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Editor's Column

This is the fourth issue of the **Journal of Research in Innovative Teaching (JRIT)**, published by National University. It demonstrates a steady progress in establishing a research culture at this institution. This issue includes 16 articles accepted after a rigorous double review. Among the authors you can find National university faculty, joint authorship of the University researchers with outside scholars, US researchers from outside the University and international writers.

National University's mission is to make lifelong learning opportunities accessible, challenging and relevant to diverse populations. In accordance with this mission, the National University research journal annual publication is an important benchmark in the University's maturity. Teaching, research and scholarship are interrelated; evidence shows that research enriches teaching and is capable of significantly improving student learning outcomes. JRIT is an annual multidisciplinary peer-reviewed publication of original research focused on new effective instructional approaches, methods and tools. It is intended to produce momentum to increase efficiency of learning and ensure better learning outcomes for our students.

The Journal is a forum to share faculty research and scholarship, which will ultimately benefit both the university academic community and our students. The Editorial Board is composed of top scholars and administrators from National University, as well as several internationally acclaimed scholars. The Review Board includes both internal and external reviewers.

All publications have been conditionally assigned in the following sections:

- Institutional Policies, Strategies and Leadership
- Graduate Education
- Teacher preparation
- Online Learning
- Engineering

In the **Institutional Policies, Strategies and Leadership** section we present five articles, by C. Kalani Beyer, from National University, *Assessing faculty excellence through the merit process;* Ashok Kulkarni and Valeri Pougatchev, from Jamaica University of Technology, *V-index as a Measure of the Targets/Objectives Accomplishment of the Strategic and Operation Plans for an Educational Institution Unit (Case Study)*; David E. Smith and Steven Fleisher, from National University, *Grade Inflation: The Implications: Faculty Integrity versus the Pressure to Succeed*; Ron Germaine, Dina Pacis, Terry Bustillos, Penny Keough, Diana Wheeler, Mary Anne Weegar, from National University, *Lessons Learned through a Review of Grade Appeals*; and C. Kalani Beyer, *Investigating the process for reappointment and promotion.*

The first article presented by C.Beyer from National University discusses the merit process for salary increases as a reward for exceptional performance in teaching, service, and scholarship used at many higher education institutions. The author argues that the merit process provides a perfect arena from which to determine the quality level of faculty since the conferring of merit connotes exceptional performances. This research demonstrates how the merit review process at a School of Education increases faculty excellence and offers suggestions on making the process stronger, leading to more faculty reaching a level of excellence.

In the second article A.Kulkarni and V.Pougatchev from Jamaica University of Technology claim that strategic and operational planning is a critical process in the success of an educational institution being a part of multilevel planning processes defined by the scope and duration. The authors propose to associate each unit and individual of the institution on its strategic planning level with a *V-index* – quantifiable, numeric indicator of a unit or individual's objectives/targets accomplishment that demonstrates to the senior management of the institution the current position of these units/persons on its/their ways to achieving its/their strategic goals. For obtaining V-index in case of cross-planning (between different units or individuals) they implemented a well known method in area of Experimental Design - "Taguchi Method".

D. Smith and S.Fleisher from National University review current and past practices of the grade inflation controversy and present ways to return to each institution's established grading guidelines. They support this study using profiles from select universities: some have approached the grade-inflation controversy academically; others have been profiled in the news. The model provided intends to ensure that degree candidates are academic experts in their field, having earned a credential through rigorous study.

R. Germaine, D.Pacis, T.Bustillos, P.Keough, D.Wheeler, and M.Weegar, National University faculty, report the frequency, causes, and solutions for grade appeals at a university with a view to enhancing the overall quality of the teaching/learning experience. They present evidence that the incidence of grade appeals can be reduced through clear and precise descriptions of assignments and grading criteria.

In his second article, C. Kalani Beyer investigates the process for reappointment and promotion relying on primary research from the processes used in the School of Education of National University through the review of dossiers over a four-year period. This research considers the contents of dossiers submitted during this four-year period to better understand if any patterns can be discerned by which to improve the process for reappointment and promotion.

The second section **Graduate Education** includes articles by Marilyn Moore, B. Charles Tatum, and Ismail Sebetan, from National University, *Graduate Education: What Matters Most?* and Larry Froman, from Towson university, *An Interdisciplinary Graduate Course: Raising the Bar to Address Quality Student Learning and Professional Development.*

In the first article the authors argue that graduate education is guided by regional accreditation, professional organizations, institutions of higher learning, and educational research. They propose guidelines for developing graduate programs of excellent quality, depth, and mastery, and tools for developing excellent curricula, and methods to support superior faculty. They also provide a template for course syllabi that demands intellectual rigor, and a roadmap for achieving these necessary components of high-quality graduate education.

The second article prepared by L.Froman discusses the need to design innovative and relevant interdisciplinary graduate courses. The author considers the challenges of interdisciplinary graduate education and then addresses the content, design, and instructional approaches of a newly developed course entitled "Psychological Issues in the Workplace (PIW)." He provides examples on both conceptual and applied levels to illustrate how the course supports quality student learning and professional development within the context of Towson University's Graduate Programs in Human Resource Development and Counseling Psychology.

The largest section of the journal, **Teacher Preparation,** integrates articles covering a wide range of pertinent issues. The first article by N.Klokar, N.Benderets, and A.Borbit, from Kyiv Regional In-Service Teacher Professional Development Institute, Ukraine, *Model of the Regional System of Distance In-service Teacher Training in Ukraine and its Implementation* presents an

innovative model of in-service professional development for Kyiv region school educators using a distance learning format. The authors offer their vision and experiences in providing effective, up-to-date professional development using online technologies.

Peter Serdyukov and Mary-Lynn Ferguson, from National University, in their article *Teacher Dispositions: What Kind of Candidates Do We Have in a Teacher Preparation Program, and How Can We Make Them Better?* argue that dispositions have become a part of teacher professional qualifications and that issues surrounding dispositions have become a growing concern for all parties involved in education. Therefore teacher educators have started discussing attributes related to candidate dispositions and ways to develop them consistently. The authors present a study identifying four different dispositional categories that included research on individual dispositions and candidates' perceptions while examining patterns of change in dispositions as the candidates move through their preparation program.

R.D. Nordgren, from National University, who offers an article entitled *21st Century Skills: A High School and University Collaboration*, writes that the phrase "21st Century Skills" is becoming increasingly common at the end of the first decade of this millennium in the general media and in scholarship. The author examines the implementation of an initiative involving three colleges within a university and nine public high schools addressing the teaching and learning of skills deemed necessary for success in the 21st century workforce.

Thomas Doyle and Clara Amador-Watson, from National University, in their *Study of the Predicting Power of a Screening Protocol for Successful Teacher Performance in a University Internship Program* discuss alternative teacher certification programs, also known as teacher internship programs, that have been designed to ensure candidates' expert subject matter content knowledge and develop pedagogical skills. The focus of the study is to determine National University's ability to predict the success of interns by comparing their scores in a pre-admission interview with University Supervisors' formal evaluations after the second and eighth month.

Donna L. Elder and Wayne Padover, from National University, in their article *Coaching as a Methodology to Build Professional Practice* examine the effect of implementing a peer coaching model in a private northeastern secondary school. The authors investigated the coaches and coachees' perspectives of the model's effectiveness in the first year of implementation. Both coaches and coachees felt that the experience helped improve teacher practice. This action research study demonstrates that peer coaching can be used in a school to provide support for improving teacher practice.

Nina Stankous, from National University, discusses *Math Teacher Preparation Using CSET: Problems and Solutions*. She states that in the light of mathematics teacher shortages and low student performance, the issue of mathematics teacher preparation becomes critical. The author addresses a few important issues focused on mathematics teacher preparation, specifically preparation for California schools. This study identifies problems related to mathematics teacher preparation and describes the main concerns of CSET Single Subject Math exam takers. It also offers an effective way to evaluate and address those concerns and provides a list of recommendations to improve the quality of future mathematics teachers.

Britt Tatman Ferguson, from National University, and Douglas Rakoczy, from Minnesota State University Moorhead, present their *First Attempts At Bibliotherapeutic Lessons: Special Education Teacher Reflections.* The focus of this inquiry was the initial use of bibliotherapeutic lessons by special education teachers. The authors discuss how four special education teachers reviewed, adapted, and implemented well-designed bibliotherapeutic lessons that use stories, over an extended period of time, to help students understand and resolve social and emotional

issues. The capability of incorporating bibliotherapeutic interventions into naturally occurring instruction and use of the regular curriculum may make such interventions easier to implement and less intrusive in the general education environment, thus facilitating inclusion of students with Individualized Education Plans.

The **Online Learning** section represented by Cynthia Schubert-Irastorza and Dee L. Fabry, from National University, contains an article called *Improving Student Satisfaction with Online Faculty Performance*. The purpose of this study was to determine the key factors influencing negative student evaluations of teaching scores in online classes. A total of 3,294 students who attended 282 online courses taught by 161 faculty members, responded to the current institutionally approved online-evaluation-of-teaching instrument. The study's long-range goal was to use the findings to help online instructors improve their pedagogy and, thus, their student evaluation scores. Study results suggested that negative student evaluations of faculty are most strongly influenced by lack of organization, lack of clarity, and insufficient feedback.

In the **Engineering** section Mohammad Amin, Ronald P. Uhlig, and Pradip Peter Dey, from National University, together with Muzibul Khan, from Nokia, present *The Impacts of Direct and Indirect Measures of MS Assessment in Wireless Communications Program*. They argue that researchers face many challenges to assess a program in a new field, especially when the program changes rapidly to keep pace with evolving and emerging technologies. The Master of Science in Wireless Communications (MSWC) at National University is one such example. This article investigates the roles of the Program Advisory Board, program annual reviews, and a five-year program review in the MSWC program and presents a summary of impacts on program changes. All major aspects of program and course-level changes are considered in this investigation.

The Editorial Board invites the readers to discuss the publications presented in this issue and to suggest topics that might be of interest for the academic community at National University and beyond. We will publish letters from readers in the next issue.

Peter Serdyukov
March 1, 2011

Institutional Policies, Strategies and Leadership

Assessing Faculty Excellence Through the Merit Process

C. Kalani Beyer

Abstract
At many higher education institutions, full time faculty receive merit salary increases as a reward for exceptional performance in teaching, service, and scholarship. The merit process provides a perfect arena from which to determine the quality level of faculty since the conferring of merit connotes exceptional performances. The primary purpose of this research is to demonstrate how the merit review process in one school at a Teaching University increases faculty excellence. A secondary purpose is to determine how the process can be made stronger, leading to more faculty reaching the level of excellence.

Key Words
Merit, exceptional, excellence, faculty, Teaching University, teaching, service, scholarship

Introduction

At many higher education institutions, full time faculty receive merit salary increases as a reward for exceptional performance in teaching, service, and scholarship (*Faculty Merit*, 2010; Portfolio, 2010; Schools of Visual, 2010). At some institutions, merit considerations relate to the annual evaluation of faculty and may involve more than just teaching, service, and scholarship (College of Education Bylaws, 2010; Exceptional Merit, 2010). In all cases, however, merit is contingent on meeting all expectations and having exceptional performance in at least one area, and the reward is financial. For this research, the merit process provides a perfect arena from which to determine the quality level of faculty, since the conferring of merit connotes exceptional performance.

The primary purpose of this research is to utilize the merit review process in one school at a teaching university to assess faculty excellence. A secondary purpose is to determine how the process can be made stronger, leading to more faculty's reaching the level of excellence in teaching, service, and scholarship. In order to achieve this purpose, the present study involves reviewing the merit request letters and final letters written by the Dean over a period of four fiscal years: 2007, 2008, 2009, and 2010.[1] The author is the Dean of the School this study involves. The review process relies on the faculty merit letter and the letters of the Chair of the Department, the School Personnel Committee, and the Dean. While the process of determining whether faculty deserve merit for teaching, service, or scholarship is highly subjective and involves other reviewers as noted above, the conferring of merit for this study was based solely upon the review by the Dean. His decisions relied on the National University Faculty Policies (1998) and the Promotion, Reappointment and Merit Guidelines (2009), a workshop conducted by the Faculty Senate and the Provost. Thus, the data used in this study reflected the decisions by the Dean and were coded as receiving merit or not, and which of the three areas (teaching, service, and/or scholarship) were noted as meritorious or exceeding the standard for the faculty by rank.

The merit process at this institution provides a perfect environment to test the hypothesis that faculty who receive merit exemplify faculty excellence, because the university in which this

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[1] Utilizing the final letter written by the Dean rather than the Provost is due to wanting to provide consistency since there was one Dean who reviewed merit requests through the four fiscal years while there were two different Provosts during this time period.

school resides granted all faculty 3% annual salary increases in each of the last 12 years. This fact makes the merit process more selective, since faculty who apply for merit consideration are seeking to be conferred as exceptional rather than just seeking a pay increase.

Defining Faculty Excellence

Excellence in teaching involves a dynamic developmental process of continuous improvement. Excellence is a process that involves purposeful reflection and mindfulness, centering on the following: knowing content, investigating prior knowledge, focusing on learning outcomes, establishing collaborative learning environments, critical thinking, and supportive relationships; and reflecting on practice. In general, best practices in teaching should include extensive subject knowledge and teaching skills; the dispositions, personality, and interpersonal relationships to serve all students; and the research nexus, all tied together by reflective practice. More specifically, best practices should contain mastery of discipline, pedagogical skills, reflective practice, positive outlook, engagement of students, high expectations of students, care for students, and advisement of students (Bain, 2004; Kraft, 2000; Lyons, 2006; Moore & Kuol, 2007; Skelton, 2004).

Excellence in service involves a variety of venues, entailing both internal service to the institution and external service to the community or profession. Internal service refers to service to the institution as a means to conduct institutional business and service to the discipline as a means to maintain disciplinary associations. This service supports the internal functioning of the academic profession and higher education as a whole and connects to the premise of shared governance.

In contrast, external service is a means for institutions to communicate to multiple external audiences what higher education does to meet societal needs. External service takes many forms, including extension, consulting, service learning, and community and civic service (Austin & Gamson, 1983). Primarily, faculty can expect service responsibilities with local organizations in which their students will eventually obtain employment (Brown, 1994; Hill & Pope, 1995; Lawson, 1996). Demonstrating the benefits of service experience requires positive evidence of outstanding achievement. Finally, service must extend over multiple years (Baldwin & Blackburn, 1981). An individual faculty member's rank determines that person's participation in and influence on the affairs of the institution (Austin & Gamson, 1983; Finkelstein, 1984). Knowledge about institutional and disciplinary affairs grows as the faculty member gains more experience as a professor in general and as a professor at one campus in particular. When faculty exhibit excellence in service, they embrace service as a scholarship of engagement and acknowledge the important role of service in both the internal and external functioning and health of the campus (Huber, 2001). Service is not easy to evaluate for purposes of reward, because it is often difficult to assess the quality of service activities, and to quantify and document service activity that results from ongoing partnerships or ad hoc projects (Boyer, 1990).

Excellence in scholarship and research means excelling in this area by producing premier tangible scholarly and research outcomes that exceed the accepted norms. Organizing research in the workplace, teamwork, and mentoring young faculty scholarship are also integral components of this excellence. Therefore, individual faculty members' contributions to research accomplishments, the culture of the university, and collaborative work and facilitation of other faculty members' scholarship require identifying the standards, which might be based upon

quantity, quality, and engagement with the educational community (Altbach, 1995; Boyer, 1990; Simpson et al., 2007).

Merit Process

At the institution of this study, the annual granting of a merit pay increase is a way to reward and recognize faculty exceeding the requirements for teaching, service, and scholarship. Faculty may apply each year for a merit salary increase or use up to two years of material if they did not apply during the previous year based upon meeting in two areas and exceeding expectations in at least one of the three areas of teaching, service, and scholarship. Faculty must document their efforts in a letter applying for merit. This letter is formally reviewed by groups of peers and administrators consisting of the School Personnel Committee, Department Chair, Dean, Provost, and President, based upon a series of guidelines. All faculty wishing to be reviewed for merit are to observe the following schedule: a two-page letter, requesting merit and explaining the reasons that the applicant believes his/her professional performance exceeds normal expectations, is due to the Office of Academic Affairs by the second Monday in February; Department Chairs submit reports to School Personnel Committees by second Monday in March; School Personnel Committees submit reports to Deans by the first Monday in April; Deans submit recommendations to Provost by the first Monday in May; Provost submits recommendations to President by first Monday in June; and the President notifies faculty of decisions by the last Friday in June.

The merit process at the university of this study involves assessment of teaching, service, and scholarship. However, in assessing the performance of faculty, there is consideration of the totality of performance across all areas. Faculty members are encouraged to use their annual faculty development plan as a basis for their self-assessment and self-improvement. The faculty policies distribute faculty time appropriately based on the needs and desires of the faculty member, as well as the needs and desires of the university. The distribution of faculty workload begins with the faculty's creation of a Faculty Development Plan (FDP), generally based upon the distribution of 70% for teaching, 20% for service, and 10% for scholarship in terms of the energy a faculty member expends in each category. The FDP results from negotiations between faculty and their respective Department Chair in the School and is reviewed and signed by their Dean. The FDP serves as a contract, which obviously places teaching as the top priority. Most of each faculty member's time is spent in areas of teaching, with time dedicated to the improvement of one's pedagogy. According to the Provost at this university, "The primacy of teaching should mean, among other things, that excellence in teaching carries more weight in deliberations regarding reappointment, promotion, and merit than does accomplishment in scholarship or service" (Green, 2007). Updating and improving instructional approaches and curriculum development are also strongly encouraged. The expectations are that all faculty maintain regular office hours and make themselves available for student consultations (*National University,* 1998).[2]

The official guideline for faculty to use in preparing their merit letter comes from both the Provost's communications and a power point presentation developed jointly by the Provost and the Faculty Senate (Promotion, 2009). The following were suggested as evidence to demonstrate

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[2] Even though new faculty policies were approved in fall 2009, the merit review for all four years was based upon the 1998 policies.

teaching quality: self-assessment, including commentary on peer and/or administrative reviews; reflection on course syllabi and course material and examples of student work; commentary on innovative teaching methods or upon any relevant information regarding courses taught; evidence of student advising; and comments on student evaluations as they relate to teaching/learning process.

Embedded in the University faculty policies (National University, 1998) and the PowerPoint presentation (Promotion, 2009) is the need for faculty to be involved in academic development, advising, and assessment. Quality faculty members create and contribute to curriculum creation, development, and modification, and to advising, as well as many aspects of assessment. The Provost remarked that as our culture of assessment continues to grow, faculty are taking greater responsibility for designing and implementing rubrics, aligning all levels of objectives, and mentoring fellow faculty. Those faculty members with assessment experiences are the leaders in training and mentoring their colleagues (Green, 2007).

Faculty members at this institution are the primary contacts for aspects of student advising in relation to the program, career options, and general academic information. This is not to be confused with the role of the university staff advisor, whose tasks involve providing advice on class scheduling, financial aid, and many other matters concerning student welfare. The degree or requirement of academic advising may vary from school to school, based upon the needs of the discipline. Although the roles are not definitive university wide, there is agreement that academic concerns are the responsibility of the faculty. By maintaining consistent office hours, in order to offer advice and consultation to students, faculty members provide guidance to those in their discipline.

During the PowerPoint presentation provided by the Chair of the Faculty Senate and the Provost at the Merit Workshop, the following questions related to teaching were listed for consideration:

Does the faculty member include a self-assessment that both describes what has been accomplished during the period under review and evaluates the work reported?

Does the faculty member teach new classes with significant revisions as needed or requested?

Does the faculty member describe new teaching strategies or approaches to existing classes?

Do peer and chair evaluations indicate quality teaching?

Are the teaching evaluations from students positive?

Is the average undergraduate or graduate grade point average (GPA) usually consistent with the 2.75 and 3.25 guidelines, respectively, of the university?

If not, is a rationale provided for the discrepancy?

The function of service requirement in the merit request was explained as contributing to shared governance, academic development and implementation of the institution, and participation in the ongoing maintenance of academic programs and shared institutional goals. The guidelines as reported at the Merit Workshop required that the faculty indicate what service they performed to the University System, University, School, Department, or Program, commensurate with their rank and productivity of approximately eight hours per week. Instructors should provide service primarily to the program and department. Assistant Professors

should provide service primarily to the program and department, with some service at the school and/or university level. Associate Professors should provide service to the program and department, with multiple service activities at the school and/or university levels. Professors should provide mentorship to other program and department faculty, with multiple service activities at the school and university levels.

During the Merit Qualifications portion of the workshop, the following were cited as necessary for exceeding expectations: being active in multiple, important university committees or initiatives; showing evidence of successful accomplishment of service goals; taking leadership roles in department, school or university committees or initiatives; having service, as a general rule, in at least two levels—university system, university, school, department, or community; exhibiting a high quality of work on departmental or school committees or initiatives; and showing evidence of recognition for high quality of work on service activities. In their merit letter concerning service, faculty needed to address the following questions:

> What service commitments have been completed or are in process for the period under review?

> Is the quality and quantity of these activities consistent with the workload guidelines outlined for the applicable academic rank?

A faculty member could be disqualified from meeting expectations for service if peers, Chair, or Dean reported inadequate attention to service responsibilities, or if the faculty member failed to present service accomplishments in the two-page merit letter (Promotio 2009).

Although scholarship represents the smallest portion of the effort of faculty to demonstrate their qualification for merit, it is also the most difficult in which to achieve excellence as faculty rise in rank. Faculty at the Instructor rank must attend presentations or participate in professional development activities. Assistant Professors must present peer-reviewed papers at accreditation institutions or at state, national, or international conferences. Associate Professors must present peer-reviewed papers at accreditation institutions or at state, national, or international conferences and have at least one juried publication over a period of three years. Professors must present peer-reviewed papers at accreditation institutions or at state, national, or international conferences and at have least one juried publication over a period of two years. The evidence of scholarly achievement included, but was not restricted to, the following documents: self-assessment of scholarly work; scholarly books, monographs, textbooks, articles, or studies that have been subject to favorable external review by academic experts in the field; essays, articles, or research findings that appear in peer-reviewed publications or other media; creative work externally reviewed by experts in the field; grants won in support of scholarship; papers that have been peer reviewed and presented at scholarly meetings, conferences, or symposia; or published; editing or refereeing of the work of peers for publication or presentation; service as a chair or as a participant on panels or sections at professional conferences; and published reviews of the work of peers. At the Merit Workshop, it was stated that the qualifications for scholarship merit were accomplishments that exceed the typical expectations for academic rank in either quality or quantity. Examples of evidence of scholarship performance that would not meet the criteria for merit included the following: no work accepted for presentation or publication during the review period; or no work presented or published during the review period. Merit worthiness in the scholarship area would involve exceeding the minimum expectations specified in the Final Workload Guidelines of the University (*National University,* 1998). The following were questions faculty needed to address:

What scholarly activities have been completed or accepted under the period of review?

Is the quality and quantity of these activities consistent with the workload guidelines outlined for the application academic rank?

Summary of Merit Recommendations

In fiscal year 2007 (see Table 1), 39 out of 76 faculty (51%) from the School submitted merit requests. Based upon applying the policies for meeting the requirements for teaching, scholarship, or service, the following resulted from the Dean's evaluation. Five faculty were not recommended to receive merit (three did not meet the expectations for scholarship, and two did not exceed in any area). Sixteen faculty (47%) exceeded expectations in all three areas: Six faculty received 7% merit, nine received 6% merit, and one received 5% merit. Fifteen faculty (44%) exceeded expectations in two areas: Two exceeded expectations in scholarship and service, 12 exceeded expectations in teaching and service, and one exceeded expectation in teaching and scholarship. One faculty member received 6% merit, seven received 5% merit, and seven received 4% merit. Three faculty (8.8%) exceeded expectations in one area: One exceeded expectations in teaching, and two exceeded expectations in service. Two faculty received 3% merit, and one faculty received 2% merit. The average merit for the 34 who received merit was 4.82%.

