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# **JOURNAL OF LEARNING IN HIGHER EDUCATION**

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# IDENTIFYING FACETS OF TECHNOLOGY SATISFACTION: MEASURE DEVELOPMENT AND APPLICATION

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## ABSTRACT

*As institutions of higher learning, universities must devote significant resources in developing intellectual capital in the use of educational technology to sustain their viability. To better understand satisfaction in technology used in classrooms, a psychometric instrument was developed to identify and measure the specific factors of satisfaction with the technology in a business school setting. Additionally, this instrument is employed on a sample of business students as a means of reporting satisfaction levels with educational technology. We show that students' satisfaction with educational technology is related to four main factors: Proficiency, assessment, performance, and preference toward Web-courses.*

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## INTRODUCTION

In the not so distant past, students would come to class on the first day of school and sometimes ask if the professor had a copy of syllabus to hand out. Technology seemed very simple in those days. Today, students come to class and sometimes ask if the syllabus and course material will be available on Blackboard, CourseSmart, WebCT, Homework Manager or any other Web-based course management system. They also want to know if you will be using Facebook, Twitter, and

podcasts to disseminate course information. As technology has become much more complicated, it has also become a more accepted and expected form of course delivery in institutions of higher learning.

This proliferation of technology in all aspects of student life has affected institutions of higher learning in general, and business schools more specifically. Most students and faculty are getting very comfortable with various technological applications both inside and outside of the class-

room. As universities and faculty adopt more and more technological applications as tools for teaching course material, it is assumed that students' learning environment is enhanced. There are, however, some basic questions that should be answered in order for instructors to better understand the use of technology in supporting the teaching and learning functions. Some of those questions are:

- *What are students' preferences in the use of technology?*
- *How do students react to technology?*
- *How satisfied are students with the utilization of technology?*

Those questions led a group of professors at a small Midwestern university to investigate the use of educational technology in a business college setting.

There are various reasons why it is becoming more and more imperative to gain a greater understanding of the modern student experience in relation to technology. Technologies can enrich the experiences of students in an educational community. One of the missions of a viable university is preparing students for their future lives and careers (Blackburn and Lawrence, 1986). Universities' intellectual capital in the use of technology is critical to competing for students and in sustaining viability as institutions of higher learning.

The general trend at the university level is that technology is assumed to be a natural part of the environment for students (Oblinger, 2003). This has become the information-age generation of students. This comfort with technology often leads to the perception that the use of technology in classes, at an adequate level, enhances student satisfaction. But such perceptions may or may not be accurate. Colleges and universities are coming to understand that meeting student expectations as they relate to technology is essential to providing a satisfactory student experience.

Beyond higher education in general, understanding technology in the context of business schools is perhaps even more important. Business is an applied discipline that is also multidisciplinary, thereby requiring a certain level of technical expertise (Jaju, Kwah and Zinkhan, 2002). Quan-

titative and qualitative skills are needed in the discipline. Practical and experience-based skills are also emphasized. Various applications of technology are often employed in the teaching of such skills. It is therefore important that professors understand student satisfaction with the technology they are asked to use. In spite of the importance of understanding student experience with technology, there appears to be a relative lack of research on the nature of student satisfaction with such.

To examine the relationship between technology and student satisfaction, we first need a clear definition of technology. According to the Association for Educational Communications and Technology (AECT), educational technology is defined as "the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources" ([www.aect.org/about/div\\_.asp?DivisionalID=18](http://www.aect.org/about/div_.asp?DivisionalID=18)). Hence, in our study, we consider educational technology to encompass a variety of instructional tools such as computers, software titles, multimedia equipment, Internet applications, mobile devices and any other electronic instruments employed by an instructor to facilitate student learning.

The purpose of this study is to identify and establish the specific facets of technology satisfaction. In this study, a psychometric instrument to measure the perceived factors that comprise technology satisfaction in a business school setting is developed. Additionally, this instrument is employed on a sample of business students as a means of reporting satisfaction levels with technology.

## LITERATURE REVIEW

Satisfaction as a construct has been used in the technology field. It is often associated with the acceptance or rejection of technology. A review of the technology studies quickly reveals that, when satisfaction is used, there appears to be no consistent definition of the construct in the context of technology. It is most often used as an outcome factor that seems to have some importance (Graham and Scarborough, 2001; Thurmond, Wambach, Connors, and Frey, 2002; Maki and Maki, 2003).

Studies on satisfaction in technology rely mostly on self-report surveys by students. Varmosi, Pierce, and Slotkin (2004) surveyed students to determine satisfaction with different learning delivery modes. Among other things, students were asked to report on their effectiveness in using technology as well as their level of comfort in using technology. In his study on students' satisfaction with Internet-based MPA courses, Arbaugh (2000) used a survey instrument that required students to report on their perceived level of satisfaction in usage of the Internet as a delivery mode.

There appears to be some research on the nature of student satisfaction with technology in limited situations. There is, however, a plethora of work on satisfaction as a construct in other business contexts. Various studies have indicated that employees and students share similarities (Cotton, Dollard, and deJonge, 2002; Tofi, Fleet and Timutimu-Thorpe, 1996). For this reason, work on job satisfaction is used as a foundation for exploring the facets of student satisfaction with technology.

Satisfaction as a construct has a long history in business. It is considered to be an attitude and is usually expressed as a continuum from high satisfaction (positive attitude) to low satisfaction (negative attitude); (Hitt, Miller, and Colella, 2006). The type of satisfaction most studied in a business context is job satisfaction. Job satisfaction in its most simple form reflects the extent to which a person likes their job. Job satisfaction involves an effective response toward the various aspect or facets of the job (Kreitner and Kinicki, 2007). This indicates that job satisfaction is not a single concept but rather a construct comprised of multiple factors.

Researchers at Cornell University found that job satisfaction contains the dimensions of work, pay, promotions, co-workers and supervision (Smith, Kendall, and Hulin, 1969). Other researchers have concluded that there are twenty different dimensions underlying job satisfaction (Weiss, Dawis, England, and Lofquist, 1967). Job satisfaction has been one of the most researched attitudes with more than 12,000 studies published by the 1990's (Kinicki, McKee-Ryan, Schriesheim, and Carson, 2002).

There are two initial questions concerning satisfaction as it relates to technology that need to be addressed. First, what are the facets or aspects that make up technology satisfaction? And second, what levels of technology satisfaction do business students possess? Valid support for these fundamental questions appears to be sparse. Existing research on students focuses on student satisfaction with the university (Astin 1993) or academic performance and college characteristics (Astin, 1993; Kuh and Hu, 1999, 2001; Hu and Kuh, 2003). Because of the noted similarities between students and employees, it follows that student satisfaction evaluations for their university or college would be similar in many respects to employee satisfaction evaluations for their employers. Furthermore, like job satisfaction, technology satisfaction seems to have several facets that are reflected in student evaluations of the use of technology in the university experience.

So, what are the facets of technology satisfaction that should be pursued? Most of the recent research has focused on distance learning as representing the use of technology in teaching. These studies point to many features that may predict student satisfaction with distance learning classes. These predictor variables include such things as:

- Student-teacher interaction (Bates, 1984; Feldman, 1989)
- Student-materials interactions (Perraton, 1991)
- Access to technology (Bates, 1995; Cybela, 1996)
- Perceived quality (Perraton, 1991; Bates, 1984)
- Prior experience (Gabrielle, 2001)
- Technological levels (Gehlauf, Shatz and Frye, 1991).

Most research that explores the construct of satisfaction in the context of technology is somewhat narrow in context, focusing on student satisfaction in Web-based instruction. In this context, satisfaction is generally treated as a simple construct assessed by as few as one scale item and as many as 21 scale items. For example, Varmosi, Pierce, and Slotkin (2004) measure sat-

isfaction for Internet courses with a single-item scale. Eom, Wen, and Ashill (2006) combine three items measuring the quality of the online course relative to face-to-face courses, intent to recommend, and intent to take online courses in the future into one satisfaction measure. Arbaugh (2000b) measured student satisfaction with Internet-based MBA courses via a 12-item scale designed around satisfaction with the Internet course, perception of quality, and likelihood of taking future Internet courses. (See Table 1 for a summary of satisfaction measures from various articles.)

Based on the definition of technology that we provide, there is a need for a broader measure of satisfaction in order to assess students overall capabilities and comfort level with various types of technology applications. Additionally, the above-noted studies assess the satisfaction of students who self-selected into those courses thereby limiting the researcher's ability to generalize the findings to student satisfaction levels with technology in general. This indicates a gap in the research that identifies exactly what satisfies students about the use of technology in the classroom whether it is Web-based or traditional.

The level of satisfaction then becomes critical as it has the potential to impact the effects that technology has on students. The use of technology in the classroom today is often expected as part of instruction. The research that has been conducted on technology as an instructional tool is headed in the right direction but needs to be developed in the area of student satisfaction with technology. This study responds to this gap in the extant research. The following section describes the development of a psychometric scale designed to measure multiple facets of student satisfaction with technology for Web-based courses as well as traditional courses.

## METHODOLOGY

Because of the scarcity of research in the specific area of college student satisfaction toward technology, a metric is developed to accomplish the purposes of this research. After having established a theoretical basis for different facets of technology satisfaction, the following sections describe the process followed to empirically establish such facets as well as to develop instruments to measure such. Our methods are based

**TABLE 1**  
**PREVIOUS RESEARCH ESTABLISHING A RELATIONSHIP BETWEEN TECHNOLOGY AND SATISFACTION**

Past Studies	Technology Assessed	Satisfaction Measure
<i>Annetta and Minogue (2004)</i>	Interactive Television	Single-item scale
<i>Arbaugh (2006)</i>	Internet Course	Twelve-item scale
<i>Beckert, Fauth, and Olsen (2009)</i>	Clicker	Twenty one-item scale
<i>Ebenezer, Lugo, Beirnacka and Puvirajah (2003)</i>	Electronic Discussion Boards	Reflective dialogues
<i>Eom, Wen and Ashill (2006)</i>	Online Course	Three-item scale
<i>Feldmann, Wess, and Moothart (2008)</i>	Laptop Service	Single-item scale
<i>Frederickson, Reed, and Clifford (2005)</i>	Web Sessions	Five-item scale
<i>Frey, Alman, Barron and Steffens (2004)</i>	Online Program	Learner comments
<i>Hazari, North, and More (2009)</i>	Wiki	Twenty-item scale
<i>Piccoli, Ahmad, and Ives (2001)</i>	Virtual Learning Environments	Three-item scale
<i>Shneiderman, Borkowski, Alavi and Norman (1998)</i>	Electronic Classroom	Six-item scale
<i>Vasmosi, Pierce, and Slotkin (2004)</i>	Internet Course	Single-item scale
<i>Warnock, Boykin, and Tung (2008)</i>	Smart Board	Four-item scale

on traditional scale development procedures (Churchill, 1979; Gerbing and Anderson, 1988).

### Phase 1: Scale Development

**Item Generation.** The exploratory stage of our research sought to generate a pool of items that would characterize the nature of satisfaction toward technology. This was accomplished through a review of relevant literature and by adapting such to the purposes of this research. From this qualitative process, an initial battery of survey statements was generated and distributed to 17 business school students as a pretest. Based on the results of that pretest, the initial list of statements was modified in order to minimize redundancy, ambiguity, and leading statements. These modifications resulted in a final list of 37 statements. This list was formatted into a questionnaire of five-point (strongly disagree to strongly agree) Likert scales, each with a “not applicable” option.

### Exploratory Factor Analyses.

The initial questionnaire items were grouped into categories as a means of hypothesizing possible factors. These factors included general satisfaction (with the instructor, with the student's own performance, and with technology in general), general technological proficiency, technology preferences, general ability to learn, and interaction with students and professors.

Data were collected from undergraduate business school students at a Midwestern university who participated voluntarily ( $n = 568$ ). One hundred and thirty seven responses were dropped during the factor analysis. In addition to the survey scale items, additional demographic information about each student was also collected, including race, age, gender, foreign/non-foreign student's status, home country, major, and number of online courses previously taken.

The sample consisted of all freshmen registered for the introductory Accounting class, all sophomores registered for Statistics I course, all juniors registered for the Corporate Finance course and seniors who were taking the business capstone course. All four courses are required for business majors. The survey participation rate is close to

100% due to the fact that it was administered during regular class time.

Our final sample consists of a total of 431 undergraduate students. Overall, 169 students (42.9%) had a single major while 144 students (36.5%) were double or joint majors. Joint majors are students whose total degree hours are taken in two emphasis areas rather than one. Unlike double majors who earn two separate degrees, joint majors earn a single degree in the two areas of emphasis. The sample also included 62 non-business majors (15.7%). Majority of students in the study were white/Caucasian (84.2%). In addition, there were more male students (214 or 53.0%) than female students (190 or 47.0%), and the sample comprised of thirty-seven (9.2%) international students. Our data also suggest that more than half of students (252 or 64.5%) have not had any online/Web courses in the past. (See Table 2.)

Exploratory factor analysis was used to suggest dimensions and construct a scale on the basis of the resulting factor loadings (Churchill, 1979). An analysis of the screen plots suggested four underlying dimensions. Further analysis using principal component factor analysis method confirmed the existence of the four factors. Items that loaded on more than one factor were eliminated as well as those with factor loadings below .60. This process reduced the scale to 18 items, with each of the four factors represented by four or five items, as depicted in Table 3.

### Scale Description

The four factors represent the different manifestations of how students feel about technology and how satisfied they are with it. Our four factors are supported by the extant literature. Proficiency characterizes the general knowledge, experience, and comfort level that individuals have regarding personal technology use (Gabrielle, 2001; Arbaugh, 2000). Assessment is the individual's assessment of the availability, capability, and use of technology at their college or university, both inside and outside the classroom (Peraton, 1991; Bates, 1984; Bates, 1995; Cybela, 1996; Arbaugh, 2000). Performance encompasses the degree to which individuals feel that technology use improves their own performance and

**TABLE 2**  
**DESCRIPTIVE STATISTICS**

<b>Major</b>	<b>No.</b>	<b>%</b>
Accounting	19	4.8%
Actuarial Science	18	4.6%
Economics	3	0.8%
Finance	26	6.6%
General Business	28	7.1%
Information Systems	10	2.5%
International Business	13	3.3%
Management	21	5.3%
Marketing	31	7.9%
Joint/Double Majors	144	36.5%
Non-Business Majors	62	15.7%
Undeclared	19	4.8%
Total*	394	100.0%
<b>Race</b>	<b>No.</b>	<b>%</b>
African American	7	1.8%
Asian or Pacific Islander	20	5.0%
Hispanic/Latin American	4	1.0%
Indian Sub Continent	12	3.0%
Mexican American	4	1.0%
White/Caucasian	336	84.2%
Other	16	4.0%
Total*	399	100.0%
<b>Gender</b>	<b>No.</b>	<b>%</b>
Male	214	53.0%
Female	190	47.0%
Total*	404	100.0%
<b>Domestic/International</b>	<b>No.</b>	<b>%</b>
Domestic	365	90.8%
International	37	9.2%
Total*	402	100.0%
<b>Web-Courses Taken</b>	<b>No.</b>	<b>%</b>
0	252	64.5%
1	76	19.4%
2	33	8.4%
3	17	4.3%
4	1	0.3%
5 or more	12	3.1%
Total*	391	100.0%
*Demographic information survey items are optional and, consequently, do not add up to the total sample size of 431 due to a number of students opting out of answering several items.		

learning in relation to courses (Arbaugh, 2000). Web-course deals with individual preferences for a Web-course versus a traditional classroom course (Beqiri, Chase, and Bishka, 2010).

## Phase 2: Scale Confirmation

After establishing the four factors of technology satisfaction through factor analysis, the scales were distributed to more student respondents ( $n = 253$ ) with the objective of confirming the factor structure. Through confirmatory factor analysis, the four-factor model identified in phase 1 was compared to a zero-factor or null model as well as to a single-factor model comprising all 18 items. The results (see Table 4) show that the four-factor model fits significantly better than the other two, as indicated by the improvement in the chi-square measure as well as other goodness of fit statistics (Jöreskog, 1993). In the four-factor model, the inter-factor correlations ranged from .08 to .47. Table 5 provides a descriptive statistics for the scale scores for each of the four factors.

## SUMMARY AND CONCLUSION

The research presented in this article makes a significant contribution to the literature in that it represents a first effort to establish a psychometric scale to assess college students' level of satisfaction with technology as part of their college experience. This study establishes four factors that make up technology satisfaction in a business school. By use of factor analysis, it was revealed that students' satisfaction with educational technology is related to four main factors. These are proficiency, assessment, performance, and Web-course (i.e. whether a student prefers taking Web-courses). The four factors were subjected to confirmatory process using a new sample of students. Our analysis found that the four-factor model was a better fit leading to the conclusion that business students' satisfaction in technology is related to Proficiency, Assessment, Performance, and whether one prefers Web-courses or not (Web-course).

As mentioned previously, it is assumed that technology is a natural part of the environment for students (Oblinger, 2003). As universities invest large sums of money into technology, they should

**TABLE 3**  
**TECHNOLOGY SATISFACTION FACTOR LOADINGS**

Factor	Factor Loading			
	Profi- ciency	Assess- ment	Perfor- mance	Web- Course
<b>Proficiency</b> (coefficient alpha = .861)				
I have experience in using technology.	.786	.134	.078	-.045
I am comfortable using technology in my classes.	.836	.100	.100	-.023
I like using technology.	.844	.054	.159	.038
I am motivated to learn new technology.	.700	-.025	.252	.147
I expect my personal experience with technology to help me accomplish the outcomes required in my classes.	.673	.151	.307	.036
<b>Assessment</b> (coefficient alpha = .815)				
Overall, I am satisfied with the training I have received at [institution] to use technology in the classroom.	.049	.682	.162	-.109
Overall, I am satisfied with [institution]'s level of classroom technology capabilities.	-.123	.768	.066	-.103
Overall, I am satisfied with [institution]'s level of technology capabilities <u>outside</u> the classroom.	.025	.710	-.102	.105
Overall, I am satisfied with the availability of technology at [institution] <u>outside</u> the classroom.	.003	.721	-.130	.125
Overall, I am satisfied with the training I have received at [institution] to use technology <u>outside</u> the classroom.	.056	.700	-.041	.115
<b>Performance</b> (coefficient alpha = .812)				
The use of technology makes course material easier to learn.	.282	-.040	.690	.247
When my instructor uses technology, it helps me organize my course material.	.222	.045	.786	.070
When my instructor uses technology, it helps me organize my class notes.	.091	.053	.742	.048
When my instructor uses technology, it helps my performance in the class.	.205	.096	.749	.148
<b>Web-Course</b> (coefficient alpha = .735)				
I would rather take a course on the Web than in a traditional classroom.	.142	-.020	.188	.679
I prefer classes which allow face-to-face interaction with my instructor.	.084	-.033	.048	.740
I prefer classes which allow face-to-face interaction with my classmates.	.023	.050	-.039	.630
I have a better understanding of the material when the instructor lectures to the class.	.095	-.111	.049	.626

**TABLE 4**  
**MODELS AND GOODNESS OF FIT INDICES FOR**  
**CONFIRMATORY FACTOR ANALYSIS (N = 253)**

Model	Description	DF	Chi-square	Delta chi-square	CFI	NNFI	RMSEA	ECVI
A	Null model	153	3,015.24	--	--	--	--	--
B	One-factor model	135	1,392.18	1,623.06	.56	.50	.21	6.71
C	4-factor model	129	426.96	965.22	.90	.88	.10	2.15

consider to what extent their efforts are incorporated into a seamless experience for students. In

are differentially related to actual student experience. Additional research should investigate which of four factors is more critical than the others.

TABLE 5 DESCRIPTIVE STATISTICS FOR FACTORS				
Factor	Mean	SD	Variance	Range
Proficiency	4.093	.669	.448	1.40 – 5.0
Assessment	3.479	.710	.504	1.00 – 5.0
Performance	3.667	.688	.473	1.25 – 5.0
Web-Course	3.801	.783	.612	1.50 – 5.0

Technology satisfaction should also be studied in the context of diverse populations. Universities adopt most technological products as universal efforts for all students. The extent to which satisfaction with technology differs with respect to gender, ethnicity, age, and socio-economic status should be studied to establish whether or not this is the case. Additionally, differences by major should also be investigated.

In short, we feel that the concept of satisfaction with technology is not only important, but is in its infancy. As such, we call

for researchers to answer the call to address the unanswered questions with respect to this construct.

other words, does technology enhance students' experience and even facilitate their learning process? For these reasons, it is imperative that the construct of technology with satisfaction be studied with respect to variables that are relevant to student experience and learning; variables like grades and learning outcomes. If the objective of spending resources on technology is to improve learning, this scale now provides a means to measure the extent to which that relationship is true.

These relationships can be considered in relation to student learning styles to determine if certain types of students have benefited more from the use of technology in education. Other considerations in the future study of the impact of technology satisfaction are the impact of the accessibility and availability of technology for students. Future research should also focus on how the four factors of the technology satisfaction scale

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# **AN ECONOMETRICS ANALYSIS ON THE EFFECT OF SATISFACTION FOR FOREIGN GRADUATE STUDENTS' ACADEMIC PERFORMANCE IN TAIWAN**

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## **ABSTRACT**

*Taiwan has proven and continues to prove its economic prowess as a fast and well developed nation. One theory to account for this accomplishment is its continued success in developing its best natural resource - its people - through education. A continuum of this practice is the implementation of Higher Education and then International Higher Education. Since early 1990s, foreign students have been studying in Taiwan obtaining degrees in various academic disciplines at both undergraduate and graduate levels. However, a foreign student, like any other expatriate, may have problems adjusting to a new country. Therefore, this study examines the factors that cause foreign students' satisfaction or dissatisfaction in adapting and adjusting to life in Taiwan and how those factors may further affect their academic performance. The research method used for data collection is a quantitative case study using the Student Satisfaction Questionnaire that was developed and piloted by the researchers. The population is ICDF higher education students who have been studying for at least one year in Taiwan and are doing courses in English. The response rate was 73.1%. The results indicate that a majority of the international students are satisfied ( $M = 3.63$ ,  $SD = .66$ ) where 60.5% could be described satisfied to very satisfied and only 7% as dissatisfied. Students' nationalities, age and gender have no statistical significance to their performance. The main findings of this research should assist ICDF, the education institutions, and the Ministry of Education in making the transition and life of foreign students smoother. It may also assist future foreign students in preparation for adjusting and adapting to Taiwan. Finally, the study offers recommendations for all the parties involved and the researchers provide suggestions for future research that could aid in learning about the lives of foreign students in Taiwan.*

*Keywords: International Higher Education, Foreign Graduate Student, Adaptation/Adjustment, Academic Performance, ICDF (International Cooperation and Development Fund)*

## INTRODUCTION

The internationalization of higher education is being adopted by many nations. UNESCO (2005) stated that there is an upward of 2 million students annually that are now studying in countries other than their own and that the number is increasing. There is hardly any country that is unaffected by the presence of international students in its institutions of higher learning, or the pressure to send some students to study abroad (Paige, 1990). Rationale behind the increasing number of international students is the assumption that students can serve as cultural carriers and resources (Klineberg and Hull, 1979; Paige, 1990). They can also serve as citizens with professional qualifications, international experience, language proficiency and cross-cultural understanding. It has also been assumed that these cultural links could help reduce inter-group tension, prejudice, hostility and discriminatory behaviors and increase international understanding and co-operation (Baron and Bachman, 1987).

