

# The Journal of Academic Administration In Higher Education

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# VALUE ADDED STUDENT ACHIEVEMENT IN ALTERNATIVE AND TRADITIONAL TEACHER PREPARATION PATHWAYS

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## ABSTRACT

*The influence of traditional and alternative teacher preparation programs on student achievement was studied in one Tennessee school district. The value added outcomes of students who were assigned to alternatively certified teachers were compared to the outcomes of students who were assigned to traditionally certified teachers. Results showed that alternatively certified teachers performed as well as traditionally certified teachers at all grade levels and content, except in secondary math, where traditionally trained teachers evidenced higher student growth and in secondary social studies, where alternatively trained teachers evidenced higher student growth.*

## Introduction

A crisis in the pool of potential teachers is clearly on the academic radar. According to Peterson and Nadler (2009) The National Council of Mathematics projects a shortfall of 280,000 qualified math and science teachers by 2015. They stated: "In California, one third of the entire teacher work force, about 100,000 teachers, will retire over the next decade and need to be replaced" (Peterson & Nadler, 2009, p. 70). Young (2003) observed that more than thirty percent of teachers in the U.S. are over fifty years of age. Furthermore, The No Child Left Behind Act (NCLB) of 2001 mandated "highly qualified" teachers in every core subject classroom. This mandate has added additional pressure for qualified teachers in a shrinking pool of certified candidates. To address the proposed shortfalls of teachers, growing numbers of governmental agencies support alternative teaching licensure routes. According

to the National Center for Education Information (2008) all states and the District of Columbia now have some type of alternative teacher licensure program. Peterson and Nadler (2009) indicated that one fifth of all new teachers are certified through alternative routes.

## Teacher Licensure: A Contentious Debate

Are licensure requirements necessary to restrict the teaching ranks and ensure teacher quality or are they unnecessary barriers to teaching? This is the central question of the teacher licensure debate. The literature on teacher licensure is conflicting, and the advocates of both traditional and alternative licensures are polarizing in their analysis of each other's work. At present, the opposing teacher education pathways of traditional versus alternative routes do not peacefully coexist. The debate between proponents of both

alternative and traditional licensure represents the highly politicized nature of American public education. Regulation versus market approaches to teacher licensure; the debate on the nature of teacher quality; the value of pedagogy versus content matter; each of these conflicts is played out in a “take no prisoners” approach. Both sides of the arguments are polarizing. Teacher licensure is a high stakes debate, one that is framed for one side to win and the other to lose.

The goals, values, and ideologies of each viewpoint in relation to the research they produce on teacher licensure should be recognized (Cochran-Smith & Fries, 2001). To better appreciate the conflicting perspectives of both camps of teacher licensure, it is helpful to analyze the competing agendas of both alternative and traditional teacher licensure proponents.

The anti-regulation or market approach to teacher licensure posits that the answer to the looming teacher shortage lies in greater reliance on the market through alternative pathways (Hess, 2001; Fraser, 2001; Constantine, et al 2009). Ballou and Podgursky (2000) argued against licensure as a barrier to teaching. Reunzel (2002) suggested that even alternative licensure has become “bureaucratic and unnecessarily restrictive” and that alternate licensure paths are “torturous routes” into teaching (p.14). Regulation, itself, as a means of professionalizing teaching is devalued. Fraser (2001) suggested allowing the school districts to hire whom they wish, with licensure de-coupled from teacher education. Stoddart and Flooden (1995) took issue with the notion of characterizing alternatively licensed teachers as underprepared teachers. They contended that:

The choice between a traditional and an alternate route is not a choice between some professional preparation and no such preparation. It is, instead, a decision about the timing and institutional context for teacher preparation and about the mix of professional knowledge and skills to be acquired. (p.7)

The market approach values de-regulation of teacher licensure so that more people may enter the teaching field without the barriers of licen-

sure. Further, the anti-regulation perspective does not value traditional teacher licensure as a route to teacher quality. These advocates of alternative licensure contend that content knowledge is of most importance to the quality of teaching; one learns to teach by doing it; and mature individuals with prior work experience enrich the teaching corps. They suggest that pedagogy curricula are not necessary to master the actual practice of teaching.

In opposition, the advocates of regulation (Darling-Hammond, Wise, & Klein, 1999; National Commission on Teaching and America’s Future (1996, 1997) dispute the value of market approaches. This regulation or professionalism viewpoint encourages raising entry standards to promote higher status for teachers (Darling-Hammond, et al., 1999; Darling-Hammond & Youngs, 2002). The National Commission on Teacher and America’s Future (NCTAF, 1997) routs pedagogical knowledge as paramount to the teaching profession. The regulation/professionalism approach values licensure through university programs of study to increase pedagogical knowledge and to limit teaching to those candidates proven worthy of the professional status of teaching. These proponents of traditional licensure for teachers through regulation or professionalism suggest that quality teachers require both content and pedagogical knowledge (Darling-Hammond & Sclan, 1996; NCTAF, 1996). They maintain that candidates should be trained through accredited teacher education programs of study within universities.

### Teacher Licensure and Student Achievement

Teachers may be the single most important factor in student achievement (Rivkin, Hanushek & Kain, 2005; Sanders & Rivers, 1996). One of the ways to hold both traditional and alternative licensure programs accountable is to judge the programs by the effects they have on student achievement. Research on the impact of teacher licensure type on student achievement is similarly conflicting among the licensure camps. Goldhaber and Brewer (2000) found that there was no statistically significant difference in the achievement of students of teachers who hold

standard versus emergency licenses. The methodology of that study was challenged by Darling-Hammond, Berry, and Thorenson (2001) who contended that alternative licensure pathways vary significantly and that the training in these programs are also variable, suggesting the data set of teachers in the study was not representative of teachers in general, and that drawing generalizations for educational policy was invalid.

A study exploring Teach for America teachers conducted by Raymond, Fletcher, and Luque (2001) suggested that there were few differences in student achievement between non-Teach for America teachers and Teach for America teachers in the Houston area. In contrast, Laczko-Kerr and Berliner (2002) maintained that the students of Arizona teachers certified through traditional programs outperformed “undercertified” teachers (including teachers holding emergency, temporary, Teach for America, or provisional certificates) by twenty percent.

Gimbert, Bol and Wallace (2007) found that secondary math teachers trained in alternative licensure routes performed better than math teachers trained through traditional routes. Most recently, in a study commissioned by the U.S. Department of Education, Mathematica Policy Research found no statistically significant difference in the achievement of the students of teachers certified through alternative and traditional routes (Constantine, et al., 2009). Darling-Hammond (2009) countered that the Mathematica study methodology was flawed in that the data set of traditionally certified teachers had less than normal amounts of training (including mentoring, student teaching, and professional development). As a result, the study held no significance for teacher education. The teacher licensure debate rages on.

### Teacher Effects: One Measure of Teacher Quality

Although it is not the only measure of teacher quality, the effect teachers have on their students’ achievement is recognized as a useful measure in Tennessee. Tennessee is a leader in the Value Added Movement (Sanders & Rivers, 1996). The value-added growth model defines effective

teachers as those who impact student achievement. Working with Dr. William Sanders from the University of Tennessee, the state of Tennessee uses a complex statistical model to measure student achievement growth (Tennessee Value Added Assessment System, UT-TVAAS). Tennessee tests students in grades three through eight in reading/language arts, mathematics, science, and social studies. In the upper grades, the state of Tennessee assesses students with end-of course assessments, including Algebra I, Mathematics Foundations II, English I and II, Biology I, and U.S. History.

Students are measured as they progress through the grades, allowing for the cumulative effects of teachers on student achievement. Tennessee transforms all state assessment scores to a normal curve equivalent scale (NCE). Average student achievement growth over a one year period is calculated. Changes above or below expected growth reflect the impact of an individual teacher on student achievement growth, or the value added measure. One of the ways to judge teacher education pathways is by the effect they have on student achievement. This study used teacher effect measures to compare the student achievement of teachers with traditional and alternative licenses.

### Methodology of the Study

#### Study Site

The researchers studied the effect that traditionally trained and alternatively trained teachers had on student achievement, as determined by standardized tests from one school district in middle Tennessee. Data were collected from one school district, located in Middle Tennessee. The area served by the subject school district has a population of 147,000 people. It is the seventh largest school district in Tennessee. The student make-up is: 62.7% white; 27.3% African American; 7% Hispanic; 2% Asian; and .5% Native American and Pacific Islander. The district serves 30,000 students with 3,900 teachers, administrators, and staff; has 34 schools; and is the second largest employer in the county.



Study Design

This study used an ex post facto design, with analysis of archival data provided by district personnel authorized to view individual teacher and student information. The data collected included the teacher licensure type of participants and the standardized test result means of the teachers' students. The school district provided anonymous achievement data from 169 teachers. The researchers reduced the data numbers for two reasons. Teachers who had more than one year of experience were excluded. In addition, teachers identified as out of state were excluded from the sample in that there was no indication of prior teaching experience for those teachers. The final data set included all first year traditionally prepared teachers (apprentice license) and alternatively prepared teachers (alternative license). The final number for these analyses included 120 first year teachers, 37 elementary and 83 secondary. Comparisons were made for all content areas at the elementary level and at the content assigned area at the secondary level.

The research question was: Is there a difference in student achievement growth based on teacher licensure preparation pathway? More specifically, do students perform better in first year traditionally prepared teacher classrooms or in first year alternatively prepared teacher classrooms?

Data Collection

The district provided the researchers with anonymous data from 169 teachers that were reduced in number to 120 first year teachers. Data were organized into several variables. Variables included teacher assignment, grade level, licensure type, university of last degree and type, and content area achievement scores (including math, science, social studies, and reading/language arts). Tennessee Comprehensive Assessment Program (TCAP) scores were analyzed. The researchers analyzed achievement tests at the fourth through eighth grade levels and Gateway tests for grades nine through twelve for a one year interval. The Normal Curve Equivalent (NCE) was used to determine student achievement growth.

The NCE scores are a type of normalized standard score resulting from the division of the normal curve into 99 equal units. This score is traditionally used for research purposes, enabling researchers to interpret differences in NCEs more readily because of the equal-interval nature of the NCE score. (Laczko-Kerr & Berliner, 2002, p. 20)

The study district defines student growth based on the difference between the means from one year to the next. Baseline NCEs were gathered from the 2006-2007 school year and compared to NCE results in the 2007-2008 school year to determine growth for the one year the students received instruction from first year traditionally and alternatively trained teachers. NCE means for each teacher were analyzed to measure the impact of instruction. A score between negative and positive one is expected as average growth for students in the subject school district. A measure of over positive one is considered above average growth for a student. A score of below negative one would suggest low growth or a non-thriving environment for the student. Student achievement data were gathered by content (math, reading/language arts, social studies, and science). For secondary teachers, only one content area score was gathered, determined by area assignment.

Data Analysis

First, descriptive statistics were reviewed for skewness and kurtosis. Second, unpaired t tests, with an F test for each, were conducted at the .05 level of significance. The F test was analyzed to determine if the possibility of equal variances existed in the comparison groups. The outcomes of students who were assigned to an alternatively certified teacher were compared to the outcomes of students who were assigned to a traditionally certified teacher. Statview, developed by SAS Institute, Inc., was the statistical software used for all analyses.

Unpaired t tests were conducted to determine the impact of teacher training on student achievement as evidenced by growth in NCE scores. While the numbers are very different for elementary apprentice and alternative teachers, exami-

nation of kurtosis and skewness indicates each could be a fairly normal distribution and the F test indicates the variances for each group could be equal. The value of F exceeds the alpha in each analysis, indicating the possibility of equal variances.

Limitations of the study are that the study size is small and that results are typical for the district of the study only. In addition, no demographic data were gathered for this initial study. The socio-economic status of the schools where teachers were assigned in the 2007-2008 school year is unknown as is the gender of the first year teachers.

Results

There are three results to this study. Table 1, based on the NCE growth, shows a statistically significant difference in performance between students of alternatively certified teachers and those of traditionally certified teachers at the secondary level in math. At the secondary level, the traditionally prepared teachers on an ap-

prentice license evidenced significantly higher growth (M=.985, SD=5.287) in math than did the teachers on alternative licenses (M=-5.466, SD=8.715), t (21) = -2.121, p=.0460.

Table 2, based on NCE growth, shows a statistically significant difference in performance between students of alternatively certified teachers and those of traditionally certified teachers at the secondary level in social studies. At the secondary level, the teachers on an alternative license evidenced significantly higher growth (M=2.579, SD=1.902) in social studies than did the traditionally prepared teachers on apprentice licenses (M=-.317, SD=2.239), t (17) = 2.863, p=.0108.

Table 3, based on the NCE growth, shows no statistically significant difference in performance between students of alternatively certified teachers and those of traditionally certified teachers in all other content areas or grade levels. In math at the elementary level; in science at the elementary and secondary levels (see Table 3); in social studies at secondary level; and in language arts at

TABLE 1 UNPAIRED T-TEST FOR GROWTH MATH							
		N	M	SD	df	t	p
Total	Alternate	22	-3.136	7.737	58	-1.104	.2742
	Apprentice	38	-1.377	4.636			
Elementary	Alternative	10	-.341	5.563	35	1.200	.2381
	Apprentice	27	-2.339	4.064			
Secondary	Alternative	12	-5.466	8.715	21	-2.121	.0460*
	Apprentice	11	.985	5.287			
*p=.05							

TABLE 2 UNPAIRED T-TEST FOR GROWTH SOCIAL STUDIES							
		N	M	SD	df	t	p
Total	Alternate	17	2.041	3.089	53	1.162	.2503
	Apprentice	38	.706	4.252			
Elementary	Alternative	10	1.665	3.764	34	2.84	.7781
	Apprentice	26	1.178	4.880			
Secondary	Alternative	7	2.579	1.902	17	2.863	.0108*
	Apprentice	12	-.317	2.239			
*p=.05							

both levels (see Table 4), there was no statistically significant difference in performance between the students of alternatively and traditionally certified teachers.

The data below indicate that there is no significant difference in student NCE growth for science either at the elementary level or the secondary level regardless of the preparation path and licensure of the first year teacher. Results indicate that students of both types of certified teachers performed in relatively the same manner on the achievement test and Gateway test.

Results of the unpaired t tests for growth in reading/language arts indicate no statistical difference in performance on the achievement test at the elementary level between students in traditionally prepared teacher classrooms and students in alternatively prepared teacher classrooms. The results at the secondary level on the Gateway test indicate a difference approaching

statistical difference but were not found to be significant, as indicated in Table 4.

Conclusion

The number of alternatively licensed teachers is growing in the United States. Proponents of alternatively and traditionally licensed teacher pathways have posited conflicting viewpoints of the values inherent in each pathway and research into student achievement as a measure of teacher quality in each licensure pathway has found conflicting results.

This study utilized teacher effect measures to compare the student achievement of first year teachers with traditional and alternative licenses in one school district in Tennessee.

Student achievement data is not the only measure of teacher quality but is one significant factor when judging the quality of all first year

TABLE 3 UNPAIRED T TEST FOR GROWTH SCIENCE							
		N	M	SD	df	t	p
Total	Alternate	18	-1.324	4.920	48	-.359	.7210
	Apprentice	32	-.734	5.912			
Elementary	Alternative	10	.068	4.645	33	.058	.9541
	Apprentice	25	-.055	6.018			
Secondary	Alternative	8	-3.065	4.982	13	.035	.9726
	Apprentice	7	-3.157	5.192			
*p=.05							

TABLE 4 UNPAIRED T TESTS FOR GROWTH READING/LANGUAGE ARTS							
		N	M	SD	df	t	p
Total	Alternate	20	-.869	3.383	60	-1.860	.0677
	Apprentice	42	.940	3.666			
Elementary	Alternative	10	.230	2.836	34	-.504	.6154
	Apprentice	26	.882	3.655			
Secondary	Alternative	10	-1.968	3.666	24	-1.985	.0587
	Apprentice	16	1.033	3.801			
*p=.05							

teachers. Tennessee uses NCEs to measure student achievement as students progress through the grades, allowing for the cumulative effects of teachers on students. Teacher effect scores are used to measure a teacher's impact on student achievement. In this study, NCE scores were analyzed to determine the effect that both traditionally and alternatively licensed first year teachers had on the achievement of their students.