Table 1. *Fiscal Year 2007*

Merit requests	Number of faculty	Percent of requests	Number not qualifying
39	76	51	5
Exceeded expectations in all categories:			
Number (Percent)		Merit percentage distribution	
16/39 (47%)	7%	6%	5%
	6	6	1
Exceeded expectations in two categories:			
Number (Percent)		Categories Exceeded	
15/39 (44%)	Scholarship & Service	Teaching & Service	Teaching & Scholarship
	2	12	1
		Merit percentage distribution	
	6%	5%	4%
	1	2	0
Exceeded expectations in one category:			
Number (percent)		Category exceeded	
3/39 (8.8%)	Teaching	Service	Scholarship
	1	2	0
		Merit percentage distribution	
	3%	2%	
	2	1	

In fiscal year 2008 (see Table 2), 47 out of 80 faculty (nearly 59%) from the school submitted merit requests. Based upon applying the policies for meeting the requirements for teaching, scholarship, or service, the following resulted from the Dean's evaluation. Two faculty were not recommended to receive merit, because, although they met expectations in teaching, scholarship, and service, they did not provide evidence indicating that they had distinguished themselves in any area. Thirty faculty (67%) exceeded expectations in three areas: Fifteen received 7% merit and 15 received 6% merit. Twelve faculty (26.7%) exceeded expectations in two areas: One exceeded expectations in scholarship and service, eight exceeded expectations in teaching and service, and three exceeded expectations in teaching and scholarship. Nine faculty received 5% merit and three faculty received 4% merit. Three faculty (6.3%) exceeded expectations in one area (one in teaching and two in service. Two faculty received 3% merit, and one faculty received 2% merit. The average merit for the 45 faculty who received merit was 5.55%.

Table 2. *Fiscal Year 2008*

Merit requests	Number of faculty	Percent of	Number not
47	80	59	2
Exceeded expectations in all			
Number	Merit percentage distribution		
30/47 (67%)	7%	6%	5%
	15	15	0
Exceeded expectations in two			
Number	Categories Exceeded		
12/47 (26.7%)	Scholarship &	Teaching &	Teaching &
	1	8	3
	Merit percentage distribution		
	5%	4%	
	9	3	
Exceeded expectations in one			
Number	Category exceeded		
3/47 (6.3%)	Teaching	Service	Scholarship
	1	2	0
	Merit percentage distribution		
	3%	2%	
	2	1	

In fiscal year 2009 (see Table 3), 37 faculty out of 85 (nearly 43%) from the school submitted merit requests. Based upon applying the policies for meeting the requirements for teaching, scholarship, or service, the following resulted from the Dean's evaluation. Fourteen faculty were not recommended to receive merit. The reason in most cases was that they did not provide evidence of peer observations and an administrative observation. Ten faculty (43.5%) exceeded expectations in all three categories of teaching, service, and scholarship, and all received 5% merit. Another 10 faculty (43.5%) exceeded expectations in two areas: Four faculty

exceeded expectations in scholarship and service, five exceeded expectations in teaching and service, and one exceeded expectations in teaching and scholarship). All received 4% merit. Three faculty (13%) exceeded expectations in one area: two in teaching and one in service. All received 2% merit. The average merit percentage for the 23 who received merit was 4.17%.

In fiscal year 2010 (see Table 4), 41 faculty out of 83 (nearly 49%) from the school submitted merit requests. Based upon applying the policies for meeting the requirements for teaching, scholarship, or service, the following resulted from the Dean's evaluation.

Table 3. *Fiscal Year 2009*

Merit requests	Number of faculty	Percent of requests	Number not qualifying
37	85	43	14

Exceeded expectations in all categories:			
Number (Percent)		*Merit percentage distribution*	
10/37 (43.5%)	5%	4%	3%
	10	0	0

Exceeded expectations in two categories:			
Number (Percent)		*Categories Exceeded*	
10/37 (43.5%)	Scholarship & Service	Teaching & Service	Teaching & Scholarship
	4	5	1
		Merit percentage distribution	
	5%	4%	
	0	10	

Exceeded expectations in one category:			
Number (percent)		*Category exceeded*	
3/37 (13%)	Teaching	Service	Scholarship
	2	1	0
		Merit percentage distribution	
	3%	2%	
	0	3	

In fiscal year 2010 (see Table 4), 41 faculty out of 83 (nearly 49%) from the school submitted merit requests. Based upon applying the policies for meeting the requirements for teaching, scholarship, or service, the following resulted from the Dean's evaluation. Three faculty were not recommended to receive merit: Two did not meet the expectations for teaching, and one did not meet the expectations for scholarship. Twenty five faculty (65.8%) exceeded expectations in all three categories of teaching, service, and scholarship, and all received 5% merit. Eleven faculty (28.9%) exceeded expectations in two areas: three in scholarship and service and eight in teaching and service). Seven faculty received 4% merit, and four faculty received 3% merit. Two faculty (7.9%) exceeded expectations in one area, service, and each received 2% merit. The average merit percentage for the 38 who received merit was 4.37%.

Analysis

During the four-year period of this study, faculty seeking merit in the school demonstrated many aspects that helped this researcher understand the quality of the faculty. Those faculty who distinguished themselves in teaching demonstrated evidence from students, peers, and administrators of the quality of their teaching performance. In addition, they provided self-assessment of their teaching, which always included great evaluation scores from students, improvement of instructional approaches, curricular development, areas for future improvement, advisement of students, and increased use of technology. Over time, more faculty remarked on the work they do to improve assessment in their teaching and participating in the university's program annual report (PAR) assessment.

Table 4. *Fiscal Year 2010*

Merit requests	Number of faculty	Percent of	Number not
41	83	49	3
Exceeded expectations in all			
Number		*Merit percentage distribution*	
25/41 (65.8%)	5%	4%	3%
	25	0	0
Exceeded expectations in two			
Number		*Categories Exceeded*	
11/41 (28.9%)	Scholarship &	Teaching &	Teaching &
	3	8	0
		Merit percentage distribution	
	5%	4%	3%
	0	7	4
Exceeded expectations in one			
Number		*Category exceeded*	
2/41 (7.9%)	Teaching	Service	Scholarship
	0	2	0
		Merit percentage distribution	
	3%	2%	
	0	2	

Service—defined as the work of faculty, which employs professional expertise to meet the mission statements of the university and the school—varied, according to the number of years individual faculty members had been employed by the university. Faculty facing their first merit consideration in the school had difficulty demonstrating service at more than the department or community level. Faculty seeking their second or later merit request tended to have service at not only at the professional and community service levels but also at the university, school, program, and department levels.

Improvement took place in scholarship throughout the school during the four years of this study (see Table 5). The *Scholarship Directory*, which faculty help create by reporting their scholarship into a digital file, was a useful measurement tool for the four years under review.

According to this directory, in all categories of scholarship most often accomplished—peer-reviewed conference presentations, journal articles published, chapter(s) in books published, grant proposals, book(s) reviewed, and editing or refereeing work of peers for publication and/or presentation—the percentage of scholarship increased each year. All faculty who met or exceeded the expectations for merit in scholarship provided a research agenda, whereas this had not always been true in the past. Having a research agenda served to help guide faculty to complete research. Nevertheless, in many of the cases in which faculty were denied merit, the denial was due to these faculty's lacking any or adequate publications for their rank. If a faculty member provided a self-assessment of that member's research agenda, including ways to improve future scholarship, reviewers tended to offer encouragement and prodding to produce more research when the faculty next sought to receive merit consideration.

Table 5. *Scholarship of the School*

Items	FY 2007	FY 2008	FY 2009	FY 2010
Books	2	2	4	2
Chapters	4	3	2	2
Articles	9	19	16	16
Conferences	73	78	80	111
Scholarly work total	**88**	**102**	**102**	**131**
Grants	1	0	0	2
Other	8	24	30	16
Total	**97**	**126**	**132**	**149**

Conclusions

Throughout the four years in which this researcher was involved in determining merit awards, some interesting comparisons were observed. First, the number of those faculty who did not qualify for merit varied between the third year (fiscal year 2009) and the other three years. The difference relates to the application of the rule devised during fiscal year 2008 that faculty must have peer observations and must have at least requested an administrative observation in order to meet the requirements for teaching. This rule was enforced during fiscal year 2009, leading to 14 faculty's failing to meet the requirements for teaching and thus being disqualified from receiving merit. While having so many faculty disqualified from receiving merit in fiscal year 2009 certainly altered the percentages compared to the other years, in fiscal year 2010, the percentages returned to figures similar to what they had been in fiscal year 2008 (67% in fiscal year 2008 as compared to 65.8% in fiscal year 2010 for faculty exceeding expectations in all three areas; 26.7% in fiscal year 2008 as compared to 28.9% in fiscal year 2010 for faculty exceeding expectations in two areas; 8.8% in fiscal year 2008 and 7.9% in fiscal year 2010 for faculty exceeding expectations in one area).

Second, in all four fiscal years, whenever faculty received merit for two categories, teaching and service (68.8%) exceeded scholarship and service (20.8%) and teaching and scholarship

(10.4%). Whenever faculty received merit for one category, service (69.2%) exceeded teaching (30.8%) and scholarship (zero). Consequently, service was most often the area in which faculty exceeded expectations, with teaching coming in second.

Finally, the average percentage drop of the merit award from the first two fiscal years (5.185%) to the last two fiscal years (4.27%) was due to financial considerations, as a recession and budget problems in the state within which the university resides influenced the percentage of the merit award.

In spite of the variation between the merit results over four years, it is safe to say that this study demonstrates that many in the school exhibit faculty excellence. There were 65 different faculty who requested merit at least once over the four-year period. Thirty four faculty (52.3%) were successful every time they requested merit. Thirteen faculty (20%) applied for and received merit each of the four years. Of the current full-time faculty in the school, 73% received merit at least once over the past four fiscal years.

The assessment of the merit requests also demonstrates that the merit process helped encourage faculty to seek the qualities of excellence. Six of the successful faculty were new professors, and five of the 14 faculty who were denied merit in 2009 requested and received merit in 2010, thus indicating a determination to achieve the merit status in spite of the prior year's failure and the continuation of the lower reward for receiving merit.

There is always room for improvement. Teaching will always be the most challenging category in which to demonstrate merit, because at this teaching university excellent teaching is an expectation. However, based upon this research, scholarship is the one area that needs the most work. While faculty have made an effort to identify a research focus and have increased their presentation of papers at conferences for which their proposal was peer reviewed, the number and quality of publications in journals, as chapters in books, or as full-book publication is still rarely accomplished by faculty unless they are preparing for a promotion request.

Of comparative importance is the need for faculty to provide a means to determine the quality of their service. Currently, service is the easiest category in which faculty can indicate that they deserve merit. Although the policies governing service require evidence relevant for assessment of service, which includes documentation of the quality of service activities as well as the results of the activity, most faculty provided only evidence of membership. Demonstrating quality of service activities is still neither expected by reviewers nor provided by faculty. Both the Provost and the Faculty Senate would need to approve any change in the documentation of service quality. It is the suggestion of this researcher that all University, School, and Department or Program chairs should be encouraged to provide a letter that evaluates the service of the faculty. Providing such documentation of service would be necessary only for reappointment and/or promotion, but candidates for merit would need to refer to the contents of these letters as evidence of the quality of their service.

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V-index as a Measure of the Targets/Objectives Accomplishment of the Strategic and Operation Plans for an Educational Institution Unit (Case Study)

Ashok Kulkarni and Valeri Pougatchev

Abstract

Strategic and Operational planning is a critical process in the success of an educational institution. It is a part of a multilevel planning processes defined by the scope and duration. We propose that each unit and individual of the institution is associated on its strategic planning level with a *V-index* – quantifiable, numeric indicator of unit's or individual's objectives/targets accomplishment and shows to senior management of the Institution the current position of these units/persons on its/their ways to achieving its/their strategic goals. For obtaining V-index in case of cross-planning (between different units or individuals) we have implemented a well known method in area of Experimental Design - "Taguchi Method". This paper describes a practical case study primer of obtaining V-indexes for some units of a fictitious Institution.

Key Words
Operation/Strategic Planning, V-index, Performance Based Management, Composite Score, e-Management Control & Evaluation Systems, Taguchi Method.

Introduction

The Strategic Operational Planning System is a key component of the e-Management and Control Evaluation System (e-MCES), which has been developed by the University of Technology, Jamaica (UTech). In developing this system, the goal is pursued of having an effective, comprehensive, profound, scalable, robust and inexpensive Web-based solution, which includes strategic, academic and financial planning, performance evaluation of all academic and non-academic staff of the institution. Glasgow, Ellis, Johnson, and Pougatchev (2009) have already described some fragments of the e-MCES. In this way the authors have taken a bold new approach to strategic and financing planning, utilizing the Balanced Scorecard as a strategic management tool developed by Kaplan and Norton (1996) considered to be the best practice of using Performance Based Management and Evaluation solutions for all categories of the University staff. Generally, this system is able to do all of the following:

- Provide appropriate information on each staff member's performance
- Align objectives and resources across the University vertically and horizontally
- Allow staff members the opportunity to identify their contributions to the achievement of the University's objectives
- Allow for consultation and agreement between the staff member and supervisor regarding the procedures to be employed
- Facilitate timely appraisals and analyses
- Provide ongoing constructive feedback to the staff member
- Provide information to affect decisions for confirmation or tenure
- Equip the management of the University to identify and reward incentives for good performance
- Inform decisions regarding granting of incremental salary increases
- Assist in recommendations for promotion
- Provide information for sanctions to be taken where necessary

Give staff members the opportunity to comment on the process and on the output; and make an appeal where necessary
Contribute to professional development planning

Provide the University with feedback on institutional deficiencies in areas such as supervision, evaluation, professional support or performance improvement

From the point of view of Pougatchev & Kulkarni (2010b), a system that satisfies the aforementioned functionalities should consist of the following components:

1. ***Management & Control Solution***
    a. *Online Strategic, Operational Planning Management and Control System*
    b. *Online Performance Based Management System*
2. ***Students' services Solution*** - *Online Module/Instructor Evaluation System*
3. ***Financial Solutions -*** *Online productivity and efficient and effective finance planning*

Figure 1 presents the general structure of the e-MCES with current information recourses used at UTech. This paper discusses the role of the online strategic and operational planning process within entire e-MCES system, developed in UTech. This is an integral and the most significant part of the system, developed and used in the university. In the present authors' considered opinion, this is first software of its kind in literature.

The success of each Educational Institution generally is based on an ability to follow its mission statement. The current research accepts definitions given by U.S. Department of Energy (1996) in its *Guidelines for Strategic Planning*:

Strategic Planning is a process of developing a mission and long-range objectives and determining in advance how they will be accomplished.

Operational Planning is process of setting short-range objectives and determining in advance how they will be accomplished.

Strategy (University Targets) is a plan for pursuing the mission and achieving objectives.

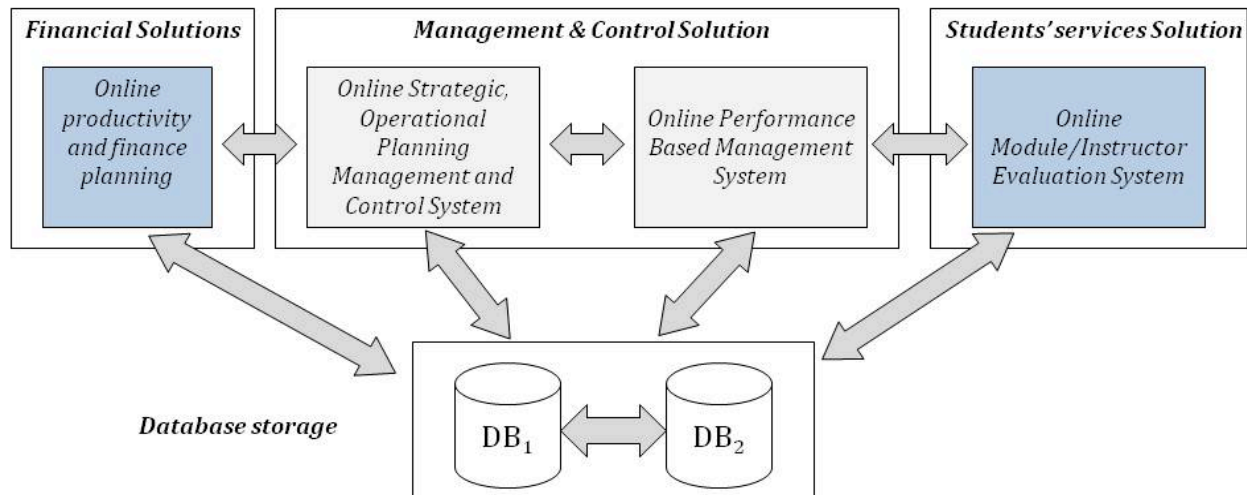**Mission statement** tends to stand for long periods of time.

Figure 1. General structure of the e-Management Control & Evaluation System

A *mission statement* should be examined and debated periodically both by those to whom the organization reports and by those accountable for carrying it out. A whole hierarchy of missions exists for any given educational institution, and each level in the hierarchy derives its mission from the mission of the parent.

The present authors agree with Hamil (2006), that strategic planning and operational planning of each Academic and non-Academic Units of the educational institution do not stand in isolation, they are all integral part of the institution strategic plan, further articulating the strategic objectives for some particular area and cascading down to each division, faculty, school/department, unit, etc. One of the main goals of our system is its ability to provide transparency in the viewing of the institution's and staff's achievements on all levels. All participants must feel that he/she is a member of a single team and be able to see their contribution to the overall success in order to understand why goals need to be accomplished.

If employees are part of the process, they will accept it. If they know there is no employee participation, it doesn't matter how good the plan—it will not work, and there will be chaos in the institution.

Introducing a V-index

Proper measurement and evaluation of targets accomplishment is key to comparing the performance of the operational plans and processes. When there is only one objective, carefully defined quantitative evaluation most often serves the purpose. However, when an element of plan under study is to satisfy multiple objectives, performances of the subject samples can be scientifically compared only when the individual criteria of evaluations are combined into a single number.

Combining multiple criteria of evaluations into a single number is common practice in academic institutions. Consider the method of expressing a grade point average (GPA, a single number) as an indicator of student's academic performance. The GPA is simply determined by averaging the grades of all courses (such as scores in Math, Physics, or Chemistry by individual criteria evaluations) achieved by the student.

Pougatchev and Kulkarni (2010a) define the following terms key to the remainder of the present case study:

Definition 1. **The Object of Responsibility (OOR)** is a member of the academic/non-academic staff or unit, which is responsible for accomplishing some objectives/targets.

> *Examples:*
> *Prof. Elma White* – member of academic staff of some department (*OOR* as a member of the Academic staff)
> *School of Engineering* (*OOR* as a Unit of the Institution)

Definition 2. **V-index** is a Measure of the Total Accomplishment of the operational plan by the Object of Responsibility (OOR) given its objectives/targets within the appraisal period.

Actually *V-index* is a number. In our present approach each OOR - unit (including entire Institution) or even individual of the Educational Institution associates with *V-index*. Its theoretical details and an algorithm of obtaining *V-index* are given by Pougatchev (2009). In this paper the main principles of calculating a *V-index* must be recalled.

Suppose for the current appraisal period the operational plan of some OOR has established *n* objectives/targets $G_1, G_2, ..., G_n$ in percents. For that set we have a set of weights $w_1, w_2, ..., w_n$ $(w_i \leq 1)$ and a set of real accomplishments of the objectives/targets *(O/Ts)* $r_1, r_2, ..., r_n$ (where r_i

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≤ 1 or $r_i \geq 1$). Real accomplishment of some objective/target *(O/T)* is a value (in percents of completion) which has been achieved during the appraisal period.

We can consider a set of values of the *"weight"* and *"real"* attributes as the set of coordinates of the ***Vector of Goals (VG)***

$$\overrightarrow{VG} = [\,w_1(G_1),\, \ldots,\, w_n(G_n)\,],$$

where *n* is a number of goals from the operational plan with a rule

$$\sum_{i=1}^{n} w_i(G_i) = 1$$

and ***Vector of Real Achievements of Goals (VRAG)***

$$\overline{VRAG} = [\,r_1(G_1),\, \ldots,\, r_n(G_n)\,]$$

- If $r_i(G_i) > 1$, then the ith goal is over fulfilled,
- If $r_i(G_i) = 1$, then the ith goal is completed on 100%,
- If $r_i(G_i) < 1$, then the ith goal is completed less than 100%, (if it is *0* then it has not been done at all).

Following Definition 2 and Definition of the *Inner Products of two vectors* from Linear Algebra the ***inner products of vectors*** $\overrightarrow{VG}$ and $\overline{VRAG}$ gives a value for *V-index* (in percents):

$$V = (\,\overrightarrow{VG}, \overline{VRAG}\,) \times 100 = \left(\sum_{i=1}^{n} w_i(G_i) r_i(G_i)\right) \times 100$$

(1)

Equation (1) describes a value of OOR's operational plan accomplishment on the *"flat"*/horizontal plans on the some level of the plan's hierarchy. Below we will introduce a vertical link of the operational plans between two OORs lying on two different levels – "parent" and "child". A *V-index* is used to calculate Total Real Accomplishment for entire institution as well. We assign the Greek letter   to it.

The operational plan is a dynamic document and can be updated year by year depending on real world and market demands. Figure 2 shows how each educational institution moves to its *Vision*, following its *Mission*:
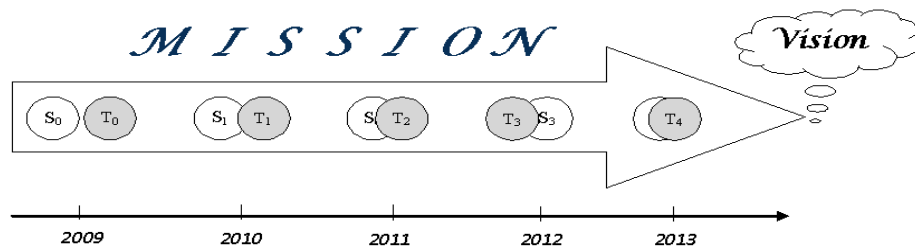

Figure 2. Achieving targets by the educational institution during 5 years strategic planning

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In this figure, indicator S_i (light circle) identifies an actual achieved position (is associated with numerical indicator) of the institution in comparison with the target position T_i (dark circle). We are going to show how to evaluate and measure institution progress and how it fits with the *Strategic Plan (SP)* targets year by year. From our point of view, *measurability* is the main essential feature of well-written goals, objectives and targets; they must be quantified. The distance (real number) between the centers of the circles S_i and T_i is a value of   *- 100*, which we consider to be a measure of the success of the institution on the way to achieving its targets. This number may be positive, negative, or equal to *0*, depending on the real achievements of the institution for the appraisal period. At each appraisal period the position of the institution may be:

> **Unaccomplished**. In this case the circle S_i is to the left of target T_i. The institution has not achieved all its goals for that period (Academic Years 2009, 2010, 2011, 2013 in Figure 2). We have < 100.
>
> **Accomplished**. In this case the circle S_i perfectly matches T_i. The institution has achieved its goals. We have = 100.
>
> **Overfilled**. In this case the circle S_i is to the right side of T_i. The institution has not only achieved its targets but has exceeded the set of achievements (Academic Year 2012). We have > 100.

Using Figure 2, we can see that the number $_i$ *- 100*, where *i* indicates appraisal period (*2009/2010, 2010/2011,* etc.), indicates the ability of the institution to achieve and execute its Strategic Plan.

We implement the procedure, of obtaining a *V-index* for each unit of the institution (academic division, faculty, department/school, program, maintenance service department, registrar department, etc.). Like the entire institution, each unit is able to define its prospective vision.

In the vision of the present authors, an operational plan of the institution must have a strong cohesive hierarchical structure. The success of accomplishment of the entire institution's plan depends on how well this plan is presented and specified on each level of the institution's hierarchy; highlighting what exactly must be done by each unit and individual. In the present authors' opinion only high level of discipline of achieving targets/objectives on all levels of the institution can provide a final success of the institution. To support it the institution has to have a structural mechanism of balancing all "chains" of its hierarchical plans. Kaplan and Norton stated (2005), "The annual planning process provides an architecture around which the alignment process can be executed". Unfortunately there are many general discussions around the alignment process in the management theory and applied areas. This paper introduces *Vertical* and *Horizontal alignments* between elements of institution's operational plan. According to the definitions 1, 2 stated above, we can define:

> ***Definition 3.*Vertical alignment**—any link between nodes at the two neighbored levels (level Up and level Down) that actually delegates/inherits some pieces of the plan, which must be done on these levels.