These assumptions, however, have not always been supported. For decades researchers have been investigating the student sojourner's life and the problems that have caused stress on them, which may ultimately affect their academic performance. Mental health problems such as depression, psychosomatic complaints, anxiety and paranoid reactions (Heikinheimo and Shute, 1986; Jou and Fukada, 1997; Manese, Sedlacek, & Leong, 1988; Sam and Eide, 1991; Ying and Liese, 1991) have been suggested to characterize international students. These are in addition to socio-cultural problems (e.g., language difficulties, difficulties in negotiating day-to-day social activities, racial and ethnic discrimination) (Furnham and Bochner, 1982, 1986; Kagan and Cohen, 1990; Pedersen, 1991; Ward and Kennedy, 1993) and academic problems such as failure and slower academic progress than host nationals (Barker, Child, Gallos, Jones and Callan, 1991; Suinn, Khoo, and Ahuana, 1995; Wan, Chapman, and Biggs, 1992) have been documented as characterizing international students' overseas sojourn.

Many countries try to lessen these problems but have never totally eradicated them. The problem lies in the fact that the internationalization of

education must be achieved not simply or solely by giving the student the opportunity to cross physical borders, but by providing the necessary tools to ensure that both students and teachers learn to work and study in an academic environment that is diverse from an international point of view. An easy but somewhat costly solution would be for host countries, while attracting foreign students, to sensitize the potential students to the culture of the host country. This is hardly the approach taken at present; and as a result, there are many cultural complications to the foreign students in cultural settings totally oblivious to them.

Despite these conclusions, Taiwan still has internationalized its higher education. Many higher education institutions in Taiwan are attracting more and more foreign students through exchange programs, government scholarships, and private scholarships. One of the institutions that provide scholarships to international students is ICDF (International Cooperation and Development Fund).

These students come from all over the world with many expectations and diverse cultural backgrounds and they are all non-speakers of Mandarin Chinese or have had little exposure to it. As a result, issues will arise that may cause the international students to experience dissatisfaction - primarily with communication and also with conditions pertaining to Taiwan's culture - and this dissatisfaction can further affect their academic performance.

As a result, the researchers want to provide meaningful information to foreign students, their home support, host schools in Taiwan, the Taiwanese government, and especially ICDF. One area of concern, and of which this study sought to explore, was to ascertain the level of satisfaction among international students, the factors accounting for it, and how these affect their academic performance. According to the Ministry of Education of Taiwan, the training of individuals in higher education is the key to Taiwan's survival and internationalization (Weng, 2001; Law, 2003 cited in Mok, 2003). Failure to cope with international competition and demand for academic innovation and consolidation will lead to loss of academic advantages to neighboring Asian nations, and the loss

of the opportunity to pursue further excellence will result in Taiwan lagging behind in this international competitive trend. This training can only be fully effective if Taiwan can identify and solve any problems which will hinder its progress. This has prompted the researchers to study and analyze foreign graduate students in Taiwan. Therefore, this research has two purposes:

1. To explore what factors may affect foreign students' satisfaction and its effect on their education.
2. To identify and propose the necessary interventions that may assist the students' cultural and academic life in Taiwan.

The research questions for this study are:

1. To what extent are ICDF students satisfied in Taiwan?
2. What is the academic performance of ICDF Graduate students?
3. Do the demographic factors (age, gender, nationality) and students' degree have any statistical significance to ICDF Graduate students' academic performance?
4. What specific satisfaction factors affect ICDF students' academic performance?

## RESEARCH BACKGROUND

In an attempt to better understand the satisfaction level of international students in Taiwan, and to develop a questionnaire that will cover the predictors of satisfaction, the research looked at consistencies in variables found in a number of researches.

One major problem is communication. Language proficiency level of students in host country deters communication with peers, teachers, and counselors (Bochner, Hutnik, & Furnham, 1985; Furnham & Alibhai, 1985; Heikinheimo & Shute, 1986). Likewise, the interactive class discussions may work against international stu-

dents and limit the potential benefits they could bring to domestic students (Huxur et al., 1996). In Australia, for example, some Asian students were exposed to negative experiences in the classroom in that they experienced suppression of "voice," (Edgeworth & Eiseman 2007). Devos (2003) concluded that communication and the lack of learning host countries' language affect the students' academic performance.

The ability to socialize is another factor. Host nationals are often insensitive to the needs of the international students for conversation (Beaver and Tuck 1998; Bochner, Hutnik, & Furnham, 1985; Edgeworth & Eiseman 2007; Furnham & Alibhai, 1985; Volet & Ang, 1998). Cunningham's (1991) survey of 53 Canadian universities indicated two categories of barriers to integration: barriers related to international students themselves and barriers related to the institutional community. Their lack of familiarity with the educational and social systems was listed as a barrier.

Financial pressures or restrictions hindered some international students who reported that the hardest part of adjusting to college was meeting the financial expenses (Boyer and Sedlacek, 1986; Cunningham, 1991). Some feel insecure financially with high tuition and limited financial aid; they are also restricted in seeking employment in most cases and have limited access to employment (Lyakhovetska, 2003). In an 11-nation study among international students, financial difficulties were found to be ranked as the greatest problem in all the countries (Klineberg and Hull, 1979).

The need for institutional support is a factor that directly affects international students academically. Cunningham (1991) reported that 59% of administrators indicated that unless there was a problem, their institution did not care about international students. Lyakhovetska, (2003) and De Vita (2000) found that support services, institutional policies, and the role of international students were not fully met.

The living conditions of students seem to have a significant impact on their adjustment and profound influence on the quality of their social and academic adjustment experience (Cunningham, 1991; Edgeworth & Eiseman, 2007;

Lyakhovetska, 2003). Another concern of international students is the choice of food offered in dining halls and food courts in campus facilities (Alazzi and Chiodo, 2006; Dillard and Chisolm, 1983; Edgeworth & Eiseman, 2007; Heikinheimo & Shute, 1986).

All these problems lead to a greater factor which is psychological. The loss of social support and status, loss of familiar cues, loss of certainty, and self-worth consequentially creates threats to cultural identity, powerlessness, feelings of marginality, sense of inferiority, loneliness, hostility, and perceived alienation and discrimination become major mental health risks (Alazzi and Chiodo, 2006; Amoh, 1995; Chapman and Pyvis, 2006; Garrod & Davis, 1999; Ishii's, 1997; Leong & Sedlacek, 1986). But of greater psychological effect is the sense of discrimination that has been theorized to have a negative effect on their adjustment and consequently their academic life (Heikinheimo and Shute, 1986; Sadowsky and Plake, 1992; Spencer-Rogers, 2001).

Gender and age are perhaps the two most studied areas regarding demographic factors bearing on international students' adaptation and generally suggest that younger students adapt more easily than older ones (Ying and Liese, 1994), and female international students tend to be less easy to adapt than their male counterparts partly as a result of having to attend to domestic obligations while pursuing academic goals.

Another aspect of demographic characteristics that has received attention in the literature is the geographical origin of the international student (Furnham and Bochner, 1982; Sam and Eide, 1991; Zunin and Rubin, 1967). In a study by Furnham and Bochner (1982) it was found that adaptation difficulties were related to the cultural distance between the country the student originated from and the host country.

## METHODOLOGY

This research employed a quantitative method approach for data gathering. A quantitative questionnaire with some items taken from the Student Adaptation to College Questionnaire (SACQ) developed by Baker & Siryk, (1989) and other factors found through research will

be used to test foreign students' satisfaction on their performance. The test used a Likert-type scale. Responses were based on a five-point Likert scale: 1 = very dissatisfying, 2 = dissatisfying, 3 = NA/neutral, 4 = satisfying and 5 = very satisfying. The respondents were instructed to refer to their experience here in Taiwan and to fill out the questionnaire that has a range of selected items about their experiences as foreign students in Taiwan. Some of the items are in relation to Geert Hofstede's theory on power distance, individualism, uncertainty avoidance, and masculinity. The questionnaire is not that which was created by Geert Hofstede but the items are related to the meaning of each dimension as described by Hofstede.

## Participants

A total of 114 ICDF international students (83 males, 31 females) both at graduate and undergraduate levels enrolled at different universities in Taiwan participated in the study. The mean age of the students was 26.35 years ( $SD = 6.264$ ) and had on average been living in Taiwan for one year. Graduate and Undergraduate students equaled at 57. Participants originated from 24 different countries with 21 students coming from Belize. Eight national countries had a student representative each. For brevity and statistical purposes, the countries have been categorized into four geographical regions: Latin American countries ( $n = 58$ , 51.8%), Belize and Caribbean countries ( $n = 28$ , 24.6%), Asia ( $n = 9$ , 8.8%), and Africa ( $n = 17$ , 14.9%). The categorization was inspired by regions, and Central America, because many of ICDF students come from that region, was divided into Latin American countries as one, and Belize (Non-Latin) and the Caribbean as the other.

## Procedure

First, a pilot test was conducted using 10 ICDF students (5 males and 5 females), 4 were Graduates and 6 Undergraduates and were from 10 different participating ICDF institutions. The samples also ensured that each region had at least two student representatives. These participants were mailed the questionnaire with a cover letter explaining the purpose, their ano-



nymity and that of the institution, and confidentiality. The pilot test was conducted for reliability and validity. Validity of the instrument was determined by content validity by investigating if the measurement questions in the questionnaire provided adequate coverage of the investigative questions. The researchers reached content validity by discussing the items and the meaning with experts. One expert provided an assessment of each item in the questionnaire by determining if they were useful or not. Validity was also reached by identifying the questions items to satisfaction problems found in other countries. Reliability showed a Cronbach Alpha of .948.

For the final test, participants were obtained through convenient sampling by visiting the institutions where ICDF students are enrolled. The questionnaires were hand delivered. The questionnaire included a cover letter informing the participants of the purpose of the study and that participation was voluntary. To ensure anonymity, neither the participants' names nor institutions' names were used. The participants were also ensured that the results were going to be treated confidentially. Participation was quite satisfactory with an overall response rate of 86.4%. Cronbach Alpha for the final test was .945.

### Instrument

The instrument (Student Satisfaction Questionnaire) for this study was either developed for this study or directly taken or with modifications from existing instruments. With the exception of the demographic variables, and the scale for GPA, all the items were answered on a 5-point Likert scale. The Demographics included age, gender, and country of origin. Student Grade Point Average was taken as levels A, B, and C which was given by the students. The Degree variable included graduate and undergraduates. Their Satisfaction was measured using the 35 questions whereby participants indicated their level of satisfaction from 1= very dissatisfied to 5= very satisfied. The questions in the questionnaire were developed based on problems (found by other researchers from other regions) that international students had in other countries. The specific factors identified in the items of the

questions and the demographic factors were discussed in the background of the research.

### Data analysis

Different statistical methods from Statistical Package for the Social Sciences (SPSS) PC version 18.0 was used to analyze satisfaction data and students' performance data. These methods include descriptive statistics, crosstab and chi-square, and linear regression analysis. Descriptive statistics, e.g., means, frequencies, and a histogram of student responses are often applied to detect the most and the least satisfaction items regarding college programs and services (Damminger, 2001). Chi-square method is used to identify the significant proportion difference for students' performance based on their degree. The linear regression method is a useful tool to analyze the relationship between multiple explanatory variables and student performance results. Linear regression allows the researcher to identify explanatory variables related to academic performance and how it contributes to the overall college satisfaction (Thomas and Galamos, 2002). This method also permitted the researchers to estimate the magnitude of the effect of the explanatory variables on the outcome variable. Therefore, regression methods seem to be superior in studying the relationship between the explanatory and outcome variables.

$$Y = f(x) = a_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + b_5x_5 + \epsilon$$

Where:

$Y = \text{GPA}$

$x_1 = \text{Power Distance variables}$

$x_2 = \text{Uncertainty Avoidance variables}$

$x_3 = \text{Masculinity variables}$

$x_4 = \text{Individualism variables}$

### EMPIRICAL RESULTS

Using the Student Satisfaction Questionnaire and on the 5-point Likert scale, the sample shows that the international students are at a very good satisfaction level ( $M = 3.63$ ,  $SD = .66$ ). This means that the score is above the mid-point of the scale which is 3. Using the scores below 2.5 and above 3.5 as cut-off points for poor satisfaction scores and very good satisfac-

tion scores, approximately 7% and 60.5% of the ICDF students studying in Taiwan could respectively be said to have poor and very good satisfaction scores.

To test Research Question 2, Cross tabular analysis and Chi-square test were used to test the academic performance of Graduate students. From the Cross tabular table we see that the Graduates are performing above their expected count at A and B levels.

To test Research Questions 3 and 4, a multiple linear regression analysis was used. Students' GPA is the dependent variable indicating students' academic performance and the demographic variables (age, gender, and nationality), degree and the 35 Questions are the independent variables. Students' nationalities were placed into geographic regions as aforementioned. The geographic regions were treated as dummy variables. Students from Latin America were used as the reference group. The process used in the Multiple Linear Regression Analysis in Table 2 is the backward elimination procedure, which examines the p-values for the 45 independent variables, and eliminates the highest insignificant variable in each equation. This process was repeated 35 times, in 36 equations, until all remaining independent variables reached at least the 10% level of significance. In the table, the independent variables accounted for 82.2% of the variance of GPA in Equation 1 and 79.9% of the variance of GPA in Equation 36. The researcher decided to show all variables and their significance in Equation 1 and how that changes because of the backward regression

process by Equation 36 where all remaining variables are significant.

In Equation 1, of the 45 independent variables, 23 have negative parameters of which only 2 have statistical significance explaining the variance of GPA. From the other 22 variables that have positive parameters 6 have statistical significance to GPA. For the Power Distance dimension, two questions show significance to GPA. The parameter for Q1 is positive (.176), with the t-ratio (3.429), indicating that it is significant at the 1% level and Q15 has a positive parameter (.088) and t-ratio 1.673 showing significance at 10%. The Individualism dimension only has one question that is statistically significant which is Q11 with a negative parameter (-.102) and a t-ratio of (-2.245) that is significant at 5%. For the Uncertainty Avoidance dimension, Q12 is the only significant question with a negative parameter of (-.090), t-ratio of (-1.690) that is significant at 10%. The final dimension Masculinity likewise only has one question Q28 significant with a positive parameter of (.071), t-ratio (2.069) that indicates a significance at 5%. From the demographic variables, Europe has a positive parameter (.388), t-ratio (2.192) that is significant at 5%, and South America also has a parameter (.303), t-ratio (1.756) that is significant at 10%. Students' degree shows significance to performance with a positive parameter of (.476) and t-ratio (4.623) indicating significance at 1%. These results changed from equation to equation.

In Equation 36, 10 variables show statistical significance to students GPA. Of those 10 variables, 3 have negative parameters and 7 have positive parameters.

Q1 has a positive parameter of (.201) and a t-ratio of (6.025) which is significant at 1% level. This is indicating that an increase in the students' opportunity to freely express their opinions in class will lead to an increase in the performance. Q12 with negative parameter (-.066) and t-ratio (-1.975) significant at 5% is suggesting that an increase in the students feeling that their instructors have genuine interest in their learning will lead to a decrease in their performance. Q11 with a negative parameter (-.087) and a t-ratio (-2.493) which is significant at 5% suggests that an increase in students' sat-

<b>TABLE1</b> <b>CROSS TABULAR ANALYSIS OF</b> <b>DEGREE (GRADUATE) OF STUDENTS BY GPA</b>				
Statistics	GPA			
	C = 70-79	B = 80-89	A = 90-100	Total
Count	4	38	15	57
Expected Count	11.5	35.5	10.0	57.0
% within GPA	17.4%	53.5%	75.0%	50.0%
Chi-square value is 15.135 (p = .001)				

**TABLE 2**  
**MULTIPLE REGRESSION OF INDEPENDENT VARIABLES AS PREDICTORS FOR GPA**

	Variables	Equation 1		Equation 36	
		$\beta$ value <sup>1</sup>	t-value	$\beta$ value <sup>1</sup>	t-value
Power Distance	Q1	<b>.176***</b>	<b>3.429</b>	<b>.201</b>	<b>6.025***</b>
	Q4	-.070	-1.441		
	Q7	-.022	-.447		
	Q10	-.058	-1.139		
	Q13	-.013	-.275		
	Q15	<b>.088*</b>	<b>1.673</b>		
	Q18	.067	1.287	<b>.085</b>	<b>2.127**</b>
Uncertainty Avoidance	Q12	<b>-.090*</b>	<b>-1.690</b>	<b>-.066</b>	<b>-1.975**</b>
	Q14	.008	.167		
	Q17	.037	.650		
	Q20	.078	1.485		
	Q21	.047	.811		
	Q23	-.019	-.333		
	Q24	.061	1.168		
	Q26	.008	.175		
	Q30	-.031	-.565		
	Q31	.012	.227		
	Q34	-.006	-.123		
Masculinity	Q3	.042	.893		
	Q6	.048	1.123		
	Q9	-.036	-.867		
	Q16	-.049	-.920	<b>-.060</b>	<b>-1.739*</b>
	Q19	.040	.899	<b>.059</b>	<b>1.824*</b>
	Q22	-.045	-1.114		
	Q25	.046	1.289	<b>.059</b>	<b>2.007**</b>
	Q28	<b>.071**</b>	<b>2.069</b>		
Individualism	Q35	-.006	-.119		
	Q2	.053	1.037		
	Q5	-.002	-.041		
	Q8	-.041	-.916		
	Q11	<b>-.102**</b>	<b>-2.245</b>	<b>-.087</b>	<b>-2.493**</b>
	Q27	-.038	-1.026		
	Q29	-.048	-1.063		
Demographic	Q32	.059	.985		
	Q33	-.050	-1.100		
	Age	-.001	-.075		
	Gender	-.009	-.105		
	Asia	.009	.064		
	NAmerica	.150	.885		
	SAmerica	<b>.303*</b>	<b>1.756</b>	<b>.292</b>	<b>2.309**</b>
	Europe	<b>.388**</b>	<b>2.192</b>	<b>.411</b>	<b>3.209***</b>
Status	Africa	-.131	-.885		
	AOceania	-.143	-.811		
Degree	ICDF/Non-ICDF	-.032	-.297		
Degree	Grads/Undergrads	<b>.467***</b>	<b>4.623</b>	<b>.477</b>	<b>6.951***</b>
R <sup>2</sup>		<b>.882</b>		<b>.799</b>	

Note: \* = p < .1, \*\* = p < .05, \*\*\* = p < .01

<sup>1</sup> The value of the beta here is from the Unstandardized Coefficients.

isfaction that they have equal opportunities to participate in campus activities will result in a decrease in their academic performance. Q18 with a positive parameter (.085) t-ratio (2.127) significant at 1% suggests that an increase in the students' recognition for their performance and contributions will lead to an increase in their performance. Of the demographic variables, Degree was significant with a positive parameter (.477) t-ratio (6.591) significant at 1% which implies as students move from undergraduate to graduate, their performance will increase.

## DISCUSSION

The results of this study are very favorable to ICDF indicating that a majority of their scholarship students in Taiwan are satisfied with their lives here where more than 60% could be described as satisfied to very satisfied. The results seem to be consistent with many researchers' conclusions that in spite of the difficulties international students may face during their sojourn, they still adapt very well and are satisfied. Only a minority of the ICDF students could be classified as dissatisfied. This was based on an arbitrary cut off point established by the researchers that has not been validated so it needs to be qualified. However, it satisfied this research.

The result of most importance to ICDF is the students' academic performance. From the Crosstab table, 91 of the students are at A and B levels. However, ICDF should be concerned about their Undergraduate students. Their academic performance is poorer than that of the Graduate students. At C level there were 19 Undergraduate students, far poorer than what is expected. The multiple regression analysis also shows students' degree to be significant to performance. The positive parameter shows that graduates categorized as 1 are performing better than undergraduates categorized as 0. There are certainly many factors that can cause this poor performance.

From the multiple regression analysis, we got very valuable data for ICDF. Age and gender were of no statistical significance. This evidence is very beneficial to ICDF in that they do not have to worry about younger students coming to Taiwan or about female students finding it

harder to adapt. Of equal contribution to ICDF is that the nationality of students does not determine their academic performance. While using regional dummy variables and students from Latin America as the reference group, none proved significant to academic performance.

In using the 35 questions as independent variables only nine had significance. Five of the questions have positive effects on students' performance. These students become satisfied with voicing their opinions in class and with the grading systems. They become satisfied with the adequate opportunities to demonstrate their competencies of their course materials in class. They love being recognized for their performance and contributions as international students. Finally they feel that they fit well in their school's environment. Once these are met the students' academic performances are better. Though ICDF does not have control over the universities' methodologies, results like these can be passed on from ICDF to the institutions so that they can implement them for the betterment of the foreign students.

Dissatisfying to the students, and that have negative impacts are: the instructors' interest in their learning; expressing their opinions to teachers; equal opportunity to participate in campus activities, clubs; counseling and psychological services offered. These as implied by the regression may cause the students' academic performances to fall if they are increased. It appears that international students do not want to have much interaction with their professors, nor do they want to socialize much and visit counseling services. ICDF has no control over issues like these that are evidently personal; however, ICDF can only make their stay here more pleasing. Either these students refuse to assimilate Taiwan's culture and the schools' culture, or they just focus on learning and want to be left alone free of any interaction with teachers, local students and other foreign students. Mostly, it may be refusing to assimilate assumingly due to cultural differences.

## CONCLUSION

Taiwan ICDF is a very effective organization that evidently has met the students' financial

and educational needs while studying in Taiwan. Being scholarship students, an assumption would have been financial constraints. However, unlike other research findings that finance hinders students' performance, this study shows no evidence that finance is a factor. The students on average are quite satisfied and are academically performing to acceptable standards. The factors that do affect the students are more personal and are quite difficult to address on individual levels. ICDF can, however, make the students' stay more relaxed by providing, and assisting the institutions with ways to make the students' sojourn as conducive as possible. In the end, it is their academic prowess that is sought along with a sense of cultural appreciation and cultural unity.

The issue that ICDF needs to address is the academic performance of the undergraduate students. The research indicates their poorer performance when compared to Graduate students. This could be due to a number of factors. In fact, other research needs to be done maybe addressing age and length of stay in Taiwan. Whatever the case is, future research will provide some relevant evidences to ICDF.

The researchers will like to highlight the following limitations to this research. One is that the research is limited only to ICDF scholarship students so the results cannot be generalized to other international students in Taiwan. Another limitation is that the majority of ICDF students come from Latin America and the Caribbean so the results are biased to their contributions. A third limitation is that the instrument was developed by the researchers and was only piloted using 10 samples. The research was also limited only to students' age, gender, and nationality. Other demographics were not of interest by the researchers.