The results of this study indicate that statistically significant differences between the alternatively licensed teachers and traditionally licensed teachers do exist in terms of student achievement in one Tennessee school district. The first result of the study is that a statistically significant difference occurred at the secondary level in mathematics. The students of the traditionally licensed teachers scored significantly higher than did the students of the alternatively licensed teachers. Secondly, at the secondary level the teachers on an alternative license evidenced significantly higher growth in social studies than did the traditionally prepared teachers on apprentice licenses. There was no statistically significant difference in the student achievement in all other content and grade levels.

The researchers concede that additional studies should utilize a larger and broader data pool, perhaps from a state-wide initiative. The student achievement data of teacher participants from several districts may provide a more generalizable analysis for policy on the nature of the student achievement in traditionally and alternatively licensed teachers. In addition, gathering demographic data on the teacher participants of the study, both traditional and alternative, may provide insight into the achievement performances of varied groups of teachers.

A growing number of teachers are licensed through alternative pathways into teaching. Evaluating teacher licensure programs based upon the student performance of teachers is one accountability tool and judging teacher preparation programs by the effects they have on student achievement provides this type of accountability. This study analyzed student achievement measures to compare teacher preparation pathways. Continued research using this measure of teach-

er quality may yield better understanding of both traditional and alternative licensure pathways into teaching in an era of looming teacher shortages.

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# ENGAGING FACULTY IN THE ASSESSMENT PROCESS: RECRUITING MISSIONARIES AND CHEERLEADERS

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## ABSTRACT

*Overwhelmingly, administrators are being faced with faculty resistance to assessment efforts. We must begin to ask ourselves why such resistance exists and how it can be overcome. This article will explore these questions and propose a shift in the way that administrators approach assessment with faculty. Similarly, it will address strategies that can expand faculty buy-in of the necessity of assessment and thereby increase overall institutional effectiveness.*

## Introduction

With an increasing emphasis on accountability in higher education, it's no wonder that administrators are concerned with institutional effectiveness (IE) activities. Traditionally, when examining an institution's effectiveness, one investigates issues such as graduation rate, enrollment, and funding, and other figures that are more administrative in nature. Currently, however, there is an additional emphasis placed on outcomes of the educational experience. The expectation is that if learning objectives are not met, that plans of action will be undertaken to rectify this problem, thereby increasing an institution's overall effectiveness. To determine if objectives are being met, however, implies that 1) specific desired outcomes have been identified, and 2) that those outcomes are assessed. The time has arrived that faculty must become engaged in this process to understand their programs' effectiveness and, in turn, the effectiveness of their institution. This is a simple statement to make, but it is important to realize that not all faculty members are comfortable with the plan-do-review cycle of assessment. Overwhelmingly, administrators are being faced with faculty resistance to assessment efforts. We must begin to ask ourselves why such resistance exists and how it can be overcome.

This article will explore these questions and propose a shift in the way that administrators approach assessment with faculty. Similarly, it will address strategies that can expand faculty buy-in

of the necessity of assessment and thereby increase overall institutional effectiveness.

## The Problem

To grasp the magnitude of the assessment phenomena, one must be mindful of the nation's call for accountability in higher education. This call has increased the importance of regional accrediting agencies, such as the Southern Association of Colleges and Schools (SACS) and the Middle States Association of Colleges and Schools (MSA). These regional accrediting agencies have established systems to, "encourage, advance, assist and sustain the quality and integrity of education" (Middle States Association of Colleges and Schools, n.d.). While accreditation is voluntary, and the accreditation evaluation is conducted through peer review, some feel that the stigma associated with non-accredited institutions is far too negative to consider. Additionally, important funding is often predicated upon an institution's accreditation status, causing some to wonder about the voluntary nature of the process.

This concern has been particularly evident in this writer's recent discussions with faculty as we work with my institution's accreditation efforts. This is not a surprise, as this observation was made in my previous work at other institutions. The overwhelming viewpoint of faculty is that accreditation – and therefore assessment – is other-imposed and not meaningful to their work as instructors (Carless, 2009; Harvey, 2004).

The apprehension over an increasing workload is great and it appears that many faculty view assessment as an additional responsibility. The conflict here is that assessing student learning should not automatically be equated with extra work (Weinstein, 2006) rather assessment should be viewed as a component of effective teaching. This attitude of outcomes-based education is not one with which all members of the higher education community are familiar. Administrators may have the opportunity to attend conferences or workshops on the assessment process, but less frequently do faculty attend those meetings. This causes an unequal understanding of the rationale behind assessment, and often leads to resistance – and faculty resistance is very often the reason why IE initiatives fail (Welsh and Metcalf, 2003a).

When there is a lack of understanding of assessment, faculty members tend to feel imposed upon. Questions of academic freedom arise. When the understanding is clear, however, an intrinsic motivation begins to develop and higher levels of importance are placed upon the efforts (Welsh and Metcalf, 2003a). The question is, then: how can administrators communicate to faculty about the rationale behind assessment of student learning outcomes in such a way that faculty shift their thinking about its function and value?

It is generally understood that as faculty become more involved with institutional effectiveness activities, they become more supportive of them (Welsh and Metcalf, 2003b). Therefore a key suggestion is to utilize strategies that intimately connect faculty with assessment efforts. Instead of externally imposing an assessment procedure, faculty must be engaged in developing their own learning outcomes and the assessments to measure them (McNair, Wiggins, Kirova-Petrova, and Bhargava, 2000). Oftentimes, administrators will attempt to motivate faculty to engage in this process with the threat of losing (or not receiving) accreditation. This is a faulty move as such practice perpetuates the belief that assessment is externally dictated and irrelevant to one's teaching. Effective movements toward accountability need to be led by faculty, even when the

emphasis comes from administration (McNair et al., 2006; Weinstein, 2006).

A common concern heard in my work with assessment is that faculty feel as if they are being pushed to conform to the expectations of external forces (ie. accreditation agencies), as opposed to incorporating the assessment process for actual educational improvement. In the southern region, faculty tend to say they are assessing “for SACS” (the Southern Association of Colleges of Schools) and thus, SACS becomes the proverbial bad guy instead of a peer group to help institutions succeed. The reality is that as administrators become more concerned with accreditation, the tendency is to mandate assessment practices simply for this reason (accreditation) and the emphasis on educational excellence becomes an afterthought.

Simply mandating assessment procedures and explaining that the primary purpose is to receive accreditation is insufficient and counterproductive to the intention of both assessment and accreditation. Such rationale undermines the personal academic judgment of faculty members and implies that they cannot be trusted in their professional capacities. This insult, accompanied with overall low-trust environments, leads to faculty “playing the game” of assessment with little attention paid to potentially valuable lessons in achievement (Carless, 2009; Harvey, 2004). If administrators want faculty buy in, they have to invite faculty to become engaged in the process – not merely go through the motions to satisfy an external requirement (Harvey, 2004; Perley & Tanguay, 2008; Welsh & Metcalf, 2003b; Wright, 2005).

### Engaging Faculty

In the years that I have worked with assessment and accreditation efforts (both in higher education and within the public school system), it has become clear to me that administrators have a tremendous impact on the development of a culture of evidence within an institution. As with any change efforts, such a goal takes time to achieve. As administrators begin to include more faculty in the assessment/accreditation process, the institutional perspective gradually shifts. In

light of what is known about faculty reactions to externally imposed assessment of their student learning, it is imperative that administrators adapt a more organic leadership approach. An organic approach to leadership allows for a “clear sense of purpose and autonomy within a particular context” (Avery, 2006, p. 30). In this discussion, allowing faculty to take ownership in the assessment effort exemplifies this approach, and thereby creates the buy-in sought by administrators and accrediting agencies. What follows are five recommendations to consider when incorporating a focus on institutional effectiveness across campus.

### Recruit Missionaries and Cheerleaders

Recruit faculty members to serve on assessment committees at the departmental level, as well as at the college and university levels. Departmental committees have the opportunity to discuss assessment in the context of their own areas. Allowing faculty to experiment with assessment within their field makes it relevant and more interesting to consider. Committee members can call upon their professional organizations' stances on assessment to gain insight on the purpose and process. Wright (2005) calls this “speaking to faculty in their own language”, as opposed to promoting arbitrary discussions on general assessment.

The more involved faculty are with assessment in their own discipline, the more valuable they perceive the practice. In turn, the more valuable they perceive the practice, the more likely they are to talk to others about their work with assessment. Some faculty members will become “missionaries” and serve to teach and recruit others to their enthusiasm. Other faculty members will serve as “cheerleaders” and provide much needed support and encouragement to their peers.

### Promote Professional Development

It is typically understood that where an organization spends its money indicates the priorities of the organization. If this is so, institutions should consider the funding they have allotted for faculty professional development in the areas of assessment and accreditation. Perley & Tanguay

(2008) state that faculty should be attending the annual meetings of the accrediting agencies. By doing so, faculty are able to connect with others in meaningful dialogue about assessment and accreditation. Despite the fact that assessment literacy is needed from senior administration to faculty, administrators comprise the bulk of attendees (Carless, 2009). With limited travel budgets and an emphasis on discipline-specific training, faculty are less likely to select an accreditation or assessment meeting over one in their specific field. Institutions should consider designating additional funds for select faculty to participate in professional development specifically related to accreditation and/or assessment (Gmelch & Miskin, 2004).

### Implement Faculty Learning Communities

One way to maximize the investment in off-site professional development is to implement Faculty Learning Communities (FLC) in which those who are interested in learning more about assessment participate. In a FLC, faculty embark on a collaborative learning exploration, either by cohort (such as first year faculty) or by topic (such as using rubrics to assess student learning). Increased collaboration is a strategy that increases faculty buy-in, and thus, the success of the initiative (Carless, 2009). Additionally, when social supports and intellectual stimulation surround an endeavor, faculty tend to become more comfortable and express a greater sense of reward from their participation (Gmelch & Miskin, 2004).

The collaborative community is the most important factor in sustainability of a project and such efforts must be embedded within the daily life of the institution (DuFour & Eaker, 1998). FLCs meet this challenge in that they promote the social construction of a particular understanding and thereby transform institutional culture. Additionally, collaboration can lead to transparency in the institutional assessment processes. Transparency creates a level of trust and implementation of change is smoother when there is a high level of trust (Carless, 2009).

## Develop Transparent Processes

One institution with which this writer is familiar released information on campus assessment procedures on what appeared to be a “need to know” basis. While the administration felt they were systematically implementing one new procedure over an extended period of time, faculty felt they were required to learn some new procedure every semester. In actuality, it was the faculty’s lack of understanding about assessment that caused them to be blind to the overall plan and the administrators’ view of the big picture that prohibited them from seeing the perspective of the faculty. Much of the confusion and resentment from both sides could have been avoided if the process were more transparent at the outset.

As previously stated, collaboration promotes procedural transparency and increased levels of trust, two critical components of faculty acceptance and appreciation of assessment. Because the success of the implementation of reform relies upon high levels of trust, it is imperative that institutions be very deliberate in who they chose to lead their assessment efforts. Weinstein (2006) explains that designated assessment leader(s) must not only understand the process of assessment, but also hold a positive attitude about it as well. To encourage collaboration among a diverse group of faculty and administration requires a leader who has strong communication abilities (see section below) and has the capacity “to create enthusiasm and commitment and to act as a change agent, cheerleader, coach, teacher and integrator” (Avery, 2006, p. 28). Because transparency and trust are key in generating faculty support, institutions must consider the implication for attempting to change organizational culture under the leadership of one who lacks enthusiasm and/or cannot elicit the trust of his/her colleagues.

## Stress Open Lines of Communication

In the previous section, a situation on a university campus where communication failed was described. In their efforts to avoid overwhelming faculty, administrators unveiled their assessment plan incrementally, introducing a new component each semester or academic year. This caused

extreme tension among the faculty, who felt administrators were uninformed themselves, indecisive and/or guarding their knowledge of the assessment process. This case exemplifies Weinstein’s (2006) assertion that “administrators do not adequately explain the purpose of and motivation for doing learning outcomes assessment” (p. 1). Because campus leaders failed to communicate this information effectively, faculty support was minimal.

Successful communication about the purpose, process and results of assessment is a critical feature of developing such support (Welsh & Metcalf, 2003a). To facilitate this attempt, Wright (2005) suggests relating assessment to a successful transference of the discipline. She explains that faculty members’ motivation in their profession is to cultivate in their students a love for and expertise in their field of study. By demonstrating to faculty the usefulness of assessment in this endeavor, a greater degree of support is generated.

A component that assists with communication is providing a place for faculty to go with their questions. Ideally, the institution designates a campus assessment leader who is approachable for both faculty and administration. Larger institutions may find it valuable to develop an assessment office, where multiple assessment resources are found. Whatever strategy an institution decides will work best for them, experienced and amicable leaders that can elicit the trust of their colleagues must be a component of the plan.

Because the degree of trust present significantly impacts the implementation of faculty’s assessment practices (Carless, 2009), it is imperative that open communication about the purpose, process, and use of assessment take place. Frequent communication amplifies the degree of transparency, which, in turn, increases the level of trust faculty members feel in their leaders, as well as the assessment process itself. With the current use of technology such as websites, email, blogs, and social networking sites, assessment leaders today have a wide variety of communication options. There is little excuse for ineffective – or nonexistent – communication.

## Conclusion

Accountability in higher education is here to stay. Faculty members are being called upon to enhance and report their teaching effectiveness. Because effectiveness is considered in regional accreditation processes, the tendency has been to require assessment plans “for the accrediting agency”. While documenting effectiveness is certainly an important use of assessment measures, it is not the most important one. Unfortunately, many faculty perceive the assessment movement as a transient one and fail to become engaged with critical processes of evaluation at the institution, college, or department levels. As administrators are the primary receivers of training and development in accreditation and assessment, they hold a particular responsibility to share this information with faculty. Regrettably, faculty are not always receptive to the pearls of wisdom their administrators distribute.

There are several reasons that faculty do not share the same enthusiasm for assessment as their administrative colleagues. Principally, a lack of faculty understanding is rampant, sometimes contributed to by well meaning administrators. The prevalence of low-trust environments similarly contributes to faculty resistance. Fortunately, there are several practices that institutions can implement when considering the generation of faculty support for assessment. This article identifies five such practices and suggests that their incorporation will stimulate greater faculty support.

By soliciting “missionaries” and “cheerleaders”, faculty become the leaders in the assessment process. Such involvement naturally creates ownership among the faculty as they engage with their colleagues about the purpose, process, and use of assessment. The promotion of professional development in the area of assessment and accreditation helps these identified faculty, as well as others, glean a better understanding about learning outcomes assessment. Not only can faculty (and administrators) participate in development activities off campus, but institutions can implement faculty learning communities, where faculty join together regularly for the purpose of discussing and reflecting upon their practice. Such collegial

interactions are a useful strategy for shaping culture (DuFour & Eaker, 1998). Strong collaborations, like those found in healthy FLCs, increase the transparency of assessment and accreditation processes.