> *Examples:*
> 1. Faculty of Engineering & Computing (FENC) Operational Plan describes a research activity: "Publish 10 papers in the international reviewed journals."

2. The Department of Computing Science (DCS), which belongs to the FENC, must publish 5 papers in the international journals. This is an example of inheritance (deriving) some items on a level below the "parent" plan.

Definition 4. **Horizontal alignment**—a link between any pieces of OOR's plan on one level. It may be a parts of plan of some individual or/and parts of plans of neighbored OORs.

Examples:
1. "Bachelor of Science in Computing & Information Technology" (BSCIT) program, which belongs to DCS, describes its own research activity: "Publish three papers in the international reviewed journals." At the same time, the "Bachelor of Science in Computing with Management Studies" (BSCMS) program, which belongs to DCS as well, describes its own research activity: "Publish one paper in the international reviewed journals." This paper must be written in cooperation with the BSCIT program. This example describes a non-trivial situation in the process of planning and will be discussed in the next section.
2. One person must align his or her targets for the upcoming appraisal period to achieve 100% of the accomplishment.

Practical example of obtaining a Total Accomplishment and V-indexes and *Measure of Total Accomplishment* for a fictitious Institution

Suppose we have a hypothetical technical university, which has an Academic Affairs Division (AAD). All Deans of Faculties of this university report to the Head of AAD (For example, at the Utech the Head of AAD is a Deputy President of the university). For simplicity's sake we consider just one faculty - Faculty of Engineering and Computing (FENC), which consists of two departments – Department of Engineering Sciences (DES) and Department of Computing Science (DCS). DCS has a several Programs:
   – Bachelor of Science in Computing & Information Technology (BSCIT) with Academic Staff: Dr. Elma White, Prof. Craig Williams, Mr. Denis Bell, and Mrs. Cheryl Sherwood
   – Bachelor of Science in Computing with Management Studies (BSCMS) with Academic Staff: Dr. Glen Campbell, Dr. Andrew Jackson, and Mr. Ryan Burrell
 – Information and Communication Technology division (ICT) with Academic Staff: Dr. Mark Reid, Mrs. Latoya White, and Mr. Sean Hoilett.

Operational Plans

Table 1 presents a part of the faculty and departments programs, operational plans, and individual targets of the Academic Staff focused, for simplicity sake, on Research activity only.

Table 1. *A part of the Faculty of Engineering & Computing Operational Plan*

Objectives from the Operational Plan (OP) of the University Academic Affairs Division (AAD)	Participation of the FENC in Scope of AAD's OP (in %)	Objectives of the FENC Operational Plan that Must be Done within Scope of AAD's OP Objectives	Details Regarding the Department's Objectives	Item Weights (in %)

1	2	3	4	5
Provide high quality, innovative academic and research programs.	10	1. Encourage publication through research groups (10 papers published in reviewed journals)	1. Publish 5 papers in reviewed journals for Department of Engineering Science (DES)	50
			2. Publish 5 papers in reviewed journals for Department of Computing Science (DCS)	50
		2. Provide 10 conference presentations	1. Provide four conference presentations for DES	40
			2. Provide six conference presentations for DCS	60
Provide a qualified, competent, innovative and self-aware staff	5	1. Conduct periodic training, assessment and feedback	1. Provide at least 10 research seminars (DES)	20
			2. Provide six professional training workshops for the staff (DES)	30
			3. Provide at least six research seminars (DCS)	50

Here is an interpretation of columns in Table 1:

Column 1: fragment of items (objectives) of the AAD's Operational Plan (OP). In Table 1 we consider just two items – *"Provide high quality, innovative academic and research programs"* with weight 10% and *"Provide a qualified, competent, innovative and self-aware staff" with weight 5%* of the AAD's OP.

Column 2: weights of items (in %) of the AAD's OP. The sum of all weights of the AAD's is equal to 100%. The respective weights of the two sample component items listed in Column 1 are 10% and 5%.

Column 3: objectives of the FENC's Operational Plan (OP). For example, the first listed objective, "Provide high quality, innovative academic and research programs," must be presented on the FENC level by two objectives: "Encourage publication through research groups (10 papers published in reviewed journals)" and "Provide 10 conference presentations."

Column 4: details of FENC OP objectives on the departments' level. In this example, the FENC's objective, "Encourage publication through research groups (10 papers published in reviewed journals)" is further divided at the departments' level by two objectives: "Publish 5 papers in reviewed journals for Department of Engineering Science (DES)" and , which must be done by DES with weight 50% and "5 journal publications for Department of Computing Science (DCS)" with weight 50%.

Column 5: weight of items presented in Column 4. For the two aforementioned department details listed in Column 4, the two item details are weighted at 50% each.

Other objectives of the table have a similar interpretation. The preceding interpretation has a similar context for Tables 2 and 3. Table 2 presents part of the Department of Computing Science OP. In Table 3, Column #4, "% of Completing," is filled at the appraisal review period

by the immediate supervisor of the person (Program Director) and emphasizes a score of the item accomplished. In this process we have two cases:

1. ***The simple evaluation of accomplishment*** (Table 3, rows 1, 2, and 5–18), where an individual is personally responsible for accomplishing some items (objectives) of the program's operational plan. In this case, the score of accomplishing this Program item based on data presented in Table 3 is quite simple:

$$\textit{Score of accomplishment of the Program Item} =$$
$$\textit{((value of column #2) / 100)} \times \textit{((value of column #4) / 100)} \qquad (2)$$

2. ***An evaluation of accomplishment for composition of objectives***, which belongs to different Programs (Table 3, rows 3 and 4). In this case Mr. Denis Bell from Program BSCIT is responsible for participating in writing a research paper for the ACM conference with Dr. Glen Campbell, who belongs to Program PBCMS. Bell's predefined contribution in that paper is 30%, which he hasn't completed (having done only 60% of his job) and Campbell's predefined contribution is 70%, which he hasn't completed either (having done only 80% of his job). We have a non-trivial situation, where we need to get a score for completion of that job.

From the individual-completion point of view, to get an individual score is quite simple (see case 1, "The simple evaluation of accomplishment," immediately preceding). From the Department of Computer Science point of view, the score depends of multiple objectives with different weights in Programs and levels of accomplishments.

Table 2. *Part of the DCS Operational Plan*

Details Regarding Objectives for the Department of Computing Science	Programs	Details of Program Objectives	Item Weights (in %)
1	2	3	4
Publish five papers in reviewed journals	BSCIT	1. Publish one paper in the *IEEE Journal*	20
		2. Publish one paper in the regional international journal	20
	BSCIT & BSCMS	1. Publish one paper in the *ACM Journal*	20
	BSCMS	1. Publish one paper in *IEEE Software Journal*	20
	ICT division	1. Publish one paper in *Information Services & Use* international journal	20
Provide six conference presentations	BSCIT	1. Participate in CATE-2010 International Conference	20
		2. Participate in Australian Software Engineering Conference (ASWEC)	10
		3. Participate in International Conference on Software Engineering	20

	PBCMS	1. Participate in IASTED "Robotics and Applications"	20
		2. Participate in "Artificial Intelligence and Applications" international conference	20
	ICT division	1. Participate in "Wireless Communications" international conference	10
Provide at least six research seminars	BSCIT	1. Conduct research seminar in March 2011 (Software Engineering)	15
		2. Conduct research seminar in May 2011 (Software Engineering)	15
		3. Conduct research seminar in October 2011 (Software Engineering)	15
	BSCMS	1. Conduct research seminar in February 2011 (Wireless Technology)	20
		2. Conduct research seminar in November 2011 (Wireless Technology)	15
	ICT	1. Conduct research seminar in July 2011 (ICT Education)	20

Table 3. *Part of the Individual Targets of the DCS Academic Staff*

	Details of Program Objectives	Individual Participation in Scope of Program OP (in %)	Individual Responsible for Accomplishing this target	% of Completing	Weight of Target within Individual's Plan (in %)
	1	2	3	4	5
1	Publish one paper in the *IEEE Journal* (BSCIT)	15	Dr. Elma White	100	40
2	Publish one paper in the regional international journal (BSCIT)	15	Prof. Craig Williams	70	40
3	Publish one paper in the *ACM Journal* (BSCIT), with co-author Dr. Glen Campbell (70% of content) from BSCMS	15	Mr. Denis Bell (30% of content)	60	60
4	Publish one paper in the *ACM Journal* (BSCMS) with co-author Mr. Denis Bell (30% of content) from BSCIT	25	Dr. Glen Campbell (70% of content)	80	80
5	Publish one paper in the *IEEE Software Journal* (BSCMS)	25	Dr. Andrew Jackson	90	50
6	Publish one paper in the *Information Services & Use* international journal (ICT)	50	Dr. Mark Reid	30	60
7	Participate in CATE-2010 International Conference (BSCIT)	10	Mrs. Cheryl Sherwood	80	10

Details of Program Objectives	Individual Participation in Scope of Program OP (in %)	Individual Responsible for Accomplishing this target	% of Completing	Weight of Target within Individual's Plan (in %)
1	2	3	4	5
				0
8 Participate in Australian Software Engineering Conference (ASWEC); (BSCIT)	10	Dr. Elma White	100	30
9 Participate in International Conference on Software Engineering (BSCIT)	10	Prof. Craig Williams	100	30
10 Participate in IASTED "Robotics and Applications" (BSCMS)	20	Dr. Glen Campbell	50	20
11 Participate in "Artificial Intelligence and Applications" international conference (BSCMS)	20	Dr. Andrew Jackson	50	30
12 Participate in "Wireless Communications" International conference (ICT)	50	Dr. Mark Reid	100	40
13 Provide one research seminar about up-to-date technology in Software Engineering area, March 2011 (BSCIT)	9	Dr. Elma White	60	30
14 Provide one research seminar about up-to-date technology in Software Engineering area, May 2011 (BSCIT)	9	Prof. Craig Williams	100	30
15 Provide one research seminar about up-to-date technology in Software Engineering area, October 2011 (BSCIT)	7	Mr. Denis Bell	100	40
16 Provide one research seminar about up-to-date technology in Wireless Communication area, February 2011 (BSCMS)	5	Mr. Ryan Burrell	60	50
17 Provide one research seminar about up-to-date technology in Wireless Communication area, November 2011 (BSCMS)	5	Dr. Andrew Jackson	80	20
18 Provide one research seminar about modern aspects in ICT Education area, July 2011 (ICT)	20	Mrs. Latoya White	70	100

We suggest the adaptation of a well known scientific "Taguchi Method" for Experimental Design (Taguchi, Chowdhury, & Taguchi, 2000). This is a statistical tool based on the systematic approach of conducting minimal number of experiments, which are characterized by a number of different types of parameters (in our case – objectives/targets), using a mathematical instrument called *orthogonal arrays*. In terms of this method we can consider the "accomplishment of the plan*"* for some OOR as an experiment. This plan can be accomplished

with different results of success – in this case we have different results of experiments. The problem is how to evaluate the success of that accomplishment, and how to combine multiple criteria of different objectives (parameters) of evaluations into a single number. To solve this problem we are using an idea of weighting of items of the operational plan with ranges of their possible values, proposed by Taguchi et al. (2000). Fortunately, in our case these ranges are rather simple and their variations are between 0 and 100 percents of the accomplishment. In our case we have two objectives with maximum (max) value is 100 and minimum value (min) value is 0. The composite score *(CS)* may be calculated using a formula:

$$CS = (|P_1 - min_1| \,/\, |max_1 - min_1|) \times (W_1 \,/\, 100) + (|P_2 - min_2| \,/\, |max_2 - min_2|) \times (W_2 \,/\, 100)$$

$$(3)$$

where:
- P_1 is a actual score (in percents) of accomplishment the objective (row #3 from Table 3) by Mr. Denis Bell and equal to 60%
- P_2 is a actual score (in percents) of accomplishment the objective (row #4 from Table 3) by Dr. Glen Campbell and equal to 80%
- W_1 is a weight of objective (row #3, column #2) within a BSCIT
- W_2 is a weight of objective (row #4, column #2) within a BSCMS
- $min_1 = min_2 = 0,\ max_1 = max_2 = 100$

Using equation (3) we can get a composite score for objectives #3 and #4:

$$CS = (|60 - 0| \,/\, |100 - 0|) \times (15 \,/\, 100) +$$
$$(|80 - 0| \,/\, |100 - 0|) \times (25 \,/\, 100) = (60/100) \times 0.15 + (80/100) \times 0.25 =$$
$$0.6 \times 0.15 + 0.8 \times 0.25 = 0.29$$

From the point of view of the Head of DCS, the last value means that the paper in the ACM journal written by Mr. Denis Bell (BSCIT) and Dr. Glen Campbell (PBCMS) is only 29% complete.

Here we must mention that for each Object of Responsibility (person or unit) in Operational plan we have two values. The first one is a total accomplishment of all targets/objectives for that OOR in terms of its own plans (see Table 4). The second value one is a contribution of that accomplishment into objective of the unit to which the individual belongs (see Table 5).

Based on the information in Table 4 and on the definitions provided earlier in this paper for *Vectors of Goals, Vectors of Real Achievements of Goals*, and *V-index*, for the current appraisal period we have:

$$V_{Dr.\ Elma\ White} = 88;\ V_{Prof.\ Craig\ Williams} = 88;\ V_{Mr.\ Denis\ Bell} = 76;\ V_{Dr.\ Glen\ Campbell} = 74$$

Details are provided in Appendix 1A.

Appendix A2 presents a success of targets accomplishment by these members of Academic Staff in comparison with previous appraisal period. Total accomplishments of targets for each individual are a data that characterize an efficiency of each academic member's activity in achieving that staff member's targets and objectives, as established by the Unit to which the staff member belongs. By analyzing that information, the supervisor can see:

Table 4. *Part of the Individual and Total Targets Accomplishments*
of the DCS Academic Staff

	Name of OOR	Targets Must be Done	This Target's Weight within Individual's Plan (in %)	% of Completion	Real Accomplishment of the Target {3}× ({4}/100)
	1	2	3	4	5
1	**Dr. Elma White**	Publish one paper in the *IEEE Journal* (BSCIT program)	40	100	40
2		Participate in Australian Software Engineering Conference (ASWEC)	30	100	30
3		Provide one research seminar about up-to-date technology in Software Engineering area, March 2011	30	60	18
4		*Total for Dr. Elma White: 88%*			
5	**Prof. Craig Williams**	Publish one paper in the region international journal	40	70	28
6		Participate in International Conference on Software Engineering	30	100	30
7		Provide one research seminar about up-to-date technology in Software Engineering area, May 2011	30	100	30
8		*Total for Prof. Craig Williams: 88%*			
9	**Mr. Denis Bell**	Publish one paper in the *ACM Journal*	60	60	36
10		Provide one research seminar about up-to-date technology in Software Engineering area, October 2011	40	100	40
11		*Total for Mr. Denis Bell: 76%*			
12	**Dr. Glen Campbell**	Publish one paper in the *ACM Journal*	80	80	64
13		Participate in IASTED "Robotics and Applications"	20	50	10
14		*Total for Dr. Glen Campbell: 74%*			

The real contribution of each member of Academic Staff in achieving goals of the unit's Operational Plan.

A comparative analysis between staff members of their respective contributions in completing an Operational Plan of the program.

The progress of staff members in their strategic goals (if any) and any year-by-year plans that may exist.

This information is critical for the person, because it goes to the performance based management evaluation system (PBMS), which is a component of e-MCES. PBMS shows the overall score of the staff member's performance, which is important for getting promotions or sanctions, if necessary or mandatory.

Based on the information on program objectives presented in Table 3, we can measure the how well the Department of Computer Science Programs completed plan objectives.

To calculate *V-indexes* for programs, we use the same process that was used for academic staff members (see details in Appendix B1). For the current appraisal period, we have:

$$V_{BSCIT} = 83.9;\ V_{BSCMS} = 69.5;\ V_{ICT} = 59$$

Appendix B2 presents information on these academic programs' success in accomplishing objectives, compared to the previous year. These values are shown in Table 5.

Table 5. *Achievements of Programs Plans Objectives for DCS*

Program and Individual Responsible	Real Accomplishment of the Target (Column 4 in Table 3	Planning Weight within a Program	% of Completion (Calculated by System)
1	2	3	4
1 **BSCIT.** Publish one paper in the IEEE Journal (*Dr. Elma White)*	100	15	15
2 **BSCIT.** Publish one paper in the region international journal (*Prof. Craig Williams)*	70	15	10.5
3 **BSCIT.** Publish one paper in the *ACM Journal* (*Mr. Denis Bell) in collaboration with* BSCMS program	60	15	9
4 **BSCIT.** Participate in CATE-2010 International conference (*Mrs. Cheryl Sherwood)*	80	10	8
5 **BSCIT.** Participate in Australian Software Engineering Conference (*Dr. Elma White*)	100	10	10
6 **BSCIT.** Participate in International Conference on Software Engineering (*Prof. Craig Williams*)	100	10	10
7 **BSCIT.** Provide one research seminar about up-to-date technology in Software Engineering area, March 2011 (*Dr. Elma White)*	60	9	5.4
8 **BSCIT.** Provide one research seminar about up-to-date technology in Software Engineering area, May 2011 (*Prof. Craig Williams)*	100	9	9
9 **BSCIT.** Provide one research seminar about up-to-date technology in Software Engineering area, October 2011 (*Mr. Denis Bell)*	100	7	7
	Total for BSCIT program: 83.9 %		
10 **BSCMS.** Publish one paper in the *ACM Journal* (*Dr. Glen Campbell) in collaboration with* BSCIT program	80	25	20
11 **BSCMS.** Publish one paper in the *IEEE Software Journal* (*Dr. Andrew Jackson)*	90	25	22.5
12 **BSCMS.** Participate in IASTED "Robotics and Applications" (*Dr. Glen Campbell)*	50	20	10
13 **BSCMS.** Participate in "Artificial Intelligence	50	20	10

Program and Individual Responsible 1	Real Accomplishment of the Target (Column 4 in Table 3 2	Planning Weight within a Program 3	% of Completion (Calculated by System) 4
and Applications" international conference *(Dr. Andrew Jackson)*			
14 *BSCMS.* Provide one research seminar about up-to-date technology in Wireless Communication area, February 2011 *(Mr. Ryan Burrell)*	60	5	3
15 *BSCMS.* Provide one research seminar about up-to-date technology in Wireless Communication area, November 2011 *(Dr. Andrew Jackson)*	80	5	4
	Total for BSCMS program: 69.5 %		
16 *ICT.* Publish one paper in *Information Services & Use* international journal *(Dr. Mark Reid)*	30	50	15
17 *ICT.* Participate in "Wireless Communications" International Conference *(Dr. Mark Reid)*	100	30	30
18 *ICT.* Provide one research seminar about modern aspects in ICT Education area, July 2011 *(Mrs. Latoya White)*	70	20	14
	Total for ICT division: 59 %		

For getting *V-indexes* for Programs, we use the same process, which was used for members of Academic Staff (details is in Appendix A2). For current appraisal period we have:

$$V_{BSCIT} = 83.9; \ V_{BSCMS} = 69.5; \ V_{ICT} = 59$$

Appendix B2 presents information on these academic programs' success in accomplishing objectives, compared to the previous year. These values are shown in Table 5.

By analyzing this information, the Head of DCS can see:
  The real contribution of each program in achieving goals of the department's Operational Plan.
  The comparative analysis between programs of their respective contribution in completing an Operational Plan of the department.
  The progress of each program in their strategic plans.

Let us continue this process for the level higher: The Department of Computer Science (DCS). The Table 2 describes a fragment of the DCS's Operational Plan with three objectives:

Objective 1. "Publish five papers in reviewed journals," includes the following objectives:
  − "Publish one paper in the *IEEE Journal*" objective (20%), which has been done by *Dr. Elma White* at 100%
  − "Publish one paper in the region international journal" objective (20%), which has been done by *Prof. Craig Williams* at 70%
  − "Publish one paper in the *ACM journal*" objective (20%), which has been done by two authors - Dr. Glen Campbell (his contribution in process of writing this paper is 70%) and

Mr. Denis Bell (his contribution is 30%). Dr. Glen Campbell has completed his job at 60%, and Mr. Denis Bell 80%. They belong to two different programs, but from the Head of Department point of view they have been doing the one research – writing one paper for the *ACM journal*. In this case we have used the *"Taguchi Methods"* (Taguchi et al., 2000), described earlier, and arrived at a value of completing this objective of 29%.
- "Publish one paper in *IEEE Software journal*" objective (20%), which has been done by *Dr. Andrew Jackson* at 90%
- "Publish one paper in *Information Services & Use* international journal" objective (20%), which has been done by *Dr. Mark Reid* at 30%

Objective 2. "Provide six conference presentations," includes the following objectives:
- "Participating in CATE-2010 International conference" objective (20%), which has been done by *Mrs. Cheryl Sherwood* at 80% (the paper is accepted, but has not yet been published)
- "Participating in Australian Software Engineering Conference (ASWEC)" objective (10%), which has been done by *Dr. Elma White on 100%*
- **"Participating in International Conference on Software Engineering" objective (20%), which has been done by *Prof. Craig Williams on 100%*
- **"Participating in IASTED "Robotics and Applications" objective (20%), which has been done by *Dr. Andrew Jackson* at 50% (the paper has been sent, reviewed, got a 50% score from reviewers, and has not published)
- **"Participating in "Artificial Intelligence and Applications" international conference" objective (20%), which has been done by *Dr. Andrew Jackson* at 50% (the paper has been sent, reviewed, got a 50% score from reviewers, and has not published)
- **"Participating in "Wireless Communications" International conference" objective (10%), which has been done by *Dr. Mark Reid* at 100%

Objective 3. "Provide at least six research seminars," includes the following objectives:
- **"Conduct research seminar in March 2011 (Software Engineering)" objective (15%), which has been done by *Dr. Elma White* at 60% (Seminar was not well planned and scheduled)
- **"Conduct research seminar in May 2011 (Software Engineering)" objective (15%), which has been done by *Prof. Craig Williams* at 100%
- **"Conduct research seminar in October 2011 (Software Engineering)" objective (15%), which has been done by *Mr. Denis Bell* at 100%
- **"Conduct research seminar in February 2011 (Wireless technology)" objective (20%), which has been done by *Mr. Ryan Burrell* at 60% (presentation was quite weak)
- **"Conduct research seminar in November 2011 (Wireless technology)" objective (15%), which has been done by *Dr. Andrew Jackson* at 80% (good presentation, but weak attendance)
- **"Conduct research seminar in July 2011 (ICT education)" objective (20%), which has been done by Mrs. Latoya White at 70% (good presentation, but weak attendance and discussions)

For simplicity, suppose that Objectives 1, 2, and 3 represent DCS's entire Operational Plan. Let:
- Objective #1 associates with 40% of all Business of the Department in appraisal period
- Objective #2 associates with 30%, and

- Objective #3 associates with 30% as well

Here are the *V-indexes for these* objectives:

$$V_{Objective\#1} = 57.8; \; V_{Objective\#2} = 76; \; V_{Objective\#3} = 77$$

Details are found in Appendix C.

Finally (for current appraisal period) we can get a V-index for the Department of Computer Science:

$$V_{DCS} = V_{Objective\#1} \times (40/100) + V_{Objective\#2} \times (30/100) + V_{Objective\#3} \times (30/100) =$$
$$57.8 \times 0.4 + 76 \times 0.3 + 77 \times 0.3 = 23.12 + 22.8 + 23.1 = 69.02$$

A value of V-index for the Department of Computer Science in process of accomplishing its plans is 69.02. The Head of DCS can see the real position of his/her department in a year-by-year strategic movement process, as an analog of what we described for the entire educational institution. In this case it is 69.02 − 100 = -30.98. It means that the operational plan of the department is not accomplished but in comparison with the same value from the previous appraisal period (say it was 55% of accomplishing, so 55 − 100 = -45), then -30.98 > -45 means, that the DCS is on the proper path of the improvement. The sequence of these numbers shows the management of the Department and Faculty of Engineering and Computing the direction in which the department has been moving.

Conclusion

Based on V-index case study, we can obtain the percents of real achievements of the individual targets of the academic staff of the departments and units; and, based on these values we can obtain the percents of completion of the programs, departments, faculties' operational plans as well as the university's yearlong strategic plan. These values indicate where these individuals/units/University stand at present and how should they move forward to achieve their goals most expeditiously. What are their major weaknesses and what are their strengths? Based on these, midterm corrections could be applied, if necessary.