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# APPLYING LEARNER-CENTERED PRINCIPLES AND STRATEGIES: FROM FACE TO FACE INSTRUCTION TO A HYBRID COURSE LEARNING FORMAT

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## ABSTRACT

*This paper discusses the transition from traditional face to face instruction to a hybrid format using the newly drafted 8 Standards of the Educational Leadership Constituents Council (2010) as guidelines for the curriculum, the 14 Learner Centered Principles (1997) from the American Psychological Association as elements for instructional delivery. Best practices for the development of comprehension in content areas from transitional face to face instruction in the areas of pre, during, and post reading in hybrid format instruction are used as examples including ways to provide differentiation of instruction (Tomlinson, 1999) These include strategies to increase prior knowledge needed to comprehend the concepts and various assessment methods to demonstrate knowledge gained through student choice of not only the method of presentation by also the topic based on prior knowledge, learning gained during the course, demographics of the school/district, current position, diversity, and interest.*

*The key to providing instruction in a hybrid course is developing an understanding of how adults learn. The American Psychological Association developed 12 Learner-Centered Principles in 1993 which were expanded in 1997 to 14.*

*“Learner centered is the perspective that couples a focus on individual learners—their heredity, experience, perspectives, backgrounds, talents, interests, capacities, and needs—with a focus on learning—the best available knowledge about learning and how it occurs and about teaching practices that are most effective in promoting the highest levels of motivation, learning, and achievement for all learners. This dual focus then forms and drives educational decision making. Learner centered is a reflection in practice of the Learner-Centered Psychological Principles—in the programs, practices, policies, and people that support learning for all (APA, 1997).”*

*These learner—centered principles are also aligned to the beliefs, characteristics, dispositions and, in particular, the practices created by the instructor. When an instructor embraces these learner—centered principles: 1) learners are included in decisions regarding how they will learn, what they will learn, and how the learning will be assessed; 2) each learner’s unique backgrounds, interests, abilities, and experiences are valued, respected, and accommodated; and 3) each learner is treated as a co-creator and partner in the teaching and learning process. The 14 learner—centered principles are classified into four categories: 1) metacognitive and cognitive factors, 2) affective and motivational factors, 3) developmental and social factors, and 4) individual difference factors.*

*As I have transitioned from face to face instruction to hybrid instruction, I have struggled with how to maintain a learner—centered instructional focus and implement the 14 Learner-Centered Principles in this new format while maintaining a focus on the Education Leadership Constituents Council Standards for Educational Administration.*

## COGNITIVE AND METACOGNITIVE FACTORS

Principle 1 is the nature of the learning process. The goals of the learning process are the focus of principle 2. With support and instructional guidance, I help each learner to successfully create meaningful, coherent representations of knowledge, over time. The hybrid format that I am currently implementing meets three times a semester: 1) the first day of class where the syllabus and course requirements are reviewed, 2) one day in the middle of the semester to connect the online course material with an application activity that extends the major concepts learned through the threaded weekly discussions, and 3) the last day of class where a major project is presented by each student that demonstrates his/her understanding of the course work learned throughout the semester in a personal experience directly connected to their respective district or school.

A second part of the learning is the threaded weekly discussions that are based on the readings. It is important to insure that the face to face activities are directly aligned to the threaded weekly discussions (Kalte, Garnham, & Aycock, 2005). Each week, readings are assigned. The students are divided into three groups that have alternating roles for demonstrating understanding the major concepts in the weekly readings. For example, for week, Group 1 will answer the discussion question; Group 2 will code the reading by indicating text to text, text to self or text to world connections and write a summary of the connections that were made; and Group 3 will respond to either Group 1 or Group 2 responds. The following week, each role will be rotated to a different group. Group 1 and Group 2 responses are due by midnight on the Sunday of the assignment. Group 3 responses are due by midnight of the following Wednesday. I provide feedback to all students on Thursday in which I include what was done well in general by all students and individual students are given positive feedback for specific content which is shared with all students. Any student that needs to improve is provided specific comments in an individually sent message that only that student sees. A rubric for grading the weekly assignment is provided in the syllabus so the students know what is expected.

It is important to note that the threaded weekly discussion provides feedback and validation not only from the instructor but also from other students in the class. At the end of each threaded discussion, I have added a 'Food for Thought' section where students are given a scenario in which they have the opportunity to apply the major concepts from the reading as a new administrator. They are not required to complete this section but it is a way to extend their thinking in a new situation.

Keeping course plans and the technology used in the hybrid course simple will help students be more successful in hybrid courses. In this way, students can focus on the content of the course material and not on learning new technology skills or other new skills to show their understanding and newly acquired knowledge (Kaltta, et. al., 2005). Instructional support and guidance is provided through the threaded weekly discussions by the students and the instructor. In thinking about planning the learning process for the students in the hybrid format, I attempt to include differentiation of instruction using various best practice strategies from face to face teaching that will activate prior knowledge, actively engage the students in the reading process, and assess the learning of the students while addressing the diversity of the students.

Connecting new knowledge with prior knowledge in meaningful ways is an indication of a successful learner, according to principle 3. Principle 4 is strategic thinking. Principle 5 states that to be a successful learner, higher order strategies are used for selecting and monitoring understanding through the application of critical and creative thinking. There are environmental factors which impact contextual learning such as culture, technology, and instructional practices, according to principle 6. Principles 3, 4, 5, and 6 drive the development of the strategies used in both the online and face-to-face instruction of students. A successful learner uses a repertoire of thinking and reasoning strategies to achieve more complex learning goals. There are several strategies that I have used in the hybrid format to help students be successful in making these connections. Prior to reading, I have students complete a KWL chart (Stephens & Brown, 2000). This is a three column chart where the students write

what they know about the topic in the first column, in the second column write questions they what to have answered in the reading, and what they have learned in the third column. Citations from the readings are required to support their prior knowledge as well as their new knowledge. Their colleagues then respond to a summary that the students write using the information from the chart.

To help students activate prior knowledge, students are sometimes asked to conduct a free write on the topic. This is a paragraph that is written before reading the material. The students use the information from the reading to confirm or revise the information from the free write (Stephens & Brown, 2000). Their colleagues then read both the versions of the free write and respond to the writer.

Sometimes students are asked to make a list of words related to the topic that they will be reading in one column. In the second column, the student indicates a citation from the readings that confirm its connection to the topic. If there are other important words/connections found in the reading, the student adds them to the list with a citation from the text. Ideas from the first column not found in the reading, are either eliminated or supported with other sources. I use this adaption of Concept Collection with the List/Group/Label strategy to help students activate prior knowledge and support their ideas with evidence from the text. Students place the words from the first column and those added during the reading into groups based on similar traits/characteristics. The students then label each group. These groups are shared during the weekly threaded discussions with a written summary. Colleagues respond to the groups and the summaries as part of the weekly threaded conversations. Students actively engage in the reading of the text to find new knowledge that needs to be supported with statements from the text (Stephens & Brown, 2000).

One best practice strategy that has been transitioned into the hybrid course is the coding of text as the student reads. The student indicates with a question mark (?) the material that is not understood. An "\*" indicates a statement with which the student agrees. A 'D' shows a place where the student disagrees, and 'C' designates an area

with which a student has a concern. Various other forms of coding can be developed by either the student or the instructor to help the student remain actively engaged in the text (Harvey & Goudvis, 2000). The student then summarizes the coding statements, explaining why they were chose. Students respond to the summaries through the threaded weekly conversations.

Students use the Four Column Evidence Chart before reading to categorize prior knowledge of the topic in column 1 (Stephens & Brown, 2000). In column 2, students add supporting evidence from the text to support ideas in column 1. New knowledge of the topic gained is added to column 3, with supporting evidence from the text to support the new knowledge of the topic placed column 4. Colleagues then respond to the summary that the students write using the information from the chart. The summary is responded to by colleagues as the discussion question for the weekly threaded discussion.

The third part of the final grade is made up of three papers of which one is presented the last day of class. The students come from various size school districts with very different demographics in rural, suburban, or urban settings who are teachers, administrators or unemployed educators in various grades and content areas, Pre-Kindergarten through college in public, private, or charter schools. As a result, they are given a choice of topics for approval based on their current situation, experiences, interests, value to their school or district. A rubric for grading each paper is presented in the syllabus.

## MOTIVATIONAL AND AFFECTIVE FACTORS

A learner's motivation to learn is impacted by the person's emotional states, beliefs, interests and goals, and habits of thinking according to principle 7. Motivation influences what and how much is learned by the individual. Principle 8 states that a learner's intrinsic motivation to learn is influenced by creativity, higher order thinking, and natural curiosity to learn. This principle focuses on a student being a self-initiated learner. The more complex the knowledge and the more difficult the skills to be learned, the greater effort and more guided practice that is required by the

learner. This is the focus of principle 9. Without the willingness to exert this additional effort and time for practice, it is less likely for the learner to be successful except through coercion. Kaleta, Garnham, & Aycock, (2005), indicate that successful learners in a hybrid course need to take responsibility for their own learning, have excellent time management skills, and have the ability to acquire the necessary technology skills to participate in the threaded weekly discussions. Part of the intake process for the hybrid course, is an interview where students answer a series of questions and provide concrete examples to support their answers in several areas that help me to understand the individual motivational and affective factors that may influence their learning. One example is "Please provide evidence from your daily life or current position where you have been self-initiated in your learning, shown excellent time management skills and have been able to communicate ideas very well in writing." A second example is, "What would you find challenging as well as rewarding from participating in the hybrid format of instruction?" (St. Bonaventure University Intake Interview Protocol, 2010). The first day of class, I have the students complete an index card that provides me with additional information about each student's beliefs about education, teaching, and leadership; interests; and goals for the future.

According to Krupp, (1982), adult learning is often self-initiated and aimed toward an immediate goal. Learners who take the initiative learn more and learn it better than passive participants. To assume responsibility for one's learning, the learner must know what he/she is after while being resourceful enough to know where to find it. The learner must also be in an environment that encourages self-initiation both emotionally and physically. It is the responsibility of the instructor in a hybrid course to insure the environment allows for and promotes self-initiation. This is done by providing choices in the method of instructional delivery (face-to-face meetings and weekly threaded discussions); a variety of personal interactions (face-to-face meetings, weekly threaded discussions, feedback from the instructor, and feedback from colleagues); and choices in assessments as well as assessment topics based on the interests, position, demographics of the school/district, etc.

There are several strategies that I use to help insure learners acquire the complex knowledge and skills within the hybrid courses. One is the activation of prior knowledge. The more prior knowledge students have on the topic, the easier the concepts are to understand. I will provide the prior knowledge needed to understand the concepts either by a video clip, an article for additional reading, or an easy text with a summary on the content, should students demonstrate a lack of prior knowledge to make connections as they read text. Within every threaded weekly discussion, the major objectives to be acquired from the reading are listed. This helps the students to focus on what is important and expected to be learned. The discussion questions used each week follow one of several formats: questions based on Bloom's Taxonomy Revised which includes the following hierarchy: remembering, understanding, applying, analyzing, evaluating, and creating (Pohl, 2000). The more prior knowledge students have the more questions that can be asked from the higher levels of Bloom's Revised Taxonomy. A case study or a practical example from the student's school or district is another way students demonstrate the higher level understanding of application. Most of the instruction and assessment of learning focuses on the higher levels of the hierarchy: applying, analyzing, evaluating, and creating. However, the lower levels of learning are accepted based on the amount of prior knowledge the student has on the concepts. Each threaded weekly discussion has embedded in the process a pre-reading activity to activate prior knowledge, a during reading activity to actively engage the students in the process of reading, and a post reading activity to demonstrate their understanding and application of the new knowledge gained.

### **DEVELOPMENTAL AND SOCIAL FACTORS**

According to principle 10, learning is most effective when the differential development of the learner within and across physical, intellectual, emotional, and areas is taken into consideration as the learner encounters different opportunities, experiences, and constraints on learning. Princi-

ple 11 indicates that social interactions, interpersonal relations and communication with individuals have a direct influence on learning. Learners have different strategies for learning, different styles of learning, and different capacities for learning which are directly connected to prior experiences and heredity, according to principle 12. Principle 13 explains that for learning to be most effective, a learner's linguistic, cultural, and social backgrounds need to be considered when planning instruction. As indicated by Principle 14, part of the learning process is assessment. Differentiation of instruction can take place in many ways according to Tomlinson (1995). In preparing for instruction in a hybrid course, differentiation takes place by presenting the content in a variety of ways including reading a text, reading an article, viewing a video, reviewing responses by colleagues, or reading a case study for application purposes. Students come to the learning with differing amounts of prior knowledge of the concepts. Differentiation of instruction can take place in several ways and the hybrid form of instruction and assessment lends itself to many of these forms. Continual assessment takes place during the weekly threaded discussions as well as grouping can be flexible based on the project that is assigned. Given student choice based on interest and prior knowledge, students have the option to work alone or in groups on various topics of their choice. The learning environment is conducive to differentiation based on the various formats that the students used to share their understandings of the content.

Knowledge is acquired in several ways. Students can acquire knowledge with incidentally, through wide reading, through exposure in their environment, through life experiences. Some knowledge is learned intentional, because the learner needs to know the information at this moment in time to make sense of a given set of circumstances or a certain situation. So the student searches for the understanding needed through a resource (a book, an expert, etc.) Learning also takes place through direct instruction using various instructional strategies. This is the goal of the hybrid course-to provide direct instruction using a variety of strategies depending on the prior knowledge, background, skill sets, interests, goals of the learner (Brabbam & Villaume, 2002). Several instructional strategies are used to activate pri-

or knowledge before reading, are used to actively engage students during the reading or during the instructional process, and are provide to assess student understanding including choices in assessments such as oral presentations, power point presentations, a research paper or a video as well as choices in topics. The learning environment is set up to value and accept risk taking as well as to encourage physical and emotional safety that is needed by self-initiated learners.

Assessment should be based on setting high and challenging standards for all learners while evaluating the learner as well as the learning process. Rubrics are developed by the instructor or in collaboration with the instructor and the students to determine how each assessment will be graded. The rubrics are shared with the students as the beginning of each course so the students have an understanding of how the assessment will be graded.

The Educational Leadership Constituents Council has developed 8 standards which are followed in the development of the hybrid courses in the Educational Leadership program. The main focus of the standards is to prepare educational leaders that have the ability to promote the success of all students through a district vision, a positive school culture, an effective instructional program containing best practices in learning, and professional development of all staff; providing a safe and healthy environment for all students and staff; providing student success through collaborating with the community; managing resources in a prudent fashion, acting fairly and in an ethical manner; provide success for students by understanding and influencing the larger educational community; and completing a hands on internship experience where the standards are put into practice. When developing the instructional plans and the assessments to insure student learning has taken place, the curriculum is driven by the principles listed below.

## **STANDARDS FOR ADVANCED PROGRAMS IN EDUCATIONAL LEADERSHIP**

### **ELCC Standard 1**

A building-level education leader promotes the success of every student by collaboratively facilitating the development, articulation, implementation, and stewardship of a shared school vision of learning through the collection and use of data to identify school goals, assess organizational effectiveness, create and implement plans to achieve school goals, and promote organizational learning; promote continuous and sustainable improvement; and monitor and evaluate progress and revise plans that is supported by all stakeholders.

### **ELCC Standard 2**

A building-level education leader promotes the success of every student by advocating, nurturing and sustaining a school culture and instructional program conducive to student learning built on collaboration, trust, and a personalized learning environment with high expectations for students; creating, monitoring, and evaluating a comprehensive rigorous and coherent curricular and instructional program; developing and supervising the instructional and leadership capacity of staff to maximize time spent on quality instruction; and promoting the use of the most effective and appropriate technologies to support teaching and learning.

### **ELCC Standard 3**

A building-level education leader promotes the success of every student by evaluating the management and operational systems; obtaining, allocating, aligning, and efficiently utilizing human, fiscal, and technological resources; promoting and protecting the welfare and safety of students and staff; developing the capacity for distributed leadership; and ensuring teacher and organizational time is focused to support quality instruction and student learning

### **ELCC Standard 4**

A building-level education leader promotes the success of every student by collaborating with faculty and community members, responding to diverse community interests and needs, and mobilizing community resources through the collection and analysis of data and information pertinent to the educational environment; understanding, appreciation, and use of the community's diverse cultural, social, and intellectual resources; building and sustaining positive relationships with families and caregivers; and productive relationships with community partners.

### **ELCC Standard 5**

A building-level education leader promotes the success of every student by acting with integrity, fairness, and in an ethical manner to ensure a system of accountability for every student's academic and social success and model principles of self-awareness, reflective practice, transparency, and ethical behavior; safeguard the values of democracy, equity, and diversity; consider and evaluate the potential moral and legal consequences of decision-making; and promote social justice to ensure that individual student needs inform all aspects of schooling.

### **ELCC Standard 6**

A building-level education leader promotes the success of every student by understanding, responding to, and influencing the political, social, economic, legal, and cultural context through advocating for children, families, and caregivers; acting to influence local, district, state, and national decisions affecting student learning; and assessing, analyzing, and anticipating emerging trends and initiatives in order to adapt leadership strategies.

### **ELCC Standard 7**

A building-level education leader promotes the success of every student through a substantial and sustained educational leadership internship that has field experiences and clinical practice within a school setting monitored by a qualified on-site school mentor.

### ELCC Standard 8

A building-level education leader promotes the success of every student by understanding principles for the development, articulation, implementation, and stewardship of a school vision of learning; understanding principles for advocating, nurturing and sustaining a school culture and instructional program conducive to student learning and staff professional growth; understanding best practices regarding management of a school organization, operations, and resources for a safe, efficient, and effective learning environment; understanding strategies for collaboration with faculty and community members, understanding of diverse community interests and needs, and best practice for mobilizing community resources; understanding dispositions of integrity, fairness, and ethical practice; and understanding how to respond to and influence the political, social, economic, legal, and cultural context within a school and district (National Policy Board for Educational Administration, Draft 2010).

In conclusion, the hybrid format of online teaching is one way for the university, the instructors, and the students to move comfortably from face to face traditional instruction to a blended format that combines some face to face meetings with the balance of instruction and interaction between students/instructor and students/students to take place during weekly threaded discussions. Maintaining simple technology, simple course requirements, with clearly stated grading procedures through rubrics and well defined deadlines with consistent regular feedback will help the course run more smoothly for students and the instructor. The ELCC standards are the curriculum content which drives the concepts that are to be taught and assessed in the hybrid course. When developing the instructional plan, getting to know the students well through several surveys and questionnaires while integrating the 14 Learner-Centered Principles using best practices strategies from face to face courses will insure students are gaining the knowledge and concepts expected throughout the course. Conducting ongoing assessments of the weekly threaded discussions along with assessment projects designed to use the knowledge gained during the course where students chose their topics and

the method they will use to demonstrate their knowledge is key to the success of the hybrid course.

Following these elements has helped me make a transition from face to face teaching to teaching the hybrid format. This statement from a current survey that was conducted with my second semester hybrid course student says it all, "I enjoy the weekly discussion board posts and bringing in the real life experiences that we are able to tie to the text. Making the text to self and text to world connections are the connectors to what makes the class a functional tool in the real world. Application of what we are learning in internship experiences and to what we have or are experiencing and then having the opportunity to come to a place to reflect and discuss in a place where you feel comfortable to reflect really allows you to grow both personally and professionally, that's what makes the hybrid community so successful. Some weeks it felt like the reading text was so dense and then the challenge of the questions that follow where there isn't always a cut and dry answer tends to make it difficult when you are learning. The reality of that though is that there isn't always just one answer and it isn't always cut and dry, so even though this is a negative, it isn't necessarily a fault of the course. The text is a bit overwhelming at times, but the re-reading and coming together through the online community to participate rather than sitting in a classroom where you might not participate at all does help force you to digest more of the information with perspective that you may not have originally had." (Student Survey, 2011").

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# **SURVIVAL IN THE ACADEMIC JUNGLE: A BEHAVIORAL PERSPECTIVE**

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## **ABSTRACT**

*This paper provides the perspective of three senior business professors regarding the opportunities and obstacles a young professor faces as he or she embarks on a career as a faculty member in a business school. The paper addresses the "life cycle of a faculty member"; the impact of accrediting agencies, specifically AACSB International; the impact of the performance appraisal process; and the occasional necessity of "moving on".*

## **INTRODUCTION**

New junior faculty members face a number of opportunities and dangers as they enter the academic jungle in an attempt to establish a meaningful career. Critical to the process is the early career phase leading to promotion and tenure. It is here that the greatest risks occur.

It is understood that faculty must engage in teaching, research, and service while building the social connections embodied in the term collegiality. Frequently, the prior experiences of the junior faculty member do not prepare them for the reality of the early years in the profession.

Connections with the discipline are critical for maintenance of a career. Given the prominent role played by research in the academy and the dynamic nature of knowledge within the discipline, professional development is a mandatory

activity. In a similar vein, the expectation for the profession expressed by accrediting bodies is dynamic.

The motivations of faculty change upon achieving tenure. The focus shifts from joining the profession to active participation in the profession. Leadership and mentorship roles emerge and are embraced.

## **THE LIFE CYCLE OF THE PROFESSOR**

### **The Early Years**

The central focus of a newly hired junior faculty member is exhibiting those behaviors that will ultimately result in promotion and tenure. The typical probation period lasts for six to seven years. This period is one of great stress for new faculty. You are in a new environment, you are

now preparing several new courses that must meet the needs of your new institution, you must engage in a process of socialization with those individuals that will ultimately determine your fate relative to continued employment at the institution, and you must publish sufficient articles to meet department and school expectations which may be difficult to obtain with any specificity.

Given the uncertainty associated with the tenure decision, it is important to adopt a career model that will prove successful somewhere in the academic community. Of necessity, the focus must be on research and publication. Naturally, this leads to a life-cycle of research productivity with a peak near the fifth to seventh years after graduation (Goodwin and Sauer, 1995). Following this peak, production tends to level off and be maintained for a period of about twenty years. It is interesting to note from the study of Goodwin and Sauer that taking a position as an administrator, such as department head, is associated with a significant decline in research productivity that persists throughout the balance of one's academic career. They call it "the curse of peer recognition." Obviously, young faculty should not accept administrative appointments and anyone accepting such an appointment should understand the negative ramifications.

Despite the focus on publication, it is also important that attention is given to performance in the classroom. This is particularly challenging because doctoral students in business are not normally given any special training on teaching pedagogy. Consequently, they mimic what their graduate school mentors were doing and this will frequently fail in the undergraduate classroom where many end up performing. The undergraduate business student today reads less, attends class less, writes less, free rides on group assignments and performs lower on the GMAT exam than students from other disciplines (Glenn, 2011). This student represents a challenge for even the most gifted teacher, much less one with no background in learning theory.

## The Later Years

At the end of the early years, the faculty member usually is promoted to Associate Professor and awarded tenure. The next phase of the career is then focused on those activities that will lead to full professor status. First and foremost, scholarly production must be maintained on a regular and systematic basis. A corollary activity that supports publication is active attendance at professional meetings as a paper presenter. Also, one can visit other research institutions and present papers to peer groups and obtain feedback on the content of the paper.

While using professional meetings as a proving ground for research, one must avoid getting involved extensively in editorships. Goodwin and Sauer found that serving as an editor actually was associated with decreased production in a similar manner as that of serving as a department head. So, be an active presenter and discussant but be leery of any administrative role in the association.

The faculty workload is frequently measured by the number of classes taught. Hu and Gill reaffirmed the fact that teaching load has an adverse effect on research productivity over their broad-based sample of IS faculty members. They found that teaching loads up to 11 hours per week did not significantly affect production while those beyond that level were significant detractors to research.

Once the final promotion to full professor has been obtained, diverse roles may be sought. For some, the best job in academics is that of a tenured full professor and they want to stay right there, in many cases deeply involved in doctoral student education or mentoring. For others, having obtained professor status now provides an opportunity for greater service to the profession and they actively seek editorships, organization offices and participation in groups studying the challenges facing the academy. Still others strive for administrative roles on the campus including department head, associate dean, dean and then provost and ultimately president.

## THE ASSOCIATION TO ADVANCE COLLEGIATE SCHOOLS OF BUSINESS (AACSB)

For new faculty members that join the faculty of an AACSB accredited business school, the AACSB standards will significantly impact expectations relative to performance. Key among those standards is Standard Two:

“The mission incorporates a focus on the production of quality intellectual contributions that advance knowledge of business and management theory, practice, and/or learning pedagogy. The school’s portfolio of intellectual contributions is consistent with the mission and programs offered.” (AACSB, 2011, pp.19-20)

With AACSB reviews of business schools now conducted on a five year cycle, the pressure for consistent intellectual output throughout an entire career is being brought by the process. Further, the focus is very clearly on peer-reviewed journal articles:

“Generally, intellectual contributions should meet two tests:

- Exist in public written form, and
- Have been subject to scrutiny by academic peers or practitioners prior to publication.” (AACSB, 2011, p.22)

Essentially, all faculty members are expected to be productive in research. There is little room for non-producers. The portfolio of intellectual contributions must come from a “substantial cross section of the faculty in each discipline.”