Enthusiastic and knowledgeable leaders play a vital role in forming such collaborations and their worth must not be underevaluated. If faculty do not trust those leading the assessment efforts, they are less likely to buy into the process. Administrators can develop trusting relationships by ensuring that communication about assessment and accreditation processes is frequent, easy to understand, and positive in nature.

Each of these strategies is related to the other. In fact, when one area is weak, another is often impacted. For example, if communication about the assessment process is poor, the transparency tends to become cloudy. Once transparency is a problem, it becomes more difficult to motivate faculty to become fully engaged in professional development activities. A lack of developmental activity makes it difficult to find qualified faculty to serve as “missionaries” and “cheerleaders” to support the movement across campus. Ultimately, administrators and other assessment leaders should focus on these components of effective leadership if they have any hope of successfully implementing an assessment process at their institutions.

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# **THE ROLE OF IDENTIFICATION IN DETERMINING STUDENT ATTACHMENT TO CHOSEN PROFESSIONS: AN EXAMINATION OF STUDENTS IN IT-RELATED PROGRAMS**

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## **ABSTRACT**

*The field of information technology has been bombarded by news of shortages for educated and qualified IT professionals. At the same time headlines in practitioner journals are showing that individuals are not entering IT-related degree programs. For the last few years, enrollments have been down in IT-related programs across the United States. In order to explore this issue, the current research project examines the student identification with IT-related degree programs as a measure of their attachment to the field. The study conducted indicates students do identify with their chosen IT-related profession (major) and that this identification is related to both the similarity the student has with the profession prototype and with perceptions of the profession. A complete review of the study and implications are provided.*

## **Introduction**

For many years now, colleges and universities in the United States have experienced declining enrollments in science, technology, engineering, and mathematics (STEM) degree programs. In particular, information technology (IT) and computer science have been significantly hard hit. Enrollment in these fields has fallen by 32 to 59 percent. (Foster, 2005) So many young adults have steered away from the IT field that they are sometimes referred to as the "lost generation" of techies (Fisher, 2007). The effects of the dot-com bust and the increasing popularity of offshore outsourcing have been cited as some of the reasons why students have not entered the IT-related disciplines. (Malykhina, 2005) Students believe that there are no jobs.

In reality, despite the current economic recession, technology continues to be one of the few fields where jobs are still in demand and where there remains a strong outlook for long-term stability (Herne, 2009). In fact, the Bureau of Labor Statistics (BLS) projects that the number of computer-related jobs will increase by 25.2% between 2006 and 2016 (Panko, 2008). This equates to approximately 226,000 additional application software engineers and ranks this job as 15th among all 821 occupations detailed by the BLS in terms of the number of jobs that will be added through the year 2016. Also ranking in the top 30 occupations for job growth are systems analysts and network systems and data communications analysts. These statistics and rankings translate into many employment opportunities for computer science and information technology graduates (Panko, 2008). The purpose of this



research is to glean additional insight into why students are continuing to avoid the technology field by taking a new perspective: investigating students' professional identification with IT-related occupations. Practical recommendations are offered to help institutions of higher education promote their information technology and computer science programs.

### A New Approach

In order to recognize potential reasons why student enrollment has declined in IT-related educational programs, a new approach needs to be instituted. Today's college students (referred to as 'Generation Y' or 'Millennial' students) are unique and have different motivations from students of previous generations. Literature supports the importance of taking a fresh perspective and emphasizes the critical role of conducting studies that investigate student reactions to terms such as 'information systems' (Panko, 2008). Investigating such student perceptions will help to point out how students view IT occupations and whether they can relate to and visualize themselves stepping into the role of a technology professional. Therefore, the approach taken in this research project is to solicit student perceptions and use professional identification as a means to exploring what factors influence the recruitment and retention of students into IT-related programs. Identification with a profession is a powerful mechanism that impacts attitudes and behaviors of individuals. The following discussion presents the framework for this student-identification study and highlights the importance of studying identification.

Professional identification is a concept of two disciplines: sociology and psychology. The focus of identification is to help answer the question "who am I" (Babad, Birnbaum, and Benne, 1983). Different approaches have been used to study the concept. Each is similar in its acknowledgement that individuals have both personal and social identities. Identities are formed in order to meet an individual's need for positive self-evaluation. For students, it would be beneficial to understand what factors influence the formation of identity with their chosen major or profession. Recognizing what factors are important to the

individual can assist in determining how programs should position themselves. Marketing efforts and strategies can be implemented to focus on issues significant to potential and current students. The following discussion highlights factors related to the two approaches used to study professional identification: the sociological approach and the psychological approach.

### Theoretical Foundations of Professional Identification

To date, there have been two significant approaches used to study professional identification. The first method is derived from sociology. The second method has its roots in psychology. Each approach has strengths that add to our understanding of how individuals form and maintain a connection with a group such as a profession.

The sociological approach, more commonly referred to as identity theory, focuses on roles individuals play in society and highlights the existence and importance of counter-roles. Within the context of the IT-related professions, a role could be reflected by a job title of programmer or an assignment such as project development team member. Identity theory defines factors that become important related to a specific role held by an individual. The idea of counter-roles is also key. For example, in the information technology domain there would not be the need for systems analysts if there were no users to require the system. The same idea would be true across disciplines and social groups.

The psychological approach encompasses two primary theories: social identity theory and self-categorization theory. Social identity theory (Tajfel, 1978) focuses on group membership and defines identification as "that part of the individual's self-concept which derives from his knowledge of his membership of a social group together with the value and emotional significance attached to that membership" (Tajfel, 1978 p. 63). Identification is seen as group identification, as opposed to role identification. The theory defines what factors influence this identification. Self-categorization theory (Turner, 1982) focuses completely on the categorization of the individual as a group mem-

ber. The two psychological approaches are seen as representing the same theoretical perspective and are typically combined under the heading social identity theory.

The importance of these theories to the discussion of students and why enrollments are down in IT-related fields lies in the factors that the theories define as important to the identification process. Identification is a powerful mechanism by which attitudes and behaviors are influenced. If we can understand the factors that influence identification for students with their chosen major, we can more accurately understand how to position our programs and to draw and maintain students in IT-related programs.

The approach taken here to examine professional identification mirrors the organization identification research initiated by Ashforth and Mael (1989). This research was guided by the desire to understand how an individual's connection and identification with the organization was influenced without giving specific regard to the role the individual held in the organization. The focus was on identification with the organization. Here, we are examining a comparable idea – identification with the group – the profession. This psychological group membership is a primary determinant of an individual's social identity. Both sociological and psychological approaches to identification help define the factors examined here.

### Importance of Identification

Several studies have been conducted that show the importance of identification to individual outcomes and behavior. In an organizational context, satisfaction with the job has been found to impact retention across academic disciplines. Other studies have also

In research on individuals in organizations and professions, there have been many empirical studies showing the importance of identification to individual-based outcomes and behaviors. Several have highlighted the relationship of professional identification to job satisfaction (Russo, 1998; Scott, et al., 1999; Liu, Ngo, and Tsang, 2001, and Loi, Hang-yue, and Foley,

2004). Findings from these studies reveal the positive correlation between the two constructs. In an organizational context, job satisfaction has been found to strongly impact retention across disciplines. Studies were also found that relate the construct of professional identification to commitment (Landsman, 2001; Lui, et al, 2001). Both studies referenced revealed a positive relationship between professional identification and commitment to a profession. Commitment is another factor salient to the retention and the satisfaction of individuals in a professional setting. It is thus expected that if students identify with their chosen profession (represented by their choice in major), they will be more satisfied and committed and thus more likely to stay.

Within the IT domain, satisfaction and commitment have been shown to directly impact an individual's intention to stay with an organization. Commitment to the organization is an important outcome variable related to intentions to turnover (e.g. Baroudi, 1985; Igbaria and Greenhaus, 1992; Igbaria, Meredith, and Smith, 1994). In contrast, satisfaction has typically been studied at the job-level (e.g. Bartol, 1983; Goldstein and Rockart, 1984; Igbaria and Greenhaus, 1992; Gallivan, 2004). IT research reveals the importance of satisfaction as an outcome variable. Job satisfaction has been found to be significantly related to organizational commitment and turnover intention for IT professionals (Thatcher, Stepina, and Boyle, 2003; Gupta, Guimaraes, and Raghunathan, 1992).

All of these studies reveal the importance of understanding individual attitudes and behaviors in order to determine which management techniques would be appropriate to help enhance recruitment and retention efforts in the workplace. The connection of identification to these outcomes further reveals a potential source of information as well. By exploring identification, proper mechanisms to recruit and retain students may be highlighted to lead to long-term commitment and satisfaction with these technology-related professions.

## Framework of Professional Identification

The importance of workplace and organization identification has been examined empirically. Extending identification research to the educational environment, to our knowledge, has not yet been done. In order to more precisely assess an individual student's identification with their chosen profession (e.g. major), it is essential to understand the formation of professional identification for students.

Previous research highlights the importance of a number of factors to the formation of group identification based in both identity theory and social-identity theory. Two factors include similarity to the group's perceived prototype and perceptions of the group held by the individual (Brooks, 2006). Understanding how important these factors are to student identification can help educators and those in organizations position themselves in the most tactical and beneficial way. Each of these areas will be discussed and potential outcomes presented.

Individuals identify with social groups that highlight their perceived similarity to the prototypical member of the group (Chattopadhyay, George, and Lawrence, 2004). More specifically, an individual defines a group by a certain set of characteristics. These characteristics form what represents the group prototype – the typical member of the group. How similar a student is to this prototype is important to the identification process. For example, the more I see myself as similar to the typical IT professional, the more likely I am to identify with the IT profession. This “similarity factor” has rich potential in describing why students identify with technology-related educational programs. Previous research has shown a significant relationship between similarity and professional identification for individuals working in the information systems field (Brooks, 2006).

Extending this concept to the student would require an in-depth look at not only the construct of similarity and its properties but also to the qualitative descriptions that students associate with what we term IT or technology-related pro-

fessions. A goal of collecting this information would be to extrapolate from students the attributes they most closely assign to the prototypical member of these groups. Additionally, it is necessary to examine these attributes as a way to more efficiently market IT-related educational programs.

While this seems like a simple and obvious concept, the potential information gleaned from the process could prove more valuable than many earlier efforts to understand recruitment and retention of IT-related majors. Do we have a clear picture of how others see our profession? Is the image still one that portrays an IT professional as a white male working in a cubicle all day drinking coffee and eating donuts?

Inherent in the definition of social identity is the idea that the way a group is evaluated will impact the individual's level of identification with the group. To our knowledge, this concept has not been explored in relation to students and how they interpret perceptions of technology-related programs. These factors could prove very influential in determining why students choose a specific degree program or profession. For example, are the mixed messages related to job availability in IT and offshore outsourcing influencing students' decisions?

Two distinct factors of perceptions should be measured: how the individual evaluates or perceives the group and how the individual perceives others evaluate the group. Previous findings in organizational research support the inclusion of an evaluative component, as well as an antecedent to organizational identification (Mael and Ashforth, 1992; Pratt, 1998).

## Research Method

In order to empirically explore these ideas, a field study was undertaken. Individuals in undergraduate technology-related programs were contacted at a private university in the Northeast. Contact was made through the course instructors. Participation in the study was voluntary. Degree programs targeted included information systems, computer science, and interactive digital design.

The field study used an online survey administered through a web interface. Thirty students responded to this preliminary phase of our study. While this is indeed a small sample, it provides an opportunity for exploration related to the concepts presented. A goal is to continue data collection in the future.

Of the thirty responses received, the majority were from male students (90%). The average age was 20.3 years and the majority self-identified as information systems majors (76.7%). Computer science and interactive digital design made up 13.3% and 10% of the samples' majors respectively.

## Preliminary Data Analysis

Data were collected on the constructs described previously: similarity to the profession prototype, perceptions of the profession, and professional identification with the chosen profession (major). In addition, students were asked to describe the characteristics they apply to the typical professional in the IT-related field they had chosen to enter. Results from the preliminary analysis are provided in the following section.

General psychometric analysis was done for each construct. All reliabilities were well above .8. Being exploratory and due to the small sample size, factor analysis was conducted on each construct individually and independent of the others. Additional analysis will be conducted in the future to assure the discriminant validity of the constructs. The perception constructs contained two reverse coded items that did not load and were dropped from analysis. The final number of items on the similarity construct was 5 (no items were dropped). Measures for professional identification and perceptions contained 6 items and 3 items respectively.

Correlation analysis was conducted to explore the relationships between the study variables. Correlations were found to be significant and positive between similarity to the profession prototype and professional identification and between perceptions of the profession and professional identification. In an effort to further examine the theoretical relationships between the

variables, similarity and perceptions were entered into a regression equation with professional identification being the dependent variable. Findings point out that the two independent variables explain approximately 13% of the variance in professional identification ( $p=.055$ ).

While these results are only exploratory, they do point to the potential importance of key factors in shaping an individual's identification with their chosen major or profession. Additional data collection is set to occur in upcoming semesters. An added goal of this collection is to increase the representation of female students. It was not possible with the small sample to compare males and females on the issues presented. Additional responses from female students could help explain the small number of females historically seen in the IT profession.

As mentioned, students were asked to provide the characteristics they would use to describe the typical member of the profession they plan to enter. This is a key question in exploring the importance of the similarity concept. Findings indicated that the more similar the students see themselves compared to the typical professional in their field, the more they identify with the field. We now need to understand what characteristics they are using to define that typical professional.

Having only 30 responses makes analysis of this data purely exploratory. Initial and introductory examination of the qualitative responses indicated that students use the following terms to describe typical members of their chosen profession: creative, people-oriented, hard working, organized, educated, imaginative, flexible, and intuitive. The following section describes the implications that can be drawn from these findings as well as directions for future research.

## Implications and Conclusion

Findings from this study, while exploratory, have important implications for IT and other educational. Identification has been shown to impact other important outcomes such as satisfaction and commitment for professionals in an organizational setting. These factors are important

to retention as well. Understanding what influences the identification of students with their chosen profession can help in developing and implementing relevant programs geared toward recruitment and retention.

Two areas were found to be important in determining the identification of individuals with their chosen major: similarity and perceptions. Similarity to what the students defined as the "prototypical" IT professional was further explored by asking students to define the characteristics they attribute to this professional. Individuals should focus attention not only on the technology aspects of IT-related field but should also indicate how dynamic the field is. Students used words such as imaginative, intuitive, and people oriented to describe the prototype for their fields. These words do not match the old image of IT: working alone and crunching numbers and code. According to a practitioner source (Percision Marketing, 2007), IT professionals view themselves as much more well rounded and socially savvy than the traditional stereotype of the socially awkward introvert glued to his computer. Instead, quite the opposite is true. IT professionals see themselves actively involved in a variety of non-techie activities ranging from participating in sports to cooking. Furthermore, individuals in the technology profession see themselves as happy with their career. According to a study by dice.com, 94% of technology workers report being happy with their work (Fisher, 2007). The question is, do prospective students see this portrayal of an IT professional? It is imperative that colleges and universities recruiting students into their IT programs debunk inaccurate techie perceptions and tailor their marketing material to portray this realistic image of a professional who is happy with their career, well-rounded, creative, and social. It is important that students have an accurate perception of technology workers not only so they have realistic expectations about the field, but also because they are more likely to view themselves as similar to this current IT professional image rather than the traditional nerd stereotype.