After systematic literature survey and related results, the present authors believe that using the Taguchi Method for calculating achievements for items belonging to different objects of responsibilities within the operational plan is a new approach in area of operational planning and evaluation.

This theoretical research has had an effective practical background, as the University of Technology (UTech) has had the original software developed by our experts and implemented within the University. While this system is still being improved as users become more experienced in it, the present research has been shared for the benefit of other universities.

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Appendix

1. Calculating V-indexes for Academic Staff of the DCS

- Dr. Elma White: $\overrightarrow{VG}$ = *[40, 30, 30]*, $\overline{VRAG}$= *[100, 100, 60]*,
$V_{Dr.\ Elma\ White}$ = *40× (100/100) + 30× (100/100) + 30× (60/100) = 88*

- Prof. Craig Williams: $\overrightarrow{VG}$ = *[40, 30, 30]*, $\overline{VRAG}$= *[70, 100, 100]*,
$V_{Prof.\ Craig\ Williams}$= *40× (70/100) + 30× (100/100) + 30× (100/100) = 88*

- Mr. Denis Bell:$\overrightarrow{VG}$ = *[60, 40]*, $\overline{VRAG}$= *[60, 100]*,
$V_{Mr.\ Denis\ Bell}$=*60× (60/100) + 60× (40/100) = 76*

- Dr. Glen Campbell: $\overrightarrow{VG}$ = *[80, 20]*, $\overline{VRAG}$= *[80, 50]*,
$V_{Dr.\ Glen\ Campbell}$ = *80× (80/100) + 20× (50/100) = 74*

2. Comparative (current and previous appraisal periods) analysis of targets accomplishment by Academic Staff of the Department of Computer Science

	Previous Acad. Year		Current Acad. Year		Indicator of progress (in %%)
	V-index	*- 100*	V-index	*- 100*	
Dr. Elma White	92	92-100=-8	88	88-100=-12	|-8|-|-12|=-4
Prof. Craig Williams	80	80-100=-20	88	88-100=-12	|-20|-|-12|=+8
Dr. Glen Campbell	80	80-100=-20	74	74-100=-26	|-20|-|-26|=-6

Appendix B

1. Calculating V-indexes for Programs of the DCS

- BSCIT: $\overrightarrow{VG}$ = *[15, 15, 15, 10, 10, 10, 9, 9, 7]*, $\overline{VRAG}$= *[100, 70, 60, 80, 100, 100, 60, 100, 100]*,
V_{BSCIT} = *15 × (100/100) + 15 × (70/100) + 15 × (60/100) + 10 × (80/100) + 10 × (100/100) + 10 × (100/100) + 9 × (60/100) + 9 × (100/100) + 7 × (100/100) = 15 + 10.5 + 9 + 8 + 10 + 10 + 5.4 + 9 + 7 = 83.9*

- BSCMS: $\overrightarrow{VG}$ = [25, 25, 20, 20, 5, 5], $\overline{VRAG}$= [80, 90, 50, 50, 60, 80]
  V_{BSCMS} = 25 × (80/100) + 25 × (90/100) + 20 × (50/100) + 20 × (50/100) + 5 × (60/100) + 5 × (80/100) = 20 + 22.5 + 10 +10 + 3 + 4 = 69.5
- ICT: $\overrightarrow{VG}$ = [50, 30, 20], $\overline{VRAG}$= [30, 100, 70],
  V_{ICT} = 50 × (30/100) + 30 × (100/100) + 20 × (70/100)=15 + 30 + 14= 59

2. *Comparative (current and previous appraisal periods) analysis of objectives accomplishment by Academic Programs of the Department of Computer Science*

	Previous Acad. Year		Current Acad. Year		Indicator of progress (in %%)
	V-index	*- 100*	**V-index**	*- 100*	
BSCIT	75.4	75.4-100=-24.6	83.9	83.9-100=-16.1	|-24.6|-|-16.1|=-8.5
BSCMS	81.3	81.3-100=-18.7	69.5	69.5-100=-30.5	|-18.7|-|-30.5|=-11.8
ICT	68.7	68.7-100=-31.3	59	59-100=-41	|-31.3|-|-41|=-9.7

Appendix C

Calculating V-indexes for some Objectives of the DCS

- **Objective #1**: $\overrightarrow{VG}$ = [20, 20, 20, 20, 20], $\overline{VRAG}$= [100, 70, 29, 90, 30]
  $V_{Objective\#1}$ = 20 × (100/100) + 20 × (70/100) + 20 × (29/100) + 20 × (90/100) + 20 × (30/100) = 20 + 14 + 5.8 + 18 = 57.8
- **Objective #2:** $\overrightarrow{VG}$ = [20, 10, 20, 20, 20, 10], $\overline{VRAG}$= [80, 100, 100, 50, 50, 100]
  $V_{Objective\#2}$ = 20 × (80/100) + 10 × (100/100) + 20 × (100/100) + 20 × (50/100) + 20 × (50/100) + 10 × (100/100) = 16 + 10 + 20 + 10 + 10 + 10 = 76
- **Objective #3:** $\overrightarrow{VG}$ = [15, 15, 15, 20, 15, 20], $\overline{VRAG}$= [60, 100, 100, 60, 80, 70]
  $V_{Objective\#3}$ = 15 × (60/100) + 15 × (100/100) + 15 × (100/100) + 20 × (60/100) + 15 × (80/100) + 20 × (70/100) = 9 + 15 + 15 + 12 + 12 + 14 = 77

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The Implications of Grade Inflation:
Faculty Integrity versus the Pressure to Succeed

David E. Smith and Steven Fleisher

Abstract

The authors review current and past practices of the grade inflation controversy and present ways to return to each institution's established grading guidelines. Students are graded based on knowledge gathered. Certain faculty members use thorough evaluative methods, such as written and oral presentations, plus examinations. Others may require only midterm and final examinations; these latter are usually insufficient to measure learning/mastery of course objectives. Supporting this study are profiles from select universities: some have undertaken the grade-inflation controversy academically; others have been profiled in the news. The model is provided to ensure that degree candidates are academic experts in their field, having earned the credential through rigorous study.

Grade Inflation: Where It Started

According to Kohn (2002), charges of grade inflation first appeared at Harvard as early as 1894. The Harvard University Report of the Committee on Raising the Standard, 1894, stated that grades A and B were sometimes given too readily. Moving ahead more than 100 years later, Healy (2001a; 2001b) reported that grade inflation at Harvard University was continuing to accelerate, that grade inflation had been further accelerated by the Vietnam War, and that grade inflation had become the moral equivalent of opposition to the war. Some faculty members may have been reluctant to fail their students and consign them to the draft, and this inadvertently fueling the upward spiral of grade inflation **(**"Princeton Cracks Down on Grade Inflation," 2005). Other elite universities—Dartmouth, Columbia, Cornell, and Yale—also have shown accelerated grade inflation. (Ivy League Grade Inflation, 2002).

Grade inflation is not limited to Ivy League schools. According to Rojstaczer (2002, updated 2009) results from a national study of undergraduates at both public and private universities showed that grade point averages increased at a steady pace. It is interesting to note the differences between public and private institutions, as shown in Figure 1.

Results suggest that grade point averages increased on average by 0.6 from 1967 to 2000. Although both public and private schools showed trends indicating grade inflation over that 35-year period, the mean grade point average at private schools was 0.3 higher than at public schools, and the grade inflation rate was also 25% to 30% higher at these private institutions. Over the past years, grade point averages increased by approximately 0.15 per decade. Rojstaczer (2003) suggested that the "marketplace mentality," in which stakeholders expect higher grades and thus they may be responsible for the increased grade inflation. Parents in particular suggest that, since they are paying high costs for education, their children should receive higher grades to obtain better job opportunities.
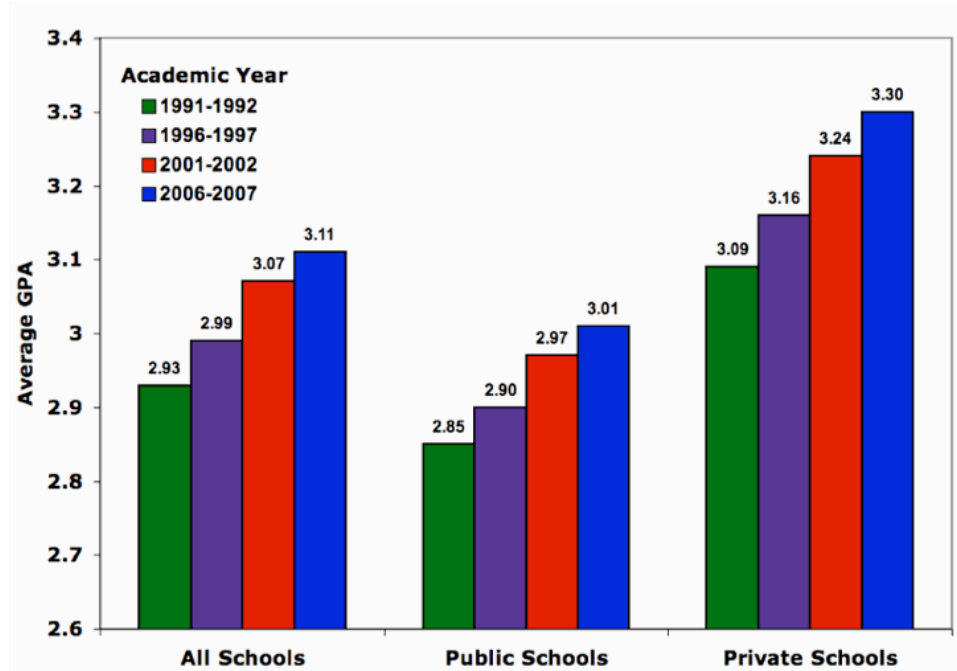
Figure 1. Recent GPA trends nationwide.

Some Universities are working on the grade-inflation problem. The Council of Chairs at California State University, Northridge, approved a 16-year grade-inflation study in 2006, which included the period from 1990 through 2005. The Provost asserted that there must be high standards that they should be made clear to students, and that faculty should enact these standards while assisting students in their academic efforts. It was also made clear that grading is the prerogative of the faculty, not the administration, and it seems to return the decision to the respective departments. CSUN seems to have a rather loose interpretation of the grade-inflation phenomenon. The report signifies the negative connotations and yields to the opinion that grades have become too high (The Council of Chairs, 2006). There is a substantial element of subjectivity. What is unclear in this report is whether the faculty body employs the use of the bell curve. Would points be added to test papers, to acknowledge the fact that the test itself required unreasonable learning expectations?.

Status of Instructors and Grade Inflation

Moore and Trahan (1998) studied the relationship between grades and status of college instruct-tors with respect to either tenure or their full-time or adjunct-faculty relationship with their specific institutions. They hypothesized that untenured and part-time faculty submit higher grades than do tenured faculty members, since merit, tenure, and promotion decisions are based, for the most part, on an instructor's teaching performance, as measured by course evaluations. Moore and Trahan sampled 17 introductory courses, across disciplines and taught by faculty

members of all ranks. They concluded that non-tenured faculty and part-time faculty tended to grade higher than did tenured faculty. Their reasoning, however, was different from that of Rojstaczer (2003): They concluded that higher grade inflation from part-time and non-tenured faculty members could result from a lack of teaching experience and/or teaching skills, and therefore an inability of the faculty members to properly distinguish grade levels. They also explained that since new faculty members are better trained and more motivated, they tend to be more effective teachers. They also concluded that non-tenured faculty members may tend to "purchase" tenure through higher in-class student evaluations, which have a direct correlation to higher grades. Similarly, Greenwald and Gilmore (1997) found that if students are given grades even one standard deviation above, rather than below, the mean, they will increase the instructor's percentile rank in student ratings by one full standard deviation. Gohmann and McCrickard (2001) examined two of Moore and Trahan's (1998) grade-inflation relationships: (a) New faculty members were less experienced in determining grades, and (b) tenure and grade inflation are linked. They examined grade distributions of faculty in a school of business in a southern college during an 8-year period from fall 1991 to spring 1998. Based on this study, they concluded that faculty members' skill in grading was better as they gained experience in distinguishing good student performance from poorer performance. They concluded that non-tenured faculty members tended to grade harder over time. The results indicated that non-tenured faculty members tended to raise their grading standards as they approached tenure. This supports the concept that faculty members begin by grading leniently, but gradually grade with more rigor. Gohmann and McCrickard's (2001) results do not, however, support the hypothesis that non-tenured faculty give higher grades to receive better evaluation results.

Sonner (2000) conducted a study over a 2-year period at a small public university where approximately 70% of the courses were taught by part-time faculty members. The initial analyses indicated that class size, subject, and class level were factors related to average class grades. The analysis revealed that average grades given by adjunct instructors remained significantly higher than average grades given by full-time faculty members. Sonner suggested that part-time faculty members were reluctant to give lower grades that might result in student complaints, which could influence whether these faculty members would be rehired to teach subsequent classes.

Kezim, Pariseau, and Quinn (2005) performed a statistical analysis to investigate whether grade inflation existed in the business school at a small private college in the northeastern region of the United States. The results showed that grade inflation existed and exhibited a linear trend over a 20-year period. The authors also found that grade inflation was related to faculty status, with significant differences seen between mean grade point averages of students being taught by tenured and adjunct faculty members and between those students taught by non-tenured and adjunct faculty members. They demonstrated that average grades given by adjunct faculty members were higher than those of either tenured or non-tenured faculty members. The results clearly indicated that the increased use of adjunct faculty members exacerbated grade inflation in higher education.

Grade Expectations

Eiszler (2002) studied 983,491 students during the period from 1980 through 1999, in more than 37,000 sections at a mid-sized public university in the midwestern United States. The number of students expecting to receive grades of A, when a grade of A was mostly stable during the 1980s, increased during the 1990s, with 47% of the students reporting expectations of receiving 'A' or 'A–' grades in spring 1999. In examining the ratings of teaching, Eiszler (2002) found the

correlation between expected grades and teaching ratings to be statistically significant. At this same public university, in 1992 a new president was hired who established the principle of the "student as a customer." Faculty members were encouraged to provide multiple indicators of teaching effectiveness; however, student ratings were the primary basis for the evaluation of faculty members. There is evidence that the grade inflation at this university was driven by the extensive use of student evaluations of teaching in the reappointment, tenure, and promotion process.

Grade Inflation and Course Choice

The number of students with science majors, graduating from colleges and universities in the United States, declined from school year 1970–71 to school year 1984–85, both as a proportion of the steadily growing total and in absolute terms (Institute for Education Sciences, 1987). This decline has prompted forecasts of a nation of scientific illiterates and a loss of scientific competiveness. The nation depends upon undergraduate education to prepare not only the small number of students who will become research scientists and engineers, but also the many other students who will have to function effectively in an increasingly technological world. That is a difficult and very important task.

The college-age population is shrinking, and declines in science enrollments are inevitable unless the proportion of students pursuing science and engineering increases, and there is little evidence of that. It is important to somehow persuade more students to study science and engineering. In a 2-decade study, Sabot and Wakeman-Linn (1991) expressed concern for the scientific scholarly community about a loss of economic competitiveness; this has since become a reality. The dearth of science degrees conferred has a correlation to the low-graded versus the high-graded course areas. Simply described by Sabot and Wakeman-Linn, the arts and humanities may be more desirable to students, as those subjects tend to be high grading. Economics, science, and math are relegated to the low-grading subjects. The expectation of grades is likely to influence course choice, even though there may fewer jobs in these so-called soft subject areas. Can students be blamed for opting toward the guaranteed successful college courses, in order to prove their worth as academics? These students do not register for rigorous coursework, which would portray them as having less than high intelligence. Graduate students do not have to play in a grade-inflation arena, if they study in areas of past expertise (Levine and Cureton, 1998).

Grade Inflation in Europe

Bagues, Labini, and Zinovyeva (2008) reported in their study based on an empirical examination of the grading standards in Italian universities. The study documented that grades vary significantly across Italian universities and degrees. Bagues et al. provide evidence suggesting that these differences reflect the heterogeneity of grading standards. A straightforward implication of this result was that university funding based on students' academic performance does not necessary favor universities that generate higher value added, and that the college experience is either enhanced or validated through the high performance of the student who is awarded the grade A− or A. The Italian funds allocation system rewards universities according to the number of exams passed by their students. University departments that rank higher according

to this indicator actually tend to be significantly worse in terms of their graduates' performance in the labor market.

Empirically speaking, Anglin and Meng and Sabot and Wakeman-Linn have suggested the deterioration in academic standards (Anglin and Meng, 2000; Sabot and Wakeman-Linn, 1991) while culling the measuring stick when comparing or considering the academic performance standards in Italy. Astutely though, these authors pragmatically looked at their literature reviews and, as analysts, questioned whether differences exist in the areas of qualifications, or possibly in certain pedagogical variations.

And most noticeably, the question of open admissions arises. When everyone is admitted, what is the measurement of the faculty member, and what can the student with possibly little research or analytical experience realistically expect in the form of an evaluation? Culturally, is this a limited continental issue? That is, do European open-admissions institutions demand more of those who are applying for admission?

Conclusions

In summary, possible reasons for grade inflation are as follows:

- University emphasis on graduation rates, contributing to a hurried academic atmosphere and pressure not to delay student graduation.
- Inadequate emphasis on academic standards and preparation in university messages to prospective students and their families.
- Increased reliance on part-time faculty, many of whom also teach at other institutions, especially in 2-year colleges.
- The traditional use of course evaluation forms in personnel actions, leading to concern by tenure-track faculty and adjunct faculty members about the effect of low grades on student ratings and, therefore, on continued employment.
- The increasing tendency of students to complain about grades, and to file grade appeals.
- A "curve" may have been used because faculty members believed it to be acceptable as the multiple choice tests seemed too difficult.
- Increased use of Scantron exams, particularly in large classes, thus emphasizing memorization rather than critical thinking and writing.
- Competition among departments to maximize enrollments in lower-division general-education courses, leading to a desire not to seem "too tough."
- University identification and reporting, by course and section number, of classes with low grades.
- Peer pressure from other faculty who assert that low grades mean that the instructor must be doing something wrong.
- Faculty members' possibly having set unrealistic academic performance goals.

The consequences of grade inflation are significant, and whatever discomforts the process of change may cause the reputation of all institutions of higher education are at stake. The concept of grade inflation becomes a tug-of-war between what is needed to fulfill degree requirements and how scholarly the expectations should be. This sends students the wrong message. The continuation of increased grade inflation is a travesty; and colleges and universities, with their major role in teaching, fail to model effective techniques of grading. This is leading students to

believe that freshman year at a university is no more difficult than at a community college. Are lenient requirements overriding scholarly preparation?

Consider the following scenario: A freshman with a 3.0 high school grade point average begins his/her university experience with a math course, a writing course, and two general education courses taught in departments with A-to-B- averages of 65%. It is probable that this student's initial grade point average will be well over 3.0. Such a scenario has the potential to become a conversation piece among students. Universities would do well to monitor grade point averages, and the benefits of regular reviews are significant. The goal of every institution of higher learning should be to become more learning centered and enhance the position in the context of assessment and the central components of academic quality, student engagement, and shared values. This also provides an opportunity to prepare for accreditation and to improve the reputation among employers who expect institutions of higher learning to hold the line on grade inflation. Higher faculty expectations will be echoed in an improvement of student learning outcomes. This will clearly differentiate colleges and universities from community colleges by enhancing the quality of instruction in lower-division courses and attracting additional higher-level students.

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Lessons Learned through a Review of Grade Appeal Data

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Abstract
This article reports the frequency, causes, and solutions for grade appeals at a university with a view to enhancing the overall quality of the teaching/learning experience. Evidence shows that the incidence of grade appeals can be reduced through clear and precise descriptions of assignments and grading criteria

Key Words
Grade appeal, academic policy, quality indicator, reflection on practice, grading criteria

Introduction

One of the most constructive outcomes of reflection on practice is that it can bring to the level of awareness what we do well and where growth is needed. Members of the National University School of Education Grade Appeal Committee embarked on a review of grade-appeal data to gain insight into an important process that is often ignored unless it affects academic staff personally. The purpose of this article is to present the frequency, rate, and causes of grade appeals and, based on the findings and a review of literature, to recommend strategies for strengthening the teaching/learning process. Quality is identified as a context in which to consider grade appeals, descriptive statistics are reported about the incidence and causes of grade appeals, recommendations are made for practice, and areas for further study are suggested.

Quality in Education

On March 10, 2009, President Obama delivered his first major speech on education, outlining five pillars that he believed must guide education policy. The fifth pillar he introduced outlined the need to provide every American with a quality higher education (Obama, 2009). Obama's quality pillar underscores the importance many see in enhancing the outcomes of teaching and learning. In part, the quality pillar is a response to critics who assert that the quality of higher education is in decline (Bok, 2006).

The American Association of Colleges and Universities (AAC&U) noted the importance of assessment data to guide planning, teaching, and improvement of quality in teaching and learning (AAC&U, 2009). Recent and past writings about higher education (Dinkins, 2010; Pulich, 1983) speak to the need for accountability and quality. Massy (2003) noted that high quality teaching, scholarship, and service within universities are key factors for building trust internally among students and externally among constituents.

A focus on quality is also at the heart of the accreditation process. The Western Association for Schools and Colleges (WASC), the regional accrediting agency for institutions of higher education in California, stated that an important purpose of the accreditation process is to "improve educational quality and institutional performance" and to promote the "sharing of practices that lead to improved quality" (*Handbook of Accreditation,* 2008, pp. 2, 9).

Standards 2 and 6 of the Common Standards developed by the California Commission on Teacher Credentialing (CTC) and NCATE's Standard 2 speak to the expectation that Schools of

Education use program review data to inform decisions that strengthen the quality of teacher preparation (CTC & NCATE Crosswalk, 2007).

Quality at National University

"Quality" is the first of six core institutional values that guide strategic planning at National University (*2015 National University Strategic Plan*, 2010), other core values being access, relevance, accelerated pace, affordability, and community. The concept of quality is also part of the conceptual framework of the School of Education, which is summarized in the statement, "We envision our faculty and candidates as those who learn and model scholarship, teamwork, active reflection, responsible citizenship, and standards of exemplary practice (STARS)" (Germaine, Birdsell, & Fabry, 2009).

Evidence of the pursuit of quality within the School of Education at National University is demonstrated in current efforts to assure that Program Learning Outcomes (PLOs) are clear, precise, and relevant; that they align with Institutional Learning Outcomes, Course Learning Outcomes, and Assignments; and that assignment rubrics are valid and reliable.

Grade Appeals as an Indicator of Quality

One indicator of quality that receives little attention is appeal of grades by students. Grade appeals occur when students are dissatisfied with their final grade for a variety of reasons. Within each School at National University, separate Grade Appeal Committees manage students' appeals. The task of each committee is to investigate appeals particular to their school and determine whether a grade change is warranted. Committee decisions are guided by documentation from the student and instructor, by University policy, and by expectations communicated to students in course syllabi (*National University General Catalog*, 2010).

Grade Appeals and Stress

Grade appeals can be stressful for both instructors and students. For example, in a phenomenological study of 13 instructors, Marek (1992) found that grade appeals bring instructors self-doubt or blame, along with feelings of being consumed by the appeal process. Marek also reported that students experience feelings that ranged from frustration to anger when working through a grade appeal.

Most grade appeals are resolved at the School or College level within a university, but the literature includes reports of court cases involving grade appeals. While the present researchers are unaware of any grade appeal cases that have proceeded to litigation during their tenure on the National University School of Education Grade Appeal Committee, dating back to 2003, Kaplin and Lee (1997) reported that the courts place the burden of proof on students to show that a grade should be changed. Courts are generally reluctant to become involved in grade appeals for two reasons: Courts are hesitant to hear an appeal when the issue at stake relies on the professional opinion of a professor; and courts do not want to be seen as interfering in a university's autonomy to assess students' learning (Boley & Whitney, 2003).

Next to be examined will be the frequency of grade appeals within the School of Education, followed by the reasons grade appeals occur.