This point is further spelled out in Standard Ten:

“The faculty of the school has, and maintains expertise to accomplish the mission and to ensure this occurs, the school has clearly defined processes to evaluate individual faculty member’s contributions to the school’s mission. The school specifies for both academically qualified and professionally qualified faculty, the required initial qualifications of faculty (original aca-

demic preparation and/or professional experience) as well as requirement for maintaining faculty competence (intellectual contributions, professional development, or both).” (AACSB, 2011, p.42)

The expectations become more specific under the “Basis for Judgment” section of the Standard: “At least 90 percent of faculty resources are either academically or professionally qualified” and “At least 50 percent of faculty resources are academically qualified.” In general, academically qualified faculty are those that possess a doctorate and remain research active. While a minimum of 50 percent AQ is permissible, this is basically true only for business schools that have only an undergraduate program. The expectations for AQ faculty are higher for master degree offering institutions. For doctoral degree granting institutions, the expectation is that virtually all faculty will be AQ.

For those new faculty members that expect a long and successful career in academics, regular publication of journal articles is mandatory. While standards do not address what is enough research, visiting teams let expectations be known to school leadership. Minimums of two articles per five years are emerging at all levels. In order to greatly exceed minimums and qualify eventually for a funded chair at a research university, publication of at least two articles per year with frequent appearances in top tier journals would be more appropriate.

Over time, expectations in the academy change. Such change will frequently be manifest through the adoption or revision of standards of professional organizations. Therefore, it is important that faculty monitor the changing standards for AACSB as they progress through their career. Many of the standards and much of the emphasis that exists in current AACSB standards did not exist 20-30 years ago. Drastic changes have occurred within one generation. Yet, scholarly productivity is still the “coin of the realm”.

## PERFORMANCE REVIEW

As a faculty member, you should expect to be reviewed on an annual basis. This review will normally cover your contributions to teaching, re-

search, and service with additional feedback for junior faculty as to promotion and tenure likelihood. In order to be prepared for this review, it is essential that you maintain a person record of your activities including courses taught with student counts, credit hour counts and student assessment of instruction, scholarly activities including publications, papers presented and paper in process, plus service to the institution and profession. Likewise, you should constantly be updating your resume and professional portfolio for future opportunities that might emerge.

A part of the annual review should also be forward looking with goals for the coming year in all aspects of performance. It is during this conversation, usually with the department head, that any concerns relative to the conflict between teaching load and research can be addressed. Time management is very important to success and small shifts to the days and times classes are offered may make a big difference in time available for research.

One of the current trends in education is for more offerings of online instruction. The market for non-traditional students or adult learners continues to expand and to desire additional education using methods that accommodate their current location and time availabilities. This form of instruction can be very time consuming and junior faculty should avoid this type of instruction particularly during the probation years. If you must teach using this method of delivery, the annual review process can be used to adjust other elements of your schedule to accommodate the added time this method of instruction will require. Further, a very substantial amount of preparation must be done prior to the delivery of the course rather than on the fly as the course is taught. Having time during the summer to prepare for an online course during the fall term would be a reasonable request.

### MOVING ON

Despite the best efforts of a faculty member, there may come a time when a new opportunity must be found. Whether tenure denial occurred or salary compression forced a move, the faculty member must find a new opportunity. It is here that many rely on contacts that have been made

in the profession during the period of service at the current institution. This underscores the necessity of becoming active in your discipline-based professional associations. Not only will you benefit from the academic activities of the association, you will form friendships with your colleagues and they will be there to help you when are seeking a new opportunity.

The relocation event will interrupt the stream of scholarly productivity and care should be given to minimize that impact. And if salary compression was the primary driver, you should at least get a 25 percent raise to justify the move (Carper, et. al., 2008).

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# FROM ONLINE STUDENT TO ONLINE INSTRUCTOR: ASSISTIVE STRATEGIES

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## ABSTRACT

*With the influx of online learning opportunities, online students and instructors are faced with a variety of challenges. Online students face the same challenges as do face-to-face learners, but by facing them in an online context, the interpretations of those challenges can lead to the success or failure of their overall educational experience. Similarly, online instructors must use the experience they accumulate and transform that into an online environment. This study used the participatory case study methodology to document a female graduate student's experience with the challenges for online students, and then used those challenges to develop virtual implementation strategies for online instructors.*

## INTRODUCTION

Thanks to the rise in online enrollment (Allen and Seaman (2010), today's student is not limited to participating in physical classrooms at the collegiate level. As a result of online enrollment, virtual universities began to increase, therefore creating new opportunities for both students and instructors. In 1995, Western Governors University was one of the first to offer all of their course instruction online (Xu and Morris, 2009). Over more recent years, online courses have dramatically increased in the United States (Seok, Kinsell, DaCosta & Tung, 2010). Allen and Seaman (2010) reported that there are over 5.6 million students in an online course during the 2009 fall term, which is a 1 million student increase over the previous year. In fact, Rudestam (2004) stated "the physical classroom no longer defines the learning environment. The learning environment is found wherever learning takes place, from homes and offices to cyberspace, including the World Wide Web and electronic libraries and databases" (p. 428). Students have the capabilities to have their entire college experience in a virtual environment, including research projects, laboratory experiments and even personality inventories.

When enrolling in an online university, advisors instill excitement in new students. Monaco and Martin (2007) suggested that this is the op-

portunity to provide education in an engaging way that facilitates discovery within students. Universities discuss the convenience of taking classes online, the cost-effectiveness compared to a "brick and mortar" or traditional university, and the quality of their form of education. In fact, Murphrey (2010) mentioned one attractive trait to students is the "anytime, anywhere" convenience (p. 212). Gustafson (2007) talked about the pressure that students can be under and how online education can relieve some of that pressure. For the most part, they are correct in their assumptions. Taking online courses is convenient, especially for adults who work full-time and have families. Participating in online courses is cost-effective, taking into consideration the economy, distance to traditional universities, and what families would have to pay in daycare or taking time off of work to attend class.

One of Guerin, Arcand and Durand-Bush's (2010) recommendations for future research was to lead students into enhancing their learning experiences through in-depth personal accounts of their educational context. Therefore, this study uses a participatory case study approach (Creswell, 2007) to outline three challenges that female graduate online student faced, an explanation of the transition from online student to online faculty, and three strate-

gies for online instructors to use in assisting their students and developing themselves as faculty members.

## REVIEW OF LITERATURE

This research focuses on a participatory case study of an online student and their transition from online learner to online instructor following graduation. The online student is a female graduate student who earned her doctoral degree through a virtual university. This research explored the challenges that student faced in an online environment and how to use those experiential challenges to develop strategies to improve the pedagogy of online instruction.

According to the *Online Classroom* (2004), online learning can mean different things to different people. Lee, Carter-Wells, Glaeser, Ivers and Street (2006) used the metaphor *community* to describe many of their virtual scenarios. They believed that this community is no longer limited by proximity of a geographical nature and are difficult to define because of that. This community can also be an experience of virtual communication from a variety of locations based on the learning management system offered by the institution (Meloni, 2011). Chang (2003) developed several ideas on what online learning could give students, such as an active knowledge construction, information sharing and to distribute that knowledge to others. From a purely academic standpoint, Lee et al., stated that “each academic online community represents a unique entity in terms of its course content, learning objectives, community norms, students, faculty, and administration” (2006, p. 14).

The online student has chosen the virtual-learning environment due to numerous factors, including transportation costs to-and-from an on-ground course, child care, leaving work early, and convenience (Lassitter, 2009). Puzziferro and Shelton (2009) have developed a profile of the online student, which consists of a student who has at least one or more of the following characteristics:

1. Delayed entrance or later return to higher education,
2. Attends part time,
3. Works full time,
4. Is considered financially independent,
5. Has dependents other than self,
6. Is a single parent,
7. Has a General Equivalency Diploma or a GED (p. 17).

An online educational experience is not without challenges. Students who are not technologically-savvy may find computers intimidating, initially navigating online courserooms can be scary, and many students feel completely overwhelmed with the online environment. In fact, Vonderwell and Turner (2005) knew that online learning and teaching requires a restructuring of student and instructor roles. Learners with the goal of becoming an online instructor upon graduation, especially masters-level and doctoral learners, should use this awareness of challenges and strategies in preparation and consideration of becoming an online instructor.

## RESEARCH QUESTIONS

This study sought to determine the challenges faced by online students and to use those challenges to develop assistive strategies for the future development of online instructors. Due to the exploratory nature of the research conducted, a qualitative, participatory case study approach was used to examine and document the intentional sample of a self-selected participant in an online graduate program at a virtual university. Specifically, two research questions guided this study:

1. When examining an online graduate student, what challenges, if any, do they face?
2. If there are challenges, how can those obstacles turn into assistive strategies for future online instructors?

Exploring the experiences of an online graduate student, this study aims to draw on the interactional challenges between online graduate students and online graduate instructors. It also aims to take those challenges, if any, and



use them to develop tools and techniques for instructors who are interested in teaching in an online environment.

## METHODS

This research uses a qualitative methodology to answer the research questions. Gelo, Braakmann and Benetka (2008) described a qualitative approach will consider reality as socially and psychologically constructed, and that the aim is to understand the behavior and culture of a human or group. Dooley (2007) suggested that a meaningful case study would include items that readers would find in a detailed story, such as a setting, main characters, events and even conflicts.

More specifically, a participatory paradigm (Creswell, 2007) is a type of case study method in which researchers are actively involved as participants (Guerin, et al., 2010). Guerin et al.'s, (2010) innovative study allowed the "researcher's personal narrative" to reveal their lived experiences that are described as "complex and rich" (p. 1063).

For this particular participatory case study, the data included observations and reflections of the online graduate student, following suit of Murphrey's (2010) case study of experiential eLearning. This documentation included reflections of understanding areas of online learning, such as communication patterns of the student/instructor dynamics, misinterpretations, and the emotional aspects of being an online graduate student.

The participant was a 36 year old female student completing her third year of an online graduate psychology program. Her course of study for the Doctor of Philosophy was General Psychology and her dissertation topic focused on anxiety and types of instruction. The data was collected through student and instructor email transcript logs. While the raw data was not fully presented in this study, it was used to triangulate the data and validate the findings. The analysis of email interactions between student and instructor took place between January, 2009 and July, 2010.

Throughout that time period, there were 186 relevant email exchanges between student and instructor. Of those 186 emails, 75 were student-driven and 111 were instructor-driven. The final component of her dissertation course, which was 20 weeks, the participant documented challenges she experienced, such as communication patterns with her instructor, noted any misinterpretations between student and instructor, and recorded emotional aspects, such as an anxiety and depression.

These challenges were recorded in a narrative form. Narratives help to join together events over time to put into story-form, which helps people make sense of experiences and events (Murray, 2003). Guerin, et al. (2010) reported that the analysis of the narratives is guided by the goal of the researcher. The goal of this research was to explore challenges that a graduate student faces in an online educational environment. When conducting data analysis of the narratives, the constant comparative method was used, this can be described by Corbin and Strauss (2008) as comparing incidental data for similarities and differences.

## FINDINGS

After analyzing the email transcript narratives, there were three themes that were represented as challenges for the online student: communication, misinterpretation and emotional aspects.

### Theme 1: Communication

As described by the participant, the most challenging issue during the study was the lack of personal contact with the instructor. In traditional classes, students are face-to-face with their instructor for every class, unless it is a distance-learning or hybrid course. Even then, there are times in which the physical presence of the instructor occurs. The participant documented that there were up to five weeks in which there was no electronic contact with her instructor, despite the student sending numerous emails. Electronic contact in this text is defined as an email initiated by the online learner or instructor, asking questions pertaining to coursework or procedural items.

In this study, examples of communication challenges, as documented by the participant, includes evidence of time expectations, policies and procedures, and the instructor's comments to the student. For time expectations, the student disclosed that her definition of a reasonable time to respond to an email was forty-eight hours. After the five week lapse in time in which the student sent numerous emails and didn't get responses, the student contacted the university to request an explanation of faculty response-time expectations. The student was told that the required time-frame for an instructor to respond was up to two weeks after the student had sent an email.

Another example of a communication challenge was the comments made to the student by the instructor, such as "I'll review your materials soon", "I'll get back to you on this next week," and after fifteen days with no contact "I'm back and will review this in the next few days." The student reported that many times, the student would counter-email to get even further clarification of the instructor's comments.

## **Theme 2: Misinterpretation**

The participant then narrated her experiences of misinterpretation of course information. The participant found that email communications were not without misinterpretation. Online learners learn early on from their peers that their written communication skills must be not be vague or left up to interpretation. For this study, the misinterpretation of information caused lengthy online discussion forums and justification of answers on behalf of the participant. The instructor made comments, followed by a variety of emoticons, disclosure of personal information, provision of questions or comments that contradicted themselves with prior questions and comments.

An example of misinterpretation was in the selection of topics for dissertation. The participant stated that the instructor assigned a specific university form to guide her in the process of the requirements of doctoral procedures. After completing said form, the instructor accepted it conditionally. Due to misinterpretation, the deadline for form submission had passed

and the participant had to enroll in additional coursework. From a financial standpoint, this "misinterpretation" cost the participant another two ten-week terms at the university, at roughly \$2500 per term. Therefore, the participant calculated the misinterpretation cost an additional \$5000 and be finished with the process twenty weeks later. The participant in this research found this to be the most costly of all misinterpretations.

Another form of misinterpretation the participant documented was the disclosure of personal information shared by the instructor. On several occasions, the instructor would reveal personal information such as "I'm having a lot of pain and severe headaches", "my family has been moving" and discussed private information about a parent. The participant stated that she felt at times she was unsure as to what to do with that information or how to proceed.

## **Theme 3: Emotional Aspects**

The third challenge faced by the participant fell within the category of affective (emotional) responses. The participant found that by being an online student, it was challenging to express how important completing any program was to a faculty member, simply because emotions have difficulty in being displayed via email.

The participant reported that she experienced anxiety during the doctoral process, especially with online learning. Examples of the student's anxiety took form in such comments to her instructor as "I'm having anxiety about it all", "I have still not heard from you. At this point, I'm growing worried" and "I'm getting nervous since I haven't heard from you in several weeks". The participant reported that the instructor did not address the emotionality of the comments, nor addressed the concern of anxiety levels within doctoral students.

## **CONCLUSIONS**

Based on the participatory case study by the online graduate student, it was determined that the three challenges faced by an online graduate student included communication concerns, misinterpretation of information, and the

need to address emotional aspects. The online learning experience can be challenging, from a learner's perspective (McKnight, 2010), and online students should be aware of the pitfalls and learn to prevent such challenges.

Communication challenges are not specific to email interactions. Depending on the institution, there can be minimally-two contacts per month requirement, as are outlined by faculty contracts (McKnight, 2010). However, this isn't always explained to learners prior to registering for the program, and students may experience some anxieties. Balter, et al., (2009) recognized the age of the millennial student as growing up with instant communication, which is one of the reasons many students will pursue an online education. If communication patterns aren't established within the initial interactions between student and instructor, it can lead to student drop-out or negative perceptions of the institution.

As a master's and doctoral learner, taking comprehensive exams online, scheduling phone conferences, selecting dissertation material, as well as meeting the university's deadlines leaves online learners wanting more support and communication with their instructors. After all, they are chairpersons, in committees, instructors, and representatives of the university. Students don't register for online coursework with the assumption that they will receive contact from their instructor on a monthly basis.

The challenge of misinterpretation can be addressed throughout the entire tenure of the student-instructor relationship. The welcoming email sets the tone for the entire course, for both the instructor and the online student (Sull, 2009). But, it is difficult to determine an online instructor's facial expressions, tone of voice, body language and various other communication skills. Even through phone conversations, information can be misinterpreted.

As for the challenge of emotional aspects, students experience frustrations when there miscommunications, or a lack of clear expectations (Hogan, McKnight & Leigier, 2006). Lassiter (2009) has found that several emotions take forms of unproductive behavior, such as shyness, virtual bullying, and a lack of connectedness

or non-responsiveness, even over-stimulation, which can lead to confusion. Many students experience anxieties when becoming taking online courses, but the physical manifestations of anxieties such as shaking, heart palpitations, and stomach discomfort (Beck et al., 1988) cannot be conveyed to instructors when they are hundreds of miles away.

The psychological manifestations of anxiety, which include excessive concern, apprehension and difficulty controlling worry (Spielberger, 1983) cannot be physically conveyed to the instructor, but can be interpreted through electronic contact. Hurd (2007) suggested that if there is a physical absence of an instructor, it could intensify a learner's anxiety in this type of setting. As an online student, it can produce anxiety when there is no reassurance by instructors. Sull (2009) recommended preparing for student anxiety concerns, even though there is no physical contact, before they enroll in the course.

### **Making the Transition: Assistive Strategies for Future Online Instructors**

Upon graduation, many online students, as did the participatory case study participant, will pursue academic careers in online instruction. Ash (2010) found that initially, curiosity may attract online instructors, but the ability to create and maintain relationships online is what keeps instructors. The participant was given the opportunity to teach online courses and developed recommendations for other instructors, which were based on her experiences as an online student. When the opportunity to become an online instructor presents itself, those who have participated in that process should use what they have learned throughout their online experience to help promote student retention in an online environment, as well as ease their anxieties as online learners. As an online instructor, there are some recommendations for improvement in online instruction.

#### **Become Virtually Real**

Essentially, students want to feel valued within the classroom setting-virtual or otherwise. Warren, Reid & Krendl (1996) suggested that

educators should pay more attention to the interaction between instructors and their students, because one of the most defining elements of this type of education is the lack of face-to-face contact. As an online instructor, spend the first week of the course introducing oneself and sending a personal welcome to each student. Although time consuming, limited amounts of personal disclosure can be a good thing, as long as the content is appropriate and relevant to the coursework. Monaco and Martin (2007) suggested that motivation and commitment can be increased simply having frequent and quality contact between online instructor and student.

Inform them that the challenges they face is understood. If the online instructor was once an online student, or has participated in online courses, that is valuable information that online students can appreciate. Validating students through emails can be achieved through making individualized comments on their discussion posts, timely follow-up, and answering every email. Often students will reply with comments such as “You are the only instructor who has ever emailed me back within 24-hours”, or “It sounds like you know how I feel” (McKnight, 2010). Allowing students to know that there have been similarities with the instructor’s education or professional experience and theirs can ease anxieties or apprehensions, creating a commonality.

### Be Strengths-Based

Many times, students will have enrolled in online classes that have limited online communication skills. Rather than inform the student in a public forum that their writing has several challenges, take that opportunity for a more private discussion. Using a strengths-based approach helps students to focus on the positives of their work and avoid dwelling on the negatives. Hurd (2007) suggested that the isolated context and a lack of face-to-face interaction with an instructor may intensify emotional responses. Sull (2009) encouraged online faculty to end any response with a positive note. Help the student to realize that although an academic error may have been made, it is not a reflection of them or their personality, but as a way to improve their student-persona.

This strategy also works with instances of suspected plagiarism, either intentional or otherwise. Plagiarism, according to Hogan, et al., (2006) is “the act of using another’s work for one’s own, without giving proper credit” (p. 35). Online course sites are designed so that instructor’s can access many students’ material at once. Online instructors can pull up one student’s discussion, compare with another, and then see which student submitted first. Using a strengths-based approach to this issue can let the student know that plagiarism is a breach of academic integrity, and show them the comparisons of submissions, time stamps, and ways to help them utilize their originality.

For example, the participatory case study participant described her experience as an instructor in an online psychology course. A student had emailed her reporting that another student had copied their work. Since this was a confidential email, the participant could monitor the situation, check time entries and compare the work. Within the next week, there was a similar occurrence with the same two students. The participant contacted the suspected student, copied both discussions, citing where the other student had posted several days prior, and how it appeared that plagiarism was an issue. The participant offered to help the student to explore her originality and offered suggested as to how to resolve the issue, such as be the first student to post a discussion each week, use different resources as the other students, and seek consultation as needed. This issue did not occur again in the course.

### Timely Feedback

Online instructors not only spend hours teaching over the internet, but many have teaching loads or assignments in physical classrooms as well. Balter et al. (2009) reported that the “internet, instant messaging, and text messaging have encouraged impatience and expectations of an immediate response among their users, compared with previous generations” (p. 455). It is imperative to establish early in the online environment that you will attempt to respond as timely as possible. Hogan, et al., (2006) reported that interaction, especially with students, is imperative for success. Monaco and

Martin (2007) stated “do not allow too much time to pass between the time the student turns in the assignment or test and the time evaluative results are returned” (p. 45). Instructors can elect to implement a 24-hour timeline, informing students that every 24-hour period, checking emails from students. Emails are the lifeline to the students. Instructors should respond to everyone, even if it is a simple “Thank you” or “You’re welcome”. Instructors should be aware of their institution’s policies and procedures regarding feedback time-limits.

Timely feedback is also imperative to grading assignments. In several online courses, there is typically a weekly assignment, due at the end of each week. Make it a priority to have each assignment graded within 24-hours of when it was due, or inform students that you do all grading of assignments on a certain day of the week. Providing feedback is important when grading assignments, because students will often submit an assignment with a post that says “I hope I did this right” or “I had trouble with this assignment”. Validating their work, if it is congruent with the grading rubric, or offering suggestions for improvement, if it is not congruent with the grading rubric, can encourage students to either continue submitting quality work, or intensify their efforts.

### FURTHER STUDY

This study provided a participatory account of several challenges experienced by an online graduate student. It explored different aspects of online learning and then took those challenges to develop assistive strategies for improvement of the online teaching profession. As technologies advance, both online students and instructors will be exposed to a plethora of opportunities in the online environment.

Ash (2010) believed that it takes more than just being familiar with technology to be a proficient online instructor. Seok et al., (2010) concurred; reporting online education can bring new challenges to instructors and students. Lee et al., (2006) stated that when comparing communication and technology, “effective and frequent communication on the part of the instructor and positive peer-to-peer communication ap-

peared to be more important than the technology” (p. 27).

It is recommended that faculty who desire to be an online instructor take an online course themselves. Hogan et al., (2006) recommended online-specific instructor competencies to assist new faculty in the development of their efforts for virtual course delivery. Espasa and Meneses (2010) state that “more teacher training should be given” when it comes to providing information to online students (p. 290). The authors continue by encouraging online instructors to obtain professional practice in improving the regulation of feedback. Since online instructors are a reflection of their universities they are also representatives to their professional fields as well. In fact, McAllister (2009) felt that the perfect mix of an online instructor is one of academic credentials and professional experience, as well as a learner-centered philosophy. Therefore, one recommendation for future research of this study is to incorporate online course enrollment part of a university’s instructor orientation period.

Solimeno et al., (2008) reported that further studies are needed that focus on emotional responses and alternative learning environments. As the navigation of the courseroom becomes more familiar to seasoned instructors, efforts should be made to become timelier with discussion forums and emails, and must not forget that as instructors, there is an obligation to be a “real person” with students. Exploring the emotional responses as an instructor can prove beneficial to the students. Puzziferro and Shelton (2009) recommended developing new values that will support the influx of new online learners. As a result of this study, it is recommended that instructors go a step further and develop awareness for the emotional aspects and anxieties that accompany the navigation of discussion posts, assignment links, and technical difficulties. Experience how the student feels when the online library isn’t working, or when there has been a weather-related disaster and the power is out, rendering helplessness.

To specifically address the challenges experienced by an online graduate student, particular attention should be paid to the themes of communication, misinterpretation and emotional

aspects. To address the challenge of communication, students should be proactive in familiarizing themselves with university policies and procedures to determine what the instructor's requirements are as to communications.

Focusing on the challenge of misinterpretation, future research should be conducted to determine guidelines of professionalism expected of online instructors. In this study, the instructor disclosed personal health information about her family and her own physical symptoms. The participant was confused as to the relevance.