Perceptions of IT-related professions also warrant attention. Individual identification is influenced by how the individual views the pro-

fession and how the individual perceives others view the profession. Again, this is a seemingly simple finding, but it has dramatic implications. IT-related programs should be paying close attention to what is really going on in IT. Rumors and broadcasts about disappearing IT positions tell only part of the story. While computer positions such as programmers and help desk workers are declining, other occupations such as software engineers, network systems and data communications analysts, database administrators, and network and computer systems administrators are strong. Rather than IT jobs disappearing, it appears that predominant technology jobs are changing and being redefined (Panko, 2008). It is critical for colleges and universities to be aware of the changing landscape of IT skills sought after by employers and to adapt their curriculum accordingly. Higher-level skills (especially analytical skills) are becoming more important for students to thrive in this market (Panko, 2008). These skills are key for being successful in high-demand positions including software engineering and network analysis. Technology programs such as information systems and computer science need to change their focus to incorporate these "higher-level" skills, especially analytical skills, into their curriculum. Building relationships with companies who hire IT workers is also recommended for colleges and universities in order to learn about skills recruiters are predominately looking for in IT new-hires. Offshoring is another phenomenon that has individuals reluctant to enter the technology field. Headlines about outsourcing and offshoring are often exaggerated to gain readers and attention. Recent research indicates that large organizations do plan on increasing their use of sourcing practices, but that does not translate to all IT jobs going to India. There a big misconception about sourcing and how organizations are implementing these strategies. Overall, with the exception of programmers and computer support specialists, offshoring of computer specialist jobs is considered negligible (Panko, 2008).

Recent research indicates that the demand for IT professionals is on the rise. It is expected that 806,000 jobs of all computer specialties will be added through the year 2016 (Panko, 2008). Universities, colleges, and organizations must

further their marketing strategies to meet this demand. Highlighting qualities that represent characteristics important to students and their formation of identification is one way to redirect the image of the profession to one that is more representative and realistic. "Given the lead-time needed to attract, enroll, and graduate students, immediate action is needed" (Zwieg, et al. 2006, p. 106).

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# ROPING A SACRED COW: REVERSING THE MEANS-ENDS INVERSION OF ORNERY PUBLISH-OR-PERISH POLICIES

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## ABSTRACT

*Moving beyond the already well-documented academic dilemma (quantity vs. quality) in measuring the worth of faculty publications per time period, this paper follows examples of unintended consequences and dysfunctional behavior impacting individuals, institutions, and ultimately, academic fields and professions in business administration. Reflections and recommendations are from the perspective of a septuagenarian with industrial and academic institution experience (teaching, administration, and research in the management discipline) over a forty year period, providing the younger reader with an alternative viewpoint; some may recognize a “passing-of-the-torch” mentality. Older and more seasoned academicians will empathize while being urged to be proactive in initiating action steps to counteract inordinately constraining forces impinging on business schools, using the academic discipline of management as an example.*

*The paper draws from classical studies of unintended consequences of bureaucratic behavior, beginning with the means-ends inversion phenomenon where specific rules meant to support goals easily become the goals themselves. Simplistic tallying of academic publications in various journals, or “bean counting” by administrators is seen as logical, nearly inevitable, and regrettably rational considering today’s powerful external forces such as accreditation standards and demands for accountability from constituencies and governing bodies. Contemporary viewpoints are brought to bear on the issue, including international rallying cries for a moratorium against rankings of academic institutions as a contributing factor in the generation of poor quality research and publications. The currently popular technique of using scholarly journal citing tallies as indicators of quality is discussed, noting that its system flaws can also be positively correlated with failures of publish-or-perish policies. The significance of electronic publication venues is discussed along with practical recommendations for current improvements and additional research.*

## Introduction

Are we beating a dead horse or prodding a sacred cow when we complain about academia’s age-old administrative policy of “publish-or-perish? In either or both instances, there should be no reason to ignore the negative aspects or fail to applaud those clearly positive outcomes. Rather than flailing away at the whole issue (metaphorically trying to start a stampede), this paper seeks to address one or more typical policy weaknesses which appear to be vulnerable and open to imme-

diate practical and implementable improvement (Casati, Giunchiglia, and Marchese, 2009). The objective is to proactively and positively impact the issue, and as in the farm animal image, break the untamed behavior, so as to allow productive use and improvement of the “herd” while simultaneously benefitting the individuals. If we can only do something affecting just one “animal” at a time, at least we can accomplish some positive changes without further delay.

Before having a look at the dysfunctional side of publish or perish, the reader should understand the worth of a normal degree of administrative pressure by faculty for involvement in research and publication. But like Management by Objectives (MBO) as a planning and control tool if it is misused, inordinately high goals with unrealistic timelines assigned by autocratic supervisors can destroy the (perhaps altruistic) purposes of this 50-year-old technique (Drucker, 1965). In this paper, the assumption is made that faculty members anticipate reasonable expectations of research and writing productivity under the leadership and supervision of administrators who value participative management and hence utilize joint goal-setting with subordinates (a tenant of MBO and/or of any goal-based performance appraisal system) (Bennis, 1980). Ideally, such direction will cause the faculty member to develop professionally, enhance his/her own career credentials, contribute to the discipline, and improve pedagogically. Lacking such direction over time could be a serious disservice to the individual, perhaps unconsciously resulting in the eventual generation of such a weak resume as to stifle any promising career moves.

Common sense rather than massive empirical research is enough for anyone to comprehend what happens when subordinates are told that they absolutely must accomplish something to remain on the payroll: They will (a) Figure out ways to meet the goals, (b) In some way manipulate the system so as to appear to be meeting the goals such as setting minimal goals, or (c) Die trying! This logic works up the chain of command, as well for administrators: Told that data should be available proving that their subordinates are accomplishing certain goals, mid-level administrators (under pressure) will see to it that the numbers look good rather than risking their own hides.

### Means-Ends Inversion

Sociologists and other behavioral scientists have studied and written for years about how rules meant to support organizational goals can easily become the goals themselves (Alexander, 1976). For example, managers in their zest to stay within budget limits can lose sight of their

primarily allegiance to enterprise goals (Koontz, O'Donnell and Weihrich, 1980). In the same way, a strict publishing productivity policy, e.g., specific numbers of actual (hard copies, not just accepted) publications in qualified venues per exact time period, will logically encourage bureaucratic "bean counting" rather than little if any contribution at all to the organization's mission, including faculty development, student learning, or eventual practitioner value (Numerof and Abrams, 1994). In the case of business schools' accreditation associations' goals for their members, individual and group performance statistics, ironically, may become dysfunctional by creating bureaucratic faculty classifications such as "Academically Qualified" (AQ) or otherwise, driven by numerical documentation rather than true value (Smith, 2009).

Beyond accreditation regulations, another contributor to the publish-or-perish means-ends inversion dilemma is the broader issue of academic institutional ranking systems. A seminal and the definitive current journal article by Adler and Harzing on this topic calls for a temporary moratorium on institutional rankings, which are shown to be highly reliant on the perceived quality of scholarly publications. The authors also point out flaws associated with counting the number of people citing another's work as a quality factor or rating the worth of the article and journal according to self-reporting manuscript acceptance rates. It is seen that publication value is often seriously misinterpreting by the exclusion of international journals, conference proceedings and electronic journals (Adler and Harzing, 2009). The latter venue leads to another value variable: Getting the research findings out in a timely manner (Poe, 2002) versus having it appear in print years later but in a so-called "prestigious" journal providing a life-time of bragging rights for the author (Starbuck, 2005).

### Nudging or Scaring the Sacred Cow?

Rather than devoting more time and space documenting what we already recognize as pathological behavior, some practical solutions need to be discussed and evaluated. The reader is encouraged to treat the previously cited article by Adler and

Harzing as a significant benchmark for further research, including a number of solid macro level recommendations and ninety valuable scholarly references. This paper, meanwhile, sets forth several micro level ideas for immediate implementation which may contribute eventually to the ambitious proposals of Adler and Harzing who call for an "exogenous shock" to the whole system to disrupt the equilibrium of the field (Koontz, O'Donnell and Weihrich, 1980). Maybe the sacred cow will eventually have to be tilted on her side but meanwhile why not try to move her at least a little right now?

### Practical Recommendations

The following recommendations grew from earlier writings and a paper presentation at an international conference of management academicians and business professionals (Ware, 2006). Subsequently, additional secondary data has contributed to updating, refining, and expanding the original work. The recommendations are presented in four action-step categories: (A) Faculty development as a positive incentive for publishing (vs. the negative stress of publish-or-perish); (B) Flexibility and sensibleness in policies (in lieu of overly-constraining iron-clad rules); (C) Impartial evaluation of publication venues; and (D) Better evaluation of the published work through service credit for colleagues.

#### (A) Faculty Development Incentives

Strongly encouraging or even firmly insisting on publishing activity for faculty development places the writing responsibility on the faculty member's own career advancement, whether or not he/she remains with the institution. The requisite for long term local employment (pre- and post-tenured) is ethical and appropriate even should it be perceived by the faculty member as paternalistic or over-controlling. In fact, a no-pressure-to-publish policy could reverse the faculty development process by implying that research activities are unimportant, and perhaps secondary to teaching and service expectations.

Rewarding exemplary teaching and/or "serving" over a period of years with little or no publishing expectations can render an otherwise invaluable/

indispensable individual virtually unemployable in the professional academic market and/or not eligible for promotion within the current institution. Credentials are weakened. By not insisting on publications, administrators will in fact have done a disservice to the individual, perhaps inadvertently (if not deliberately) exploited a person who was used effectively by the organization for teaching and service, then later discarded as being "not academically qualified."

Academic department heads should direct their faculty members to be involved continuously in research and publication to some extent, leading them by example and providing appropriate support. The resulting publications, as a side benefit rather than as a primary goal, will yield "Academically Qualified" categories for accreditation but more importantly, stronger professional credentials for the individual, a win-win situation for all.

#### (B) Flexibility in Policies

Rigid rules in assessing the worth of research or demanding conformance to exact calendar deadlines can become almost ludicrous. Consider someone who is awarded a Nobel Prize on January 1 and the research is published in a venue that is not found in Cabell's Directory of Publishing Opportunities in Management (Cabell's, 2006-2007). They not only missed the calendar year deadline but (depending on the circumstances) could lose their "Academically Qualified" status for a year if inclusion in Cabell's is being used as a measure of worth. To add insult to injury, the effort put into winning the prize might not be counted as research at all, perhaps being recorded as a service activity" which (ironically) took up so much time that the busy and now famous individual is sanctioned for not publishing enough (Ware, 2007). "Congratulations for winning the Nobel Prize but you will have to wait until the next academic year to be considered for a merit raise!"

Other policies can be seen as counterproductive when viewed narrowly, such as not allowing any credit or even a "pat on the back" when an industrious faculty member faces abnormal publication delays for whatever exogenous reason.

Accepted manuscripts with promised publication dates can appear in print much later than anticipated; this year's scholarly efforts appear to be nil according to the inflexible information system. Incidentally, it has been shown that some business disciplines may experience more difficulty than others in maintaining regularity in publishing success. For example, Zivney and Berlin found that publishing one article per year in any finance journal over any prolonged period of time is a "truly remarkable feat, met by only 5 percent of finance doctorates" (Zivney Berry, 1992).

Why not allow exceptions to policies from time to time for the best interest of all concerned? If the policies are "set in stone," at least we could come up with motivational accolades, and think "out of the box" about with opportunities for early distribution of rewards.

### (C) Impartial Evaluation of Publishing Venues

Clearly, there are many truly outstanding venues that simply do not accept mediocrity and we hold them up as icons. Who doesn't dream of being known as the one who published in the Harvard Business Review or the Academy of Management Journal? It is commendable to strive for those goals and such accomplishments would mean that there will be wide dissemination of our contributions which could in turn make a lasting impact for the benefit of many.

Accessible academic journal ranking resources exist such as Journal Rankings in Business, where one will find references in the fields of Accounting, Entrepreneurship, Finance, General Business, Management, Marketing, Management Information Systems, and Production/ Operations Management (Western Libraries Business Library). Management journals are evaluated in Mezas' Journal Impact Ratings (The Industrial Organization-Psychologist, 1996) and several Marketing journal rankings are found at www.KnowThis.com. In short, references are clearly available for administrators and would-be writers to document the relative worth of journals.

However, how many fine papers are never submitted to top echelon journals for fear of rejection or the perception that the process may take lengthy periods of delay while reviewers work on the manuscript and revisions go back and forth? Meanwhile, would-be authors are denied promotion, merit raises, and tenure as the clock ticks. It becomes a better strategy to somehow "get something published" before this year's deadline! Administrators themselves may say, "Find something in your field in Cabell's that has a high acceptance rate and go for it!" Likewise, an uninformed administrator might discourage a junior faculty member from submitting an article to a certain journal because they have "never heard of it," or feel that "it can't be any good since it's one of those new e-journals."

Also, under the topic of evaluating publication venues, we can expect that there will be some outstanding manuscripts selected and published in less rigorously-refereed journals for various reasons, such as the author being under to pressure to get something in print. Needless to say, it would be encouraging for the writer to know that despite the reputation of the journal, e-pub, or magazine that administrators had at least read the work (Ware, 2007). With endorsement, a well-written article could trigger further research, eventual wide scholarly notoriety, and practitioner value. As an example consider Irving Janis' classic, "Groupthink," first published in a magazine that one might read in a waiting room at their dentist's office (Irving, 1971).

### (D) Evaluation of the Published Work through Service Credit

Do you know of any administrator who has the time to meticulously evaluate scholarly papers? That person himself or herself is under intense time pressure; time, thoughtfully reading something even in their own discipline for the content interferes with their "day jobs." One can follow the logic of simply relying on the general perception of the worth of the publishing venue, e.g., "What an accomplishment! You got something in the latest issue of Administrative Science Quarterly? Let's put a copy in your personnel file and we can show it to the AACSB accreditation team when they come next year. Oh, did I read it?

No, not yet but I'm sure it's interesting and I will get around to it later." Furthermore, if one's journal article is packed with statistics and equations, which administrator will "find the time" to read it? There is absolutely no casting of blame intended here; it is normal and there are no culprits.

If out-of-discipline, over-worked, or inexperienced administrative evaluators are unable to accurately assess the true quality of a published work, one suggestion is to call on in-discipline colleagues within the local institution to evaluate it. As an incentive, these reviewers could receive documented credit for their efforts for use in posting their activity in the category of professional "service." Administrators would need to address and agree on the significance of such time-consuming service which traditionally has been subservient to "teaching" and "research" during academic performance reviews and accreditation self-studies. Consider the many hours spent by conscientious manuscript reviewers, scholarly paper referees, discussants, and professional meeting track chairpersons which have no easy way of being counted. Should not this time and effort be in some fashion akin to attorneys' "billable hours?" Some professional organizations have been known to offer awards for these types of intellectual contributions but it is so much easier to count articles published! In-discipline peer review could also support a researcher/writer's case that a particular contribution is far above average whereas unqualified evaluators might simply check off the fact that "something" was published. If quality is ignored, writers would be led to create several mediocre papers rather than one extraordinary one just to get the count.

Another evaluative method under the service category would be to encourage public presentations of published works. Award service credit for the presenter and for any discussants. Such programs would also offer opportunities to recognize writers beyond a perfunctory "thank-you." Audience attendance and participation could be bolstered by having periodic breakfasts or luncheons at no cost to attendees. New interdisciplinary scholarly research might be a byproduct of open forums and there would always be an implied faculty development value by the very exchange of ideas.

Public Presentations can be true service contributions (getting the findings out for use by academicians, students, and practitioners instead of being filed away as an accomplishment for measuring progress). Worth could be judged, as well. The contribution might have been published in a non-scholarly magazine yet the content could be extraordinarily valuable.

### Conclusion

Adding individual career development goals, being open to flexibility in faculty-publishing policies, demanding impartial judging of various publishing venues and awarding service credit for effort spent evaluating written work should move academicians toward producing higher quality research, resulting in more valuable influence on student learning, faculty development, and practitioner applicability. Publishing should be one means to a goal of overall excellence in one's academic discipline for the good of many rather than an end in itself to gain rewards or to avoid sanctions.