Context of School of Education Grade Appeals

Grade appeals are initiated when students write a letter to the Dean and provide evidence of why they believe their grade should be reviewed. Policy within the *National University General Catalog* identifies conditions for grades to be appealed. The Dean directs the Grade Appeal Committee to review students' letters and evidence, to ask for additional evidence as needed, and also to request a response and evidence from the instructor. Based on the evidence provided by both parties, a decision is rendered by the Committee.

Table 1 shows the number and frequency of grade appeals by students in the School of Education (SOE) during fiscal years 2008, 2009, and 2010. A search of the literature did not find comparable data from other universities with which to compare frequency of grade appeals; however, the SOE's particular rate is one grade appeal per 130 classes, or approximately one grade appeal in over 2,000 students. Though the total number of grade appeals is low, the Committee ruled a grade change should take place in over 30% of the cases. If grade appeals could be eliminated in cases that resulted in a grade change, the incidence of grade appeals would be lowered from one in 130 classes, to one in 200 classes. The per-student rate would decrease from one in 2,000 to approximately one in 3,000 students. A closer look at the causes of grade appeals brings to light potential solutions for reducing the incidence of grade appeals.

Table 1. *Number and Frequency of School of Education Grade Appeals for Fiscal Years 2008–2010*

Fiscal year	Total quantity of grade appeals	Grade appeals as a percent of total quantity of classes*	Quantity of appeals in which a grade was changed	Quantity of changes in online classes / quantity of online appeals	Quantity of changes in on-site classes / quantity of on-site appeals
FY 2008 July 07 – June 08	54	0.7% (1 appeal per 137 classes)	16 (30%)	12 / 29	4 / 26
FY 2009 July 08 – June 09	54	0.8% (1 appeal per 132 classes)	22 (40%)	14 / 38	8 / 16
FY 2010 July 09 – June 10	42	0.7% (1 appeal per 146 classes)	13 31%	11 / 31	2 / 11

*Source: National University Office of Institutional Research and Assessment (OIRA). The total number of classes includes on-site, online, hybrid, and iLinc classes. While Independent Studies are reported as separate classes, they are not included in the total number of classes in Table 1.

Grade Appeals and Policy

Having a clear grade-appeal policy at a university aligns with recommendations in the literature (Boley & Whitney, 2003; Marcum & Perry, 2010; Pulich, 1983). Academic policies at National University clearly state the basis for a grade appeal and the process students must follow to appeal a course grade. A grade appeal may be initiated if a student believes one of the following has occurred in the grading process: A calculation error; lack of clear and prompt criteria for grading; assignment of a grade for reasons other than the announced criteria; assignment of a grade based on bias or discrimination; or inconsistent or unfair application of grading standards (*National University General Catalog*, 2010, p. 47.)

Causes of Grade Appeals, and Solutions

Faculty conversations about reasons for grade appeals sometimes focus on students' sense of entitlement. While at times entitlement may be part of the grade appeal equation, our focus in this section is on what instructors can influence: clarity in description and directions for assignments, and clarity about expectations for grading. Clear, precise expectations in syllabi help students to see instructors as guides rather than as enemies (Kane & Harms, 2005; Marek, 1992).

Table 2 shows the factors that contributed to grade appeals within the School of Education during fiscal years 2008, 2009, and 2010, the two primary causes being (a) factors other than announced criteria and (b) unclear grading criteria.

Table 2. *Tally of Grade-Appeals Causes: School of Education*

		The originally assigned grade was an error based on:				
Fiscal year	No. of appeals	Calcula-tion error	Unclear grading criteria	Factors other than the announced criteria	Bias or discrim-ination	Unfair applica-tion of grading standards
2008	54	3	11	33	0	7
2009	54	0	19	34	1	0
2010	42	1	11	28	1	1

For grade appeals that are attributed to unclear grading criteria, the solution appears simple: make grading criteria clear. Questions to ask about assignments include: Do descriptions of assignments and/or grading criteria need greater clarity and precision? Are rubrics clearly aligned with course and program learning outcomes? Solutions could be considered in discussions between instructors who teach the course, and in candid conversations with students. The latter can be particularly effective for making positive change and building trust with students (Pulich, 1983).

The most frequent reason reported for grade appeals is grading perceived by students to be based on factors other than the announced criteria. Clear, precise grading criteria are expected in

course syllabi. However, if inconsistencies occur about how points are earned, grade appeals are likely to happen. Inconsistencies are most likely to occur when instructors deviate from approved syllabi. For example, the Grade Appeal Committee recommended a change of grade in a case where an instructor added an assignment to a particular class, but did not make corresponding changes in all course documents. The assignment itself was creative and probed students' ability to apply learning; however, changes to the grading structure in the syllabus were not consistent in other course documents, leading to understandable confusion and a grade appeal. The evidence of "factors other than announced criteria" as the most frequent reason for grade appeals indicated that a few instructors in the School of Education are making changes to syllabi after the course has started.

Statistics do not directly identify all elements that influence whether a grade is appealed. Boley and Whitney (2003) found that students are less likely to pursue a grade appeal if they feel they have been heard and treated fairly. The adage, "The best teachers do not forget what it is like to be a student," applies here. In practice, it means to listen and respond to students' concerns with respect and empathy (Massey, 2003). While instructors' expectations for students' learning should always be high, they need not feel that they, as instructors, must always be "right." A helpful perspective can be, "If the student were my own child or grandchild, how would I want her/his instructor to respond?"

Recommendations to Reduce the Incidence of Grade Appeals

Based on evidence from grade-appeal data, the present researchers' collective experience in working with grade appeals, and a review of literature, the following recommendations are made.

Professors responsible for particular courses should periodically review syllabi and other course documents for clarity, accuracy, and consistency, and engage other instructors and students in the review (Astin, 2002). Engaging others in the review is akin to calibrating assessments, except that appraisal is of the assignment explanation rather than of the assignment outcome. Written descriptions of assignments and learning outcomes should be clear and precise. Evaluation rubrics should reflect course and program learning outcomes, and point values for assignments and due dates should be consistent in all documents.

Terms such as "participation" should be defined as precisely as possible so that the instructor and students know what it looks like and, where needed, what it does not look like (Pulich, 1983).

At a minimum, syllabi should cite the *National University General Catalog* for academic policy on issues such as the grading system, plagiarism, attendance, and criteria for grades of Incomplete. Early in the course, instructors can draw students' attention to policies by way of classroom discussion or online announcement (Dinkins, 2010). Greater awareness of policy is likely when the catalog language is included within syllabi. Instructors must be knowledgeable about policy so that they apply policy consistently and fairly (Boley & Whitney, 2003; Pulich, 1983).

Instructors and students should attempt to resolve grade issues through direct communication with one another. While instructors cannot control the emotional state of students, they can choose to communicate with respect and empathy while applying policy consistently and fairly (Boley & Whitney, 2003).

Distinct online and on-site syllabi should be available when a course is offered in both platforms. Not all activities that fit one particular mode of delivery will fit the other. For

example, discussion postings are generally a part of online classes, with specific point values attached to each discussion. In the same course held on site, what activities or assignments take the place of online discussions? Is another activity substituted, or are point totals distributed differently? Pre-planning is needed to avoid confusions and potential grade appeals. Approved course syllabi should be available to instructors well in advance of teaching a course so that they have an opportunity to become familiar with expectations (Marcum & Perry, 2010).

A final recommendation is for the grade appeal process itself. Currently, the results of a grade appeal are forwarded to the Dean, who reviews the decision and forwards the report to the student, instructor, and to the Grades Department if a grade change is made. The present researchers recommend that faculty responsible for the course in which grade appeals occur also receive a copy of the grade appeal as a signal to check whether change or additional clarity might make future appeals more preventable.

Further Study

The records kept by the National University School of Education Grade Appeal Committee provide a rich source for further investigation. Potential future study includes review of appeals on a course, program, and departmental basis. An investigation of the effects of a recent change from paper submission of grade appeals to electronic submission of grade appeals would be interesting. Additionally, a qualitative study of perceptions of instructors and students who have experienced a grade appeal may prove fruitful. Participants could describe their experience and what they might do differently (if anything) to limit the potential of future grade appeals. Such investigations open the door to collaboration between instructors and students in a way that they "co-labor" together to improve the teaching/learning process (Kane & Harms, 2005).

Summary

A discussion has been presented of the frequency, causes, and solutions to grade appeals at a university, with a view to enhancing the overall quality of the teaching/learning experience. Evidence shows that the incidence of grade appeals can be reduced through clear and precise descriptions of assignments and grading criteria.

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Investigating the Process for Reappointment and Promotion

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Abstract

This paper presentation relies on primary research from the reappointment and promotion processes used in the School of Education of National University through the review of dossiers over a four-year period, fiscal year 2007 through fiscal year 2010, by the Dean of the School of Education. The purpose of this paper is to investigate the contents of dossiers submitted during this four-year period to better understand if any patterns can be discerned by which to improve the process for reappointment and promotion. Historical case study is the methodology for this study.

Introduction

This article relies on primary research from the reappointment and promotion processes used in the School of Education of National University through the review of dossiers over a four-year period, fiscal year 2007 through fiscal year 2010, by the Dean of the School of Education. The purpose of this paper is to investigate the contents of dossiers submitted during this four-year period to better understand if any patterns can be discerned with which to improve the process for reappointment and promotion. This research purports to report the process solely from the Dean's perspective and does not investigate the process from the point of view of other members of the review process. Historical case study is the methodology for this study.

This research is unique because no other studies exist investigating the reappointment and promotion processes. Instead, the only resources available were explanations of reappointment and promotion policies or guidelines of how institutions conduct reappointments and promotions. It is because of the scarcity of research on this topic that the cited resources at the end of this paper are sparse. As a consequence, this study is important because it begins a discussion that it is hoped will lead to other institutions' investigating their processes for reappointment and promotion.

Section 6.2 of the *National University Faculty Policies* (1998) determines the assessment of teaching, scholarship, and service for reappointment and promotion through the four-year period of this study, and the *Final: The Report of the Taskforce on Fulltime Faculty Workload* (2004) provides the interpretation of the policies. The faculty policies distribute faculty time appropriately, based on the needs and desires of the faculty member as well as the needs and desires of the University. The distribution of faculty workload begins with the faculty's creating a Faculty Development Plan (FDP), which results from negotiations between faculty and their respective Department Chairs in the School, and it is signed by their Dean.

The FDP serves as a contract, placing teaching as the top priority. Typically, teaching accounts for 70% of faculty workload (*Final,* 2004). Most of each faculty member's time is spent in areas of teaching, with time dedicated to the improvement of one's pedagogy (Green, 2007). Updating and improving instructional approaches and curriculum development are also strongly encouraged. The expectation is that all faculty members maintain regular office hours and make themselves available for student consultations (*National University,* 1998). Evidence of teaching was almost always provided with a written self-assessment by the faculty member

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under review based upon Student Evaluations, Average GPA, peer observation, curriculum development, and plans to improve and/or refine teaching. Less often, faculty provided administrative evaluation, evidence of student advising, and innovative teaching. In the past, faculty have sought reappointment without peer and/or administrative evaluations, but the policy was altered during fiscal year 2008 and made a requirement in fiscal year 2009 (Promotion, Reappointment, and Merit Guidelines, 2009).

The second area of faculty workload is the service component. Typically, service accounts for 20% of faculty workload (*Final,* 2004). Service encompasses a wide panoramic screen covering faculty involvement in university, school, and program governance; working with prospective students, current students, and alumni after they graduate; and making a contribution to the community. All faculty engage in service at the program level, participating in discussions and decisions related to curriculum development, program assessment, and selection of textbooks for the programs in which they teach. Faculty involvement in department-level service, which includes serving on department committees that look at issues across programs, participating in monthly department meetings, and other special projects, is also a means for faculty to meet the service requirement. School-level service includes serving on school committees, elected or appointed; working on school projects such as assessment; and participating in school meetings. University service includes serving on faculty governance or advisory bodies, such as the Faculty Senate or Graduate Council; on special committees and taskforces such as Presidential Commissions; or on special projects. The level of service expected of faculty is related to rank and time at the university. For example, new faculty, especially those hired at a lower rank, are primarily encouraged to focus on department service first and to begin school or university service gradually. Instructors and Assistant Professors, especially in the first two years, are more likely to be engaged in program, department, and school service than in university-level tasks. Additionally, there is an expectation that faculty provide service to the community related to their discipline. Serving on boards of professional organizations is an example of such an activity. Service is an important part of the workload of faculty at National University and is an integral part of the evaluation of faculty for reappointment and promotion (*National University,* 1998).

The third area in which faculty need to prepare is scholarship. Scholarship typically accounts for 10% of faculty workload (*Final,* 2004). This is viewed as an important part of faculty employment, as this is how faculty enhance their standing, both personally and professionally, in the academic community. The expectation is that faculty, depending on rank, produce works in their fields, which further develop their strength in a given field. The university encourages faculty to improve scholarship through its faculty development processes, which helps to support the university's core values (*National University,* 1998).

Reappointment and Promotion Processes

To be reappointed and/or promoted, faculty must submit a dossier describing their work and accomplishments during their previous contract period, along with evidence of those accomplishments. The dossier is reviewed by their Chair, a School Personnel Committee of faculty colleagues, the School Dean, the University Faculty Personnel Committee (composed of senior faculty from across the University), the Provost, and finally the President. As a result of this process, faculty are either not reappointed or reappointed for a contract whose term is determined by the reviewing bodies and by the applicant's rank. Within the past five years, the ranges of

allowed contract lengths at each rank have been raised, so faculty need not reapply for reappointment as often as in the past.

The reappointment/promotion process at National University involves assessment of teaching, scholarship, and service. However, in assessing the performance of a faculty member, there is consideration of the totality of performance across all areas. Faculty members are encouraged to use their annual faculty development plan as a basis for self-assessment.

At National University, evidence of successful teaching requires written self-assessment by the faculty member under review, the Department Chair's review, peer review, administrative review, student assessments, and review of student learning outcomes. According to Provost Green (2007), "the primacy of teaching should mean, among other things, that excellence in teaching carries more weight in deliberations regarding reappointment, promotion, and merit than does accomplishment in scholarship or service."

Based upon both the Provost's communication and a PowerPoint presentation, which provided promotion and reappointment guidelines during a workshop developed jointly by the Provost and the Faculty Senate (Promotion, 2009), the following were suggested evidence to demonstrate teaching quality: self-assessment, including commentary on peer and/or administrative reviews; reflection on course syllabi and course material and examples of student work; commentary on innovative teaching methods or upon any relevant information regarding courses taught; evidence of student advising; and comments on the student evaluations as they relate to the teaching/learning process.

Embedded within the university faculty policies (*National University,* 1998) and the Power-Point presentation (Promotion, 2009) is the need for faculty to be involved in academic development, advising, and assessment. Faculty members craft and contribute to curriculum creation, development, and modification, as well as many aspects of assessment. The Provost remarked that as our culture of assessment continues to grow, faculty are taking greater responsibility for designing and implementing rubrics, aligning all levels of objectives, and mentoring fellow faculty. Those faculty with assessment experience are leaders in training and mentoring their colleagues (Green, 2007).

Faculty at National University are the primary contacts for aspects of student advising in relation to the program, career options, and general academic advice. This is not to be confused with the role of the university staff advisor, who is tasked with class scheduling, financial aid advice, and many other matters concerning student welfare. The degree or requirement of academic advising may vary from school to school, based upon the needs of the discipline. Although the roles are not defined university wide, there is agreement that academic concerns are the responsibility of the faculty. By maintaining consistent office hours and being available to students, faculty members provide guidance to those in their discipline.

In reflecting on these processes, it is important to note that peer evaluation plays a key role throughout these multistage evaluations. Faculty participation in peer assessment is taken seriously by the institution. The most structured and relevant peer assessment comes through the School and University Personnel Committees. As mentioned in the faculty policies, the purpose of the School Personnel Committee is "to assure that faculty hold responsibility for the evaluation of their peers against standards of professional performance and that each faculty member in each school is given the fairest, fullest, and most appropriate assessment of his/her professional work by colleagues within the school" (*National,* 1998, p. 9). The School Personnel Committees make recommendations for "appointment, reappointment, non-reappointment, promotion, and merit increase" (*National,* 1998, p. 9).

During the PowerPoint presentation provided by the Chair of the Faculty Senate and the Provost at the Promotion, Reappointment, and Merit Workshop held in February 2009, the following questions related to teaching were listed for consideration:

1. Does the faculty member include a self-assessment that both describes what has been accomplished during the period under review and evaluates the work reported?
2. Does the faculty member teach new classes or classes with significant revisions as needed or requested?
3. Did the faculty member describe new teaching strategies or approaches to existing classes?
4. Do peer and chair evaluations indicate quality teaching?
5. Are the teaching evaluations from students positive?
6. Is the average undergraduate or graduate Grade Point Average (GPA) usually consistent with the 2.75 and 3.25 guidelines, respectively, of the university? If not, was a rationale provided for the discrepancy?

Evidence of teaching to be included in the dossier consisted of the following: course outlines that demonstrate attention to learning outcomes and clear guidelines for students; handouts and sample student work that reflects academic rigor; description of different course preparations and delivery methods; and a table of student evaluation and GPA data.

Faculty in the School of Education tend to have a GPA higher than the recommended ones to which other schools at National University adhere. All the School of Education programs are approved by the Commission on Teaching Credentialing, the primary accreditor for licensure in the State of California. In order to comply with the standards of this accreditor, Schools of Education need to provide assessments where knowledge, skills, and dispositions are evident. As a result, few courses in the School of Education rely on objective exams or quizzes. Instead, grades for School of Education courses are determined by a series of anchor activities that assess field-experience observations, lesson plans, demonstrated dispositions, teaching lessons, projects, portfolios, research papers, and, in some programs, a thesis. All these assessments are based on the expectation that the candidate demonstrates a mastery level of the knowledge, skills, and dispositions necessary for an educator by the end of the course. Consequently, it is a common practice for instructors in the School of Education to provide feedback on the first draft of any assignment, encouraging candidates to revise and resubmit the assessment. The entire focus of the instruction is to help candidates improve their knowledge, skills, and dispositions to achieve the level that the Commission on Teaching Credentialing expects of credentialed teachers, education specialists, education administrators, school counselors, and school psychologists. To receive a credential in all School of Education programs, a GPA of at least 3.0 must be maintained. This grade point average alone leads to higher GPA by School of Education candidates. Generally, the acceptable GPA benchmarks in the School of Education are 3.5 for graduate-level classes and 3.25 for undergraduate classes.

Service at National University is considered part of faculty workload, a factor to determine reappointment and promotion, the source of academic development, the cornerstone of student advising, and the basis for shared governance. Service typically accounts for 20% of faculty workload and is accorded approximately eight hours per week of faculty time. The majority of service at National University appears to be internal as opposed to external. The type of service actually required of a particular faculty member may vary greatly, depending on the size and disciplines of each school. A small school with a handful of faculty may need every member to serve on a program, school, and university committee. Another school may have stringent and

time-consuming advising requirements based on discipline. Although the complete picture of faculty service is not collected in any single place, external service is reported monthly to the Dean as part of the Monthly Activity Report. Service is typically documented in the faculty dossier and comprises an important part of the application for merit. Service at National University is discussed in Section 6.4 of the 1998 *Faculty Policies*. The rank of the faculty influences the level and the distribution of service and determines whether the activity encompasses service to the department, the school, and/or the university.

At National University, the function of service requirement contributes to shared governance, to academic development and implementation of the institution, and to participation in the ongoing maintenance of academic programs and shared institutional goals. The guidelines as reported at the Promotion, Reappointment, and Merit Workshop held in February 2009 required that the faculty indicate what service they performed to the University System, University, School, Department, or Program commensurate with their rank and productivity of approximately eight hours per week. Instructors should provide service primarily to the program and department. Assistant Professors should provide service primarily to the program and department, with some service at the school and/or university level. Associate Professors should provide service to the program and department, with multiple service activities at the school and/or university levels. Professors should provide mentorship to other program and department faculty with multiple service activities at the school and university levels.

According to the presenters at the workshop, as a general rule faculty should have service in at least two levels from among the university, school, department, university systems, and community levels. Examples of evidence of service performance that would meet the requirements of service included the following: being active in multiple, important University committees or initiatives; having evidence of successful accomplishment of service goals; assuming leadership roles in department, school, or university committees or initiatives; and maintaining a high quality of work on departmental or school committees or initiatives. Examples of evidence of service performance that would not meet the criteria for merit include the following: peers, Chair, or Dean reports inadequate attention to service responsibilities; or faculty member fails to present service accomplishments in the dossier.

Service at the leadership level is contingent on whether the work is compensated by either a stipend or course-load reduction. As defined in the *Faculty Policies* Articles 1 and 3, the Workload Standard of Practice (SOP) sets the criteria for compensation, either in course release time or in monetary terms, for service work above the average of eight hours per week required of all faculty. Particular attention is paid to the faculty member's serving in the role of faculty leadership positions, Department Chair, Lead Program Faculty, Regional Lead Faculty, or Course Lead Faculty. Faculty who do not serve in those roles should refer to Articles 3 and 8.7 of the *Faculty Policies* for guidance regarding negotiating appropriate compensation for work above the expected eight hours of service per week.

The review of scholarship is done for each year according to the faculty member's last reappointment. Scholarship typically accounts for 10% of faculty workload. Basing the review on rank, the following are the expectations for faculty according to their rank: faculty with the rank of Instructor must demonstrate participation in academic or professional conference(s) or substantial progress toward completion of terminal degree; faculty with the rank of Assistant Professor must present papers at peer-reviewed academic or professional conferences(s) or publish or complete equivalent work appropriate to the discipline; faculty with the rank of Associate Professor must present papers at peer-reviewed academic or professional conference(s) and

publish or complete equivalent work appropriate to the discipline every three years; faculty with the rank of Professor must present papers at peer-reviewed academic or professional conference(s) and publish or complete equivalent work appropriate to the discipline every two years.

The evidence of scholarly achievement included, but was not restricted to, the following documents: self-assessment of scholarly work; scholarly books, monographs, textbooks, articles, or studies that have been subject to favorable external review by academic experts in the field; essays, articles, or research findings that appear in peer-reviewed publications or other media; creative work externally reviewed by experts in the field; grants that have been won in support of scholarship; papers that have been presented or published at scholarly meetings, conferences, or symposia; editing or refereeing of the work of peers for publication or presentation; service as a chair or as a participant on panels at professional conferences; and published reviews of the work of peers. Examples of evidence of scholarship performance that would not meet the criteria for reappointment included the following: no work accepted for presentation or publication during the review period; or no work presented or published during the review period. The following were questions faculty needed to address: (a) Have scholarly activities been completed or accepted under the period of review? (b) Are the quality and quantity of these activities consistent with the workload guidelines outlined for the applicable academic rank?

Promotions are applied for and reviewed in basically the same way as reappointment requests, though the dossiers cover the entire period spent at the previous rank. Faculty become eligible for promotion after serving in the preceding rank for a certain number of years, as stated in the *National University Faculty Policies* (1998). In general, it is expected that the faculty seeking promotion be performing at the expectations for the rank to which they seek promotion for a year preceding the promotion request. For example, in scholarship, promotion to Associate Professor requires at least one peer-reviewed publication and evidence of an ongoing research plan for future publications during the year preceding the promotion request review.

Results of the Study: Reappointment

During this four-year period, 38 faculty sought reappointment. All but one faculty were reappointed for each of the four fiscal years. However, six faculty never completed the process of reappointment: Four resigned before they were required to go through the reappointment process; one faculty was discovered to have two full-time jobs and resigned; and one faculty did not submit a dossier and did not have his contract renewed. While some faculty excelled in presenting a dossier that satisfied most, if not all, of the requirements, a few faculty fell short; however, this did not deter their reappointment.

The investigation was conducted by rank (Instructor, Assistant Professor, Associate Professor, and Professor) in order to discern any patterns connected to rank, and the results include this inspection as well as a composite of all faculty seeking reappointment. Among the Instructors, nine sought reappointment over the four-year period (see Table 1), and all but one were reappointed. In the School of Education, Instructors are generally valuable retired public school educators whose contributions to the programs of the School do not require a doctoral degree. In the area of teaching, 89% had 4.0 or above Assessment of Teaching scores; 55.5% were in the acceptable level for the school in terms of GPA (a score better than the 31.6% for Assistant Professors); improvement in observations need to be made since the Instructors seeking reappointment had only 44.5% administrative observations, 66% had peer observations, and 22% had no observations; the 100% of faculty who provide student advising was awe inspiring, and

the 78% involvement with curriculum development was excellent. Instructors provide service mainly through community and professional organizations (100%), although some have evolved to performing service to the university (25%). While Instructors are required to participate only in academic or professional conferences or make substantial progress toward completion of terminal degree, 89% of Instructors seeking reappointment had peer-reviewed scholarship, and 33% even had peer-reviewed publications.