Finally, to examine the challenge of the emotional aspects of online learning, future research should be conducted as to how to alleviate the anxiety experienced by online students. This may include concepts such as learner's guides, guidelines and defined expectations by universities and instructors.

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# OPENCOURSEWARE AND OPEN EDUCATIONAL RESOURCES: THE NEXT BIG THING IN TECHNOLOGY-ENHANCED EDUCATION?

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## ABSTRACT

*OpenCourseWare (OCW) and Open Educational Resources (OER) are two new and closely related educational technologies. Both provide open access to learning materials for students and instructors via the Internet. These are for the moment still very young technologies. While they have grown dramatically in just ten years there is still relatively little literature about their application in higher education. This paper will introduce the technologies, discuss their potential, and offer some concepts for where researchers may take the topic in the future.*

## INTRODUCTION

As technology continues to play a larger role in the delivery of higher education educational researchers face an ever-changing landscape of topics and questions. Over the past decade focus has shifted from questions of if online education can work to how it can work to how to best use what is known to work. Hardware-related research has moved from what students can accomplish with technology at home with desktop computers to what they can do with laptop computers to what can happen with ubiquitous technology in the form of mobile computing. These and other issues will continue to offer questions to modern educators. Part of the challenge to researchers is to continually identify the next area demanding attention.

One rapidly growing new avenue of technology enhanced education is the creation, use, and adoption of OpenCourseWare (OCW) and Open Educational Resources (OER). While the expansion of these new technologies, both inside the United States and internationally, has moved at an astounding pace little exists in the literature about the real impact on education. Some case studies have been done but when compared to other educational technologies OCW and OER are still relatively unexplored areas. This paper seeks to first define OCW and OER and what they can do and also challenge the community of higher education research-

ers to pursue new knowledge about just what is happening with these tools in practice.

## DEFINITIONS OF OCW AND OER

OCW and OER are similar resources. Both are digitized educational materials that are provided online at no cost to the user. Both can be used in similar ways for education and in some cases they are included almost interchangeably in research on the topic. There are, however, some distinct differences between the two technologies.

OER is the broader of the two categories. Hylen (2005) defines OER as, "Open Educational Resources are digitised materials offered freely and openly for educators, students and self-learners to use and re-use for teaching, learning and research" (p. 1). OCW is similar, but more narrowly defined. The OpenCourseWare Consortium defines OpenCourseWare (OCW) as "... free and open digital publication of high quality university-level educational materials. These materials are organized as courses and often include course planning materials and evaluation tools as well as thematic content" (OCW Consortium, 2010).

At a basic level, all OCW materials are, by definition, OER, but not all OER materials are OCW. The real differences are in breadth and organization. OCW materials are organized as

courses and as such have both a progression and volume of content that covers a large enough area of a certain field or topic to approximate what a student would encounter in a post-secondary class on the subject. OER may rise to that level, but at the same time may be as simple as a podcast of a single lecture or the sharing of a single presentation file.

These distinctions may be important depending on the need of the user. A learner seeking a large volume of information about a subject probably needs to find an OCW course; a resource that provides a full range of learning activities. For a learner seeking one specific piece of information the right OER could be the better, more efficient resource. As with many resources the right choice between OER or OCW depends on the requirements of the user.

### A BRIEF HISTORY

At the time of this writing in 2011 OCW is reaching its tenth year of existence, originally launched by the Massachusetts Institute of Technology (MIT) in 2001 with content for over 1600 courses (Abelson, 2007). The stated goal of the program is to "...provide the content that supports an education" (Kirkpatrick, 2006, p. 53). Since the MIT launch other organizations have been created to organize and distribute OCW materials. The OCW Consortium boasts a membership of hundreds of universities and related organizations at the time of this writing (OpenCourseWare Consortium, 2010) and other universities have their own OCW functions, including the Johns Hopkins Bloomberg School of Public Health, Yale University, Carnegie Mellon, and Notre Dame just to name a few.

OCW has experienced large-scale growth, both at MIT and across other institutions. From the initial 1600 course launch of OCW at MIT their program has grown to over ten million users (Edudemic, 2011). Yet another study indicates that there are more than 3,000 courses available from over 300 universities internationally (Yuan, et. al., 2008). Other user statistics, outside of the membership of the OCW Consortium, are difficult if not impossible to attain. Because there is no central repository of OCW

materials, nor any central record-keeping of OCW activity there is really no way to know how many people have accessed OCW courses or how often people do so.

Information about OER is even more difficult to obtain. Because OER materials can be as small as just a single multimedia file, produced and distributed by virtually any provider, there is no way to track individual access to OER resources. There is real educational value to the information contained in OER materials, but at the moment there is no detailed information about how or to what extent the information is being used.

To frame where OCW is in terms of the life cycle of educational resources online learning, a delivery method that is still maturing and growing, was officially founded in 1993. The United States Distance Learning Association recognizes this date as the time that Jones International University became the first accredited online university. So, online learning, something that many in higher education still consider to be new technology, was launched a full eight years before OCW came into existence.

### THE NEXT BIG THING?

This paper's title is in the form of a question, not a statement. The reason for this is that the author is posing a question rather than sharing definitive results. Are OCW and OER going to be the next big drivers of online learning and blended course design? Will they impact higher education as a whole to the extent that online education has in the past several years? Will dedicated OCW and OER theorists begin to enter into the literature?

There are not any answers to these questions right now. What is important to higher education, however, is to openly ask these questions and openly discuss the possibilities. With so many organizations investing in OCW and OER, and so much material available, there is anecdotal evidence that these materials are popular, and perhaps even important. What is lacking, however, is literature examining and assessing the use of such materials in operational environments. While there is some, it is rela-

tively scarce considering the size of OCW and OER programs.

There are helpful guidelines available for how to use OCW and OER materials, and even some information indicating that people have taken advantage of the materials. A 2004 survey of educators using MIT's OCW found that 57% used OCW for course or curriculum development and 47% have adopted elements of MIT materials for use in their classrooms (Marguiles, 2004). Rennie and Mason (2010) provide a five step process through which OER materials, including OCW, are used to design a course:

1. Identify the main generic headings for course content (key topics for discussion and learning)
2. Search for relevant resources that can be re-used for these headings
3. Write 'wrap-around' materials that contextualize and support the learning resources
4. Add your new materials to the common pool (if required)
5. Select a format for sharing (a wiki, etc)

Thus, practitioners have roadmaps available for adopting and adapting OCW and OER materials for use in their classrooms. The question remains, however, as to how these materials are being applied today and how they may be applied in the future.

### FUTURE POSSIBILITIES

There is some discussion in the literature about what OCW and OER may become in the future. Taylor (2007) foresees this possible future as one where,

...the OCW movement has the opportunity to expand its vision and operations to enable the OCW learners to have access to academic support, to have the opportunity to be assessed and to have the potential to gain credit towards recognized qualifications awarded by a credible accreditation agency (p. 3).

This possibility is not without its merits, and is in fact already in operation in at least one program at Fredrick Community College in the state of Virginia, USA. There, students can take advantage of freely provided online courses in emergency management and transfer those completed courses to the college, in addition to taking a college-provided exam, and pay a nominal fee to receive academic credit and eventually earn an associates degree in Emergency Management.

Duderstadt (2008) has a similar, if more encompassing, vision of what OCW may grow to become. The concept of the meta-university involves combining resources in a manner where, "Open source, open content, open learning, and other 'open' technologies become the scaffolding on which to build truly global universities..." (Duderstadt, 2008, p. 11). Duderstadt (2009) poses an even more forward looking projection by proposing that the combination of OCW, emerging technologies, and other social and educational factors could, in the future, yield, "...the linking together of billions of people with limitless access to knowledge and learning tools enabled by a rapidly evolving scaffolding of cyberinfrastructure; which increases in power one-hundred to one-thousand-fold every decade" (p. 31).

These are certainly bold predictions, events that, if accurate, would change the face of higher education for everyone. Such possibilities are the reason that these questions must be asked and research must be pursued. It is easy to look at predictions like the ones above and dismiss them as impractical or even impossible. If nothing else, recent history has shown us that such dismissals can be both premature and dangerous.

Looking back at the early days of online education, how many people then would have believed what has happened so quickly? Who would have believed that just one of many companies involved in for-profit education, Apollo Group, Inc., owner of the University of Phoenix and other providers, would grow to a market cap of US\$5.66 billion at the time of this writing (Yahoo Finance, 2011)? The provision of higher education is something that is guaranteed to change, particularly as technology advances and

society's demands shift. OCW and OER may never reach the scale that some are predicting, but with millions of users already taking advantage of the technology it seems likely that it will continue to grow and exert more influence onto the educational landscape.

For practitioners and researchers alike the question becomes how to study this new sector of the educational landscape. Certainly, case studies of existing applications of OCW and OER will offer better insight into what the technologies may be capable of. Some of these have been done, but many more will be necessary to truly begin to understand how to optimize the technology's use. Beyond studies of what is being done, studies of what resources are available need to be pursued as well. Learning how big OCW and OER are, the rate at which they are growing, and where that growth takes place can serve to frame the technology and create a baseline from which to consider what will happen in the future.

Knowing what exists in OCW and OER will be a good start to the research. This will be complemented by further studies on how such materials are produced. This may be the area of future research that is best represented in the current literature, with much discussion of copyright issues and similar logistical concerns over posting open content. From this base there is a broad opportunity for research into methods for capturing, archiving, and distributing OCW and OER. Embedded methods for tracking use and linking institutionally hosted materials to more centralized OCW and OER repositories could also be explored and developed.

In addition to organizational and operational studies, pedagogical research will also be valuable as OCW and OER grow into the future. Studies of educational effectiveness, student response, and successful faculty use of the materials will all serve to provide sound pedagogical footings for more refined models of how to apply these resources in the educational community. Beyond this point there will certainly be more areas in which to focus research efforts. Most important will be a deliberate focus on OCW and OER by educational researchers of all types and the construction of a robust body of literature to support ongoing conversation.

## CONCLUSION

The world is changing at an ever-faster pace and those changes include higher education. As technologies advance and access to technology spreads, more people will have the opportunity to use technology-enabled educational tools. Online education is still a growing, changing, and challenging aspect of blending technology and education, but it is not alone in its position. OCW and OER have the potential to foster substantial change in how and where people learn in the future. To be prepared for this potential change it is critical that educational researchers invest the time into studying these new tools and create a base of literature about what they are, how they work, and what they might mean in the future.

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## ASSESSMENT OF CPA CANDIDATES' EDUCATION: PART TWO<sup>1</sup>

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### ABSTRACT

*This paper is the second of a two part study comparing The Sixth Edition of the Uniform Accountancy Act as prepared and adopted by the National Association of State Boards of Accountancy (NASBA) with the actual regulatory practice of the various jurisdictional boards of accountancy in place just prior to the release of the most recent NASBA guidelines. The purpose of this part is to examine the state, district and territorial boards of accountancy educational requirements to sit for the Uniform Certified Public Accounting (CPA) Exam in the first "of the 'Three Es' – Education, Examination, and Experience – that constitute the requirement for Certified Public Accountant (CPA) licensure. (AICPA 2011) And to compare these existing educational requirements to those presented in the "Uniform Accountancy Act Model Rules" as approved by NASBA Board of Directors on JULY 29, 2011. Educational requirements - general education, accounting, and business related courses at both the bachelor and graduate level - were obtained by the authors from state, district, and territorial web sites as of April 11, 2011 in order to examine requirements by the various accountancy boards. Each board of accountancy establishes the requirements for licensure within its jurisdiction.*

<sup>1</sup> See *Journal of Learning in Higher Education* Fall 2011 for "Assessment of CPA Candidates' Education: Part One"

### INTRODUCTION

The final licensing authority of Certified Public Accountants rests with state, district, and territorial boards of accountancy of the United States of America. One commonality among all boards of accountancy is the requirement that any person wishing to be certified by examination within their jurisdiction must pass the Uniform CPA Exam. Passing this exam offered

through cooperation of the boards of accountancy, the National Association of State Boards of Accountancy (NASBA), the American Institute of Certified Public Accountants (AICPA), and Prometric implies all examinees have knowledge of business and accounting assessed on an equivalent basis. The AICPA states: "The purpose of the Uniform CPA Examination is to provide reasonable assurance to Boards of Ac-

countancy (the state entities that have statutory authority to issue licenses) that those who pass the CPA Examination possess the level of technical knowledge and the skills necessary for initial licensure in protection of the public interest. Public interest is protected when only qualified individuals are admitted into the profession.” (<http://www.aicpa.org/BecomeACPA/Pages/BecomeaCPA.aspx> ) This indicates that there should be a minimum level of knowledge and education evaluated. However, the authors discovered minimum education requirements to sit for the exam by a board of accountancy vary from a high school diploma to a bachelor’s degree plus other educational requirements.

Data for this project was collected from the various web sites of 54 of the 55 boards of accountancy and NASBA. The Commonwealth of the Northern Mariana Islands’ Board of Accountancy was not included in the study since the board has not offered the CPA exam. From the NASBA web site, the “Uniform Accountancy Act Model Rules” (Model Rules) of 2011 was acquired to determine the Model Rules, more specifically Rule 5-1 (Education requirements – definitions) and Rule 5-2 (Education requirements – determining compliance of the applicant’s education). Model Rules offer guidance to boards of accountancy regarding minimum educational requirements to sit for the CPA exam. These rules are based on a college/university’s degree accreditations and the Uniform CPA Examination Content Specification Outline (CSO) provided by the AICPA for the exam. “NASBA’s mission is to enhance the effectiveness of state boards of accountancy.” This paper examines the academic course work in three categories: general education, accounting, and business, as recommended by the 2011 accountancy act. (NASBA, 2011)

### **GENERAL EDUCATION REQUIREMENTS**

General education is expected to develop skills in communication, research, judgment and analysis, and emphasize ethical behavior and professional responsibility. (NASBA, 2011) Ten boards (less than 20 percent of the boards) require subject areas outside of business related courses to sit for the CPA Exam. Of these

boards, five boards require statistics and three other boards allow students to choose from several courses. Two of the eight boards, also require at least one algebra course. Computer science is required at four boards and is an option at one additional board. Communications is required at four boards and is an option at two other boards. There are an additional three boards that specify business communications and one that encourages it be integrated into accounting courses. It was also noted for this board that humanities is one of the 10 areas which students can use to meet the requirements to sit for the Exam. Also, two boards have a requirement of a minimum of 60 hours of general education. Outside of these cases there are no specific general education requirements, other than those built into the degrees as set by the colleges and universities.

### **ACCOUNTING EDUCATION REQUIREMENTS**

Boards of accountancy vary in the ways they describe the minimum educational requirements, either for the candidates to be eligible to sit for the CPA Exam or to be licensed. Boards may list specific accounting topics that must be included in a candidate’s education and/or reference a minimum number of accounting credit hours to be obtained.

In examining the education requirements to sit for the CPA Exam, it should be noted that introductory accounting courses, at either the undergraduate or graduate level, are normally considered part of the general business curriculum and generally cannot be used to satisfy accounting education requirements. Boards may refer to “upper division” courses to indicate those courses beyond the introductory level. Table 1 shows the number of accounting credit hours beyond the introductory level required of candidates for the CPA Exam.

The largest category listed, at 29 (53.74%), are those boards that do not specify the number of upper division accounting hours that candidates for the CPA Exam must have completed. The next largest category is the 10 boards that require at least 24 credit hours in accounting, which agrees with Model Rules. Seven boards



**TABLE 1**  
**SEMESTER HOURS OF**  
**UPPER DIVISION OR GRADUATE ACCOUNTING**  
**REQUIRED BY BOARDS OF ACCOUNTANCY**  
**BEYOND INTRODUCTION TO**  
**UNDERGRADUATE OR GRADUATE ACCOUNTING**

Semester Hours Required	Number of Boards	Percent of Boards
36	1	1.85%
33	1	1.85%
30	7	12.52%
27	1	1.85%
24	10	18.52%
18	2	3.70%
15	1	1.85%
12	1	1.85%
6	1	1.85%
Not Specified	29	53.74%
Total Boards	54	100.00%

require at least 30 accounting credit hours, which was the number of credit hours included in previous drafts of the Model Rules prior to 2009.

Of the 29 boards that do not specify a minimum number of upper division accounting hours, 27 either specify a minimum number of accounting hours without requiring that they be upper division, or list specific course topics that must be included in candidates' transcripts that add up to a substantial number of hours. Exceptions are the Virgin Islands, which does not specify a minimum number of accounting hours or specific courses in accounting to be included, and Pennsylvania, which requires a minimum of three credit hours in accounting.

Table 2 shows the education requirements in accounting by specific accounting topic, when specific topical coverage is required by boards of accountancy. The topics listed in the Model Rules are those with the CSO designation in the NASBA column. The topics listed in Table 2 without the CSO designation are included

**TABLE 2**  
**COMPARISONS OF ACCOUNTING REQUIREMENTS**  
**OF NASBA AND THE BOARDS OF ACCOUNTANCY**

Accounting Subject-matter content derived from the Uniform CPA Examination Content Specification Outline (CSO)	NASBA	Boards (54)	
		Number	Percent
Financial Accounting and Reporting for Business Organizations	CSO	33	61.11%
Financial Accounting and Reporting for Government & Not-for-Profit entities	CSO	7	12.96%
Auditing and attestation services	CSO	37	68.52%
Managerial or cost accounting	CSO	31	57.41%
Taxation	CSO	33	61.11%
Fraud examination	CSO	0	
Internal controls and risk assessment	CSO	0	
Financial statement analysis	CSO	0	
Accounting research and analysis	CSO	2	3.70%
Tax research and analysis	CSO	0	
Accounting information systems	CSO	7	12.96%
Ethics (accounting course), as described in Rule 5-2 (d) (6)	CSO	3	5.56%
Advanced Accounting		5	9.26%
Accounting Theory		1	1.85%
Accounting Communications		1	1.85%
Electives		5	9.26%
At least 24 upper division/graduate semester hours in accounting		20	37.04%

because they are required by at least one board of accountancy. (CSO refers to the Uniform CPA Examination Content Specification Outline, from which the topic headings used in the Model Rules are derived.)

The Model Rules state that the 24 credit hours in accounting should cover “some or all” of this content; whereas the language actually adopted by boards of accountancy that specifies topical coverage is more direct. For example, one subparagraph describing the educational requirements of the state of New Jersey is typical: “At least 24 semester hours in accounting at the undergraduate or graduate level, which included coursework in financial accounting, auditing, taxation and management accounting.” (<http://www.state.nj.us/lps/ca/laws/accountancyregs.pdf>)

Table 2 shows that of the topics listed in the Model Rules, auditing and attestation services is the one most often mentioned by the boards of accountancy at 68.52%, followed closely by financial accounting and reporting, and taxation, both at 61.11%. The number of boards requiring Government and Not-for-Profit accounting is surprisingly low, considering the importance of government and not-for-profit expenditures to the economy, with only seven boards, or about 13%, specifically requiring that this topic be included in a candidate’s education.

Unlike some of the boards, the Model Rules do not specify a certain number of credit hours for each topic. The Financial Accounting and Reporting for Business Organizations topic is one that six boards require candidates to have studied for six or nine credit hours, while other boards either specifically require only three credit hours or do not mention the number of credit hours required. Other Model Rule topics are rarely required by boards to have been studied by candidates for more than three credit hours. Even though Model Rule section 5-2 (d) (3) dictates a minimum of two student credit hours in a discrete undergraduate or graduate accounting (NASBA, 2011), only two boards require research and analysis to sit for the exam.

Table 3 shows the minimum education requirements in accounting that must be completed before CPA Licensure is awarded. Comparing

**TABLE 3**  
**MINIMUM ACCOUNTING EDUCATION IN**  
**TOTAL SEMESTER HOURS REQUIRED BY**  
**BOARDS OF ACCOUNTANCY FOR LICENSURE AS**  
**CERTIFIED PUBLIC ACCOUNTANT**

Semester Hours Required	Number	Percent
38	1	1.85%
36	4	7.41%
33	3	5.56%
30	12	22.22%
27	4	7.41%
24	27	50.00%
21	1	1.85%
15	1	1.85%
12	2	3.70%
3	1	1.85%
Not Specified	2	3.70%
Total Boards	54	100.00%

these results to Table 1, which lists the accounting education requirements for CPA Exam candidates, it is clear that more boards specify a minimum number of accounting credit hours for licensure than for eligibility for the CPA exam. Only two boards (3.70%), do not specify a minimum number of credit hours in accounting for licensure, in contrast to Table 1’s 29 boards (53.7%) that did not specify a minimum number of credit hours in accounting for eligibility to sit for the CPA Exam. (One possible explanation for the difference is discussed later in connection with Table 7.)

### **BUSINESS EDUCATION REQUIREMENTS**

Table 4 shows the education requirements for general business topics for candidates to be considered eligible to sit for the CPA Exam. The topics listed in the Model Rules are those with the CSO designation in the NASBA column, while the topics listed in Table 4 without the CSO designation are included because they are required by at least one board of accountancy.

**TABLE 4**  
**COMPARISONS OF BUSINESS REQUIREMENTS OF**  
**NASBA AND THE BOARDS OF ACCOUNTANCY**

Business Topics	NASBA	Boards (54)	
		Number	Percent
Business law	CSO	19	35.19%
Economics	CSO	12	22.22%
Management (includes Organization Behavior)	CSO	7	12.96%
Marketing	CSO	6	11.11%
Finance	CSO	10	18.52%
Business communications	CSO	3	5.56%
Statistics	CSO	8	14.81%
Quantitative methods	CSO	2	3.70%
Information systems or technology	CSO	1	1.85%
Ethics (business course), as described in Rule 5-2 (d) (6)	CSO	9	16.67%
Algebra or higher		2	3.70%
Computer Systems and Applications		5	9.26%
Production/ Operations Management		2	3.70%
International Environment		1	1.85%
Business Policy		2	3.70%
Humanities		1	1.85%
Oral Communications		4	7.41%
Written Communication		2	3.70%
Oral and Written Communications		1	1.85%
Business Electives		5	9.26%
Accounting Courses not used to meet accounting requirement		18	33.33%
At least 24 undergraduate/graduate semester hours in business beyond required accounting hours		20	37.04%

The largest group, at 20 (37.04%) of the 54 boards of accountancy requires at least 24 credit hours of business topics. Of these 20 boards, most list at least one topic to be included in those 24 hours. The most commonly required topic is Business Law, by 19 boards (35.19%). Economics and Finance are also commonly required, by 12 boards (22.22%) and 10 boards (18.52%), respectively. Nine boards (16.67%) specifically require coverage of ethics. Notice that the Model

Rule section 5-2 (d) (6), which is referred to in the Table 5 label for Ethics, allows the topic to be covered either as a discrete course, or by integration throughout the rest of the curriculum. (NASBA, 2011) Statistics, Management and Marketing are also required by several boards.

While the Model Rules include Business Communications as a topic and suggest in Model Rule section 5-2 (d) (5) a minimum of two

student credit hours in an undergraduate or graduate accounting or business course (NASBA, 2011), some boards of accountancy accept credit hours for communications even if offered outside the institution's college of business, as demonstrated by the total of seven boards that require Oral Communications, Written Communications, or Oral and Written Communications. Similarly, although only one board specifically requires coursework in Information Systems and Technology, five boards require coursework in Computer Systems and Applications, which perhaps represents a wider variety of content than that discussed in the Uniform CPA Examination CSO related to Information Systems and Technology.

Finally, Table 4 also shows that of boards that address the specific content of business education, approximately one-third (18 boards of the 54 total boards) specifically state that any accounting courses not used in meeting the accounting education requirements can be used to meet general business education requirements.

Table 5 illustrates that more boards of accountancy are specific about the total number of credit hours of business education required for licensure than for eligibility to sit for the CPA exam. More specifically, it shows that 39 boards require 24 or more credit hours in business coursework, in Table 5, with the 20 boards requiring at least 24 hours for eligibility, in Table 4.

