disciplines

We encourage the submission of manuscripts, presentation outlines, and abstracts pertaining to any business or related discipline topic. We believe that all disciplines are interrelated and that looking at our disciplines and how they relate to each other is preferable to focusing only on our individual 'silos of knowledge'. The ideal presentation would cross discipline. borders so as to be more relevant than a topic only of interest to a small subset of a single discipline. Of course, single domain topics are needed as well.

Conferences

Academic Business World (ABW) sponsors an annual international conference for the exchange of research ideas and practices within the traditional business disciplines. The aim of each Academic Business World conference is to provide a forum for the discussion of research within business and reference disciplines in the social sciences. A secondary but important objective of the conference is to encourage the cross pollination of disciplines by bringing together professors, from multiple countries and disciplines, for social and intellectual interaction.

International Conference on Learning and Administration in Higher Education (ICLAHE.org)

All too often learning takes a back seat to discipline related research. The International Conference on Learning and Administration in Higher Education seeks to focus exclusively on all aspects of learning and administration in higher education. We wish to bring together, a wide variety of individuals from all countries and all disciplines, for the purpose of exchanging experiences, ideas, and research findings in the processes involved in learning and administration in the academic environment of higher education.

We encourage the submission of manuscripts, presentation outlines, and abstracts in either of the following areas:

Learning

We encourage the submission of manuscripts pertaining to pedagogical topics. We believe that much of the learning process is not discipline specific and that we can all benefit from looking at research and practices outside our own discipline. The ideal submission would take a general focus on learning rather than a discipline-specific perspective. For example, instead of focusing on "Motivating Students in Group Projects in Marketing Management", you might broaden the perspective to "Motivating Students in Group Projects in Upper Division Courses" or simply "Motivating Students in Group Projects" The objective here is to share your work with the larger audience.

Academic Administration

We encourage the submission of manuscripts pertaining to the administration of academic units in colleges and universities. We believe that many of the challenges facing academic departments are not discipline specific and that learning how different departments address these challenges will be beneficial. The ideal paper would provide information that many administrators would find useful, regardless of their own disciplines