Maybe it's time for the sacred cows to be taken off of the endangered species list.

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# ADMINISTRATIVE PERCEPTIONS OF DATA-MINING SOFTWARE SIGNALS: PROMOTING STUDENT SUCCESS AND RETENTION

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## ABSTRACT

*Signals is a data-mining software technology that is used to provide early feedback about academic progress. This study analyzes interviews with administrators to identify key concerns and benefits about the use of this technology. Our results indicate that administrators believe that Signals can provide important support for students by giving them early and frequent feedback about their progress. From their perspective, Signals promotes student success and supports strategic university goals. At the same time, administrators expressed concerns about the resources required to maintain and implement Signals technology and whether or not it was possible to scale Signals use across a large campus. Results are discussed in terms of how the implementation of data-mining through Signals enables data-driven decision making.*

## Introduction

Many scholars have noted that in the Digital Age, dynamic and diffused media technologies are getting increasingly available to instructors and administrators, hence transforming the ways in which educational objectives are approached (Brown, 2002; Campbell & Oblinger, 2007; Jenkins, 2007; Newlin & Wang, 2002). In this changing environment, pedagogical norms for undergraduate education are shifting from teaching to learning through the use of student-centric, application based, interactive technologies (Chickering & Gamson, 1987; Hailes & Hazemi, 2002; Seymour, 1999). Institutions of higher education have already invested millions of dollars to test and implement these new media technologies on their campuses (Goldstein & Katz, 2005).

The integration of new technologies, however, brings both challenges and benefits to the educational communities that adopt them. Some individuals lack the technological literacy required for the use of sophisticated applications. Others are uncertain that the proposed technology will actually benefit its users without unintended consequences (Dede, 1998). Addressing these issues requires that administrators select appropriate strategies in introducing the proposed technology (Campbell & Oblinger, 2007b). The benefits associated with successful implementation of educational technologies, however, are wide ranging. For example, emerging Web based technologies have the potential to contribute to student success by increasing interactions between the faculty and students, and by providing further opportunities for cooperation among students (Brown, 2002; Newlin & Wang, 2002).

In particular, recent academic analytics (AA) technologies allow institutions to collect and control a wide variety of information that can be used to improve student success and retention (Goldstein & Katz, 2005). One of these technologies, *Signals*, was developed and implemented at a large Midwestern Research 1 (R1) University to increase student success and retention rates. The purpose of this study is to examine perceived contributions and limitations of the *Signals* initiative from the perspective of higher education administrators, as they are the key decision makers regarding implementation of new technologies.

### The Operations and Development of *Signals* Technology

The purpose of the *Signals* initiative is to acquire and make sense of data regarding student success in order to provide administrators and instructors necessary information for implementing interventions. *Signals* is a Web based technology that promotes student success by employing academic analytics to identify students that may be at risk of failing to meet benchmarks in a course, and then facilitating interventions to encourage these at-risk students to seek out help resources. Academic analytics uses data mining to combine both performance and behavioral student data from a variety of institutional systems. These data account for performance (i.e. course progress, ACT and SAT scores, high school GPA) and behavioral (i.e. interaction with technology, help seeking behavior) elements. This mined data is then fed through an algorithm that predicts student success (grade outcome) in a particular course. This real-time algorithm is run at the instructor's discretion and each student is placed in a risk group for success in a course. Using this algorithm, instructors can send students feedback about their current performance illustrated as green, yellow and red stoplight *Signals* to correlate with low, moderate and high risk groups respectively.

The development of this predictive model began in 2005 and a statistical proof of concept study was approved in 2007. In the spring of 2007, researchers identified eligible courses, recruited faculty members, and created pilot intervention

schedules. These schedules consisted of emails, text messages, face to face interventions and referral of students to academic advisors. In fall 2007, these interventions were implemented in one controlled setting course with 220 students. After assessments and adjustments, a second course piloted *Signals* in spring 2009 with control/experimental groups of 150 students. The *Signals* technology was closely monitored and the algorithm was modified again according to the results. Subsequently, researchers and technology developers designed an automated platform for *Signals*. The fall 2008 pilot included 600 students in two courses.

Although hundreds of other educational technologies provide early warning systems (Goldstein & Katz, 2005), the *Signals* model has unique characteristics that increase its efficacy. First, *Signals* not only relies on static performance-based data, such as SAT scores and grade-to-date in a given course, but also includes a behavioral component that accounts for students' interaction with instructional technology (number of practice tests to access) and help-seeking behavior (number of times the students visited the university help resources). *Signals* also eliminates some bias of prediction due to the nature of the algorithm as it relies on dynamic data within each course. The algorithm allows all students to begin each course on an even playing field with their peers. This contrasts with other systems that place "at risk" flags on students based solely on membership of certain groups—such as low income or first generation students. While *Signals* draws on past data, by accounting for performance and behavior in a given course, the algorithm helps mitigate the association of specific demographic characteristics that may lead to self-fulfilling prophecies amongst students erroneously labeled "at-risk." This course-by-course structure also allows students to view their standing among peers from the personalized dashboard of the *Signals*, so that they can see how much effort they are putting into a course compared to their peers.

*Signals* is more flexible than other early warning systems because it can account for the fact that the data from a course is continuously changing. Student data in *Signals* is available in real-time and is updated as instructors need it. These up-

dates combine static data points such as SAT scores and dynamic data that reflect, for example, the amount of time a student spends using practice tests available through the course management system. Importantly, the use of dynamic data increases the predictive strength of the student success algorithm (Iten, Arnold, & Pistilli, 2008). These real-time updates also allow students to receive *Signals* alerts as early as two weeks into the course, depending on the structure of the class. Such alerts can be in the form of e-mail or text messages that notify the student about which risk group they are in and how they can improve their performance. Faculty and administrators also benefit indirectly from this flexibility because it allows access to aggregated, comprehensive, up-to-date information about overall student performance success.

### Potential benefits and drawbacks of *Signals* Technology

Among possible perceived benefits of the *Signals* initiative, Campbell and Oblinger (2007) suggest that *Signals* (student success algorithm) can encourage faculty members and students to increase academic success; increase accountability of all stakeholders for student success rates; facilitate interaction between faculty members, university personnel and students; and encourage administrators to strategically allocate academic and financial resources for the students.

Possible issues with the *Signals* initiative were foreseen to be maintaining the privacy of students' academic information and faculty members' teaching performance; taking over students' responsibility to be proactive about academic achievement; ensuring the validity of the student success algorithm components; allocation of appropriate technological, informational and human resources to the *Signals* project; and reaching out to the right students with the right approach (Campbell & Oblinger, 2007, Campbell, De Blois & Oblinger, 2007).

Previous literature suggests that while *Signals* might entail some risks and uncertainties, the positive outcomes in terms of student success seems to outweigh perceived potential risk

(Campbell, 2007; Campbell & Oblinger, 2007; Data Mining for Academic Success, 2006).

### Literature Review and Research Rationale

From the perspective of social construction of technology theory (Pinch & Bijker, 1987), technologies both shape and are shaped by the perceptions of their stakeholders, namely the end-users and, the designers as well as the administrators (Mackenzie & Wajcman, 1985). Technologies consequently evolve before they take their final forms in accordance with the perceptions of their stakeholders as well as relevant political and economic conditions (Hughes, 1985). Furthermore, the same technologies have the power to change how their stakeholders interpret them, and put them in use.

From this perspective, AA—the basis of the *Signals* technology—both shapes and is shaped by its users, designers, and administrators. Each academic institution that applied this technology specified a need for credible, accessible and timely information, regarding prospective or current students and even their faculty members, and the designers created algorithms to collect objective data (Goldstein & Katz, 2005). This information was then used to make further strategic decisions, shaping not only the academic institution, but also the algorithm itself (i.e. to make it more accurate or user-friendly) and its implementation within the institution (Pirani & Albrecht, 2005).

Previously, universities have used AA to identify prospective students to employ appropriate recruitment strategies, to differentiate students in danger of academic failure to reduce retention rates, and to help guide advisors and help sources (Campbell, De Blois & Oblinger, 2007). Other universities have used AA to provide graduate program administrators with objective productivity ratings of their faculty members (Fogg, 2007; Wasley, 2007). A medical academic institution aims to use AA in measuring performance to reduce cost and increase productivity in medicine (Norris et.al, 2008).

In each case, the purpose of these algorithms is to "gather, synthesize, and evaluate relevant data

and information for effective decision making” (Pirani & Albrecht, 2005, p.2). AA is positioned to be a crucial new technology because it helps administrators make vital decisions regarding the reputation of their academic institution. Data provided by AA algorithms allow the administrators to make admissions, finance, research and planning related decisions, including strategic planning, resource allocation, and improvement strategies (Goldstein & Katz, 2005; Norris et. al, 2008). Even though the algorithms are created to serve a specific purpose, the information that is acquired from these algorithms allows administrators to expand the uses of this technology (Fogg, 2007). How the administrators interpret and use this technology, allows the technology to develop even further, yielding more accurate information for data driven decision making.

### Research Rationale

According to the social construction of technology perspective, in order to evaluate a new technology, it is important to examine how effective it is in terms of not only its technical properties but also the perception of its usability by all stakeholders in relation to its financial and policy implications (Bijker, 1995; Pinch & Bijker, 1987).

The technical properties of *Signals* as an AA technology have been a research interest since its inception (Campbell, 2007). The predictive power of the *Signals* algorithm as well as the reliability and validity of its technical properties of this new technology were examined earlier (Campbell, 2007). In this study, it was found that the *Signals* algorithm was able to accurately predict student effort and success 80% of the time for freshmen students.

On the user side, the concept of academic analytics has been proven successful with previous studies examining the impact of this technology on increasing student success, improving student retention rates as well as directing students to appropriate help sources (Campbell, De Blois & Oblinger, 2007; Goldstein & Katz, 2005; Iten, Arnold & Pistilli, 2008). It was also suggested that with academic analytics, faculty members would be able to target the groups of students in need with the appropriate teaching strategies, re-

sulting in better teaching experiences (Campbell & Oblinger, 2007) However, students and faculty members are not the only stakeholders of this technology that shape it. The administrators are key in making strategic financial and policy related decisions about the future of technologies. Thus, it is important to focus on the perceptions of those who make administrative decisions regarding *Signals* as well.

As Campbell and Oblinger (2007) have noted, both an institution’s reputation and the well being of its members are affected by how a new technology is implemented. For this reason, we believe that systematic assessment of *Signals* from a broader perspective provides valuable information about the technology’s connections to its stakeholders and can be helpful in informing future applications and alterations of the technology. To begin this broader assessment, we began our research with the administrators of the University such as deans, department heads, executive vice presidents, as well as directors of various offices such as student success and academic excellence offices. Our research aimed to identify the perceptions of the potential contributions and limitations of *Signals*, for the University in particular and the higher education community in general. Accordingly, our two research questions are as follows:

RQ 1: How do administrators perceive the contributions of the *Signals* initiative?

RQ 2: How do administrators perceive the limitations of the *Signals* initiative?

### Methods

Six administrative professionals with knowledge of academic analytics in general and *Signals* specifically were recruited from a large, R1 institution in the Midwest. Interviewees were recruited by a member of the research team and asked to participate in an hour long videotaped interview. Participants were provided with the question list before the interviews. All participants held an administrative position at the time of recruitment in either the office of deans, academic departments, or student offices, but have substantial teaching experience. Four of the interviewees

were male, and two female. All six participants were Caucasian. Five of the six held advanced degrees, while one held a BS. The range of time at the given institution was from 6 to 19 years, with the average being 10.5 years. All but two of the interviewees came to the current institution from a previous institution of higher education. One participant came to the current institution from industry and the second has only worked at the current institution. Total years in education ranged from 6 years to 33 years, with an average of 17.5 years. Some of the administrators were intimately involved with the research behind *Signals* and others only know the broadest detail.

Three interviewers from the research team completed the hour long sessions while an independent professional videotaped the interview. A total of six interviews were completed between September and October 2009. To guarantee that the interviews gathered data on key points, a semi-structured interview format was employed, but interviewees were given considerable freedom to deviate from the probing questions to set the course of the dialogue. Four questions guided the interview: (1) What is your general opinion of the *Signals* project? (2) Why is this project strategically or academically important to this University? (3) How has *Signals* changed your interaction with faculty in your department? (only for department heads) and (4) What future contribution do you see the *Signals* Project making to this institution specifically and the field of higher education in general? The interviews lasted between 30 minutes and 1 hour and were taped, with participant consent. These tapes were used by the research team to create verbatim transcription without utterances for the purpose of analysis. No identifying material was captured to ensure the confidentiality of the participants.

The transcripts were double coded by members of the research team using Hatch’s (2002) typological analysis method in which the “data analysis starts by dividing the overall data set into categories or groups based on predetermined typologies...generated from theory, common sense, or research objectives” (p. 152). These typologies were policies, resources, scalability, measurement, strategy, as well as limitations and positives associated with *Signals*. Since the purpose of this

study was simply to gather initial perceptions, typological analysis was a logical selection. Each interview was read carefully by the coder before analysis began so that a general sense of the interview could be captured. After each of the transcripts were dual coded, the research team had a series of meetings during which the transcripts were dissected and meaningful categories and excerpts were extracted.

### Findings

There were four themes that emerged in administrative perception of the *Signals* initiative. First, the possibility for positive outcomes in student success and motivation; second, the potential for broad impact of *Signals* for other types of courses and academic institutions; third, the concern of scalability; and fourth the resource requirements for implementation.

### Strategic Concerns— Success, Learning, and Graduation

Administrators explained that the prompt and frequent feedback that *Signals* delivers to students supports the University’s mission about student success and motivation generally, and graduation and retention rates more specifically. These data begin with the presumption that student success is an essential foundational aspect of a University’s success. As Participant C said, “Well, in terms of the project being strategic, there is probably nothing more strategic at any higher education institution than to actually teach students, and have students be successful.. . . I think most campus communities are trying very hard to make students successful” (C,2, 26-8/ 3,68-69). In the discussions about student success, the *Signals* technology was described as an important element in increasing student success by fostering student’s study skills and learning.

The data collected showed that administrators shared the perception that *Signals* supported student learning. Participant R observed that this initiative “has almost this two-fold mission. One is, the capacity of the tool itself helping improving student learning if well used. And the second, is giving people new ways of thinking and saying there are other ways of dealing with the chal-

lenges we have” (R 7, 154-157). Addressing these challenges was described by Participant P as the need to get “faculty to buy into the fact that students are here to succeed, students are here to do well and that the faculty’s job is not only to just impart information but also to ensure that the information is being understood, that it is coming back in a manner that it is supposed to be coming back in, and broadly just getting used the way it supposed to be used” (P 1, 15-20). From the perspective of these two administrators, *Signals* supports both the student’s formal and informal learning and the relationship between instructors and students by providing the instructors tools to interact with their students outside the class session more often and more explicitly with the use of technology.

The implications of successful learning for the strategic goals of the University more generally are explained by Participant H as follows:

“If we can identify the students who are having trouble sooner and create learning situations for them that specifically focus on them we’re just going to have success all along the way. So, we track students who probably aren’t as qualified as we would want them to be or as skilled knowledgeable and sometimes just even motivated we can focus on them and hopefully they will help our graduation rates and their success in college” (H,1,21-7).

Here, Participant H notes the connection between student success and a University’s retention concerns. This connection was also made by other administrators who were concerned with graduation rates. In these interviews, administrators shared the observation that students who achieve academic success and meet learning objectives are more likely to stay enrolled at the University and graduate with their cohort. Participant C elaborates on the influence of the *Signals* technology in reaching these outcomes.