Table 1. *Results of Instructor Reappointments Student Evaluations*

Less than 3.0	3.0 to 3.49	3.5 to 3.9	4.0 to 4.24	4.25 to 5.00	Total
		1 (11.1%)	2 (22.2%)	6 (67%)	9

GPA:

Under 2.5	2.5 to 2.99	3.00-3.5	Above 3.5	Total
		4 (44.5%)	5 (55.5%)	9

Observation:

None	Peer	Administrative	Both	Total
2 (22.2%)	3 (33%)	1 (11.1%)	3 (33%)	9

Other teaching:

Curriculum Development	Advising	Innovative Teaching	Curr. Dev. & Advising	Curr. Dev. & Innovative Teaching	All	Total
	2 (25%)		1 (12.5%)		6 (62.5%)	9

Service:

Com. & Prof. Org.	School	Com. & Prof. Org. & School	University	School & University	All	Total
		6 (67%)			3 (33%)	9

Scholarship:

Prof. Work	Peer Review Present.	Prof. Work, Peer Review Present.	Peer Review Pub.	Prof. Work, Peer Review Pub.	Peer Review Present. & Pub.	All	Total
1 (11.1%)	3 (33%)	2 (22.2%)			3 (33.3%)		9

Seeking reappointment at the Assistant Professor rank were 19 faculty (see Table 2), and all were reappointed.

Table 2. *Results of Assistant Professor Reappointments Student Evaluations*

Less than 3.0	3.0 to 3.49	3.5 to 3.9	4.0 to 4.24	4.25 to 5.00	Total
		2 (10.5%)	6 (31.6%)	11 (57.9%)	19

GPA:

Under 2.5	2.5 to 2.99	3.00 to 3.5	Above 3.5	Total
		6 (31.6%)	13 (68.4%)	19

Observation:

None	Peer	Administrative	Both	Total
4 (21.0%)	2 (10.5%)		13 (68.4%)	19

Other teaching:

Curriculum Development	Advising	Innovative Teaching	Curr. Dev. & Advising	Curr. Dev. & Innovative Teaching	All	Total
2 (10.5%)	2 (10.5%)			5 (26.3%)	10 (52.6%)	19

Service:

Com. & Prof. Org.	School	Com. & Prof. Org. & School	University	School & University	All	Total
2 (10.5%)	1 (5.3%)	6 (31.6%)			10 (52.6%)	19

Scholarship:

Prof. Work	Peer Review Present.	Prof. Work, Peer Review Present.	Peer Review Pub.	Prof. Work, Peer Review Pub.	Peer Review Present. & Pub.	All	Total
4 (21.0%)	5 (26.5%)	1 (5.3%)		3 (15.8%)	6 (31.6%)		19

In the area of teaching, 89.5% had 4.0 or above Assessment of Teaching scores; 31.6% were in the acceptable level for the school in terms of GPA (a score much lower than the 55.5% for Instructors); improvement in observations needs to be made since the Assistant Professors seeking reappointment had only 68.4% administrative observations, 78.9% had peer observations, and 21% had no observations; the 63% of faculty who provide student advising needed to

score higher but the 89% involvement with curriculum development was excellent. Assistant Professors are heavily involved in community and professional organizations (100%) and at the school level (82.2%), but the 52.6% involvement in university service is still quite good. The scholarship requirement for Assistant Professors is to present papers at peer-reviewed academic or professional conferences or publish or complete equivalent work appropriate to the discipline. Peer-reviewed presentations (79.2%) is mainly how they accomplished scholarship; however, peer-reviewed publications (31.6%) are not uncommon.

Table 3. *Results of Associate Professor Reappointments Student Evaluations*

Less than 3.0	3.0 to 3.49	3.5 to 3.9	4.0 to 4.24	4.25 to 5.00	Total
		2 (28.6%)	1 (14.8%)	4 (57.1%)	7

GPA:

Under 2.5	2.5 to 2.99	3.00 to 3.5	Above 3.5	Total
		5 (71.4%)	2 (28.6%)	7

Observation:

None	Peer	Administrative	Both	Total
			7 (100%)	7

Other teaching:

Curriculum Development	Advising	Innovative Teaching	Curr. Dev. & Advising	Curr. Dev. & Innovative Teaching	All	Total
					7 (100%)	7

Service:

Com. & Prof. Org.	School	Com. & Prof. Org. & School	University	School & University	All	Total
					7 (100%)	7

Scholarship:

Prof. Work	Peer Review Present.	Prof. Work, Peer Review Present.	Peer Review Pub.	Prof. Work, Peer Review Pub.	Peer Review Present. & Pub.	All	Total
	1 (14.3%)				1 (14.3%)	5 (71.4%)	7

At the Associate Professor rank, seven faculty sought reappointment (see Table 3), and all were reappointed. In the area of teaching, 72% had 4.0 or above Assessment of Teaching scores; 71.4% were in the acceptable level for the School in terms of GPA; and the 100% administration and peer observations and 100% involvement with curriculum development, student advising, and innovative teaching were extraordinary. All Associate Professors who sought reappointment were involved with service at all levels. The scholarship requirement for Associate Professors is to present papers at peer-reviewed academic or professional conference and publish or complete equivalent work appropriate to the discipline every three years. They accomplished their scholarship almost equally between peer-reviewed presentations (100%) and peer-reviewed publications (86%).

Table 4. *Results of Professor Reappointments Student Evaluations*

Less than 3.0	*3.0 to 3.49*	*3.5 to 3.9*	*4.0 to 4.24*	*4.25 to 5.00*	*Total*
		1 (33%)		2 (67%)	3

GPA:

Under 2.5	*2.5 to 2.99*	*3.00 to 3.5*	*Above 3.5*	*Total*
		2 (67%)	1 (33%)	3

Observation:

None	*Peer*	*Administrative*	*Both*	*Total*
			3 (100%)	3

Other teaching:

Curriculum Development	*Advising*	*Innovative Teaching*	*Curr. Dev. & Advising*	*Curr. Dev. & Innovative Teaching*	*All*	*Total*
					3 (100%)	3

Service:

Com. & Prof. Org.	*School*	*Com. & Prof. Org. & School*	*University*	*School & University*	*All*	*Total*
		2 (67%)			1 (33.3%)	3

Scholarship:

Prof. Work	*Peer Review Present.*	*Prof. Work, Peer Review Present.*	*Peer Review Pub.*	*Prof. Work, Peer Review Pub.*	*Peer Review Present. & Pub.*	*All*	*Totals*
						3 (100%)	3

At the Professor rank, three faculty sought reappointment (see Table 4), and all were reappointed. In the area of teaching, 67% had 4.0 or above Assessment of Teaching scores (with one of the three having an average score below 4.0); 67% were in the acceptable level for the school in terms of GPA; the 100% administration and peer observations and 100% involvement with curriculum development, student advising, and innovative teaching were excellent. It was interesting that only one Professor (33%) who sought reappointment was involved with service at all levels. The scholarship requirement for Professors is to present papers at peer-reviewed academic or professional conference and publish or complete equivalent work appropriate to the discipline every two years. All accomplished their scholarship through professional work and peer-reviewed scholarship.

The composite for all four faculty ranks indicates that, overall, most faculty seeking reappointment in the School of Education provided evidence through their dossier that met the requirements for reappointment (see Table 5). Evidence of teaching was almost always provided with a written self-assessment by the faculty member under review based upon Student Evaluations (84.2% of the faculty had evaluation scores of 4.0 or higher); average GPA (47.4% of the faculty had GPAs within the acceptable range for the School of Education, and the rest had higher GPAs); peer observations (81.6% of faculty), administrative observation (71% of faculty), and no observations (15.8%); curriculum development and plans to improve and/or refine teaching (81.7% of faculty), student advising (81.7%), and demonstrating curriculum development, student advising, and innovative teaching (68.5%). While in the past faculty have sought reappointment without peer and/or administrative evaluations, the evaluation of faculty by the School of Education has been stricter on faculty having these evaluations.

Service, defined as the work of faculty, which employs professional expertise to meet the mission statements of National University and the School of Education, varied according to the number of years with National University. Faculty facing their first reappointment in the School of Education had difficulty demonstrating service at more than the department or community level (5.5%). Faculty seeking their second or later reappointment had service at not only the university, school, and department levels but also professional and community service (55.3%). The rest of the faculty, most at the Instructor and Assistant Professor ranks, provided service only at the community, professional organization and/or school levels (44.7%). Although the policies governing service require evidence relevant for assessment of service, which includes documentation of the quality of service activities as well as the results of the activity, most faculty provided only evidence of membership. Demonstrating quality of service activities is still not expected by reviewers and not provided by faculty.

In the area of scholarship, 42% of the faculty seeking reappointment at the Instructor and Assistant Professor ranks fulfilled the scholarship criteria through professional work (dissertation, as a conference discussant and/or chair, or as a peer reviewer); nearly 13.2% of all faculty during the four years under review chose this mode. Among Associate Professors and Professors who sought reappointment, 100% had peer reviewed scholarship. They fulfilled the scholarship requirement by presenting peer reviewed papers at conferences (48.3%) or publishing peer reviewed articles (51.7%).

Table 5. *Composite Results of Reappointment Student Evaluations*

Less than 3.0	3.0 to 3.49	3.5 to 3.9	4.0 to 4.24	4.25 to 5.00	Total
		6	9	23	38
		(15.8%)	(23.7%)	(60.5%)	

GPA:

Under 2.5	2.5 to 2.99	3.00 to 3.5	Above 3.5	Total
		18	20	38
		(47.4%)	(52.6%)	

Observation:

None	Peer	Administrative	Both	Total
6	5	1	26	38
(15.8%)	(13.2%)	(2.6%)	(68.4%)	

Other teaching:

Curriculum Development	Advising	Innovative Teaching	Curr. Dev. & Advising	Curr. Dev. & Innovative Teaching	All	Total
2	4		1	5	26	38
(5.3%)	(10.6%)		(2.6%)	(13.2%)	(68.5%)	

Service:

Com. & Prof. Org.	School	Com. & Prof. Org. & School	University	School & University	All	Total
2	1	14			21	38
(5.3%)	(2.6%)	(36.8%)			(55.3%)	

Scholarship:

Prof. Work	Peer Review Present.	Prof. Work, Peer Review Present.	Peer Review Pub.	Prof. Work, Peer Review Pub.	Peer Review Present. & Pub.	All	Total
5	9	3		3	10	8	38
(13.2%)	(23.7%)	(7.9%)		(7.9%)	(26.3%)	(21%)	

Results of the Study: Promotion

Reviews of the request for promotion occur in basically the same way as the reappointment requests. Candidates eligible for promotion, however, must have been at the preceding rank for a certain number of years (generally five years). They also must exhibit characteristics of the rank to which they seek promotion for a year preceding the promotion request.

Table 6. *Associate Professor Promotions Student Evaluations*

Less than 3.0	3.0 to 3.49	3.5 to 3.9	4.0 to 4.24	4.25 to 5.00	Total
		1 (7.69%)	3 (23%)	9 (69.23%)	13

GPA:

Under 2.5	2.5 to 2.99	3.00 to 3.5	Above 3.5	Total
		6 (46.15%)	7 (53.8%)	13

Observation:

None	Peer	Administrative	Both	Total
	5 (38.46%)	1 (7.69%)	7 (53.8%)	13

Other teaching:

Curriculum Development	Advising	Innovative Teaching	Curr. Dev. & Advising	Curr. Dev. & Innovative Teaching	All	Total
		1 (7.7%)	1 (7.7%)	1 (7.7%)	10 (76%)	13

Service:

Com. & Prof. Org.	School	Com. & Prof. Org. & School	University	School & University	All	Total
		3 (23%)			10 (76%)	13

Scholarship:

Prof. Work	Peer Review Present.	Prof. Work, Peer Review Present.	Peer Review Pub.	Prof. Work, Peer Review Pub.	Peer Review Present. & Pub.	All	Total
	2 (15.4%)	1 (7.7%)			4 (30.8%)	6 (46.2%)	13

During this four-year period, of the 18 faculty who sought reappointment, 5 were denied promotion, and 3 other faculty were denied promotion by the University Faculty Personnel Committee but their denials were overturned by the Provost. The investigation was conducted by rank (promotion to Associate Professor and Professor) in order to discern any patterns connected to rank, and the results include this inspection as well as a composite of all faculty seeking promotion.

Seeking promotion to the Associate Professor rank were 13 faculty (see Table 6). Of these, 10 were promoted. In the area of teaching, 92% had 4.0 or above Assessment of Teaching scores; 46.2% were in the acceptable level for the School in terms of GPA; 66% had administration observations, and 92% had peer observations. In the area of teaching quality, 84% had student advising, 91% were involved with curriculum development, and 92% indicated

innovative teaching. Each faculty member who sought promotion to the Associate Professor rank was involved with service at three or more levels. The scholarship requirement for Associate Professors is to present papers at peer-reviewed academic or professional conferences and publish or complete equivalent work appropriate to the discipline every three years. Among the faculty seeking promotion, seven demonstrated that they were performing at this rank's requirements in scholarship by producing peer-reviewed publications. Three were unable to demonstrate this and were not recommended for promotion.

Table 7. *Professor Promotions Student Evaluations*

Less than 3.0	3.0 to 3.49	3.5 to 3.9	4.0 to 4.24	4.25 to 5.00	Total
			1 (20%)	4 (80%)	5

GPA:				
Under 2.5	2.5 to 2.99	3.00 to 3.5	Above 3.5	Total
		3 (60%)	2 (40%)	5

Observation:				
None	Peer	Administrative	Both	Total
	1 (20%)		4 (80%)	5

Other teaching:					
Curriculum Development	Advising	Innovative Teaching	Curr. Dev. & Advising	Curr. Dev. & Innovative Teaching	All	Total
				2 (40%)	3 (60%)	5

Service:						
Com. & Prof. Org.	School	Com. & Prof. Org. & School	University	School & University	All	Total
		2 (40%)			3 (60%)	5

Scholarship:							
Prof. Work	Peer Review Present.	Prof. Work, Peer Review Present.	Peer Review Pub.	Prof. Work, Peer Review Pub.	Peer Review Present. & Pub.	All	Total
		1 (20%)		1 (20%)	3 (60%)		5

Seeking promotion to the Professor rank were five faculty (see Table 7); three were promoted. In the area of teaching, 100% had 4.0 or above Assessment of Teaching scores; 60% were in the acceptable level for the school in terms of GPA; 80% had at least administration observations, and 100% had at least peer observations. In the area of teaching quality, 60% had student advising, 100% were involved with curriculum development, 100% indicated innovative

teaching, and 60% had all categories covered. One faculty member did not meet expectations in teaching for the Professor rank and was denied promotion. Each faculty member seeking promotion to the Professor rank was involved with service at three or more levels. The scholarship requirement for a Professor is to present papers at peer-reviewed academic or professional conferences and publish or complete equivalent work appropriate to the discipline every two years. One faculty member could not demonstrate this and was not recommended for promotion.

Table 8. *Results of Promotion Student Evaluations*

Less than 3.0	3.0 to 3.49	3.5 to 3.9	4.0 to 4.24	4.25 to 5.00	Total
		1 (5.6%)	4 (22.2%)	18 (72.2%)	18

GPA:

Under 2.5	2.5 to 2.99	3.00 to 3.5	Above 3.5	Total
		9 (50%)	9 (50%)	18

Observation:

None	Peer	Administrative	Both	Total
	6 (33.3%)	1 (5.6%)	11 (61.1%)	18

Other teaching:

Curriculum Development	Advising	Innovative Teaching	Curr. Dev. & Advising	Curr. Dev. & Innovative Teaching	All	Total
		1 (5.6%)	1 (5.6%)	3 (16.7%)	13 (72.2%)	18

Service:

Com. & Prof. Org.	School	Com. & Prof. Org. & School	University	School & University	All	Total
		5 (27.8%)			13 (72.2%)	18

Scholarship:

Prof. Work	Peer Review Present.	Prof. Work, Peer Review Present.	Peer Review Pub.	Prof. Work, Peer Review Pub.	Peer Review Present. & Pub.	All	Total
1 (5.6%)	1 (5.6%)			2 (11%)	7 (38.9%)	7 (38.9%)	18

The composite for promotion to the two faculty ranks indicates that the success rate is lower for promotion (72%) than it is for reappointment (97.4%). It is an arduous task for faculty to

demonstrate, a year before the request for promotion, that they are exhibiting teaching, service, and scholarship at the rank to which they seek promotion. In a sense, faculty seeking promotion must be exceeding the expectations for the rank they currently hold in teaching, service, and scholarship (see Table 8). Overall, 94.4% of the faculty seeking promotion had Assessment of Teaching scores of 4.0 or higher; average GPA (50%) within the acceptable range for the School of Education; 67% had at least administration observations, and 94.4% had at least peer observations. In the area of teaching quality, 77.7% had student advising, 94.4% were involved with curriculum development, 94.5% indicated innovative teaching, and 72.2% had all categories covered. Service was certainly distinguished, since 100% had service in at least three levels and 72.2% had service at four or more levels.

In the area of scholarship, 100% of the candidates for promotion had some form of peer scholarship, but in three of the four cases in which faculty were denied promotion, it was due to lacking any or adequate publications. If a faculty member provided a self-assessment of his or her research agenda, including ways to improve future scholarship, reviewers tended to offer encouragement and prodding to produce more research when they next sought promotion.

Conclusions

Based upon the research done in this study, the success of a faculty member's application for reappointment and/or promotion hinges on providing a dossier that contains the following: candidate evaluations that average at least 4.0 or higher; an average GPA that is not higher than 3.5 for graduate courses and 3.25 for undergraduate classes (the current standard used in the School of Education); both peer and administration observations and evaluations; evidence of curriculum development, student advising, and innovative teaching; both peer-reviewed conference presentations and peer-reviewed publications; and service at the community, professional-organization, school, and university levels.

The current reappointment and promotion process, however, is flawed in several ways. First, there is no standard rubric by which the evaluators can determine whether a faculty member deserves to be reappointed or promoted. The *Faculty Policies* serve as the guide to determining the review; but since there is no actual template to follow, inconsistencies hinder reviewers' objectivity. The data accumulated for this research demonstrate that in the teaching area, faculty do not always include peer and administrative observations, have GPAs higher than the university standard (or higher than the more lenient standard of the School of Education), and do not provide evidence for all items in the Other Teaching category (curriculum development, advising, and innovative teaching); yet in most cases they are reappointed. Review of promotion requests is more consistent in expecting faculty to demonstrate that they meet all the requirements. Second, while it is widely known that teaching is the most important area of the review, scholarship appears to be the category that prevents faculty from succeeding in the review, especially in terms of promotion. However, there is an inconsistency when faculty are reappointed, even when their scholarship does not meet the requirements stated in the *Faculty Policies*. Third, even though the *Faculty Policies* state that the service requirement is about both quantity and quality of service, there is no process for verifying, and no expectation of verifying, the quality of the service.

The inconsistencies of the reappointment and promotion process can be addressed in several ways. First, a process is needed for guiding faculty in preparing for reappointment and/or promotion. This can be accomplished if the leaders in the school—which often includes faculty at the

Professor rank, Course or Regional Leads, Program Leads, Department Chairs, or Dean—volunteer to mentor faculty in preparing their dossier for reappointment and/or promotion. Two years before the faculty member seeks reappointment and/or promotion, the mentor should begin to work with the individual to help prepare the dossier. Second, the university should move from using a hard-copy dossier to utilizing an eDossier. In populating the eDossier, faculty would benefit by having a template to follow, and evaluators would follow a rubric in assessing the eDossier. Within the parameters of the *Faculty Policies*, a weighted system should be developed in order to provide consistency of the evaluation. Third, as long as the Faculty Policies require a certain level of competency for scholarship, a definitive practice is needed for determining whether the reappointment of faculty should be delayed or denied if this requirement is not met, or if the promotion should be denied. Fourth, a process for determining whether faculty service is at the level of quality stated in the *Faculty Polices* needs to be developed. This may entail having the Faculty Senate and the Office of the Provost determine a process for faculty to use to verify the quality of their service. Finally, consistency is needed in using GPA guidelines, which may entail approving new guidelines or requiring all schools to adhere to the current university-approved GPA guidelines. In the meantime, for the School of Education, its faculty need to revisit its use of Mastery Teaching in order to at least bring it into closer compliance with its own guidelines for GPA.

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Graduate Education

Graduate Education: What Matters Most?

Marilyn Moore, B. Charles Tatum, and Ismail Sebetan

Abstract

Graduate education is guided by regional accreditation, professional organizations, institutions of higher learning, and educational research. We propose guidelines for developing graduate programs of excellent quality, depth, and mastery. Tools for developing excellent curricula, and methods to support superior faculty are shown. Graduate courses require rigorous assessment to ensure high level learning outcomes are met. Excellent teaching and learning also require adequate support of technology, lecture/lab facilities, library services, and student support. We provide a template for course syllabi that demand intellectual rigor, and a roadmap for achieving these necessary components of high-quality graduate education.

Introduction

This paper addresses issues related to graduate education and offers suggestions about how best to design graduate education programs. Perhaps the clearest statement on the defining characteristics of graduate education comes from the Western Association of Schools and Colleges (WASC). According to this accrediting agency, "Graduate education necessarily entails greater depth, sophistication and mastery than is required for undergraduate learning" (WASC, 1988, p. 29). The WASC revised *Handbook of Accreditation* (WASC, 2001) does not directly address the defining characteristics of graduate education, so the 1988 statement remains a cogent description of what a graduate institution should aspire to. Because graduate education requires great depth, sophistication, and mastery, institutions of higher learning must provide policies and resources to support this higher level of learning. Previous articles (e.g., Mossavar-Rahmani et al., 2009; Tatum, Hoban, & Hazzard, 2000; Tatum, Hoban, Hazzard, Serdyukov, & Blake, 2002) have addressed the issue of how graduate programs differ from undergraduate programs and how graduate programs can meet the WASC criteria. The current article uses these previous reports as a springboard for further discussion of a broader set of issues and concerns regarding graduate education.

The goals of this article are focused on the following issues: (a) how to prepare graduate faculty to provide high quality teaching, (b) how to improve academic quality of different graduate programs, and (c) how to respond to the professional needs in graduate programs. The article will also clarify the appropriate qualifications and educational/professional experiences and reasonable scholarship activity needed of faculty who will be approved for teaching graduate courses.

Trends in Higher Education

As early as the 1950s, Horner (1959) reported a problem of growing concern in graduate education. It was the tendency to merge undergraduate and graduate students in the same courses. He

contended that unless college and university administrators examined the mixed course, the label *graduate education* would become a misnomer.

During the 1960s, student unrest fueled demands for relevancy. Initially, institutions of higher education responded with issues of relevancy brought by students. At the end of the twentieth century, higher education was important for acquiring workplace skills, especially among persons of the middle class (Angel, 2006; Millett, 2002).

In the twenty-first century, higher education's purpose continues to be defined by institutional boards of trustees, state and federal governments, and accrediting agencies that seek to influence the standards movement (Burke, 2005). "Standards are now an active aspect of every academic discipline and influence the higher-education offerings of nearly every major area" (Angel, 2006, p. 468). Curriculum areas continue, however, to be affected by issues of multiculturalism, diversity, and globalization.

Forces that Influence Higher Education

According to Diamond (2008), in addition to globalization and accrediting agencies, major changes in college curriculum have been brought about by the changes in student population and technology-based teaching and learning. While technology increases the instructional options available to faculty, technology has a negative impact on two other areas: institutional budgets and the way in which students study and learn.

Impact of Evaluation on Graduate Curricula

Dezure, Lattuca, Huggett, Smith, & Conrad (2002) report that evaluation methods, which have shifted from content to competencies, are having an impact on both graduate and undergraduate curricula. While multiple-choice tests are still widely used, new evaluation methods promote higher-order critical thinking skills and student competencies. Examples of these evaluation methods include self-assessments, student portfolios, student journals, case studies, simulations, poster sessions, group projects, and technology-based innovations. The results of these assessments are being used to improve programs and for accreditation purposes.