#### MINIMUM EDUCATION

The suggested requirement of at least 150 education credits for CPA licensure (the 150-hour rule) began being discussed at least 20 years ago. Table 6 shows that boards requiring at least 150 credit hours from institutions of higher learning now comprise 83.33% of total boards, at 45 boards, and the number rises to 46 (85.18%) if the board requiring a bachelor's degree plus thirty hours is included. (Note that a bachelor's degree typically requires at least 120 hours of coursework credits.) Of the approximate 15% of boards not adopting the 150-hour rule, six boards (11.11%) require at least a bachelor's degree or 120 hours of coursework credits. It is notable that two boards (3.70%) require only an

**TABLE 5**  
**MINIMUM BUSINESS EDUCATION IN**  
**TOTAL SEMESTER HOURS REQUIRED BY**  
**BOARDS OF ACCOUNTANCY FOR LICENSURE AS A**  
**CERTIFIED PUBLIC ACCOUNTANT**

Semester Hours	Number	Percent
48	1	1.85%
39	2	3.70%
36	2	3.70%
33	2	3.70%
32	1	1.85%
30	5	9.25%
27	3	5.56%
24	23	42.59%
21	2	3.70%
18	1	1.85%
12	3	5.56%
9	2	3.70%
6	1	1.85%
Not Specified	6	11.11%
Total Boards	54	100.00%

associate's degree or 60 hours or course credit, and one board requires only a high school diploma for licensure.

Of the 46 boards that have either explicitly adopted the 150-hour rule, or have effectively ad-

**TABLE 6**  
**MINIMUM EDUCATION REQUIRED BY**  
**BOARDS OF ACCOUNTANCY TO OBTAIN A**  
**CERTIFIED PUBLIC ACCOUNTANT LICENSE**

Education	Number	Percent
150 hours & Bachelor's or Higher Degree	45	83.33%
Bachelor's Degree + 30 hours	1	1.85%
Bachelor's Degree	4	7.41%
120 Hours	2	3.70%
Associate's Degree	1	1.85%
High School Diploma	1	1.85%
Total Boards	54	100.00%

opted the rule by requiring a bachelor's degree plus 30 hours, there are variations in how many coursework credits are required for eligibility to sit for the CPA Exam. Table 7 shows that of the 46 boards that have adopted the 150-hour rule, 21 boards (45.65% of the total of 46), require that candidates have completely met the education requirements before sitting for the exam.

Therefore, slightly more than half of boards that have adopted the 150-hour rule allow candidates to sit for the exam while they are still in the process of completing educational requirements. Typically, these boards require candidates to have met some threshold educational

requirements. For example, 14 boards (30.43%) require that candidates have completed a bachelor's degree, including those tabulated in the second through fifth rows of Table 7, of the 46 boards requiring 150 hours. Four boards (8.70%) require that candidates have completed 120 credit hours before taking the exam.

The remaining boards do not set a specific threshold for education requirements, but rather, base acceptance of candidates on how near in time the candidates are to completing the requirements, ranging from time periods of 60 days to six months.

### OTHER DIFFERENCES AMONG BOARDS

When education is obtained other than in a traditional classroom, differences in what counts occur among boards of accountancy. These differences concern how education is obtained such as: on-line, self study, and/or through work and life experiences. Differences among boards include the amount of credit allowed for internships in fulfilling general, accounting, or business hours requirements, and whether pass/fail courses can be counted. Also, differences exist as to whether College Level Examination Program ("CLEP") exams count, and, if so, how much total credit can be earned toward education requirements. Further, the awarding of credit for Life Experience has become an issue. Other issues include independent study, correspondence, and internet courses. Also, some boards limit the amount of credit which can be earned in one subject or topic area. Finally, there is the issue of CPA review courses and whether such courses should count toward meeting the education requirements of state boards of accountancy. If education gained outside the traditional classroom is allowed, the credit must appear on a transcripts from an accredited institution recognized by the board of accountancy. However, often there are limits to the amount of credit that may be counted from a non-traditional classroom setting. In addition, there are differences in the amount of credit awarded for graduate education. Some boards use a multiplication factor of 1.5 or 1.6 per graduate hour in equating graduate hours with undergraduate hours; however the trend over the past four years has been to count undergraduate hours

<b>TABLE 7</b> <b>MINIMUM EDUCATION TO SIT FOR A</b> <b>UNIFORM CERTIFIED PUBLIC ACCOUNTANT EXAM</b> <b>IF 150 HOURS IS REQUIRED TO</b> <b>AWARD THE CERTIFICATE</b>		
<b>Boards Requiring 150 hours (46)</b>		
<b>Education</b>	<b>Number</b>	<b>Percent</b>
Completed 150 hours	21	45.65%
Bachelor's Degree	9	19.57%
Bachelor's Degree & 120 hours	3	6.52%
Bachelor's Degree + 620 on the GMAT	1	2.17%
Bachelor's Degree + 120 days of finishing requirements	1	2.17%
120 Hours	4	8.70%
Last term of Bachelor's Degree if within 120 days of finishing requirements	1	2.17%
180 days prior to finishing requirements	2	4.35%
Must finish requirements within 6 months of application date	1	2.17%
Must finish requirements within 60 days of exam period	3	6.52%
Total Boards requiring 150 hours	46	100.00%

and graduate hours as equal in determining if educational requirements are met.

## CONCLUSIONS

It appears that in general, the boards of accountancy have not adopted all the elements of the Model Rules concerning educational requirements for CPA Exam and licensure candidates. For example, many boards have little specificity as to the content of the required accounting and business coursework. Perhaps these boards are relying on requirements that credit hours and/or degrees have been earned at accredited institutions. The positive aspect of this approach is that it allows flexibility for the educational institutions that are preparing candidates to sit for the CPA Exam in that jurisdiction and probably reduces the number of revisions to the requirements. However, boards taking this approach should be aware that they are, in a sense, subordinating their judgment to that of educational institutions or accrediting bodies. If the accrediting bodies or institutions experience major changes, such as significant funding changes, new accrediting bodies and the increasing presence of for-profit universities, it is then possible that the coursework content could change without specific consideration by the board, perhaps in ways the board would not approve.

However, when compared to a similar study in which board of accountancy rules were compared to a proposed draft of UAA Education Rules (Griffin, 2007), the boards have moved closer to NASBA's Model Rules but still have a long ways to go before there is uniformity in the requirements among state, district, and territorial boards.

## FURTHER STUDY

The authors assume the accounting curriculum for colleges and universities located within the same state or jurisdiction as the board of accountancy will comply with the educational requirements of that board, but the direction of causation is not clear; it may be that the board has in essence written its requirements to match what is offered at the leading colleges and universities in that state. Therefore, it would be interesting to examine how closely boards of accountancy

mirror the Model Rules in relation to the political power of colleges and universities in its state or jurisdiction.

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<http://www.state.nj.us/lps/ca/laws/accountancyregs.pdf>.

NASBA's Education Committee Task Force Framework, "UAA Education Rules 2005 Exposure Draft," Nashville, Tennessee, 2005.

<b>APPENDIX WEB SITES</b>	
<b>Name of Organization</b>	<b>Web Site</b>
National Association of State Boards of Accountancy	<a href="http://www.nasba.org/nasbaweb/NASBAWeb.nsf/WPHP?OpenForm">http://www.nasba.org/nasbaweb/NASBAWeb.nsf/WPHP?OpenForm</a>
Prometric	<a href="http://www.prometric.com/CPA/default.htm">http://www.prometric.com/CPA/default.htm</a>
The Uniform CPA Examination	<a href="http://www.aicpa.org/BecomeACPA/Pages/BecomeaCPA.aspx">http://www.aicpa.org/BecomeACPA/Pages/BecomeaCPA.aspx</a>
Alabama State Board of Public Accountancy	<a href="http://www.asbpa.state.al.us/">http://www.asbpa.state.al.us/</a>
Alaska State Board of Public Accountancy	<a href="http://www.dced.state.ak.us/occ/pcpa.cfm">http://www.dced.state.ak.us/occ/pcpa.cfm</a>
Arizona State Board of Accountancy	<a href="http://www.azaccountancy.gov/">http://www.azaccountancy.gov/</a>
Arkansas State Board of Public Accountancy	<a href="http://www.state.ar.us/asbpa/">http://www.state.ar.us/asbpa/</a>
California State Board of Accountancy	<a href="http://www.dca.ca.gov/cba/">http://www.dca.ca.gov/cba/</a>
Colorado State Board of Accountancy	<a href="http://www.dora.state.co.us/Accountants/">http://www.dora.state.co.us/Accountants/</a>
Connecticut State Board of Accountancy	<a href="http://www.ct.gov/sboa/site/default.asp">http://www.ct.gov/sboa/site/default.asp</a>
Delaware State Board of Accountancy	<a href="http://dpr.delaware.gov/boards/accountancy/index.shtml">http://dpr.delaware.gov/boards/accountancy/index.shtml</a>
Florida Board of Accountancy	<a href="http://www.myfloridalicense.com/dbpr/cpa/">http://www.myfloridalicense.com/dbpr/cpa/</a>
Georgia State Board of Accountancy	<a href="http://www.sos.state.ga.us/plb/accountancy/">http://www.sos.state.ga.us/plb/accountancy/</a>
Hawaii Board of Public Accountancy	<a href="http://hawaii.gov/dcca/pvl/boards/accountancy">http://hawaii.gov/dcca/pvl/boards/accountancy</a>
Idaho State Board of Accountancy	<a href="http://www.isba.idaho.gov/">http://www.isba.idaho.gov/</a>
The Illinois Board of Examiners	<a href="http://www.illinois-cpa-exam.com/">http://www.illinois-cpa-exam.com/</a>
Indiana Board of Accountancy	<a href="http://www.in.gov/pla/accountancy.htm">http://www.in.gov/pla/accountancy.htm</a>
Iowa Accountancy Examining Board	<a href="http://www.state.ia.us/government/com/prof/account/home.html">http://www.state.ia.us/government/com/prof/account/home.html</a>
Kansas Board of Accountancy	<a href="http://www.ksboa.org/">http://www.ksboa.org/</a>
Kentucky State Board of Accountancy	<a href="http://cpa.ky.gov/">http://cpa.ky.gov/</a>
State Board of CPAS of Louisiana	<a href="http://cpaboard.state.la.us/">http://cpaboard.state.la.us/</a>
Maine Board of Accountancy	<a href="http://www.maine.gov/pfr/professionallicensing/professions/accountants/index.htm">http://www.maine.gov/pfr/professionallicensing/professions/accountants/index.htm</a>
Maryland State Board of Public Accountancy	<a href="http://www.dllr.state.md.us/license/cpa/">http://www.dllr.state.md.us/license/cpa/</a>
Massachusetts Board of Registration in Public Accountancy	<a href="http://www.mass.gov/?pageID=ocasubtopic&amp;L=4&amp;L0=Home&amp;L1=Licensee&amp;L2=Division+of+Professional+Licensure+Boards&amp;L3=Board+of+Public+Accountancy&amp;sid=Eoca">http://www.mass.gov/?pageID=ocasubtopic&amp;L=4&amp;L0=Home&amp;L1=Licensee&amp;L2=Division+of+Professional+Licensure+Boards&amp;L3=Board+of+Public+Accountancy&amp;sid=Eoca</a>

Michigan Board of Accountancy	<a href="http://www.michigan.gov/dleg/0,1607,7-154-35299_35414_35451---,00.html">http://www.michigan.gov/dleg/0,1607,7-154-35299_35414_35451---,00.html</a>
Minnesota State Board of Accountancy	<a href="http://www.boa.state.mn.us/Licensing/">http://www.boa.state.mn.us/Licensing/</a>
Mississippi State Board of Public Accountancy	<a href="http://www.msbpa.ms.gov/">http://www.msbpa.ms.gov/</a>
Missouri State Board of Accountancy	<a href="http://pr.mo.gov/accountancy.asp">http://pr.mo.gov/accountancy.asp</a>
Montana State Board of Public Accountants	<a href="http://bsd.dli.mt.gov/license/bsd_boards/pac_board/board_page.asp">http://bsd.dli.mt.gov/license/bsd_boards/pac_board/board_page.asp</a>
Nebraska State Board of Public Accountancy	<a href="http://www.nbpa.ne.gov/">http://www.nbpa.ne.gov/</a>
Nevada State Board of Accountancy	<a href="http://www.nvaccountancy.com/">http://www.nvaccountancy.com/</a>
New Hampshire Board of Accountancy	<a href="http://www.nh.gov/accountancy/">http://www.nh.gov/accountancy/</a>
New Jersey State Board of Accountancy	<a href="http://www.state.nj.us/lps/ca/accountancy/index.htm">http://www.state.nj.us/lps/ca/accountancy/index.htm</a>
New Mexico State Board of Public Accountancy	<a href="http://www.rld.state.nm.us/accountancy/index.html">http://www.rld.state.nm.us/accountancy/index.html</a>
New York State Board of Public Accountancy	<a href="http://www.op.nysed.gov/prof/cpa/">http://www.op.nysed.gov/prof/cpa/</a>
North Carolina State Board of CPA Examiners	<a href="http://www.nccpaboard.gov/Clients/NCBOA/Public/Static/index.html">http://www.nccpaboard.gov/Clients/NCBOA/Public/Static/index.html</a>
North Dakota State Board of Accountancy	<a href="http://www.nd.gov/ndsba/">http://www.nd.gov/ndsba/</a>
Accountancy Board of Ohio	<a href="http://acc.ohio.gov/">http://acc.ohio.gov/</a>
Oklahoma Accountancy Board	<a href="http://www.ok.gov/oab_web/">http://www.ok.gov/oab_web/</a>
Oregon State Board of Accountancy	<a href="http://egov.oregon.gov/BOA/">http://egov.oregon.gov/BOA/</a>
Pennsylvania State Board of Accountancy	<a href="http://www.portal.state.pa.us/portal/server.pt/community/state_board_of_accounting/12502">http://www.portal.state.pa.us/portal/server.pt/community/state_board_of_accounting/12502</a>
Rhode Island Board of Accountancy	<a href="http://www.dbr.state.ri.us/divisions/accountancy/">http://www.dbr.state.ri.us/divisions/accountancy/</a>
South Carolina Board of Accountancy	<a href="http://www.llr.state.sc.us/POL/Accountancy/">http://www.llr.state.sc.us/POL/Accountancy/</a>
South Dakota Board of Accountancy	<a href="http://accountancy.sd.gov/">http://accountancy.sd.gov/</a>
Tennessee State Board of Accountancy	<a href="http://tn.gov/commerce/boards/tnsba/index.shtml">http://tn.gov/commerce/boards/tnsba/index.shtml</a>
Texas State Board of Public Accountancy	<a href="http://www.tsbpa.state.tx.us/">http://www.tsbpa.state.tx.us/</a>
Utah Board of Accountancy	<a href="http://www.dopl.utah.gov/licensing/accountancy.html">http://www.dopl.utah.gov/licensing/accountancy.html</a>
Vermont Board of Public Accountancy	<a href="http://www.vtprofessionals.org/opr1/accountants/">http://www.vtprofessionals.org/opr1/accountants/</a>
Virginia Board for Accountancy	<a href="http://www.boa.virginia.gov/">http://www.boa.virginia.gov/</a>
Washington State Board of Accountancy	<a href="http://www.cpaboard.wa.gov/">http://www.cpaboard.wa.gov/</a>
West Virginia Board of Accountancy	<a href="http://www.boa.wv.gov/Pages/default.aspx">http://www.boa.wv.gov/Pages/default.aspx</a>
Wisconsin Accounting Examining Board	<a href="http://drl.wi.gov/profession.asp?profid=60&amp;locid=0">http://drl.wi.gov/profession.asp?profid=60&amp;locid=0</a>
Wyoming Board of Certified Public Accountants	<a href="http://cpaboard.state.wy.us/">http://cpaboard.state.wy.us/</a>
District of Columbia Board of Accountancy	<a href="http://dcregs.dc.gov/Gateway/ChapterHome.aspx?ChapterNumber=17-25">http://dcregs.dc.gov/Gateway/ChapterHome.aspx?ChapterNumber=17-25</a>
Guam Board of Accountancy	<a href="http://www.guamboa.org/">http://www.guamboa.org/</a>
Puerto Rico Board of Accountancy	<a href="http://www.estado.gobierno.pr/">http://www.estado.gobierno.pr/</a>
Virgin Islands Board of Accountancy	<a href="http://dlca.vi.gov/businesslicense/steps/cparequirements/">http://dlca.vi.gov/businesslicense/steps/cparequirements/</a>



# USING STATISTICAL PROCESS CONTROL TO ENHANCE STUDENT PROGRESSION

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## ABSTRACT

*Public interest in educational outcomes has markedly increased in the most recent decade; however, quality management and statistical process control have not deeply penetrated the management of academic institutions. This paper presents results of an attempt to use Statistical Process Control (SPC) to identify a key impediment to continuous improvement in the academic setting and to facilitate continual improvement of instructional performance. An illustration from an undergraduate degree program in business administration is provided.*

## INTRODUCTION

During the 1990s Total Quality Management (TQM) was a hot topic among American business professionals. Companies adopted TQM, in many cases with a great deal of passion. Adherents promoted widespread adoption – not just in industry but also in the public sector. Universities and university systems were not only encouraged to adopt quality management by external stakeholders such as boards of trustees and advisory councils, but also pursued the approach because they had funding concerns and a need to “do more with less”. AACSB International, a premier worldwide accrediting organization for colleges of business, convened a major conference of business school and industry leaders to facilitate adoption of quality management practices in business. Among the recommendations of that convention were the following points on improving the teaching/learning process:

- “rather than obtaining feedback from students in the form of course critiques at the end of the course, institute feedback throughout the course.
- apply statistical methods to detect the presence or absence of ‘out of control’ conditions in the education system.
- as role models, faculty should practice TQ in the conduct of courses, performance of research and interactions with students, staff, and colleagues.
- the university should become a model of a TQ focused organization; in so doing, students’ expectations will become the expectations of their employers...” (Gitlow, et al., p. 6, 1994)

With these, and other, recommendations in hand, AACSB funded the development of a 231 page curriculum resource guide for quality man-

agement. Similarly, in the last decade various studies have discussed the application of quality management principles to higher education (e.g., Baile and Bennett, 1996; Ensby and Mahmoodi, 1997; Mehrez et al., 1997; Vazzana et al., 1997; Willis and Taylor, 1999). However, although assessing educational processes is necessary for continual improvement of educational outcomes, institutions of higher learning seem to stand in need of examples demonstrating actual application of quality methods in their environment and greater expertise in the techniques to perform such assessment. For example, Lawrence, et al. (2008, p. 453) seeks to “stimulate thinking about the application of a proven quality management methodology to academic settings where formal improvement programs such as six sigma are not commonly found.”

W. Edwards Deming, a leading proponent of quality management and the practice of continuous improvement, promoted an improvement cycle known variously as the Shewhart cycle, Deming cycle, PDCA (Plan-Do-Check-Act) Cycle, or PDSA (Plan-Do-Study-Act) cycle (Evans and Lindsay, 2002). Like TQM, this approach has been widely used in industry, however has not deeply penetrated the administration of instruction in American universities (Mergen et al., 2000). While there is great interest in improvement and innovation, continuity of effort seems to be lacking. It is at least possible that this continuous improvement practice has not penetrated academic administration because of a lack of awareness of the way in which statistical control of processes can be used to establish an understanding of the range of outcomes one might expect under normal circumstances and a baseline for ongoing improvement. Conversely, statistical control may not be widely applied in academic administration because continuous improvement – in a form such as the P-D-S-A cycle is not practiced. Regardless, statistical process control is ideal for capturing educational processes such as retention-progression-graduation, because it focuses not only on measuring outcomes, but also, and importantly, on measuring processes, and on prevention of nonconformance rather than ex post detection. (Montgomery, 2000).

More recently, improvement efforts at universities have come in the form of enrollment man-

agement efforts directed toward student retention, progression and graduation (RPG). These efforts are becoming increasingly important as our society is becoming more and more efficiency and value conscious. As student cohorts progress from the freshmen to senior level, some individuals are lost due to attrition. While there may be many factors that play a role in student attrition, including student characteristics and institutional practices, attrition does cause reduced efficiency and lost opportunities in the educational system. As such, RPG represents a significant family of performance measures for universities today, and will likely continue to grow in importance.

Retention, Progression and Graduation are terms that have been operationally defined by the Integrated Postsecondary Educational Data System (IPEDS). Specifically, a first time freshman is a degree-seeking undergraduate who enters college for the first time in the fall term or who has graduated from high school within the same calendar year of that fall term. Cohorts are groups of first time, full time, degree-seeking freshmen who enter a specific university during a given fall term. A university's retention rate for a given cohort is defined as the percentage of that group that returns to the same institution the following fall. Many universities focus primarily on freshman retention, meaning this statistic is not always tracked as the cohort matures into their third year and beyond. Progression, however, is monitored throughout the academic career of the cohort. Progression is defined as the fall cohort who progress to the next classification by the subsequent fall. The rate of progression for a cohort in a given fall would be reflected in a histogram presenting the percentage of students in each classification. Graduation rates are defined as the percentage of a fall cohort that graduates by the summer of their sixth year. While the above describes an entry cohort based methodology, Lee and Buckthorpe (2008) present an exit cohort method. For study programs in a more-or-less steady state operational situation, their method has the benefit of providing a current indicator of the current state of affairs in a course of study, rather than requiring a lag of several years while an entry cohort progresses. In addition, it has been tested over several years and “has proved

to be a robust method” of calculating non-completion rates.

The measurement and use of RPG has recently become quite pervasive among global universities. In the U.S., it is used by the National Collegiate Athletic Association (NCAA) to monitor athletic programs and ensure that universities do not field athletes who are not making academic progress. The consequence of not meeting the NCAA’s RPG targets for an athletic team is a reduction in the number of scholarships that may be offered to members of that team. Similarly, university systems around the world have used RPG or non-completion rates as a way of evaluating the relative effectiveness of their member institutions and to establish performance benchmarks. They have also adapted their funding formulas to financially reward institutions that meet RPG targets and penalize those that do not.

In this paper, we present the results of a project that seeks to address the resistance of academic environments to the use of continuous improvement techniques. The project involves developing an illustrative example of Statistical Process Control (SPC) applied to the supervision of instruction. Our example shows that SPC is effective in demonstrating the need for standardization of course outcomes prior to efforts at continuous improvement. It also illustrates the importance of SPC in any improvement cycle that may be used by academic administrators who seek to fulfill the AACSB mandates described above, establish a continual improvement process for the courses they supervise, and/or address demands for improved RPG.

### STATISTICAL PROCESS CONTROL

SPC was first proposed by Walter A. Shewhart. In the context of the mass production of parts used by his employer, Shewhart (1931, p. 34) suggested that SPC would lead to at least five favorable outcomes, which he labeled:

1. Reduction in the cost of inspection,
2. Reduction in the cost of rejections,
3. Attainment of maximum benefits from quantity production,

4. Attainment of uniform quality even though inspection test is destructive,
5. Reduction in tolerance limits where quality measurement is indirect.

Shewhart noted that “it is often more economical to throw out defective material at some of the initial stages of production rather than to let it pass on to the final stage where it would likely cause the rejection of a finished unit of product.”(Shewhart, 1931, p. 28) Shewhart’s perspective, which has now been validated by nearly a century of industrial practice, was that “by eliminating assignable causes of variability, we arrive at a limit to which it is feasible to go in reducing the fraction defective.”(Shewhart, 1931, p. 28) Shewhart developed SPC as a method for identifying the assignable causes of variability – those that affect a process at sometimes but not at others - so that they could be removed. The control charting techniques associated with SPC are now widely used in business and other public organizations. However, they are far less prevalent in university administration of instructional processes.