“The stoplights (*Signals*) project’s a very exciting project, because one of the big-

gest challenges in higher education is ensuring that students actually stay and graduate. So, right now many institutions will have a seventy or eighty percent six year graduation rate. Students have a tendency to struggle early on, drop out, and one of the challenges is to identify the students that are struggling ...” (C, 1, 16-19).

*Signals* technology may help increase retention and graduation rates by giving students prompt and frequent feedback about what study behaviors they need to change in order to reach their learning objectives. Participant P states that with *Signals* “the student has a better opportunity to figure out what they need to do in order to succeed. If students succeed academically they’ll be retained. If students are retained they tend to persist all the way to graduation” (P, 8,170-171).

Participant C observed that that achievements of the *Signals* initiative is not only noted by administrators and states that “clearly the program is successful, and in the classes in which this project has been implemented, we get lots of comments from students, ranging from wonderful little thank yous to students who said they really needed that kick to get me going, to get me started” (C, 2, 34-36).

### Scalability

The data collected in this study also indicated that administrators anticipate that *Signals* has exciting potential for expansion into new disciplines and other Universities. At the same time, they noted that the technology will need to be refined before these expansions are possible.

There are two main elements of the *Signals* technology that will need to be addressed before its full potential can be realized. First, the system needs to be technology agnostic, meaning that *Signals* can be used with any CMS. Second, integration with the other academic technologies such as e-portfolios, wikis, and clicker systems needs to be considered. As described above, the *Signals* technology mines data from course management systems that instructors are using in their classes. Participant C noted, “The *Signals*

technology as it is currently formulated has been designed with the specific course management system used by the University. And although these two systems – the *Signals* technology and the University’s course management system – have been integrated well, this integration will not be the same with every course management system because the data that is available for mining is not consistent between course management systems.” Participant C identifies this future horizon for the *Signals* technology a question of making the project “more adaptable to more environments” and notes that this will require a considerable amount of effort (C5, 104-8).

The expansion of the *Signals* project to other environments will likely be facilitated by what administrators interviewed for this study identified as a positive response from instructors. As discussed above, the *Signals* technology is currently being used in 47 large, entry-level lecture courses. Several administrators who participated in our study indicated that many other instructors who know about this initiative are interested in using this technology in their courses. The courses in which this technology has been piloted have helped to refine the use of *Signals* in a large lecture environment. At participant R noted, “It has been tested, it has been fine-tuned, and (it) looks like it’s now ready to roll out to a broader group of faculty.” (R2, 31-7) The administrators indicated that the target areas for expansion include other gateway courses, non-science disciplines such as the liberal arts, and students also in their sophomore year. Administrator H discussed this expansion as follows:

“One of the first things we want to do of course is expand this out to different disciplines. We’ve focused on one or two disciplines at this point. We’ve had very strong faculty advocates supporting us who’ve been believers in this system before we even piloted it. We’ve like to expand it out to different disciplines to include more of those gateway courses more of the freshman experience. We might be looking at Engineering or we might be looking at more of the Science more of the Liberal Arts. So we want to touch more groups of the students across

the freshman and sophomore experience.” (H3, 62 – 68)

The main limitation identified in these data that may slow the expansion of the *Signals* technology is its reliance on data mined from course management systems. The algorithm that drives *Signals* requires that students use the course management system to complete assignments. Additionally, the ability of the *Signals* technology to provide prompt and frequent feedback relies on courses in which there are frequent graded assignments. Participant R indicated, for example, that many humanities courses utilize a course structure in which there are few graded assignments. He said specifically that “we’ve talked to a lot of humanities classes...(where) the entire grade will be based on two papers and two papers alone...and it’s really hard (for the students) when you don’t get that feedback (un)til mid semester” (R,9). In this example, the course management system data may not be useful, but information from other systems such as a class wiki environment may be considered for earlier feedback.

After developing the use of the *Signals* technology to other types of courses and a more diverse group of disciplines, administrators expressed an interest in expanding the *Signals* technology at other institutions of higher education. Mining anonymized and aggregated student performance data from other institutions would have positive outcomes for the development of the predictive algorithm that drives the *Signals* technology. If other institutions are using *Signals*, then it would be possible to combine data sets from different campuses and create an algorithm that would be useful across Universities. More generally, administrators expressed enthusiasm about sharing a technology that promotes student success and retention throughout the higher education community. Participant P put it simply by saying that “other faculty, other researchers can take that back to their campuses and say hey, look at what (this University) is doing. We can do it too” (P7, 154-55). This statement suggests that early adopters of the *Signals* may serve as role model for other instructors.

## Resources

Administrators expressed concern about the resources that the *Signals* technology requires. At a University-wide level, administrators will need to determine the cost of the initiative and whether or not the University is able to allocate resources for its maintenance. Moreover, the University will need to establish that the time and effort that goes into the *Signals* initiative continues to produce positive outcomes. At the same time, the resources that are available to instructors also become an important factor. Participant R explained a possible scenario as follows:

“But I (if I was an instructor) just may have, I may have no resources necessary to give early and frequent feedback because I have no one who can grade that. So, for me, it just may not be possible. And so, now you run into this whole resources issue where I say, “give me ten TAs and I might be able to pull it off.” But then, where do you pull the money from to pay those ten TAs? So, those are some very practical issues” (R13, 287-292).

In this example, an instructor could be interested in using the *Signals* technology in their course but might face a material barrier that limits the total time that can be invested in it. Although the implementation of a *Signals* initiative requires University resources, administrators also noted that it helps to make better use of existing University resources. Participant C gives the following explanation:

“We invest in help desk, so chemistry has a help desk, math has a help desk, biology has a help desk, physics has a help desk. We have regular office hours, we have tutoring sessions, we have study sessions, and the most frustrating thing from a faculty perspective is to do all this work, and have a relatively small group of people show up. And what we are seeing is that the people who participate in this project (*Signals*), they see an ever increasing number of students taking advantage of the resources, and that

is very rewarding to the people that have worked so hard to make these services available” (C3, 69-76).

Administrators discussed the *Signals* initiative as providing important connections. It bridges gaps between students and help resources as well as improving communication between students and instructors.

## Discussion

The purpose of this paper was to determine the perceptions of higher administrators on the contributions and limitations of *Signals* initiative. The perceptions of administrators are crucial, as the administrators such as deans, directors, department heads, and executive vice presidents are the key policy makers who determine the future of this technology.

All participants mentioned the strategic importance of *Signals* for numerous stakeholders including the students, the instructors and the administrators. Our participants referred to how *Signals* has great potential to reach massive number of students; and how it motivates students to utilize the help resources available on campus. Furthermore, the participants reflected on both their experiences with the development and implementation of this technology and the feedback they have received from the end users, such as faculty members and students.

Our findings demonstrate that the administrators at this University do not share some of the concerns that were previously proposed by the literature about the *Signals* initiative (Campbell, De Blois & Oblinger, 2007; Campbell & Oblinger, 2007). Contrary to concerns in previous literature about *Signals* being a “big brother,” none of the administrators in this study agreed with this concern and stated that the *Signals* project is considered as a support mechanism more than a control mechanism.

Among main concerns about the *Signals* initiative, our participants commonly mentioned the issue of scalability. This raises a concern about application of new media technologies with users who are technologically savvy and with those

who are not. When a technology such as *Signals* is implemented among larger audiences, different precautions are necessary, such as technical training or advocacy of the technology.

The issue of resources was also a common theme in the responses of our participants. Implementation of a technology such as *Signals* requires both fiscal and human resources. Our participants focused more on the issue of human capital, about making the technology user friendly, so that minimum time and guidance is needed to implement the technology. As far as new technologies are concerned, there are always ambiguities concerning whether the investments made into a technology will pay off by yielding the desired outcomes. So far, the administrative members believe that the investments are paying off, since students are having better experiences with their classes and are better informed about not only their academic standing, but also learn where and how to seek help.

The diversity of our findings from previous literature on this technology shows that systematic studies on perceptions of stakeholders of a technology are essential. Such empirical studies provide reliable directions for the administrators and future applicators of technologies. Academic Analytics technologies are being increasingly used in various institutions (Campbell, De Blois & Oblinger, 2007; Goldstein & Katz, 2005). However, it is important to develop precise algorithms, so that the administrators do not make erroneous decisions (Wasley, 2007). It is increasingly important to have empirical studies on perspectives on technologies, so that the administrative members can make accurate decisions regarding not only the future of technologies but also the reputation of their institutions and higher education (Norris et. al., 2008). Since the cost of building new technological infrastructures and training its users can be high, such accurate decisions would help higher education institutions save valuable resources in implementation of technologies such as Academic Analytics.

This study also has its limitations. First, the data results and perceptions derived from early and small scale implementations of the *Signals* initiative. Because of this, there were only six adminis-

trators who participated in this study. Future research across more of the university’s departments and even in other universities would expand the scope of this study and provide additional valuable information. Second, all the participants in this study are employees of a single University and have been involved in this project since its early stages. Future studies should examine the perceptions of administrators after *Signals* is implemented on a larger scale. Third, it is important to examine the perceptions of all stakeholders, including the students and instructors, as they are affected by the implementation of this new technology and will play a crucial role in shaping it. This research can be expanded to account for other perspectives, including students and instructors.

## Conclusion

The expansion of the academic technology systems in the past decade has made efforts such as *Signals* possible. The advancement of technology has allowed access to an incredible wealth of data. New data mining techniques make the collection of data from multiple sources and statistical manipulation of said data possible now, whereas in the past it has been excessively time consuming, making it prohibitive to use. In addition, as professors embrace the pedagogical changes technology can bring, systems such as *Signals* are being welcomed into traditional classrooms. As an institution, we are actively using the data we have been gathering passively for years to provide students with detailed, and more importantly, actionable information that can easily be integrated into their student success arsenal.

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# EVALUATION OF WAP SERVICES IN CAMPUS ENVIRONMENT USING A QUANTITATIVE APPROACH

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## ABSTRACT

*In this paper, we introduce a novel approach to sharing information between students and lecturers in order to enhance quality of information in campus environment via WAP technology. We describe a network for distributing campus information among lecturers and students. The concept of developing campus information via WAP technology is to ensure that student can access information at any time, at any locations and ad-hoc basic. WAP Based Students Information System helps the students and lecturers on campus to find and access information based on ad-hoc basic, which is of interest and relevant to students or lecturers; they only need a PDA or a mobile phone. The second purpose of this study is to evaluate the capabilities of WAP service for retrieving and sending information. This research, focus groups are being used to develop survey instruments for measuring students' satisfaction with WAP service implementation. Then, survey instruments will undergo testing and evaluation process for measuring the effectiveness of this WAP service implementation in campus environment. Students mostly agreed this WAP service is possible to utilize some of the campus problems in providing useful information solutions such as students' results, students' courses, announcements and news. The results and analysis show that based on framework the WAP-based customized information services have successfully performed in campus environment. Therefore, campus institutions can provide and offer information for mobile users (students) as value added services.*

## Introduction

This study focuses on the development of a mobile browser in campus environment that supports WAP as well as Web service. The system will help students to check their academic result and related courses information, view the own personal information, check for announcement, and even courses registration. It performs managing student's information system in the wireless environment. Students will be provided with more value-added services, which are easy to use directly from a mobile phone to access information at any time, at any locations. The current issues are: i) information can not be access at any time, at any locations (not mobility); and ii) registration and result need to collect at main campus. This study is to improve the convenience for the student information retrieval. Deployment of campus information-oriented applications for mobile terminals, the wireless application proto-

col (WAP) has provided a promising solution. In addition, it is convenient to access online information via mobile device between students and lecturers. The students and lecturers can immediately access information about the campus news and save the time spent on reading large amount of electronic documents.

The first major effort entails researching and determining a set of criteria to use in evaluating the efficiency of WAP services. The second major effort involves WAP interface and design. This WAP services were evaluated their features and capabilities using quantitative approach. Students are asked to comment on the finding of efficiency WAP services. The quantitative survey method used in this study helped gain a deeper understanding of the features and characteristics WAP services.



Related Works

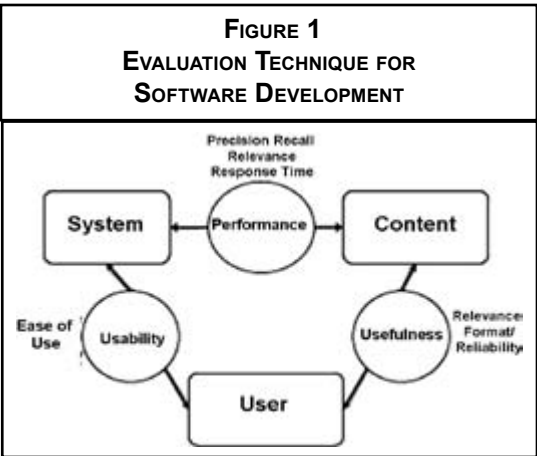
Smart terminal equipments such as mobile phone, PDA etc., develop quickly at present [Xia, Yuan, Zhang, Deng, Xiao, 2007]. Wap provides a viable technical solution for wireless data terminal applications. Wireless network has many characteristics, for example, it can be visited conveniently and fast, accessed anytime and anywhere. Therefore we want to focus on benefits, more specifically on the benefits that are associated with the use of mobile services. The obvious benefits of mobile services are related to mobility in space. Mobile devices and services offer people the opportunity to move around while maintaining access to relevant services and staying (socially) connected [Open Mobile Alliance, 2001]. The nomadic value of mobile services is reflected in concepts like anytime and anyplace [Molina, et.al., 2007].

Pagani [Pagani, 2004] mentions mobility, availability (anytime, anyplace), and personalization as important benefits of (multimedia) mobile services. Some educational communities and organizations have recognized the possibilities of m-Learning. m-Learning may provide tools to respond to the demands of working life and information society [Jarvenpaa, Lang, Takeda and Tuunainen, 2003]. One way to enhance m-Learning is to raise the usability of mobile terminals as good usability is the basis for the meaningful and effective learning [Kristian, 2002].

Most handheld devices have already been equipped with a web browser. A mobile browser can become a powerful platform for playing a variety of digital media contents, improving the current situation where service providers need to prepare their own players for many different types of media contents [WAPSILON, 2008, WinWap Technologies, 2008, Opera software, 2008, Access. Co. Ltd., 2008, Infraware, 2008, Vu, Kibong, Keung, 2007].

Mackulak and Savory [Mackulak and Savory, 1994] carried out a questionnaire survey on the most important simulation software features. The most important features identified include: a consistent and user friendly user interface; database storage capabilities for input data; an in-

teractive debugger for error checking; interaction via mouse; a troubleshooting section in the documentation; storage capabilities for simulation models and results; a library of reusable modules of simulation code; and a graphical display of input and output.

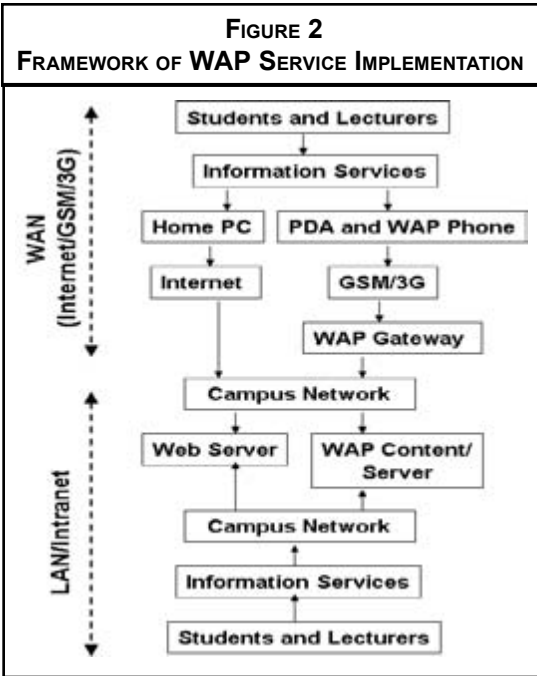


The quantitative methods are Experimental Design and Analysis; Case Study Design and Analysis; Survey Design and Analysis. For example, evaluation on software development (Figure 1) [Canfora and Troiano, 2002] [Barrett and Inskip, 2008].