Graduate and Undergraduate Education

Typical Student-Applicant Qualifications and Selection

In general, graduate institutions should require that all students accepted to graduate education meet one or more of the following minimal requirements:

> Hold a baccalaureate degree from a regionally accredited undergraduate institution, and have a minimum grade point average (GPA) no lower than 2.5 on a 4-point scale (students with less than a 2.5 GPA can be admitted on probationary status, but should not be allowed to continue as students if they do not maintain a 3.0 GPA), or
> Have a GPA of 2.75 or higher in the last 90 quarter units, or
> Have a GPA of 2.0 to 2.49 and have satisfactory scores on the GMAT (e.g., 550 or higher), GRE (e.g., 480 or higher verbal or 570 or higher quantitative), Miller Analogies Test (e.g., 408-413 or higher) or approved standard program-specific exam, or

Have completed 13.5 quarter units of graduate level course work with grades of "B" or better at a regionally accredited institution.

Applicants who are within six months of completing a baccalaureate degree may be eligible to apply under a "conditional admissions" status, but they should not begin taking graduate-level courses until proof of completion of the baccalaureate degree is provided. Some graduate programs may require a higher GPA for admittance than the standard 2.5, and other programs may have additional entrance requirements, such as letters of recommendation, personal interviews, and program prerequisites.

Typical Graduate Curricula

Dezure et al. (2002) define curricula as "goals for student learning (skills, knowledge and attitudes); content (the subject matter in which learning experiences are embedded); sequence (the order in which concepts are presented); learners: instructional methods and activities; instructtional resources (materials and settings); evaluation (methods used to assess student learning as a result of these experiences); and adjustments to teaching and learning processes, based on experience and evaluation" (p. 1).

The curricula for graduate-level courses contain the following general design features that distinguish graduate from undergraduate courses (Tatum et al., 2000; Tatum et al., 2002). These distinctions are not absolute, and not every program contains all of these features. Most programs should adhere to the majority of these specifications, however. Graduate level programs contain:

Highly specialized courses and topic areas. Undergraduate courses often contain specialized courses and topics, but these are foundational, entry-level courses that do not include the depth of graduate-level courses.

Course content that involves greater depth than similar titles at the undergraduate level.

Courses that require greater judgment, analysis, and critical thinking skills than their undergraduate counterparts.

Higher levels of writing skill (in form, style, and content) than are required at the undergraduate level.

A greater emphasis on the application of knowledge, skill, and leadership (through fieldwork, practica, workshops, etc.) rather than mere mastery of course content, which is more typical of undergraduate programs.

Original research (or projects) required in capstone or portfolio courses, as opposed to literature review or summary projects found at the undergraduate level.

More extensive use of library resources and literature than is required of undergraduates.

A greater emphasis on research skills and research-based decision making that is beyond the capabilities of most undergraduate students.

A high level of independent work outside the classroom, compared to the undergraduate learning environment.

In adherence with the Carnegie Unit standard (Harris, 2002), classes should be scheduled to meet a minimum of 40 classroom hours. This formula does not readily apply to online classes, but the workload for online classes can approximate that of on-site classes if the in-class meetings are replaced with additional online activities (e.g., threaded discussions, online chats).

Examples of Assessment of Student Academic Work

Graduate courses require a more rigorous evaluation process than do undergraduate classes. This rigor is measured in different ways (e.g., rubrics, examinations, portfolios), depending on the course or program. In general, graduate programs attempt to assess the following at a more advanced level than undergraduate programs (Council of Graduate Schools, 2005a, 2005b).

> Quality of written work: Graduate students should be held to a higher standard of content depth, critical thinking, use of primary sources, etc.
> Originality of research or other projects: Graduate students should be required to be more creative and go beyond summaries of the existing literature. Graduate projects often involve empirical research (surveys, observational studies, experiments, interviews) and novel applications of materials and ideas.
> Practical skills: Many programs are professional in nature and should require graduate students to gain competence in skills required of a practitioner (e.g., counseling, computing, management, field experiences, and clinical and laboratory experiences).
> Mastery of specialized content: Graduate students should be held to a higher standard of course mastery and be required to learn highly specialized material.
> Critical thinking ability: Graduate students should be required to learn more than just course content. They should be asked to think about the course topics and material and draw inferences, project trends, deduce implications, and understand the relevance of what they learn (Allen, 2004).

In general, graduate programs should use one or more of the following learning products: a thesis (or capstone project), a program portfolio, and course grades.

> A thesis is an original research work of a sufficient volume (e.g., 50–100 typed pages) that explores a critical issue in the field of study. It typically contains student-generated research data, a theoretical foundation, explicit references to scholarly sources, conclusions based on logic and data, and recommendations for further study.
> A program portfolio is a collection of major artifacts from the student's course work that is subjected to a final evaluation (Moore, 2010).
> Course grades are calculated in a traditional way, but the level of performance required from graduate students should be higher than what is expected for undergraduates.

These learning products should be evaluated by objective criteria (both quantitative and qualitative) established by the course instructors and approved by the department and school.

Requirements for Graduate Curricula

During the first decade of the twenty-first century, significant changes have occurred in higher-education curricula, with an emphasis on additional education about teaching and learning. Studies report a gap between the focus of doctoral programs and the work actually expected of those who hold the doctorate (Barnett & Coate, 2005; Gaff, 2002). Graduate curricula go beyond skills and learning outcomes and include student attributes, student-centered learning, and life-long learning.

Intellectual Inquiry

One type of intellectual inquiry is naturalistic inquiry. Naturalistic inquiry plays an important role in graduate education, especially in physical and social sciences curricula. In the design of a study, Lincoln and Guba (1985) state that prior to an inquiry, the investigator is obliged to spell out how the study will be conducted and indicate problems that may be encountered and what will be done about them. Moreover, the graduate student needs to demonstrate the trustworthiness of the inquiry.

Experiential inquiry is another type of intellectual inquiry. Relationships are an important part of graduate education at most universities. Programs in counseling psychology, human behavior, and special education, for example, encourage the exploration of interpersonal and intrapersonal relationships in the development of knowledge, skills, abilities, and dispositions. Candidates must learn and demonstrate self-understanding, self-awareness, and self-reflection as necessary components of communication, cooperation, and collaboration with clients, colleagues, and members of professional organizations and the community. Consequently, experiential inquiry is a necessary element in the success of candidates in given professions. Senge, Kleiner, Roberts, Ross and Smith (1994), as well as Senge (1990), have written extensively about the value of systems thinking, personal mastery, and shared mental models as tools to enhance personal and organizational effectiveness—tools that are used in many graduate courses.

In graduate education, experienced students are able to specify these elements of a naturalistic and experiential inquiry, as compared to undergraduate students, who lack the background and experience in the rigors of research.

Innovations

Faculty learning communities (FLCs) are an innovation in higher education that assists faculty in their aspirations for professional growth through collaboration, reflection, and active learning. Cox (2005) offers the following definition of faculty learning communities:

> A faculty learning community is a cross-disciplinary faculty and staff group engaging in an active, collaborative, yearlong program with a curriculum about enhancing teaching and learning and with frequent meetings and activities that provide learning, development, inter-disciplinarity, the scholarship of teaching and learning and community building. (p. 1)

A topic-based FLC is yearlong and has a curriculum designed to address a teaching and learning need, issue, or opportunity. The result is a work of scholarship: a white paper, conference presentation, research study, or peer-reviewed publication. Changes to programs and courses are also outcomes of topic-based FLCs. Cohort-based learning communities address the teaching, learning, and development needs of an important cohort of faculty or staff that has been particularly affected by the isolation, insulation, or fragmentation of the institution. Palmer (1998) states, "By privatizing teaching, we make it hard for educational institutions to become more adept at fulfilling their mission" (p. 144).

Learning Outcomes

One of the hallmarks of graduate education is the endeavor to produce the highest learning experience possible. This article is concerned primarily with graduate learning outcomes, but it is instructive to compare the difference between graduate and undergraduate education to gain a sense of what is meant by higher levels of learning. In general, the course descriptions, goals,

objectives, and learning outcomes in the graduate courses specify more complex types of learning than do undergraduate courses. Appendix A contains a generic graduate course syllabus. Course descriptions and learning outcomes in Appendix A indicate a higher level of learning for graduate courses, as contrasted with undergraduate courses. The types of learning in graduate courses are in accordance with the higher levels of Bloom's (1956) taxonomy, such as applying, analyzing, evaluating, and creating; see Dalton and Smith (1986) and Appendix B.

Technology and Curricula

In order to use technology effectively, instructors need to examine the curricula and learning goals. After such an examination, appropriate technologies to support these curricula and learning goals can be chosen (Svinivki & McKeachie, 2011).

Bloom's (1956) taxonomy or the revised version of educational objectives (Dalton & Smith, 1986) can be used to make the connection between curricula and technology tools; see Appendix B for the revised Bloom's Taxonomy. In graduate education, higher-level learning of Bloom's taxonomy involves skills such as analyzing, evaluating, and synthesizing. The basis for selecting technology can be in accordance with this taxonomy of objectives (Svinivki & McKeachie, 2011).

In addition, to engage students and avoid placing students in a passive learning mode, activities need to be incorporated that engage students in task performance and reflection. For example, an online discussion board or blog could be used to extend a discussion of content presented in a class session (Svinivki & McKeachie, 2011).

The curricula for a particular discipline, as well as the learning goals, will affect decisions about which technologies are appropriate (Svinivki & McKeachie, 2011).

Graduate Faculty

Each program within the graduate school should ensure that the course instructors for graduate-level classes are well qualified. The following recommendations are based on several sources (Council of Graduate Schools, 2007; Darling-Hammond & Bransford, 2005; Palmer, 1998; Svinivki & McKeachie, 2011). In general, instructors, both full-time and part-time, should be screened and selected with the following attributes and conditions in mind:

> They possess a terminal degree (or equivalent) in the field of study.
> They reflect a diverse background.
> They demonstrate an ability to link theory and practice.
> The have appropriate background and experience through research, scholarly publications, and conference participation.
> They have been interviewed by other faculty and students.
> They have been provided with an orientation on how to teach graduate students in ways that are different from teaching undergraduate students (e.g., more emphasis on quality, originality, and critical thinking).
> They have been provided opportunities to become involved in academic discussions and experiences.

More specifically, graduate faculty designated to teach, supervise, mentor, advise, and direct graduate projects should meet the following criteria:

Graduate Faculty teaching graduate courses should:

o   Hold a terminal degree or equivalent in their discipline from a regionally accredited college or university or have evidence of professional achievement equivalent to the terminal degree.
o   Have a minimum of two years' teaching experience demonstrating pedagogical and methodological skills to effectively deliver advanced courses that result in achievement of program learning outcomes.
o   Show evidence of completion of some form of faculty orientation sponsored by the institution.
o   Show evidence of participation in workshops or training sessions on enhancing knowledge of and developing skills in the use of various updated technologies used in academic classrooms.
o   Show competency in appropriate writing style.
o   Be prepared to teach a diverse population of students.

In addition to the above, those teaching research courses should:

o   Complete all required training and show evidence of mastery of the principles of ethics in human subjects in research.
o   Be familiar with the procedures of the Institutional Review Board (IRB).
o   Show competency in research design, technology (Internet literacy, Internet references), and statistical analysis used in research and literary analysis and criticism.

And those teaching supervisory or clinical courses should:

o   Hold a state and/or nationally recognized and certified professional license, certification, or credential.
o   Have a minimum of two years of supervisory and clinical experience.

Resources

Faculty Support

This report recommends the resources that will be needed to assure a quality graduate education. These resources should be continued and enhanced in the future. To assist graduate faculty who provide high-quality teaching, the university should provide adequate support, which includes:

Technology. All faculty should have access to updated computers in their office, classroom, and lab, and other media support such as slide/overhead projectors, PowerPoint software, TV/VCR, and classroom access to the Internet.

Facilities. Providing labs with updated equipment will have positive impact on the quality of teaching and subsequently the different academic programs for faculty and students. Providing appropriate facilities will increase credibility of the programs and will raise the status of the university among the instructors, students, and the community.

Library services. Faculty should establish electronic reserves for their classes as well as select access to their favorite journals, all to be available on the Library Website. The Library provides faculty training on using technology and multi-media to support course curricula. Also, basic library orientations should be given on a regular basis.

Administrative support. Faculty need sufficient staff support, faculty development funds, released time, and grant support.

Student Support

Student orientation and self assessment. Prospective students need to be provided with enough information about learning expectations to determine if the program they are contemplating will meet their needs and future plans.

Admission and student advising. The admissions advisor should respond to queries, set information appointments, explain the university admissions process, and advise students to discuss program details with the lead faculty.

Conclusions

As noted by Mossavar-Rahmani et al. (2009), we live in a rapidly changing, global, knowledge-based, highly diverse society. The demand is growing for citizens and employees to have advanced skills, cognitive capacities, and broad educational experience beyond what is generated at the undergraduate level. The current article offers a set of guidelines for developing high-quality graduate programs. Through adherence to the suggestions outlined herein, programs can be developed that follow the standards set by regional accreditation agencies, professional organizations, other institutions of higher learning, and the best practices of educational research. Developing innovative and relevant educational experiences at the graduate level is vital to meeting the demands of the new global economy and shaping the future for a more productive and integrated populace.

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Appendix A
Standard Course Syllabus

Course: [Number and Name of Course]
Last revised: [Insert date] by [insert name of lead faculty]
Textbook: [Required and suggested textbooks]

Course Prerequisite(s)
[Copy *prerequisite* (if any) from Course Description in catalog]

Major Course Goals
[General learning outcomes, such as the ability to think critically, interact with professionals, communicate with the public, and/or write coherently. *Recommended:* At the conclusion of this course, the student will be able to:]

Course Description
[Copy from *Course Description* in catalog, or revise if necessary]

Learning Outcomes

[Specific learning outcome tied to program outcomes. *Recommended:* Upon successful completion of this course, students will be able to:]

Course Requirements

[*Example:* "Students are expected to attend all class sessions, participate in all class activities, complete exams as scheduled, and turn in all assignments on time. Failure to do so may result in the loss of points."]

Recommended Course Grading

[In accordance with university policy. *Example:*]

A	96–100	B+	87–89	C+	77–79	D+	67–69
A–	90– 95	B	84–86	C	74–76	D	64–66
		B–	80–83	C–	70–73	D–	60–63

Grading Factors

[Each instructor is responsible for identifying *several* specific grading components and the weight to be assigned to each component. The following are examples only and are not meant to be all inclusive:]

1. Weekly quizzes
2. Midterm exam(s)
3. Homework assignments
4. Participation in classroom or chat-room discussions
5. Participation in threaded discussions (online only)
6. Short papers, term papers, and the like
7. Individual and/or group projects (written and possibly oral presentation)
8. Case-study analysis and discussion
9. Field experience report
10. Final exam (comprehensive)

Definition of Grades

Graduate Courses	
A	Outstanding Achievement
B	Commendable Achievement
C	Marginal Achievement
D	Unsatisfactory
F	Failing

[The following are university options.]

I–Incomplete. A grade given at the discretion of the instructor to a student who has completed a sufficient number of class sessions but is unable to complete the requirements of the course because of *uncontrollable* and *unforeseen* circumstances. If an instructor decides that an "Incomplete" is warranted, the instructor should convey the conditions for removal of the "Incomplete" to the student in writing.

W–Withdrawal. Signifies that a student has officially withdrawn from a course.

Academic Dishonesty

Academic dishonesty takes many forms, such as cheating on exams, misrepresenting one's work, or defrauding the academic process. Plagiarism is a serious form of academic dishonesty. Plagiarism is the presentation of someone else's ideas or work as one's own. Students must give credit for any information that is either not the result of original research or not common knowledge. If a student borrows ideas or information from another author, he/she must acknowledge the author in the body of the text and on the reference page. Students found plagiarizing are subject to the penalties outlined in the policies and procedures of the university. The following is one of many websites that provide helpful information concerning plagiarism for both students and faculty: http://www.indiana.edu/~wts/pamphlets/plagiarism.shtml

Ethics

Ethical behavior in the classroom is required of every student. [The course should identify ethical policies and practices relevant to course topics.]

Technology

Students are expected to be competent in using current technology appropriate for this discipline. [Such technology may include word processing, spreadsheet, and presentation software. Use of the Internet and e-mail may also be required.]

Diversity

Learning to work with and value diversity is essential in every class. Students are expected to exhibit an appreciation for multinational and gender diversity in the classroom.

Civility

As a diverse community of learners, students must strive to work together in a setting of civility, tolerance, and respect for each other and for the instructor. Rules of classroom behavior (which apply to online as well as on-site courses) include but are not limited to the following:
Conflicting opinions among members of a class are to be respected and responded to in a professional manner.
Side conversations or other distracting behaviors are not to be engaged in during lectures, class discussions, or presentations.
There are to be no offensive comments, language, or gestures.

Students with Disabilities

Students seeking special accommodations due to a disability should submit an application with supporting documentation, as required by the university. Instructors are required to provide such accommodations if they receive written notification from the University.

Library Electronic Resources
[Provide information about access to databases of full-text articles from scholarly journals.]

Selected Bibliography
[List books, articles, and websites that support the course content.]

Appendix B
Elements of Bloom's (1956) Taxonomy
(as revised by Dalton & Smith, 1986)

Knowledge: Just the facts. Most people know that the Magna Carta was signed in 1066. Not everyone knows that the most recent version of the U.S. flag became official on July 4, 1960. At level one of Bloom's taxonomy, you will have to "... define, duplicate, repeat and memorize" facts, say educators Richard C. Overbaugh and Lynn Schultz. You must also be able to "... name, recite and identify," adds D. R. Krathwohl, who helped develop the 1956 taxonomy.

Comprehension and understanding. Disorganized knowledge is like a mixed-up hall closet. The second level of Bloom's taxonomy requires you to classify information into categories. You can summarize, compare, explain, and infer information using organized sets of facts, states North Carolina State University Professor Richard W. Slatta. At this level, you also "... interpret, outline, discuss, predict, translate and describe ..." say Joan Dalton and David Smith, authors of "Extending Children's Special Abilities—Strategies for Primary Classrooms."

Application. When you link batteries and wires to form a circuit or follow a recipe to make a cake, you are applying knowledge. This third stage of Bloom's taxonomy is its own assessment tool. If you complete a task, you have acquired a set of facts and understand how to use them to achieve an objective. At this level, you must be able to "... solve problems, show, use, illustrate and examine ..." information, Dalton and Smith say.

Analysis. Analysis is "breaking material into constituent parts, determining how the parts relate to one another ... through differentiating, organizing, and attributing," Slatta states. When you dissect a crayfish and compare its body structures to a mammal's, you are analyzing information. At this stage, you discuss exceptions to rules, form hypotheses, design experiments, and identify assumptions made by the authors. You also examine whether source materials and author credentials are valid.

Synthesis/creation. Bloom's student, Lorin Anderson, revised Bloom's Taxonomy in 2001. Synthesis was renamed "creating" and moved to the top of the learning pyramid. When you create, you use your existing knowledge to make, design, or write something entirely new. This includes making a new recipe by combining principles of nutrition and chemistry with measurement or composing a song. Dalton and Smith add that you also "... invent, predict, plan, construct, imagine, propose and formulate" at this stage.

Evaluation. When you critique a play or musical performance, you are evaluating. This requires you to state what makes the work entertaining, and what its strengths and weaknesses are, when compared to other works. Ask yourself what changes you would make to improve the piece. When you listen to evidence, make observations, and draw conclusions, you can take action with

confidence. At this stage, Dalton and Smith say, you debate points, select criteria to use in evaluations, justify a chosen position on an issue, and make recommendations. (Smith, 2010, paragraphs 2–7)

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An Interdisciplinary Graduate Course: Raising the Bar to Address Quality Student Learning and Professional Development

Larry Froman

Abstract

The need to design innovative and relevant interdisciplinary graduate courses is discussed. The author considers the challenges of interdisciplinary graduate education and then addresses the content, design, and instructional approaches of a newly developed course entitled "Psychological Issues in the Workplace (PIW)." Examples on both conceptual and applied levels are provided to illustrate how the course supports quality student learning and professional development within the context of Towson University's Graduate Programs in Human Resource Development and Counseling Psychology.

Introduction

Interdisciplinary graduate programs and courses designed to support them have historically been met with resistance within the boundaries of traditional academia. These boundaries can be characterized in ways similar to those of bureaucratic institutions that foster narrow and turf-protected structures that serve to maintain and perpetuate the operations of organizational units. In the case of academia, these structures are manifested in the ways departments and colleges often operate: creation of turf-silo disciplinary boundaries that fail to address the inherent cross-disciplinary realities of professional roles. Consequently, students are often ill prepared to address the emerging challenges surrounding their fields.

This paper will consider such challenges in the context of two Master of Arts programs at Towson University: Human Resource Development (HRD) and Counseling Psychology. As the founder and former director of our HRD program, the present researcher often encountered turf-silo issues as the design of the program curricula moved forward. Given that the researcher's department base was in Psychology, a decision was made by university administration to "house" the program there. While having Psychology and the College of Liberal Arts as the home base for the program has worked reasonably well, it remains necessary to raise the bar of curriculum relevance and professional core competencies through active working relationships, partnerships, and teamwork with other departments and graduate programs (e.g., Applied Gerontology, Business Administration, Clinician to Administrator, Communication Management, Counseling Psychology, Educational Leadership, Health Care Management, Occupational Science, Social Science, and Women's Studies).

A newly developed course, "Psychological Issues in the Workplace" (PIW), is presented as an example of how important themes relevant to Towson's HRD and Counseling Psychology programs can be addressed in ways that support effective teaching, quality student learning, and the professional development goals of the students.

Challenges of Interdisciplinary Graduate Education

An innovative program that provides inspired leadership for the development of interdisciplinary graduate education is the *Preparing Future Faculty* program, sponsored by the Association of American Colleges and Universities and the Council of Graduate Schools. Funding support is provided by The Pew Charitable Trusts, the National Science Foundation, and the Atlantic Philanthropies. The program is dedicated to the goal of "helping higher education play its proper role in a twenty-first century global society" (Applegate, 2002, p. 2). To help achieve this goal, the program is committed to helping current and future faculty connect their work to other disciplines and to "see with new eyes" the possibilities for the "creation of a more healthy, civil, humane, and participatory society" (Applegate, 2002, p. 2).

Critics of traditional graduate education have pointed to the role of faculty cultures and reward systems that tend to reinforce excessive emphasis on narrow areas of specialization; this specialization inhibits, if not discourages, collaborative teamwork to address socially relevant issues and problems in society (Nerad, 2004; Reich & Reich, 2006; Rhoten & Parker, 2004). Such specialization has also limited the career options of graduates (Golde & Gallagher, 1999).

Changing Faculty Cultures and Reward Systems

The starting point for change is typically found in leadership; and in the academic community, that leadership need not and should not depend on a top-down, hierarchical-driven approach. Rather, consistent with well-established principles of faculty governance, an expanded form of leadership capacity based around faculty-driven initiatives, with the support of department chairs, college deans, provosts, presidents, and other stakeholders, is well-positioned to initiate the change process.

A second lever of change can be found in the structural organization of universities. Based upon traditional disciplinary boundaries, university structures typically reinforce narrow and overly specialized courses and research. Functioning as rigid silos, they are set up—intentionally or not—to block flexible, innovative, and team-oriented faculty relationships. Such structures take on the role of "master," rather than "servant," of the university's overall mission in society. Therefore, it is this author's recommendation that a more flexible approach be taken in how universities are organized. For example, a *matrix-type structure* used by many business organ-izations can support ad-hoc, temporary projects that bring together people from various departments with a diverse array of skills and perspectives to address important and complex issues (Robbins & Judge, 2009). A similar approach can be used by universities; that is, ad-hoc structures (e.g., curriculum development teams) consisting of faculty from various disciplines can be formed to design new programs, curricula, and research projects. Indeed, some twenty-five years ago, the present researcher served as chair of just this type of faculty group that developed Towson University's current graduate program in Human Resource Development.