While there are substantial differences between the factories addressed by Shewhart’s research in the early 20<sup>th</sup> century, and universities in the early 21<sup>st</sup> century, the outcomes envisioned by Shewhart are now being openly promoted in public higher education policy in the United States. In higher education:

1. The call for “reduction in the cost of inspection” is reflected in concerns about the rapid growth in assessment requirements and the cost associated with this growth.
2. The call for “reduction in the cost of rejections” is reflected in efforts by accrediting and funding agencies to assure RPG, or reduce non-completion rates. It is also reflected in the prevalent attempts among undergraduate programs to create “first year experience” programs that demonstrably enhance RPG.
3. The call for “attainment of maximum benefits from quantity production” is re-

flected in the widespread expectation of access to higher education and financial support for the same.

4. The call for “attainment of uniform quality even though inspection test is destructive” is reflected in the fact that the decision to hire a specific graduate cannot be redone. One primary current emphasis of virtually all accrediting agencies seems to be on program assessment. This reflects the need to ensure that instructional processes consistently attain program objectives.
5. The call for “reduction in tolerance limits where quality measurement is indirect” is reflected in the assessment practices of university administrators and in the use of grades, transcripts, and psychometric testing by corporate human resources professional who seek to predict applicant performance in specific types of jobs.

Just as it may be more economical to reject non-conforming parts during early stages of production, so too in higher-education it may be more economical to no longer enroll a student (lacking in aptitude or motivation) at an early stage of their university experience than to allow that student to progress in a program that they are unlikely to successfully complete.

Statistical control charts have been used for many years to monitor the performance of business and manufacturing processes (e.g., Kumar and Gupta, 1993; Harris and Ruth, 1994). A control chart is comprised of a center line, an upper control limit (UCL), and a lower control limit (LCL) and sample values that are plotted against these. The center line is simply the expected value for the statistic being observed. In the U.S., it is common to use “three-sigma” limits – meaning the control limits are three standard deviations away from the mean being observed. The UCL and LCL represent the extent to which one might expect the statistic being observed to vary under normal circumstances. Therefore, observed values outside the control limits are

seen as indicators of the presence of some “special cause” acting on the system of interest.

In addition to single points outside of the control limit, the presence of special cause variation may be indicated by patterns of observed values. Examples of such patterns are “two out of three consecutive points more than two standard deviations away from the mean on the same side of the center line”, “or four out of five consecutive points more than one standard deviation away from the mean on the same side of the center line”, or “a predictable (i.e., seasonal) pattern”, or “13 points in a row within one standard deviation of the mean”. Hence, to facilitate the use of such “rules of runs”, control charts often depict “one-sigma” and “two-sigma” zones in addition to the control limits. These are helpful in interpreting the chart.

In this paper, the specific SPC tool we utilize is the p-chart. These charts are used to monitor the proportion of entities with a specific characteristic in a given sample. To draw p charts, samples are drawn from the population and the proportion of entities exhibiting the characteristic of interest ( $p$ ) for each sample is calculated. The average proportion ( $\bar{p}$ ) for all samples is calculated using the values from each sample. Given a group of  $m$  samples, the estimate of the sample average proportion,  $\bar{p}$ , can be calculated using the formula,

$$\bar{p} = \frac{\sum_{i=1}^m p_i}{m}$$

The standard deviation ( $\sigma_p$ ), a measure of variation, is used to derive various control limits within which sample proportions are expected to fall. The standard deviation ( $\sigma_p$ ) is calculated using the following formula,

$$\sigma_p = \sqrt{\frac{\bar{p}(1 - \bar{p})}{n}}$$

Where:

- $\sigma_p$  = Estimate of the standard deviation of the sampling distribution of proportions
- $\bar{p}$  = Estimate of the sample average proportion

$n =$  sample size

Average proportions and standard deviations calculated in this manner can be used to construct a p-chart in the following manner.

$$\text{Center line} = \bar{p}$$

$$1 \text{ sigma boundaries} = (\bar{p} \pm \sigma_p)$$

$$2 \text{ sigma boundaries} = (\bar{p} \pm 2\sigma_p)$$

$$3 \text{ sigma limits} = (\bar{p} \pm 3\sigma_p)$$

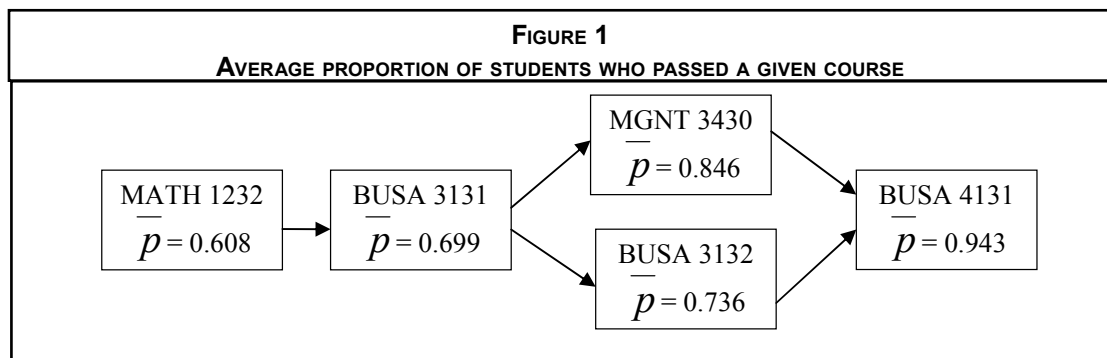
The 3 sigma limits are referred to as the Upper Control Limit (UCL) and Lower Control Limit (LCL). When the sample size is held constant,  $\sigma_p$  will also be a constant and the boundaries and control limits will be straight lines. When the sample size varies,  $\sigma_p$  will also vary, and the recommended approach to handling this situation is to utilize these varying the boundaries and limits. (Duncan, 1986) Sample proportions are plotted on the control chart along with the applicable center line, boundaries, and limits. Depending on the location of plotted values the control chart relative to the boundaries and limits, conclusions regarding the presence of special cause variation can be made utilizing the interpretation rules alluded to above.

### APPLYING SPC TO AN ACADEMIC SEQUENCE

Analysis of student academic performance in a sequence of core classes, with the help of statistical control charts, helps explain the impact of instructional factors on retention, progression and graduation. The academic performance of the students enrolled in the undergraduate business degree program of the College of Business Administration at Georgia Southern University

between year 2000 and 2008 was studied and analyzed for this purpose. Data for students enrolled in summer classes, web courses and other satellite campuses was eliminated to remove unique populations that could skew the results. The results for the universe of students enrolled during this period were used to determine the average proportion ( $\bar{p}$ ) of students progressing. The proportion ( $p$ ) progressing in a given semester, and the appropriate control limits for that semester were determined using the results for all of that term's enrollees. Hence, our control limits vary by semester.

The effort focused on academic performance of students in five courses, which all business students are required to complete. These are taken in sequence between the second and final semester of the undergraduate business degree program. These courses are also generally understood to be the sequence (or critical path) that is most likely to impact a student's time to graduation. Thus, this project focused on explaining progression and graduation related instructional issues – particularly, we needed to discover if special causes of variation in pass rates can be identified and investigated using SPC. Since a letter grade of “C” or better is required for a business student to pass in each of these courses, the proportion of students achieving a grade of “C” or better was calculated for each of the five courses during spring and fall semesters for the time period between spring 2000 and spring 2008. P-charts from the data analysis for five courses under consideration are shown in Figures 2 through 6. From Spring, 2000 through Spring, 2008 these courses demonstrated substantial variation in the average proportion of students achieving a grade of “C” or better (Figure 1).



### MATH 1232

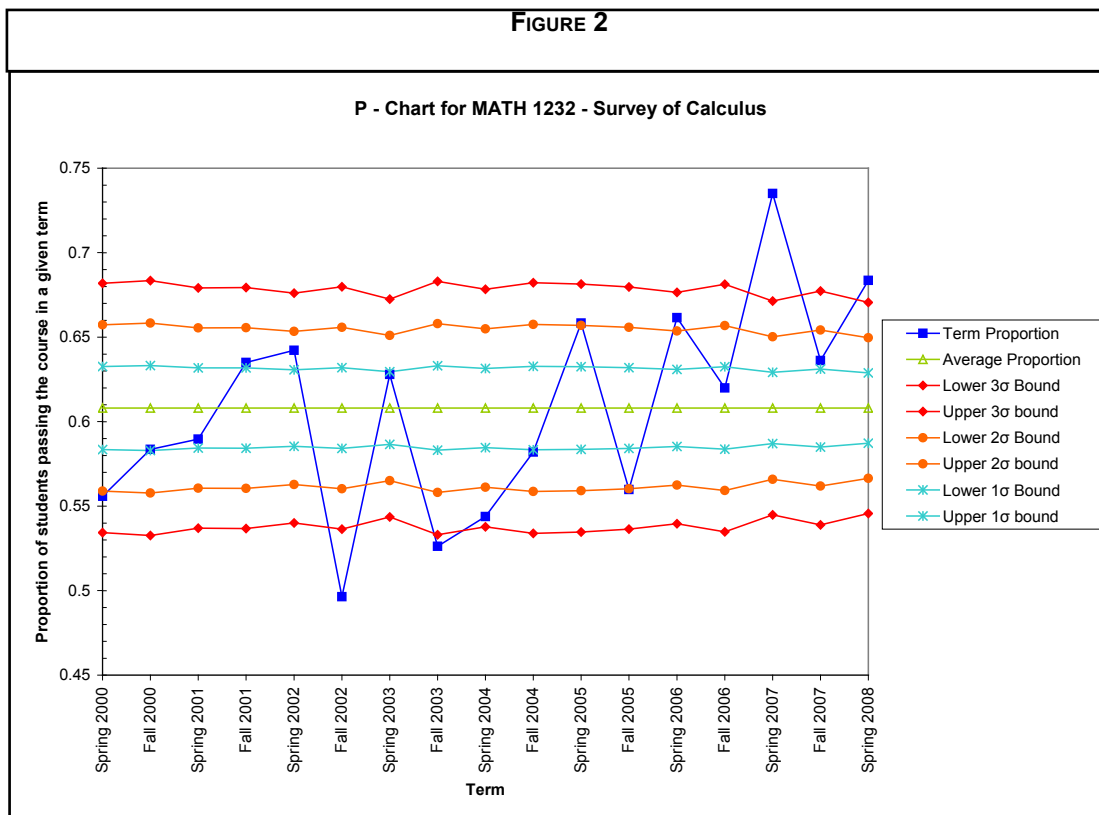
Math 1232 is a Survey of Calculus course and it is the first class in the critical sequence. Two things are obvious from the control chart (Figure 2); first there is an overall upward trend in the proportion of students passing the class and second there is a wide range in the semester proportions observed. These run from 0.496 to 0.735 with a mean proportion of 0.608. The department chair suggests “the spring results are better because most of the students take College Algebra in the fall and then Survey in the spring. Fall semesters probably involve off-semester students who failed previously and transfer students.” One possible cause for the upward trend includes an increase in admissions standards. It is also possible that the higher rates recently observed are a result of greater university attention to the first year experience, and/or improved coordination and staffing of the class. It appears that the improvement in pass rates does not simply reflect a relaxation of standards in this course, because this could lead to lower pass rates in subsequent courses. There are three points of specific concern on

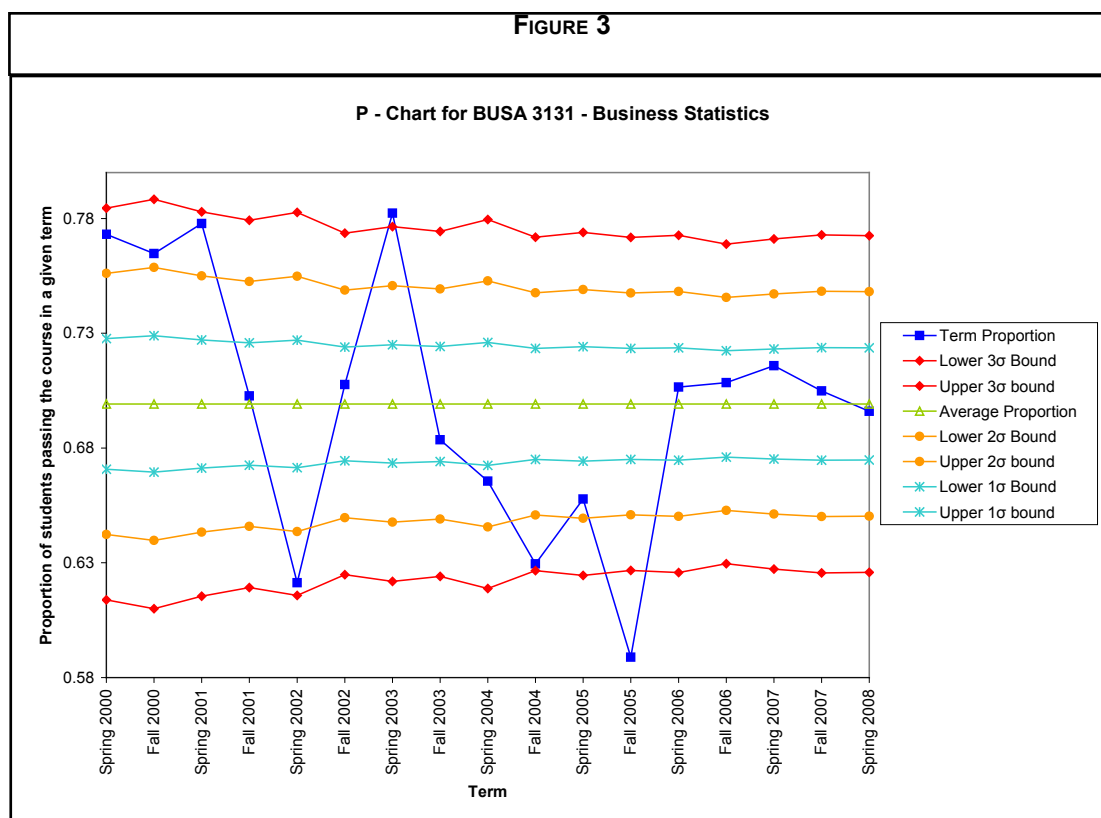
this control chart. In fall 2002, the proportion of students passing the course was significantly lower than mean value ( $\bar{p}$ ). Similarly the proportion of students passing the course is significantly higher than upper control limit (UCL) in spring 2007. The proportion of students passing the course is slightly higher than the upper control limit in Spring 2008. Investigations of reasons for poor student performance in Fall 2002 may give us insight into what does not work in MATH 1232, whereas investigations of assignable causes for improved student performance in the Spring of 2007 and 2008 may help us identify what does work particularly well and could be institutionalized to improve student progression by improving pass rates in this course in future semesters.

### BUSA 3131

BUSA 3131, the second class in the critical sequence, is a Business Statistics course. This chart (see Figure 3) has a mean proportion ( $\bar{p}$ ) of 0.699 and the proportion ( $p$ ) for given semesters ranges from 0.589 to 0.782. There is a significant

FIGURE 2





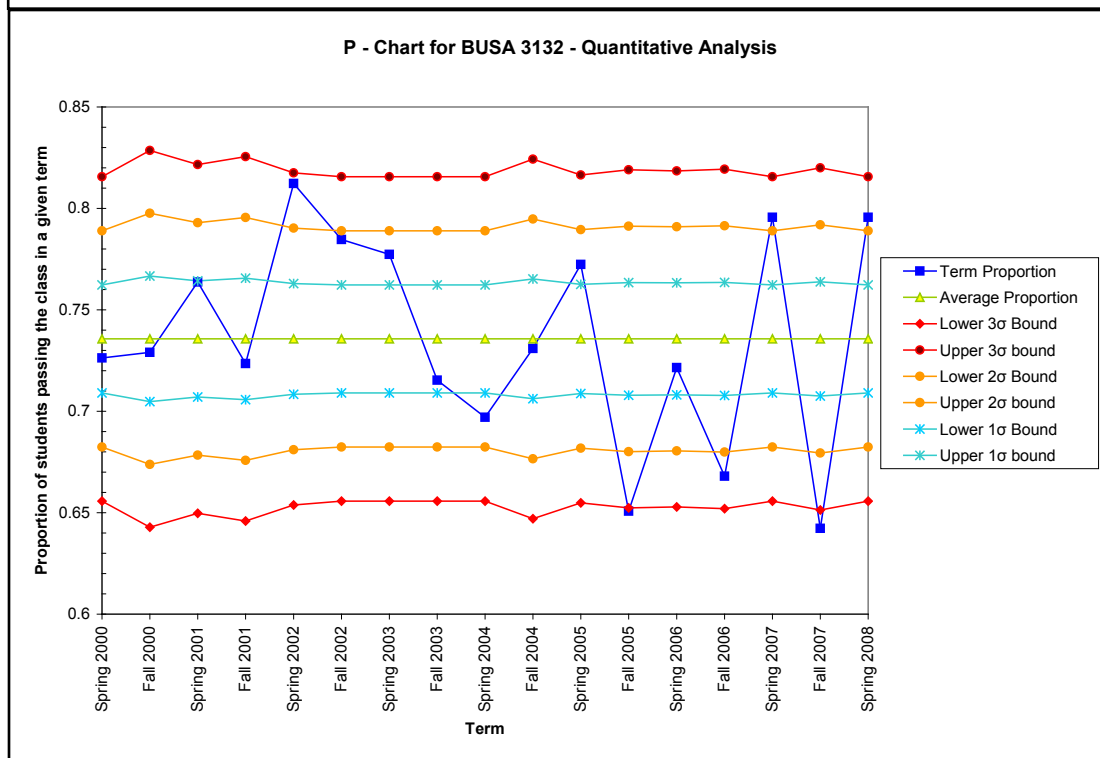
variation in proportion ( $p$ ) from Spring 2001 to Spring 2006 indicating presence of some assignable causes and a lack of control over student performance in this course over this given period, whereas the proportion has been less variable (staying close to the center line) after Spring 2006. This reduction in variation most likely reflects a change in the staffing approach used in the course. Due to a reorganization of the departmental structure of the college, this course has been administered in two different departments and by four different department chairs over the period charted. Prior to 2003 the department was prone to a heavy reliance on temporary and adjunct faculty and had substantial turnover of tenure-track faculty. The resulting wide variations in semester pass rates reflect the lack of continuity among instructors. Upon re-alignment of departments in the fall of 2003, the new supervisor for this course relied on a mix of faculty from economics and quantitative methods. Finally, beginning in the fall of 2005, a third department chair consolidated staffing of the course with quantitative methods faculty and this practice has since continued. While there are points outside of the limits on this

chart – the pattern simply reflects the impact of organizational dynamics and staffing policies. It suggests the importance of remaining with the current approach to staffing the course. It should be noted that it is far easier to adjust the rigor of the class – and the consequent pass rates – than to reduce the variation in pass rates. Hence, the accomplishment of the department chair who introduced the staffing model currently used is very significant, both for this course and for staffing of other courses. Based on the fact that virtually all doctorally qualified faculty in business disciplines have received adequate training in basic business statistics, many would argue against a requirement that quantitative analysis faculty be used exclusively to staff the core service course in statistics. However, it is clear from our experience, and this control chart, that unifying the instructional corps with this requirement has beneficially reduced variation in the proportion of students passing this class.

### BUSA 3132

BUSA 3132 is called Quantitative Analysis, and covers topics such as forecasting, queuing, deci-

FIGURE 4



sion analysis and linear programming. BUSA 3131 is a prerequisite to BUSA 3132. As the p-chart for BUSA 3132 shows (Figure 4), there is obvious variability from semester to semester with only one semester where the proportion ( $p$ ) is outside the lower control limit. The proportion ( $p$ ) of students who pass this course ranges from a low value of 0.642 to a high of 0.812, with a mean proportion ( $\bar{p}$ ) of 0.736. In addition to an out of control point for fall 2007 of 0.642, this chart exhibits an interesting pattern following the fall of 2004. Namely, the proportions for Spring semesters are consistently higher than the proportions for Fall semesters. This could reflect either a staffing pattern or a different mix of students in the spring (with more second attempters). Indeed, given that two new tenure-track faculty members were added to the staffing of this class in the fall of 2004, it seems likely that staffing plays a role in the observed pattern.

### MGNT 3430

MGNT 3430 is an operations management course for undergraduate business majors. It can

be seen from the control chart (Figure 5) that semester averages of the passing proportion range from 0.785 to 0.913 with an overall average of 0.846. The proportion of students passing the class falls within the control limits for each semester. The staff teaching this course has been active with one another in a “teaching circle.” It is possible that the ongoing and consistent interaction among this instructional cadre is a primary factor in the observed degree of control over student pass rates.