Methodology and System Architecture

Figure 2 shows the overall framework of the WAP services implementation in campus environment. There are four phases development process such as: i) Web server; ii) WAP gateway; iii) WAP content/server; and iv) link to existing campus network/Internet/GSM/3G.

The network architecture design of the campus WAP Based Students Information System, consists of two-system architecture: i) existing web server network; and ii) new implementation of WAP service. Students and lecturers can access information via traditional Web service or WAP service (see Figure 3 and Figure 4). Figure 5 shows WAP services evaluation process using qualitative approach. Students from Malaysian Institutes Information Technology faculty, Uni-

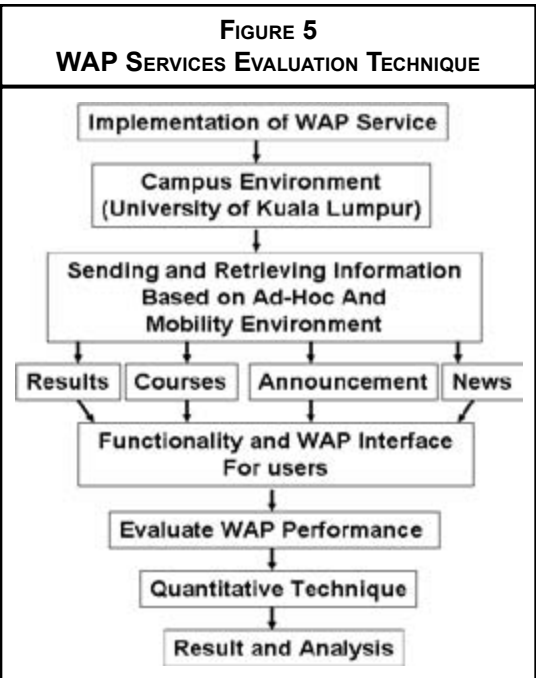
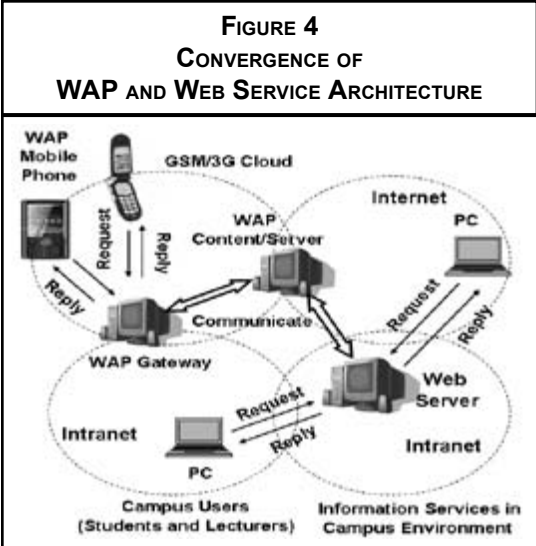
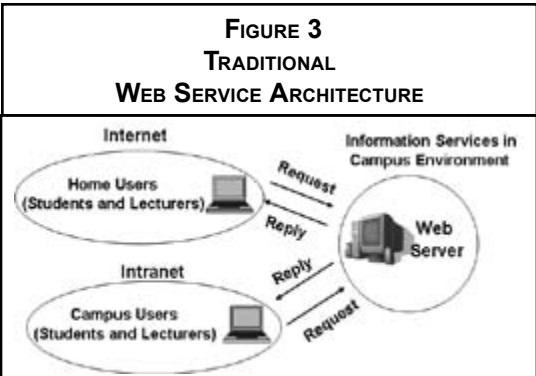


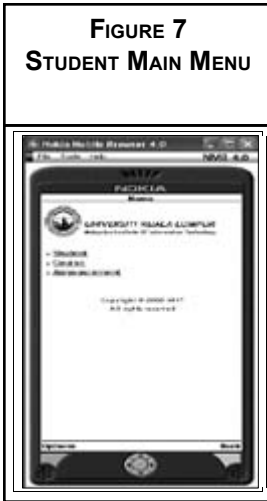
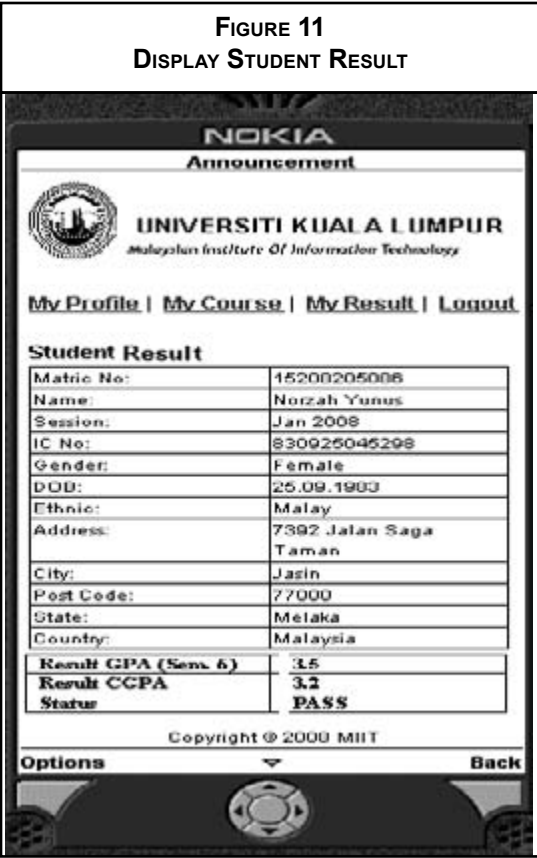
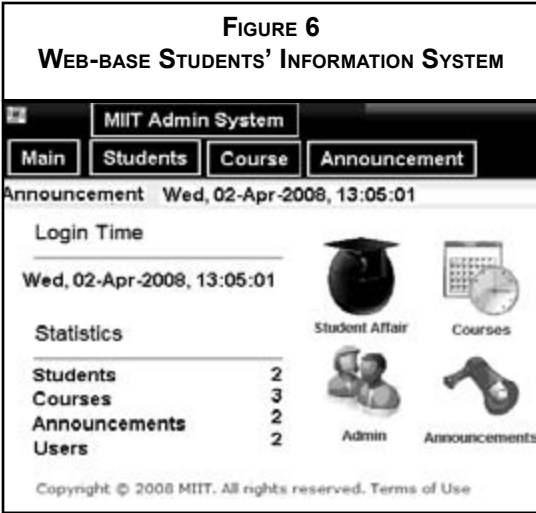
versity of Kuala Lumpur, will select to response the performance of WAP services.

Evaluation and Results of Wap Services

Results of WAP Services

We have setup a WAP service environment to retrieve information at University of Kuala Lumpur in Malaysia based on mobility approaches. The main objectives of this convergence technique between WAP and Web as follow: i) provide an easier method to access information; ii) provide a WAP based information retrieval system to build an information system that could be available to the students at any location; and iii) provide easy key access and menu-driven interface. Figure 6 shows the current Web-base Students' Information System. We have converged WAP and Web service to ensure that students are able to access student information system at anytime and at any location. Figure 7 shows the design of the campus WAP Based Students Information System that consists of three-system modules: i) student; ii) course; iii) personal record information and iv) announcement. The





WAP Based Students Information System is also provided a security system, therefore, students need to key-in their 'ids' and 'password' (see Figure 8). In addition, students are able to display their profile (see Figure 9). Students are also able to register (add, delete, modify) their semester subject through WAP Based Students Information System and access their semester result from everywhere using PDA or mobile phone (see Figure 10 and Figure 11). Menu driven interface will apply in the system to minimize text entry by keypad. The selection menus are well categorized in order to assist the student and navigate the application.

**Evaluation of WAP Services**

Students from MIIT faculty, University Kuala Lumpur have selected to be evaluator of WAP services implementation in campus environment. Number of students from each department is 20 students (refer to Table 1). Table 2 shows the cri-

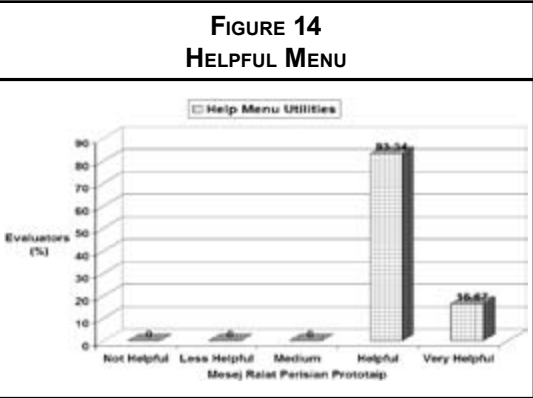
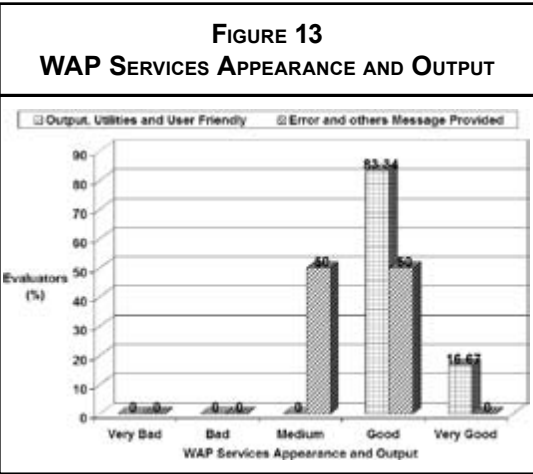
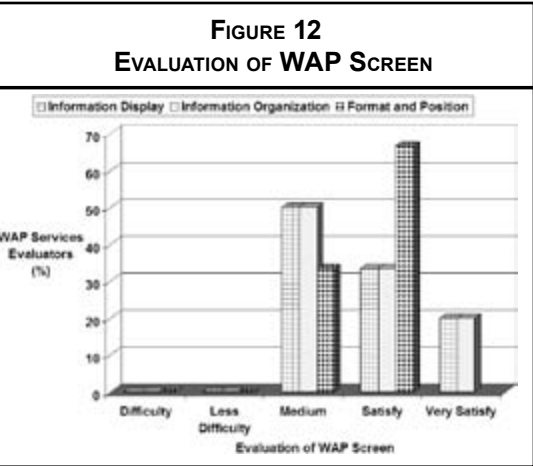
teria categorized and classification of WAP services evaluation.

TABLE 1 SAMPLE OF MIIT STUDENTS EVALUATION	
Students Response: Faculty of MIIT, University of Kuala Lumpur	
System and Networking Department	20 students
System Engineering Department	20 students
Multimedia Department	20 students

TABLE 2 EVALUATION OF WAP SERVICES	
Evaluation of WAP Services Implementation	
Functionality and Interface	Easy of Information Display
	Easy of Information Organization
	Provide help utilities screen
	Format and Position Arrangement
	Error Message Provided
	Able to Navigate Information, News, Events, Results
	Mobility and Ad-Hoc
	Easy to use
Adequate Information provided	

Most of the students agreed and categories this WAP services moderately satisfy in information organization (50%), information display (50%), format and screen arrangement (30%). Other students agreed and categories information organization and display is 30% satisfy and 20% categories very satisfy. More than 60% of student responses that WAP format and screen arrangement is satisfied (refer to Figure 12).

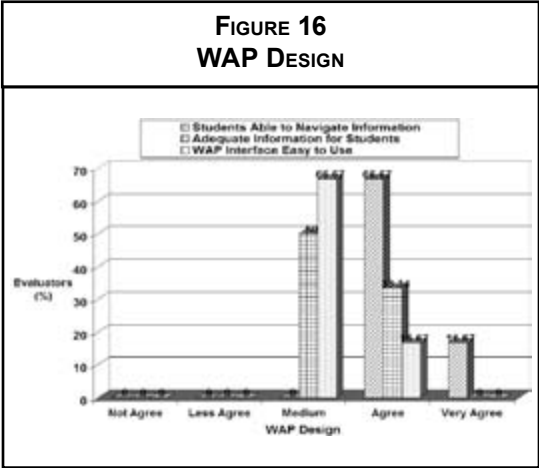
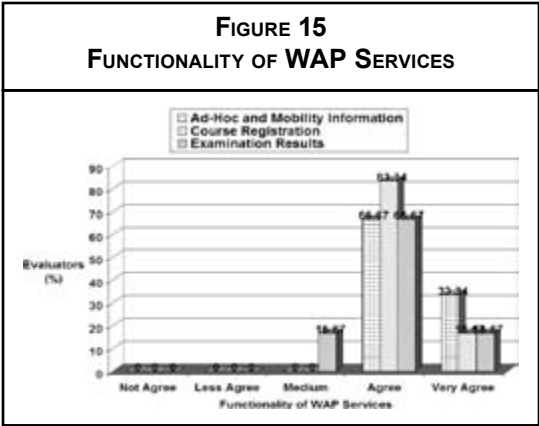
Some of students (50%) are moderately agreed this WAP services able to generate error and alert message, while some of the students (50%) are agreed and categories this WAP services good for providing error and alert message. Most students (83%) agreed this WAP services able to provide output, menu utilities and user friendly. While, other students (16%) categories this WAP services very good for generating output, menu utilities and user friendly (refer to Figure 13). Figure 14



shows that 83% student categories this WAP services menu able to help and easy for students to navigate the relevant information.

Majority of students (83%) are agreed this WAP services able to make course registration. Minor-

ity students (16%) classified this WAP services able to make course registration very excellent (refer to Figure 15). Some of the students (66%) are agreed this WAP services able to view the examination results and others 16% students classified as moderate and excellent. Some students (67%) agreed this WAP services able to send and retrieve information based on ad-hoc and mobility environment, and others 33% students classified as excellent (refer to Figure 15). Some students (67%) agreed this WAP services able to navigate information, and others 33% students classified as excellent for navigation information (refer to Figure 16). Majority of students (67%) are moderately agreed this WAP interface is easy to use (refer to Figure 16).



**Conclusion**

In this paper, we presented WAP Based Students Information System, a mobile WAP browser for handheld devices. This study focuses on the devel-

opment of a mobile browser in campus environment that supports WAP as well as Web service. It is clear that there is a need for development for mobile services and terminals in campus environment and students are able to retrieve information at anytime and at any location. The practical value of mobility in teaching will be greater in the future because mobile terminals are flexible to use and they enable real time and place independence. Our WAP services will evaluate by MIIT students using quantitative approach. Our WAP services can determine and solve problems for retrieving information. Based on the results, it shows that WAP Based Students Information System enabled mobile students to enjoy much valuable information and a large number of services over mobile networks. This WAP application provides students to request the academic information using wireless devices. By using this application, students are able to request and retrieve their examination result, view their profile, check announcement and register course. It can use to retrieving information based on ad-hoc and mobility environment. In addition, it is easy to use and provide a user-friendly graphical and text interface. This study presents a comprehensive list of criteria structured for evaluating WAP services architecture. The results from our study show that evaluators mostly agreed this WAP services that has combined with mobility environment is able to generate valuable in sights for students to use the information anywhere in and out campus environment. In general, evaluators perceive this WAP services in a positive manner. Initial quantitative findings from this study will provide a valuable assessment of satisfaction with this WAP services as it being implemented. Based on focus group feedback, this WAP services can significantly enhance to make communication with students and lecturers. The system can be further enhanced to become a more powerful and sophisticated system. There are still many aspects for improvement and enhancements of the WAP system can be made in the future to meet changing needs of the students. There are several enhancements that could be extended the usability of system development such as reporting module, linked with other faculties' student information system and SMS Messaging.