### BUSA 4131

BUSA 4131, Strategic Management, is the last course in the sequence. Semester proportions of passing students in this course range from a minimum value of 0.883 to a maximum value of 0.981 with a mean of 0.943 (Figure 6). The proportion, 0.883, for fall 2000 is outside the lower control limit of 0.889 for that semester. Given that this is eight years prior to the construction of the control chart, and all of the faculty who taught the course in that semester are no longer affiliated with the university, it is difficult to determine the cause of this point. Three possi-



FIGURE 5

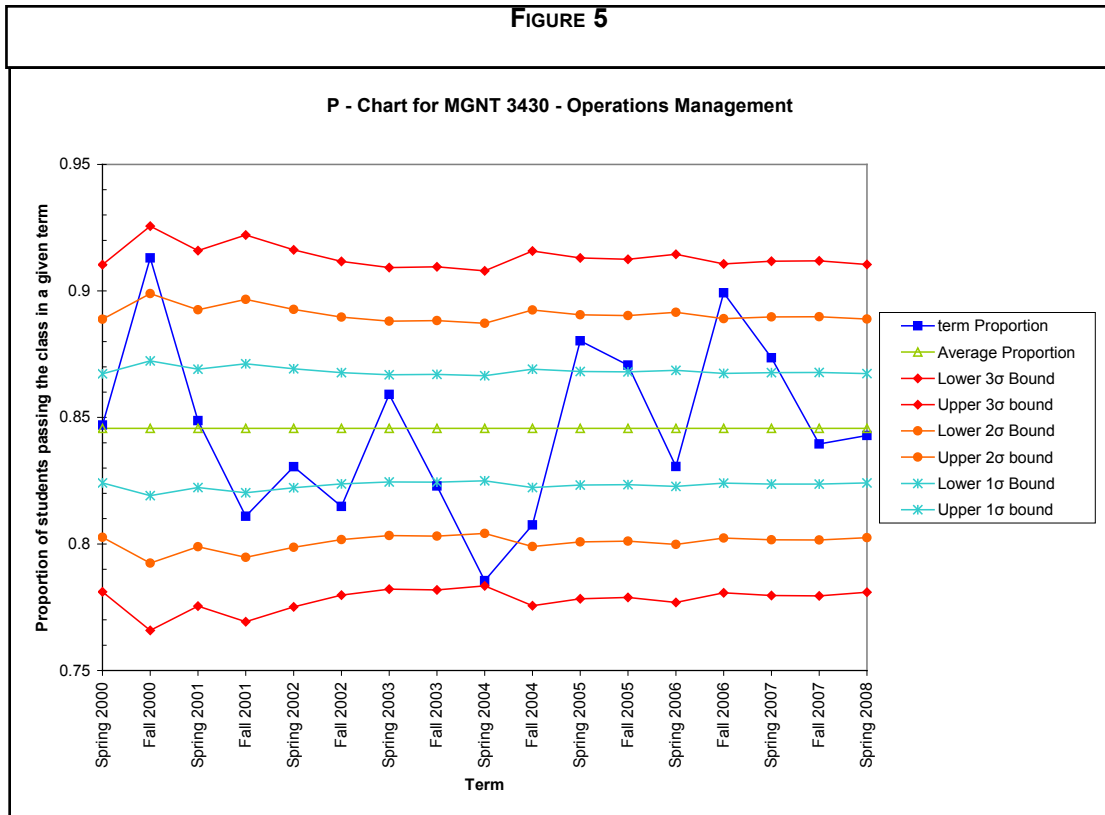
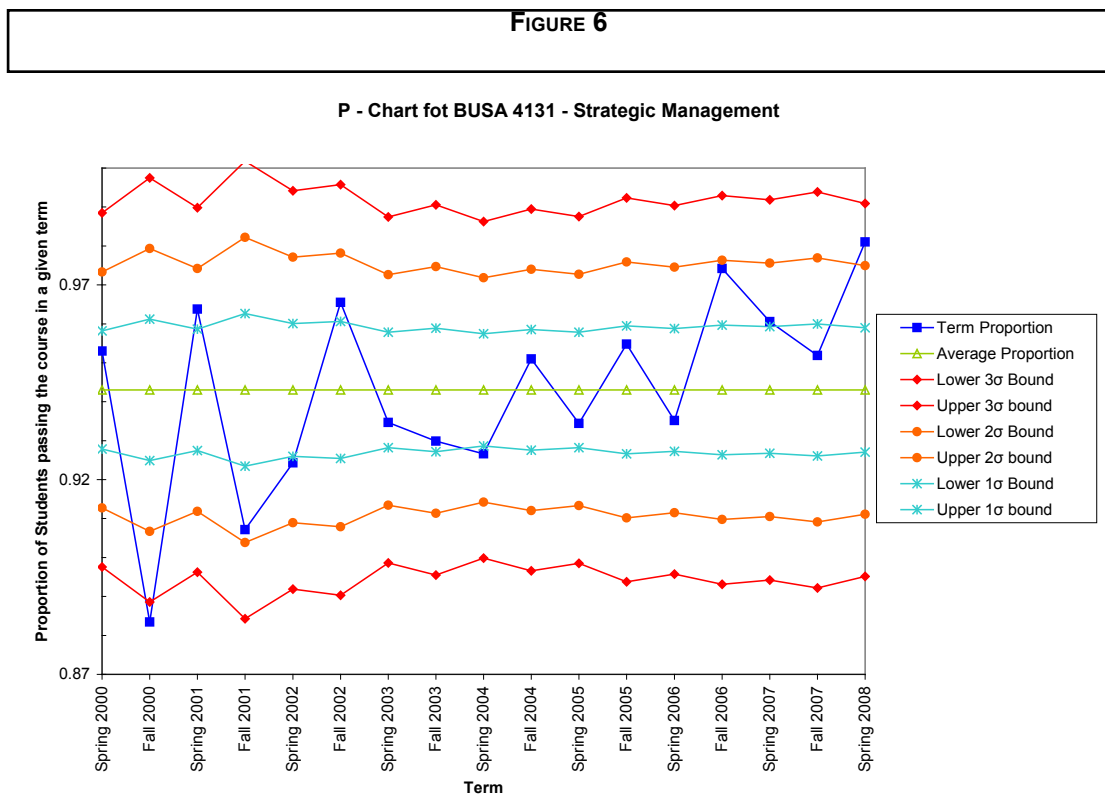


FIGURE 6



ties arise. First, it is possible that the point would not have seemed unusual at the time (if one were looking at a chart with pass rates from 1992 to 2000), the average proportion of students passing may have been lower. Second, it is also possible that the faculty and administration at the time were aware of some special cause variation and responded appropriately. Third, because the percentage passing the course is so high, and the number taking the course in that semester was relatively small, it would have taken only one less failing grade to bring the point within the control limit. Hence, there is a small risk that a Type I error is made in concluding the process was out of control when in fact it was not.

### SUMMARY AND DISCUSSION

Just as Shewhart (1931) demonstrated lower defect levels where there was superior statistical control of processes, our study of variation in pass rates for an academic sequence shows that academic courses with lower pass rates exhibit less statistical control. This demonstrates the value of SPC as a tool for academic administrators who seek to improve RPG. From a control charting perspective, the specific proportion (p) of students who pass (shown on the control charts) is not as significant an issue as is the wide variation in this proportion found from semester to semester in certain courses. Unless the special causes of these inconsistencies in pass rates are eliminated, it is very difficult to utilize an approach such as the PDSA cycle to continuously improve student pass rates (and hence progression) through strategies applied to the instructional process. Illustrating this point is one of the primary benefits of this paper – particularly given the lack of penetration of SPC in academic administration.

Student progression through our critical sequence of courses is analogous to progress of material through manufacturing processes. When students enter this critical sequence, those lacking in aptitude and ability get filtered out and do not move to the next course in critical sequence. This means that students with relatively better aptitude and abilities progress to the next course, thereby increasing the student performance in the subsequent courses. This is one common explanation for the increase in passing proportions observed as retained students move to higher level

courses. For this reason, it may be more economical and beneficial to set higher standards (which may cause lower pass rates in the lower level classes such as MATH 1232, in order to improve the passing proportion in later classes as well as quality and efficiency of the overall university system. Alternatively, it may be effective to assure a good quality of the raw material (namely student preparedness) by raising the entrance standards. This should have an effect on the pass rate in the first course of the sequence and may actually reduce variability throughout. If either of these alternatives seems unrealistic due to current policies, maybe a leveling remedial course for less prepared students should be a requirement, before they enroll in their first academic classes in the sequence. A recommendation of adjustments to course rigor, such as suggested above, however, needs to be predicated on the ability to control. As we have seen, statistical control has not yet been demonstrated for most of the courses in this sequence. Hence, there is a fundamental need to establish statistical control of the instructional processes – demonstrated through limited variability in semester to semester passing proportions – before our university may effectively pursue this academic strategy aimed at retention. This recognition is a second benefit of our research.

In the context of a management process such as the Deming cycle, ongoing use of statistical control charts enables a department chair to establish a reasonable range (benchmark) for pass rates in any course of interest. This benchmark can be established through an S-D-S-A cycle (Standardize – Do – Study – Act). The Deming Cycle for continuous improvement of processes which have been standardized utilizes four stages: Plan – Do – Study – Act. During the plan phase, instructors for a given course would identify any changes they intend to make to their pedagogy for a given term (e.g., new book, new assignments, different topics, altered pedagogy, etc.). The do phase occurs as the course is taught: instructors would maintain records of student performance as well as information regarding student receptivity to the new approach. Control charts would be most helpful during the study phase, which would involve determining the impact of the change. A course change that led to improved learning, as documented both by an improved pass rate and

the records of student performance gathered during the do phase, would be institutionalized going forward. Likewise, innovations that did not work might show on a control chart as an out of control point and be documented and discontinued. Thus, the control chart is critical because it allows the course supervisor and/or instructors to know when pass rates are unusually high or low and to respond in a timely manner. Indeed, it allows for experimentation with teaching methods to result in continuous improvement to RPG by identifying those new instructional techniques that work, and those that do not. Illustrating this relationship between control and improvement is a third benefit of our project.

The Deming cycle is predicated on the presumption that improvement is derived from the application of knowledge. (Evans and Lindsay, 2002). As such, the initial use of statistical control charts can enable administrators to focus on improvement implementation and learning. Looking at Figure 1, for instance, the sample proportion for spring 2007 indicates the presence of some factor that added variability to the educational process. Studying the upward trend and the exceptional progress rate on that year can give administrators great knowledge about the educational process. Such knowledge can be used to consolidate the contributing factors to exceptional results or to uncover factors that need attention and modification. Therefore, as used in this study, the control chart can afford administrators a great means to generate knowledge about the educational process that can guide improvement efforts. Upon stabilization of the process, the ongoing use of control charts enables administrators to predict pass rates, for instance, and, therefore, allocate classrooms and staff courses. Allocation of classrooms and staffing of courses is typically a problematic area due to dependency on budgetary information, which is not always timely. The ability to predict the proportion of students that are likely to advance in a sequence may, at least partially, alleviate this problem.

In summary, this paper presents a new approach to identifying instructional issues in retention, progression and graduation. It demonstrates the use of SPC to analyze the variation related to student academic performance so that root cause analysis can be conducted, and corrective

actions developed, by those who supervise instruction. Control limits derived on each chart are dependent on student performance but, once statistical control has been established, future targets may be developed by benchmarking the pass rates of institutional peers and competitors. Additionally, in the current academic climate, with a heavy emphasis on assurance of learning through assessment processes, SPC also provides a means for monitoring relationships between educational quality (i.e., learning outcomes) and academic progression.

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## USING ACTION RESEARCH TO EXAMINE TEACHER STRATEGY EFFECTIVENESS

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### ABSTRACT

*Successful teachers strive to ensure that their students learn to their maximum abilities. Is action research a valuable way for graduate students to review their effectiveness as teachers? Do students learn more through varied teaching strategies and techniques? The authors examined graduate students' perceptions of action research projects analyzing student achievement. Three middle school teachers conducted the action research projects with their assigned students.*

*This article has two purposes: 1) to share experiences encountered while creating an action research project and implementing the plan; and 2) to share summaries of graduate students' action research.*

### INTRODUCTION

Do diverse teaching strategies affect middle school students' academic achievement? Effective teachers find what works best for their students while taking into account several factors, including student ability levels, state-mandated curricula topics, time available in class, and their own personal teaching styles. The authors reviewed three action research projects conducted by education graduate students assigned to teach middle school students. These projects analyzed student achievement. The action research projects were completed as part of an assignment in a graduate-level course in a state university in the southeastern United States. Two of the graduate students focused on science content and one focused on reading content.

The first stage of the research process was to develop an action research plan that reached across

all ability levels and which could be adapted to state-mandated student performance indicators. Each graduate student conducted his/her own action research project based upon his/her individual classroom students and needs.

### RELATED LITERATURE

Action research is defined as "any systematic inquiry conducted by teacher researchers, principals, school counselors, or other stakeholder in the teaching/learning environment to gather information about how their particular schools operate, how they teach and how well their students learn (Mills, 2007 p. 5). According to Keating et al (1998) the basic idea of action research has been known for some time. The premise is that teachers who are in the classroom recognize problems there and that with some training can review the challenges and make the classroom better.

#### Teacher/researchers described:

A reflective elementary, secondary, or postsecondary classroom teacher identifies a persistent teaching problem or question and decides to initiate a classroom inquiry. This teacher reads theoretical and applied educational literature, including other teacher-research reports, and decides to work collaboratively with a colleague. Using primarily practical, efficient, qualitative methods recommended by other teacher researchers, with perhaps a quantitative tool added in, the researcher initiates a study. The teacher learns from and along with students while engaging in the investigation, and she or he finds that the research questions have been altered somewhat throughout the course of the study. The investigator may struggle to balance the dual role of teacher and researcher or feel uneasy with the innovations that are explored. The teacher researcher decides to share the research story publicly and writes it for publication, using a narrative style that includes figurative language and verbal and visual illustrations (Bauman & Duffy, 2001, p. 611).

The National Science Education standards note the importance of teachers conducting research, as provided in Standard C relative to professional development. This standard states, in part, that science teachers must “provide opportunities to learn and use the skills of research to generate new knowledge about science and the teaching and learning of science” (National Research Council, 1996, p. 98). Good teachers regularly review their teaching practices to ascertain what techniques provide success for their students. The National Association for Research in Science Teaching espouses the theme “Every teacher a researcher,” thus encouraging teachers to conduct valid research in their classrooms (Martin, 2003, p. 496). Moreover, researchers, including van Zee (1998), advocate sharing research results through conferences or publications. Action re-

search provides an avenue for classroom teachers to collaborate and examine their teaching while reflecting and refining methods to improve student achievement, attitudes, interest, and participation. The reflection process is ongoing and includes deciding upon a topic, collecting data, interpreting and examining data, and taking action (Glanz, 2005).

The constructivist theory purports that students come into the science classroom with ideas and experiences instead of simply waiting for knowledgeable teachers to fill their empty brains. In this context, students are active learners and teachers serve as managers of classrooms (Fosnot, 1996). Similarly, the Institute for Learning Centered Education (2007) maintains that constructivism is not a teaching strategy, but a theory concerning how students learn. Schulte (1996) concludes that constructivism is, in effect, students’ knowledge and personal experiences allowing them to construct their own understanding of learning.

Research shows that students with varied ability levels perform better in a guided inquiry setting. Science programs based on inquiry methodology, including graphing skills, laboratory skills, and interpreting data, proved beneficial to middle school science students (Mattheis & Nakayama, 1988). Cuevas, Lee, Hart, & Deaktor (2005) found that an inquiry-based intervention program for diverse third and fourth grade students enhanced their achievement. Another study indicated that learning disabled students scored better on unit tests after receiving instruction using the inquiry technique as opposed to textbook instruction (Scruggs, Mastropieri, Bakken, & Brigham, 1993).

Further, there are a large number of strategies used to teach reading. Direct instruction emphasizes fast-paced, scripted rule-based and highly focused lessons (Houchins, Sartor, Shippen, & Stevenson, 2005). This strategy is used successfully with students with special needs, often utilizing small group instruction. Direct instruction seems to be an option for raising student reading achievement (Iver & Kemper, 2002). Additionally, teachers can assist struggling middle school students by using content topics to teach reading. As content knowledge increases, reading achievement improves (Palumbo & Sanacor, 2009).

Even when provided with varied strategies, some students are not successful readers. Reading instruction is a significant area in a child's education. Students who are not successful readers often face greater and more failures in school and in life (Jolivet, Lingo, & Staton, 2006). Teachers must utilize a variety of methods to reach students. Tompkins (2010) suggests ways to work with students who struggle. She states that effective teachers improve literacy through differentiated instruction, attend professional development opportunities, team up with a literacy coach, and utilize suitable materials for instruction.

## METHOD

### Conducting Action Research Projects

#### Graduate Student A: Middle School Science.

Graduate Student A (GSA) Research Question: How can I change my students' attitudes towards science and increase their learning? GSA teaches seventh grade science in a rural area whose 102 students are at or near the poverty level; 83% receive free or reduced lunch. Sixteen students have previously been retained; 40% have spent from 60-100 days in In-School Suspension and/or Alternative School.

GSA noted that his students did not participate in class discussions or appear interested in science class. These same students had been assigned to GSA as fourth graders, so he particularly noticed that even those who had been interested and good students while in fourth grade were not achieving at the same levels as previously displayed.

In order to gain insight on these changed behaviors, GSA created and distributed a short survey to 102 students. He received 72 responses. The questions and top responses include:

1. What is "science"?
  - a. I don't know—47%
  - b. Science is about how things are made—15%
2. Do you like science? Why or why not?
  - a. Yes—you get to learn about new things—12%
  - b. No—It is too hard—73%
3. How is science different now than when you were in the fourth grade?
  - a. It's harder—33%
  - b. It's not fun anymore—60%
4. How can science be more interesting?
  - a. Do activities/projects—82%

After reviewing the surveys, GSA determined that students did not like science because it was too hard and it was not fun. Upon further investigation, GSA found that as the students got older, they participated in fewer hands-on activities and received more lectures. Talks with peer teachers revealed that they felt obligated to cover the material for all students. Of particular note was that of the 102 students, 76 had not scored proficient on the state-mandated test, and only three were above proficient for the past three years.

GSA created a lesson that asked students to count the number of insects that could be found in the school yard. Specific instructions were not provided. Students were organized into groups of two or three and received these guidelines.

1. Each group had a 50 minute class period to come up with their method and list of needed materials
2. Once they were outdoors, student groups had 40 minutes to identify and tally insects.
3. The total area searched was 9 meters by 48 meters. Tallies were averaged and multiplied by total square meters.
4. Each group used a square meter boundary to complete the tally.
5. Results were to be graphed in Microsoft Excel.

Students collected and interpreted data and generated graphs, then created a PowerPoint presentation to share information with the entire class. This action research project required five class periods, one each for periods for planning, gathering data, interpreting data, inputting data to the graph, and sharing information with discussion of results.

After attending a professional development conference, GSA decided to repeat the activity six weeks later with one major change. The second method incorporated a technique learned during the professional development. Instead of students randomly throwing meter squares, they chose numbers from boxes, one through nine and one – forty-nine. These numbers corresponded to a grid set up in the same area as the first activity. Students compared results of the two activities and found they were quite similar.

Students were intrigued by the activities and the data gathered. GSA was delighted that the students were enthusiastic to participate in collecting data. A bit of coaching was needed during the first couple of days but eventually most participated and enjoyed doing science. Their eagerness was very apparent during the second activity. GSA found that interested students participated in class more. Further, they were eager to continue in science lessons that included data gathering and using the science process skills.

#### Graduate Student B: Middle School Reading.

Graduate Student B (GSB) Research Question: Can a change in instruction improve students' reading abilities? Seventeen resource students in grades seven and eight comprise the population, with six boys and three girls in seventh grade, and six boys and two girls in eighth grade. These students have been diagnosed with learning disabilities, although these disabilities should not hinder them from progressing in reading. Students had been taught through whole group instruction and seemed to lack motivation. The students previously used either a reading book or paperback novels in reading.

GSB reviewed three different data sets: classroom grades, STAR Reading (a computerized program), and Benchmark test based on state standards. GSB decided to use the SRA Corrective Reading program to determine the appropriate reading level. The SRA Corrective Reading approach allows teachers to give fast paced, direct instruction to students. This approach allowed for student involvement through individual monitoring, group related reading, and class participation. Lessons are broken into smaller segments and include daily work from which grades

are collected. The SRA Corrective Reading approach was utilized for a 12 week period.

Classroom grades raised by ten of the seventeen students; 6 students' classroom grades decreased, and two students' classroom grades stayed the same. Ten of the seventeen students showed gains of .7 to 4 points in their reading range on the STAR Reading test. Three students decreased from .4 to 2 points in their reading range on the STAR Reading test. There were no changes in the reading range of four students. Benchmark tests are based on grade-level state standards. All of the students in this project read below grade level. The Benchmark scores remained unchanged.

GSB found that the majority of the students improved their reading range level that was nearer to their grade equivalent. Measured improvement should be noted as success. If these gains were to continue, students could possibly return to the regular reading instruction program.

#### Graduate Student C: Middle School Science.

Graduate Student C (GSC) research question: Is the constructivist technique more effective than guided inquiry for middle school physical science? For the purpose of this study, constructivism consists of students building their own knowledge from experiences. The teacher provides the scientific problem under investigation and students create their own steps and procedures to conduct the investigation using available materials. Such a perspective allows for student experiences that encourage construction of new knowledge based on previous knowledge and experiences. For the purpose of this study, guided inquiry is defined as the structured procedure used in completing scientific tasks with the teacher providing the problem to be investigated, the steps to be used to conduct the investigation, and the necessary materials to complete the investigation.

This study involved 83 sixth-grade students in a rural middle school with departmentalized grades three through six. Administrative procedures required assigning students to one of four ability-grouped classes based on standardized reading and mathematics scores. Each group of students participated in daily science instruction for 55 minutes. For this project, each group was



subdivided into clusters, consisting of five to six students each, depending on the class population. The student groups worked together to solve each task, independent of other groups or classes.

Group A included 23 sixth-grade students with standardized test scores in the lowest tier. Twelve of the students received special education services in reading, mathematics, or both, and five students were involved in the Title 1 program for either reading or mathematics or both. Group B included 17 sixth-grade students with standardized test scores in the lowest tier, but who did not qualify for any special services. Group C included 21 sixth-grade students with standardized test scores in the upper tier. Group D consisted of 22 sixth-grade students with standardized test scores in the top tier and included three students identified as gifted.

The classroom teacher designed four tasks to engage students in scientific inquiry while attempting to solve a physical science problem. For each activity, two groups of students were presented with a guided inquiry problem and a set of steps for solving the problem, and two groups were presented with a similar problem, but given the freedom to devise their own solution and construct their own procedures. With each successive task, the groups reversed methods so that no one group continually used the same method to solve problems. With each of the four tasks used for this research, the guided inquiry served as the control.

Students in the lower tier had mixed success with the two problem-solving methods. Those students in group B whose disability was related to attention deficit or hyperactivity seemed to have greater success and were more likely to complete an activity when specific steps were given. Additionally, the students in group A had difficulty developing their own procedures when using the constructivist method. They were free to use any resource, so they resorted to their science textbook and found a similar lesson there. With the text's step-by-step guide, they quickly accomplished their task. Consideration was given to excluding this activity because of the use of the book. Nonetheless, since the students were told that they could use any resource, the activity was accepted.

Pursuant to the research question of whether middle school science students show more achievement gain in physical science knowledge when engaged in constructivist activities than in guided inquiry activities, the data did not support the use of either the constructivist or guided inquiry strategies. Not enough discrepancy was shown in the scores to state which method was more beneficial.

Although a statistical relationship was not found between average scores when comparing science strategies utilized, a relationship was found when comparing average scores between the four groups. Comparisons were made between average points gained and ability groups' placements for tasks 1, 2, and 3. Data showed that average gains were highest for those students placed in the lowest ability group A. Average gains were second highest for those students placed in the second lowest ability group B. Average gains were third highest for those placed in the second highest ability group C. The lowest average gains were for those student placed in the highest ability group D. Interestingly, task 4 average gains mirrored the student placements, with group D posting the highest average gain, group C posting the second highest average gain, and groups B and A tying for the lowest gains.

In addition to these concerns, middle school teachers may experience additional stress because of elementary school practices. With the high stakes associated with today's standardized testing, the lower grades minimize the teaching of science and concentrate on language arts and mathematics as priority subjects (Jones, Jones, Hardin, Chapman, Yarbrough, and Davis, 1999). In fact, primary students may not receive science instruction and, thus, enter upper elementary classes with limited science understanding and experience. Accordingly, middle school teachers feel the pressure of obtaining high student achievement on standardized tests with students who are under-prepared.

## CONCLUSIONS AND RECOMMENDATIONS

These action research studies proved beneficial to the researchers, as they were required to step outside of their comfort zones and create situa-

tions to evaluate their teaching methods. Part of becoming a facilitator of learning is giving up complete control of the classroom by allowing students to actively participate in the instructional process. During these projects, students were given the opportunity to think and generate their own plan for solving a task. Many students are not accustomed to that procedure; rather, they are used to simply following directions. Perhaps if students spent time working together and practicing student-centered procedures, the result would be increased academic improvement. Indeed, the students participating in the study found that the process of learning was as important as the outcome.

Additionally, the teachers experienced noteworthy challenges. One constraint experienced was that of insufficient time. Each class period was 55 minutes, and some activities require longer to complete. Problem solving methods vary greatly depending on the skill and experience of the group. When this occurred, students and teachers waiting for them became frustrated.

On a positive note, the teacher observed that students were more interested in science when participating in active learning activities. Most of the students showed excitement about designing their own methods and creating their own problem-solving techniques. Although some students needed a bit more guidance and encouragement, the cooperative learning environment proved a real asset. Completing the tasks in science class provided opportunities for students to think like scientists, and see the importance of communicating with others within the group. The students stated that they had to think and work harder than if they were using only a text.

Due to the study's limitations, follow-up research is recommended including, for example, replicating the project with a larger population of middle school students. Likewise, the research should be conducted over a longer period of time, perhaps beginning at the first of a new school year. Further, students would benefit from more detailed instruction on constructing procedures and lessons. In this manner, students could be gently led into the process.

All three graduate students found their action research project to be effective. Students who are

given a voice in their learning become responsible for their education as they prepare for more challenging educational endeavors throughout their lifetime.

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### **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

### **Conferences**

Prior to this year, Learning and Administration was a primary track of the annual Academic Business World International Conference. Because of increased interest, we have promoted Learning and Administration from a Track to Conference in its own right. For the full call for papers and more information go to <http://ICLAHE.org> and <http://ABWIC.org>.