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# MALE FACULTY VERSUS FEMALE FACULTY VIEWPOINTS REGARDING TENURE

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## ABSTRACT

*The attitudes of male and female university professors at AACSB accredited business schools differ substantially regarding certain aspects of traditional tenure. This survey of 1,583 professors at 321 AACSB accredited schools in all 50 states examines a broad range of tenure-related issues. Survey results indicate that although general agreement exists between male and female faculty with regard to the impact of tenure on higher education in business, five significantly different tenure-related issues provide critical insight into problems that presently exist in academia. Fortunately, this is an improvement over the eight significant differences in the previous investigation.*

## Introduction

Tenure in higher education is a very controversial issue. Currently, about 90 percent of all four-year institutions in the United States have tenure systems, and estimates are that approximately 50 percent of all professors nationwide are tenured, down from 66 percent in 2001 (Fogg, 2005; U.S. Department of Education, 2003). The original purpose of tenure was to guarantee academic freedom, but it has also become a strong shield of lifetime faculty protection at virtually all universities. Female faculty members often believe that they are not being awarded tenure on an equal basis. Apparently, they are correct with women being underrepresented among the nations tenured faculty (National Center for Education Statistics, 2003). Approximately 60 percent of all male faculty are tenured, but only 40 percent of female faculty are tenured (Parsad and Glover, 2002).

The so-called tenure gap between men and women in United States could cause these individuals to view tenure differently. Differences apparently do exist because female faculty are less satisfied than men with job satisfaction issues such

as clarity of tenure and collegiality (Ashburn, 2007). According to Marianne Ferber, professor emeritus of economics and women's studies at the University of Illinois Urbana-Champaign, women faculty are still less likely than men to earn tenure and become full professors (Green, 1999). This situation may intensify since there are now more part-time and non-tenure-track faculty employed at universities throughout the United States (Budd, 2006).

At times there are subtle barriers, and at other times, more blatant ones which have created a low percentage of tenured female faculty (Colon, 1998). In 2000, Northwestern University Provost Lawrence Dumas revived the university's Faculty Diversity Committee, saying that increasing the number of women in faculty positions should be a priority for Northwestern University. Seven years later, the numbers are still quite skewed in favor of males (Glazer, 2007).

The Massachusetts Institute of Technology (MIT) found themselves guilty of serious long-term discrimination and released a report confessing to pervasive, perhaps unconscious gender bias against its female faculty (Leo, 1999). By

2007, the rate of female tenured faculty at MIT has risen slightly from 10.5% to 16% a decade ago, but there is still a significant tenure gap. The number of junior faculty women granted tenure has ranged from 0 to 8 a year, men from 10 to 24 a year over the same period. MIT has made strides in tenuring more women, but the bulk of its tenured professors are male (Wertheimer, 2007).

Some believe that tenure evaluations discriminate against woman. Some contend that white males have been in a privileged position when it comes to attaining tenure. Despite the stronger presence of women in academia for the past 30 years, tenure requirements have not evolved in ways which make tenure accessible to men and women equally. Tenure discrimination in the workplace is often subtle. Female professors who are working to attain tenure are often struggling to balance their desire for tenure with their desire to have children. Female faculty believe that tenure is an outmoded concept and an “old boys’ club.” Tenure evaluations are often conducted in secret sessions by committees that keep no minutes. Tenure committees often provide no details to the tenure candidate on the reasons why tenure was denied (Thompson, 2008). This could be why female faculty have had some success in proving tenure discrimination in court.

Women continue to win tenure bias cases in court, but quite possibly their preference would be to instead earn tenure in a fair and balanced tenure system. By the end of the 20th century lawsuits against universities for tenure discrimination had tripled (Brown, 1999). Jury awards for denying female faculty tenure included a \$12.7 million dollar award for Leslie Craine against Trinity College of Connecticut and a \$541,000 award for Dr. Colleen Crangle against Stanford University’s School of Medicine (US College, 1999; Green, 2000).

Other questionable tenure denials include that of two faculty members, both of whom seem to be perfect tenure candidates at the University of North Texas. Dr. Jane B. Pemberton received positive recommendations for six years, won a \$900,000 National Science Foundation grant, was praised by her dean as an innovative teacher

with a good research record. Jacqueline Lambiase was recommended at every level of the tenure process, was praised for her teaching, service and writings that earned her a national reputation. Her chair even stated that “she is without a doubt one of the most outstanding teachers and researchers we’ve ever had” (Fogg, 2004). Despite glowing recommendations and seemingly fine performances these two women were not awarded tenure. Such occurrences seem to place female faculty at a disadvantage with regard to earning tenure under the traditional tenure system.

This study was conducted to gain a better appreciation of any differences that currently exist between women and men regarding various tenure issues. This investigation expands on the very limited amount of tenure research relating to the perceptual differences between male and female faculty, and follows up on research conducted in 2001 (Premeaux and Mondy, 2002).

Research Methodology and Demographics

Four hundred and eleven AACSB (The International Association for Management Education) programs accredited at both the undergraduate and graduate level in the United States were surveyed. AACSB is the most recognized national accrediting body for business programs and has established standards that all accredited schools must meet. Meeting these standards means that, among other achievements, faculty must distinguish themselves in the areas of teaching, research, and service. Faculty at AACSB accredited schools are subject to similar performance expectations, and should therefore be fairly well informed regarding the questions posed in this investigation.

Because of the time necessary to complete the survey instrument and the geographic dispersion of the respondents a mail questionnaire was utilized. A survey was mailed directly to six faculty members at each accredited school, for a total of 2466 faculty surveys. From the faculty pool at each school two full professors, two associate professors, and two assistant professors were randomly selected to receive surveys. In addition, two of the six respondents were female, without

regard to rank. A postage-paid addressed envelope was included so each respondent could return the completed questionnaire directly. A follow up mailing was conducted six weeks after the initial mailing, and another three weeks after the follow up. Response was very high with 1,583 faculty members from 321 schools responding. This response rate should allow for fairly valid assumptions to be drawn from the sample population.

All the tenure issues included in this survey were addressed in the 2001 investigation, as well as in other studies. As in the previous study, male and female faculty members were asked to rate their level of agreement with the 34 tenure issues listed in the sidebar. The following scale was used to indicate the level of agreement with each of these issues for both male and female faculty. A rating of “1” relates to complete disagreement, “2” indicates disagreement, “3” means moderate agreement, with a “4” being agreement, and a “5” means complete agreement.

As may be seen in Table 1, the demographic characteristics reveal fairly definitive divisions in the sample population. Basically, both male and female faculty members were quite effective in terms of teaching, research, and service. These demographics are quite similar to those in the previous study with the exception of higher average salaries. This level of productivity indicates that the majority of respondents would be quite competitive at most AACSB accredited universities.

Faculty Viewpoints Regarding Tenure

Descriptive statistics in the form of frequency and crosstabulation tables were computed to get a “feel” for the data. A comparison was then made to determine what differences exist between the perceptions of male and female faculty regarding tenure’s impact on higher education in business. A mean rating score was calculated for each of the issues for both male and female faculty, and these responses were compared, and an “F” statistic computed, (p < .05). The statistically significant mean ratings of both male and female faculty were analyzed. Variables with a statistically

SIDEBAR QUESTIONS: PERCEPTIONS OF MALE AND FEMALE PROFESSORS
Tenure is necessary for personal faculty security
Academic freedom cannot be secure without tenure
Tenure is necessary
Tenure is over applied, meaning too many faculty are tenured at most universities
Tenure should be eliminated
Tenure should be modified
Tenure should be periodically evaluated rather than being a lifetime guarantee
Tenure should be granted for only 20 years
Tenure should be granted for only 25 years
Tenure helps promote teaching excellence
Tenure hinders teaching excellence
Teaching is afforded too much importance
The longer a person has been tenured the less effective he or she will be as a teacher
Tenure helps promote research excellence
Tenure hinders research excellence
Research is afforded too much importance
The longer a person has been tenured the less effective he or she will be as a researcher
Tenure helps promote service productivity
Tenure hinders service productivity
The longer a person has been tenured the less effective he or she will be at providing service
Only quality teachers, who are capable researchers should be granted lifetime tenure
Non-research oriented quality teachers should be granted lifetime tenure
Tenure is necessary for core faculty stability
Tenure is necessary for core faculty expertise
Tenure prevents adaptation to the fast changing business world
Tenure promotes too much faculty independence
Tenure prevents curriculum and program flexibility
Overall tenure detracts from faculty productivity
Tenure reduces faculty commitment to the university and the college/school
Tenure encourages outside faculty activities for profit
Tenure encourages outside faculty activities for pleasure
An effective reward system can overcome tenure related problems
Withholding financial rewards can overcome tenure related problems
Greater financial incentives can overcome tenure related problems

TABLE 1 SUMMARY OF DEMOGRAPHIC DATA		
Demographic Item	Male %	Female %
<b>Rank:</b>		
Full professor	46	23
Associate professor	39	47
Assistant professor	15	30
Doctorally qualified	98	98
Male/female representation	77	23
Married	91	72
< 45 years old	25	32
<b>9/10 month salaries:</b>		
\$40,000 - \$59,999	12	24
\$60,000 - \$79,999	44	51
\$80,000 - \$99,999	32	23
≥ \$100,000	12	2
<b>Primary job:</b>		
Teaching/researcher	82	75
Teaching	9	18
Researcher	9	7
≥ 6 years experience	88	79
Tenured	81	64
Excellent career teaching performance (90% of the maximum)	78	77
Career research productivity (>5 refereed articles)	83	68
Research productivity—last 5 years (>5 refereed articles)	54	56
Books: Authored/co-authored	11	2
Above average service productivity	93	91
<i>Note.</i> Percentages are rounded		

significant difference between the perception of male and female faculty are identified in Table 2.

As may be seen in Table 2, male and female faculty mean ratings differed for only five of the thirty-four tenure issues, down from eight statistically significant differences in 2001. This low number of significant differences may indicate that males and females view tenure similarly. However, ana-

lyzing where the differences exist reveals specific areas where women and men view tenure issues quite differently. When comparing male and female perceptions, two groupings surfaced: questions 1, 2 and 3 relate to tenure, financial security, and academic freedom and questions 4 and 5 relate to tenure evaluation and modification. In the original study, there were also perceptual differences between males and females related to university commitment, but these differences are no longer evident.

Tenure, Financial Security and Academic Freedom

Questions 1, 2, and 3 deal with the necessity of tenure and the security of academic freedom. There were significant differences between the perceptions of male and female faculty for these three issues, with female faculty members believing much more strongly in the need for tenure. Basically, women agree, much more so than men, that tenure is essential for personal security and academic freedom. Quite possibly, women believe that they are more vulnerable than men, and therefore, need tenure’s protection more than men. Currently, even more so than in 2001, women value tenure more than men. Possibly, female professors having to litigate to obtain tenure creates an environment where tenure’s security is vitally important to women.

Tenure Evaluation and Modification

Questions 4 and 5 deal with tenure evaluation and modification. Currently, significant differences exist between the perceptions of men and women for only two issues related to tenure revisions, down from three issues in 2001. Women apparently no longer believe to a greater degree than men that tenure is being over applied. This may be due to the fact that women want to apply tenure more in their favor. Women believe much more strongly than men that periodic evaluations should occur and that tenure should be modified. Examples of females not being able to obtain tenure, while some of their less productive male counterparts continue their employment under the shelter of tenure, may encourage women to support periodic evaluations and other ten-

TABLE 2 SUMMARY OF SIGNIFICANT DIFFERENCES: PERCEPTIONS OF MALE AND FEMALE PROFESSORS			
Tenure Criteria	Male Mean (N = 1219)	Female Mean (N =364)	(p<.05)
1. Tenure is necessary	4.13	4.71	.0001
2. Tenure is necessary for personal faculty security	4.16	4.83	.0004
3. Academic freedom cannot be secure without tenure	3.97	4.61	.0027
4. Tenure should be periodically evaluated rather than being a lifetime guarantee	2.14	4.63	.0031
5. Tenure should be modified	2.12	4.69	.0045
Notes:			
Rating scale: 1(complete disagreement), 2 (disagreement), 3 (moderate agreement), 4 (agreement), and 5 (complete agreement).			
N indicates the total number of respondents.			
A significant difference between means, where the PR>F value is less than the critical value of .05 is shown as (p < .05).			

ure modifications. Evidently, women believe that the current tenure system works to their disadvantage and that tenure revisions could improve their chances of being awarded tenure.

Conclusion

Currently, female faculty appear to have an even greater desire for tenure than in 2001, and are eager for revisions in traditional tenure that would allow them to more readily earn tenure. Since there is significant agreement among both female and male faculty regarding most aspects of tenure, these two groups may be of similar minds as to the impact of tenure on higher education, except that females believe they are at a disadvantage under the traditional tenure system.

Since 2001, the vast majority of universities have not been proactive in tenuring women. Fortunately however, Princeton University, Princeton, New Jersey, wants to help tenure-track faculty members who are starting a family. As of 2005, both men and women who become parents will automatically receive one additional year in tenure review for every child born or adopted, although they can request an early tenure review. This first-of-its kind policy may help boost the

number of tenured women in the university system, but it could be unfair to scholars who are not primary caregivers. Many universities, including Princeton, already allow new parents to request extra time for tenure decisions, but studies show that many women worry that such a request might show a lack of commitment to academic life. Even though this might seem like a positive step, according to Lisa Wolf-Wendel, a sociologist at the University of Kansas in Lawrence who studies gender issues, the impact of the new policy is hard to predict (Bhattacharjee, 2005).

In an attempt to improve the tenure environment for women the Sloan Foundation has awarded several grants to U.S. universities to further develop existing programs that are seen as examples of how institutions can make it easier for women to balance family with a career in higher education. The ultimate goal of these programs is to increase the number of women who are full time faculty members by encouraging tenure committees to be more flexible about issues such as publishing requirements (Marcus, 2006). However, this approach could be seen as unfair to scholars who have previously been judged by the higher standards, and could impact the core faculty qualifications of colleges that must have refereed



publications like AACSB accredited colleges. Different tenure standards for different groups could cause more problems than they solve.

It appears that the heavily male-dominated tenure-system has not changed much, and is still not favorable to women. Unfortunately, inequalities still persist for women in areas such as pay, rank, and tenure (AAUP Survey, 2005). Even though women earn 40 percent of doctorates, they still encounter barriers to earning tenure (Davidson, 1997). This situation could become even more problematic because nearly 60 percent of new hires are not even on tenure-track and many are only part-time faculty (Fogg, 2005).

These findings indicate that women believe more strongly than men that tenure is necessary in higher education, and that personal security and academic freedom are both highly desired benefits of tenure. Possibly, women are more adamant than men regarding the need for tenure because they have a more difficult time securing tenure. Because women may have a more difficult time becoming tenured, they want tenure revisions, particularly in the form of periodic tenure evaluations. Possibly, such periodic evaluations would help eliminate unproductive faculty, thereby allowing more women the opportunity to secure tenure. As in 2001, both men and women viewed tenure as highly desirable, but women want changes that could help them earn tenure in greater numbers. Apparently, female faculty members will continue to push for changes that can help overcome perceived gender based tenure discrimination.

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### **Conferences**

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