A third lever of change is the all-important issue of the university reward system. That reward system has served to reinforce narrow areas of specialization in ways that impede efforts toward cross-disciplinary collaboration. There is evidence, for example, that faculty beginning their academic career, while acknowledging the potential for meaningful and socially relevant interdisciplinary research, experience conflict between the promise presented by this path and the traditional gateways to obtaining tenure and promotion (Rhoten & Parker, 2004). Such findings beg the question as to why such a disconnect exists between traditional reward systems and cross-disciplinary collaboration. Part of the answer might lie in what some respondents to Rhoten

and Parker's surveys and interviews saw as a potential threat to their career advancement: they were perceived as operating on the fringe of their academic discipline. The respondents, however, felt that this career risk was worth taking if it meant that they would have opportunities to deal with the "core problems of society" (p. 2046). It is the present author's view that changes in the reward system are called for to encourage faculty to move across their disciplinary boundaries in ways that connect being on the "fringe" with the promise of innovative and socially relevant problem solving.

Course Design for "Psychological Issues in the Workplace" (PIW)

Good Work

In designing the PIW course, the starting point for this author was to infuse chosen topics with an underlying set of core values that addresses the ethical-moral imperative of "doing well by doing good." The intent was to provide a quality learning experience for students in ways that prepare them not only to have the core competencies to succeed in their chosen fields, but to do so in a way that addresses the theme of "good work." Under the direction of Howard Gardner of Harvard University, the Good Work Project, launched in 2001, has been researching the ways in which leading professionals in a variety of domains carry out good work. "Good work" is defined in two interrelated ways: (a) work that is deemed to be of high quality and (b) work that is socially responsible (Gardner, Csikszentmihalyi, & Damon, 2001). In designing the course, the author was guided by how these two themes could be integrated into a course for human resource, counseling, and other professionals interested in the changing workplace and its impact on the workforce.

Some Key Questions

The conceptual framework and design of the PIW course were guided by the following questions:

1. As a strategic partner with management, how can human resource practices infuse business decision making with ethically humane principles and practices?
2. In what ways do human resource management/development (HR) and counseling psychology connect when considering issues related to job loss and insecurity?
3. How can effective workplace stress management and work-life balance initiatives be designed to have a positive impact on employee health, morale, and productivity?
4. What relationship do positive emotions have with quality of work life, job satisfaction, motivation, and job performance? What implications do these issues have for counseling psychology?
5. What human resource and counseling issues are presented in the context of workforce diversity management?
6. In what ways do human resource management/development and counseling psychology connect when considering the issues related to organizational and client change?

Core Competencies of HR Professionals

The field of human resource management and development has evolved over the years. HR managers were often seen as occupying largely administrative roles in their organizations, dealing with such functions as hiring, training, salary, benefits, and employee relations.

Adherence to these traditional roles has led to the perception that human resource practitioners were not critical to the overall success of the organization. In this new and constantly changing business environment, this perception has intensified into what some have referred to as a "crisis of confidence and credibility," where HR functions are viewed as costs to be minimized (Hansen, 2002; Becker & Gerhart, 1996). In response to this "crisis," academic HR programs, working with the Society for Human Resource Management (SHRM), have identified those capabilities—often referred to as core competencies—that HR professionals need to forge strategic partnerships with management to sustain value for their organizations.

The SHRM has made significant progress towards overcoming the aforementioned negative perceptions with a relevant and forward-looking set of competencies for HR professionals. These competencies, also referred to as "HR Disciplines" (n.d.), can be linked directly to the questions just listed. Among the SHRM core competencies/disciplines related to these questions are strategic alignment of HR with business goals and practices, ethics and sustainability, quality of work life enhancement, managing workforce diversity, and change management.

PIW Course Topics

1. Doing well by doing good: The ethical perspective. Research studies have shown that when organizations integrate ethical principles into their culture and practices, (e.g., honesty, integrity, trust, investment in workforce development, and corporate social responsibility), they can achieve positive performance outcomes and competitive advantage (Aupperle, 2008; Baucus, Norton, Baucus, & Human, 2008; Cameron, 2003; Smith, 2007; Tatum & Eberlin, 2007; Urbany, Reynolds, & Phillips, 2008; Wooten, 2008). It is the present author's view that current and future applied graduate programs in human resources development (HRD) and related disciplines integrate ethical issues grounded in empirical research into their core curricula.

2. Managing job loss and insecurity. This topic and the accompanying research studies are of interest to not only Towson HRD students, but to its counseling psychology students as well. Among the issues covered here are the relationship of unemployment to mental and physical health (Bartley, 1994; Linn, Sandifer, & Stein, 1985; Waters & Moore, 2002), anxieties related to job insecurity (Canaff & Wright, 2004; Holm & Hovland, 1999; Probst & Brubaker, 2001), and reemployment strategies (Davies, 1996; Guindon & Smith, 2002; Vinokur, Schul, Vuori, & Price, 2000; Westaby, 2004). These articles provided a context for some interesting analyses from the cross-disciplinary perspectives of Towson's HR and counseling students. Most noteworthy are the learning opportunities presented when students can expand their mindsets and overcome some of their pre-existing biases fueled in part by their training. For example, the learning of the HR students is enriched when they listen to counseling students relate some of the articles listed above to their own internship experiences, where job loss and insecurity were presented within the context of client mental-health issues. Similarly, the learning of counseling students is enriched with the perspective of HR students' discussing practical strategies related to reemployment and career development, such as training and retraining, networking, and other job-search strategies.

3. Managing workplace stress and work-life balance. The current landscape of the workplace, fueled by the severe economic downturn, increasing workloads, and related productivity pressures, has created an array of stress-related issues for workers and their families. Topics related to these issues that are covered in the PIW course are job insecurity, global competitive pressures, increased productivity and customer service issues, co-worker conflicts,

and technology-driven change. A sample of articles listed in the course bibliography provides insights and research evidence that enrich the learning process: Job burnout (Angerer, 2003), workplace correlates of morale and depression (Britt, Dickinson, Moore, Castro, & Adler, 2007), stressors experienced by female managers (Portello & Long, 2001), the changing nature of work and stress (Schabracq & Cooper, 2000), and customer aggression (Grandey, Dickter, & Sin, 2004). Additional issues covered are workplace aggression and harassment (Grandey, Kern, & Frone, 2007; Lewis, Coursol, & Wahl, 2002; Rospenda, Richman, & Shannon, 2006), supervisory aggression (Dupre & Barling, 2006), interpersonal aggression in work groups (Glomb & Liao, 2003), and workplace bullying (LaVan & Martin, 2008; Salin, 2003).

With the anxieties and pressures felt by workers to meet increasingly demanding expectations regarding workload, productivity, and customer service, the issue of work-life balance has presented major challenges. This topic, as with the topics of job-loss insecurity and workplace stress, provides some interesting and meaningful cross-disciplinary learning opportunities for the HR and counseling graduate students. From an HR lens, work-life balance is typically approached within the context of employee benefits, management practices, and policies such as flextime and telework options, while the counseling lens tends to focus on the psychological context, considering such factors as how the balance issue, or lack thereof, impacts on the quality of life of workers and their families. As the discussion and analysis of these issues moves forward, the connection between these two perspectives becomes evident, as both HR and counseling students can offer each other useful ideas related to coping skills and intervention strategies, including the option of job and career changes that may be necessary to achieve a healthier balance between one's professional and personal life.

The expanding research literature on this topic is yet another indication of its importance from a business/HR, psychological, and overall societal perspective. For example, the business/HR literature provides some important insights into work-life balance as a human capital investment issue (Cascio, 2006) and a reflection of the organization's culture (Burke, 2006). Evidence supporting best practices in work-life balance are examined (Hammer, Cullen, & Shapiro, 2006; Hobsor, Delunas, & Kesic, 2001; Nord, Fox, Phoenix, & Viano, 2002), including such practices as teleworking (Golden, Veiga, & Simsek, 2006) and alternate work schedules (Tausig & Fenwick, 2001). From the perspective of individual, family, and culture, issues concerned with parental attachment, family roles, life satisfaction, and cross-cultural differences are examined (Perrone, Webb, & Jackson, 2007; Kossek & Lambert, 2005).

4. Positive emotions and workplace outcomes. The downward spiral of the U.S. economy over the past 18 months has created a cycle of fear, uncertainty, declining consumer confidence, stalled credit availability, and employer resistance to increase hiring, resulting in an unemployment rate that hovers around 9.5%—about 14.6 million people out of work, with almost half this group having been unemployed for over 6 months. How has this uncertainty, growing insecurity, and lack of confidence affected the day-to-day lives of people in the workplace, as well as those seeking employment? What role do positive emotions and related psychological processes have in helping people not only cope with economic stress and upheaval, but also open their hearts and minds to become more receptive, productive, and creative (Fredrickson, 2009)?

Driven in part by the turmoil in the current economy, organizational/workplace responses often lead to job loss and other cost-cutting measures. The reality or threat of job loss swirls around the lives of many in today's workplace, affecting the hopes and dreams of thousands of workers, their families, and their communities. With these formidable challenges facing so many, what kinds of conditions can help bring about positive change? How can workers and their

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organizations create a more positive and proactive workplace that bridges economic and human goals? The PIW course addresses these questions and through evidence-based research articles, providing HR and counseling students with insights into the practical application of positive psychology concepts to such workplace processes as employee motivation, job satisfaction, performance, leadership, and organizational change.

The capacity to be hopeful is a key starting point. It is an essential ingredient in nurturing the human spirit and providing people with emotional strength. As noted by Fredrickson (2009):

> Deep within the core of hope is the belief that things can change. No matter how awful or uncertain they are at the moment, things can turn out better. Possibilities exist. Hope sustains you. It keeps you from collapsing into despair. It motivates you to tap into your own capabilities and inventiveness to turn things around. It inspires you to plan for a better future (p. 43).

In the context of the workplace, hope has been found to support and sustain the capacity of workers to be resilient, to overcome adversity and bounce back in ways that strengthen their effectiveness (Youssef & Luthans, 2007). The capacity to be resilient in the face of adversity is a key anchor in helping people to be forward looking and take the proactive steps that can lead to a better future. However, this capacity for resiliency, coupled with a forward-looking orientation, also requires a sustained and vigilant process of seeking out new opportunities (Froman, 2010). A hopeful perspective plays a key role in enabling our antennas to be positioned outward enough so that opportunities are more likely to be noticed and pursued more readily than with less hopeful perspectives where the antennas tend to be positioned more inwardly.

In PIW course discussions, HRD and Counseling students engage each other in constructive dialogue, tapping into their respective disciplines to shed light on how hopeful, positive attitudes impact on goal-oriented behaviors.

A related sub-topic that students examine is emotional intelligence (EI), the ability to accurately perceived, access, and manage emotional cues and information (Mayer, Salovey, & Caruso, 2004). EI addresses self-regulatory processes of awareness, emotions, and motivation that enable people to make adjustments to achieve individual, group, and organizational goals. EI has also been defined as a set of competencies that promote a "cooperative combination" with intelligence (Mayer et al., 2004). As competencies, they encompass personality traits, motives, bodies of knowledge, and skills that can potentially facilitate individual achievement of positive work outcomes in such areas as job performance, career advancement, customer service, teamwork, and leadership (Dulewicz & Higgs, 2000; Goleman, 1995).

Working Smarter Model

Building on workplace applications, EI research has expanded into related areas of career assessment, counseling, and development. A Working Smarter Skills model (Kivland, 2006) provides Towson University's HR and counseling students with a useful tool to engage in self-reflection to support both their personal and professional development. See Figure 1. Students draw on their personal and professional experiences to provide examples of how these concepts can be applied in ways to support their professional development and effectiveness.

S	**Self:** understanding one's default style of emotions, strengths, limitations, values and motives
M	**Management:** ability to manage one's default style to sustain optimal performance
A	**Authenticity:** intentionally displaying honesty, integrity and transparency to build and sustain trust
R	**Resilience:** flexibility in adapting to changing situations, skills to manage setbacks and resources to overcome obstacles.
T	**Trust:** consistently meeting other's needs, hearing other's perspectives and following through on commitments
E	**Emotional Self Control:** intentionally managing disruptive emotions, actions and impulses that may interfere with individual or team performance
R	**Relationship Results:** ability to manage other's emotions from a foundation of authenticity, empathy, influence and collaboration to move others towards results.

Figure 1. *The Working Smarter Skills Model.*

Note. Definitions are quoted from "Developing Smart Workers: It's EQ not IQ that Matters," by C. Kivland, 2006, *Career Performance Strategies,* retrieved January 9, 2011, from http://www .careerperformancestrategies.com/pdf/smart_workers.pdf

As with the previous topics covered so far, EI concepts offer the students learning opportunities to forge cross-disciplinary analyses and practical applications. For example, findings relating EI to organizational behavior suggest that EI strengthens positive work attitudes and altruistic behavior (Carmeli, 2003) as well as organizational commitment (Nikolaou & Tsaousis, 2002), and affects how people handle threats to job security (Jordan, Ashkanasy, & Hartel, 2002). The HR perspective, while focused on workplace applications, has conceptual and practical relevance for the counseling students as well. For example, the EI concept offers counseling students a useful conceptual model to explore mental health issues related to client awareness, attitudes and motivation, and overall personal effectiveness. Cross-disciplinary student engagement on these EI issues can enrich the learning process.

5. Diversity Issues. In our increasingly multicultural society, it is imperative that graduate training programs in HR and counseling psychology examine diversity issues. A topic receiving increased attention in the business management and HR literature is cross-generational issues. For example, studies have examined how the "workforce gap" can be bridged in our aging society (LaMascus, Bernard, Barry, Salerno, & Weiss, 2005; Loughlin & Barling, 2001; Nyce, 2007).

One of the sub-topics related to these issues concerns the viability of workplace mentoring programs structured on older, experienced workers' being paired with younger ones. While legitimate concerns about the workforce gap are clearly justified, studies such as those cited

earlier should not lead to mistaken and exaggerated claims about age-experience factors having negative consequences for mentoring relationships. Rather, the more fundamental question should focus on identifying those factors, beyond age and experience, that can have a positive impact on mentoring relationships.

Research evidence suggests the need for better selection of mentors and better planning and design. Yet, typical mentoring programs often resort to a one-size-fits-all mindset where the tendency is to choose the wise, older, experienced sage, or the younger rising star who has exceeded all expectations of job performance. Effective cross-generational diversity management requires more creative and flexible approaches of pairing mentors and the mentored "based on potential professional and personal synergies between them that will help both parties benefit during particular stages of their careers" (Hill and Stephens, 2003, p. 337). The boundaries of such programs can be expanded to go beyond traditional coaching to include such initiatives as group brainstorming sessions on new product ideas and role-playing of stressful interactions with customers or employees. Such activities, note Hill and Stephens, "allow mentor and mentored to establish mutually satisfying relationships that lead to organizational success" (p. 337).

In course discussion of workforce gap issues and their implications for mentoring, HR and counseling students can bring their own experiences to the conversation about relationships they have observed in organizations and in other settings. An interesting example of this approach used in the course is having our students provide examples of professional and personal synergies that they have encountered in their jobs and professional experiences.

In addition to age issues, the PIW course examines gender (McCracken, 2000), disability (Ball, Monaco, Schmeling, Schartz, & Blanck, 2005), temporary workers (Feldman, Doerpinghaus, & Turnley, 1994), the digital divide (Ford & Whaley, 2003), and the need for addressing the tensions that can emerge when organizations rightly pursue the twin selection goals of good person-job fit with expanding workforce diversity.

The connection of diversity to Towson's counseling students expands into other areas beyond mentoring, to include such areas as counselor-client dynamics, relationship counseling, and cross-cultural issues.

6. The Dynamics of Organizational and Client Change. The three sub-topics discussed below – balancing stability and change, psychological aspects of the learning organization, and dispositional-situational change - are intended to provide our HRD and counseling students with conceptual insights into how change issues can be addressed on organizational, group, and individual-client levels.

Balancing Stability and Change

The kinds of organizational changes occurring in today's workplace (e.g., job cuts, downsizing, and mergers) are emotional events. Much of the literature on organizational change, however, has focused on rational-cognitive approaches, often viewing emotions in the narrow context of factors that interfere with, rather than facilitate, effective change management (Kiefer, 2002). A useful way of viewing change and stability is to recognize that while organizations need to adapt to the inevitability of change, they also need to identify and maintain those stable components of their cultures that have positive value (Leana & Barry, 2000). This dynamic process of stability interacting with change (stability-change dynamic, or SCD), as related to organizational change, can also be applied to mental-health issues faced by counseling professionals as they help their

clients identify those stable and valued aspects of their lives interacting with those factors that need to be changed.

PIW students also discuss their professional experiences in building and sustaining effective relationships by addressing such core principles as honesty, integrity, trust, open communication, and healthy conflict (i.e., respectful disagreement that can promote better communication and improved problem solving).

A useful teaching tool is to have students examine change issues they have encountered or are currently dealing with in their professional work. For example, some of our HRD students are assigned the task of assisting management with various change-management initiatives. Upon reflection and analysis of this task, students use the SCD course concept to identify those aspects of their work environments and cultures that have had and continue to have sustained positive impact on organizational outcomes (e.g., mentoring relationships, work teams, and workforce training and development initiatives). Through role-play exercises, students are then instructed to propose a plan to management that would justify a continuation of these programs, but in ways that could still be compatible with new policies, programs, job descriptions, and other change initiatives.

An integrative concept that connects HR and counseling students is the topic of overcoming resistance to change. Discussion of such factors as fear, habits, comfort zones, power, and perceived threats to job and overall life security are explored in ways that connect organizational change issues with those of mental health and improvement in personal effectiveness.

Psychological Aspects of the Learning Organization.

Insights into the psychological factors that promote learning in organizations provide another pathway for cross-disciplinary learning opportunities. Organizations that have the capacity for learning, adaptation, and change have been described by Senge (1990) to have five core disciplines: personal mastery, mental models, shared vision, team learning, and systems thinking.

When considering the nature and pace of change in today's workplace, these learning concepts are at least as relevant today as when Senge first described them. The ever-changing processes of restructuring have shattered bureaucracies and their accompanying job descriptions. A culture of learning has become a prerequisite for survival and growth. For purposes of this article, two of the disciplines will be discussed and applied to the PIW course: mental models and team learning.

Mental Models

Behaviors in organizations, as in any environment, are influenced by deeply ingrained assumptions and perceptions about the world. In the workplace, such assumptions can become integrated into day-to-day operations, eventually morphing into "standard operating procedures" (i.e., bureaucratic policies and procedures). Overly bureaucratic organizations become stifled by their own internal machinery in ways that block adaptive behaviors and much-needed change. This internal machinery can take on a life force of its own by allowing policies and procedures that once made sense to perpetuate into a mindset of "we do it this way because that's the way it's always been done." These "sacred cows" are scrutinized through such questions as:
1. What were the original reasons for the policies/procedures?
2. Do these reasons apply to today's realities?

3. Do the current policies/procedures make sense in light of these new realities?
4. If we get rid of these "sacred cows," do we have new policies/procedures to replace them?

In effect, organizations need to engage in "sacred-cow hunts" to rid themselves of inefficient and outdated relics of the past. When such hunts occur, new mental models emerge that reflect learning, adaptation, and change.

In counseling situations, students encounter, or can expect to encounter, mental models presented by clients. These models might take the form of conditioned cognitive processes such as assumptions and prejudiced attitudes that affect their emotions and behaviors. An applied exercise for counseling students is to use the sacred-cow concept to gain insights into how their clients' mental models sustain their dysfunctional ways of being. Counseling students are then assigned a therapeutic intervention version of sacred-cow hunts, where they examine the afore-mentioned hunt questions in ways that apply to their professional experiences.

Team Learning

A team is a special kind of group that operates on a collective level. The letters comprising the word TEAM can represent select words in the slogan, "Together, each of us can achieve more." But for that kind of productive impact to occur, the team must learn to function effectively. First, the skill sets among team members should be complementary. Second, members should be committed to achieving the team goal. Third, team members should be accountable to one another, with the team as a whole being accountable to the organization. Like individuals, teams can become locked into mental models that become sacred cows, requiring team-initiated hunts. Along these lines, teams can become locked into their perceived sense of expertise, creating illusions of invulnerability. Those illusions, when combined with conformity pressures, can create a dysfunctional decision-making environment referred to as "groupthink." Therefore, in light of these potential warning signs, teams must be vigilant in examining their internal machinery (i.e., assumptions, norms, and conformity pressures) and put into place safeguards that allow for a climate of trust, open communication, constructive feedback, and healthy debate. Such safeguards can put teams on a path of learning and productive behavior.

The applied exercise for students at Towson University focuses on their team experiences in general, and the concept of "groupthink" in particular. Students examine psychological and organizational factors that might contribute to a flawed decision-making process where such groupthink factors as overconfidence, lack of open communication, and conformity pressures might be in play. On the positive side, students provide examples of effective team experiences where complementary skill sets, high levels of commitment, and shared accountability were evident.

Dispositional-Situational Interaction and Change

Focusing on concepts drawn from positive psychology (e.g., hope, resilience, and support networks), the PIW course provides another bridge between the HR and counseling students. In the context of the workplace, hope has been found to support and sustain the capacity of workers to be resilient, to overcome adversity, and to bounce back in ways that strengthen their effective-ness (Youssef & Luthans, 2007). For those among the growing number of people who have lost

their jobs, who are underemployed, or who face an increasingly stressful and insecure work environment, hope and the capacity for resiliency are key psychological anchors in helping people take the proactive steps necessary for them to achieve a better future (Fleig-Palmer, Luthans, & Mandernach, 2009). But this capacity for resiliency also requires that people engage in a sustained and vigilant process of being ready and able to respond to opportunities encountered. For when people have a more hopeful perspective on life, opportunities are more likely to be noticed and pursued than if their perspective is less hopeful.

In response to this challenge, the HR perspective focuses on such internal organizational dynamics as leadership, empowerment, ethically based cultures, and training and development opportunities. The response through the counseling lens examines such dispositional factors as personality, attitudes, values, and change orientation. As the discourse moves forward with each perspective, students identify cross-disciplinary connections that inform each approach. Dispositional factors, for example, that are often the focus of counseling also provides our HR students a useful lens to approach organizational change. It is through this cross-disciplinary perspective, in which interactive relationships between dispositional tendencies and workplace interventions are examined, that students gain important insights into the dynamics of change.

The Hybrid Instructional Model

As is the case with the growing number of web-based graduate programs designed to respond to the needs of working professionals, Towson University's HR program has integrated distance education (DE) into its curricula. Courses vary in their reliance on DE technology and their centrality to the design and implementation. The PIW course uses a hybrid model that combines DE technology with traditional classroom-based face-to-face meetings. Evidence for the effectiveness of hybrid approaches using asynchronous online environments has been mixed, depending on such factors as learner characteristics (Salas, Kosarzycki, Burke, Fiore, & Stone, 2002), learner interactions with course content, student interactions with instructors, and interactions among students in both online and classroom environments (Swan, 2003). But what has become increasingly clear in evaluation studies of applied graduate programs is the ongoing need to design affordable, accessible, flexible, and relevant practitioner-oriented programs.

Regarding learner characteristics, the PIW course, using Blackboard as the online learning software, is designed to take into account individual differences among student experiences and preferences in learning environments. The hybrid model addresses that challenge by giving students a fair amount of flexibility in how they navigate such online features as discussion-board postings, Web sources, and collaborative group interaction. For example, those students who miss classes are given the option of using more of the online environment to complete course assignments.

Collaborative learning is emphasized throughout the course in online and traditional class-meeting instructional formats. Students are encouraged to engage in active dialogue and respectful debate focused on HR and counseling-related analyses linked to course topics. The group work culminates in an end-of-semester class presentation based on a synthesis of student research and professional experiences.

Conclusion

The need for interdisciplinary approaches to graduate education was discussed in the context of a new course, Psychological Issues in the Workplace, added to the curriculum of two graduate programs: Human Resource Development and Counseling Psychology. The author discussed course content through six topical areas: ethical issues, job loss and insecurity, workplace stress and work-life balance, positive emotions and workplace outcomes, diversity issues, and organizational and client change. Examples of cross-disciplinary linkages were provided in ways that expanded the discourse on how HR and counseling issues could be related both conceptually and through practical interventions. The last section of the article dealt with issues surrounding distance education and the hybrid model adapted to the PIW course.

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Teacher Preparation

Model of the Regional System of Distance In-Service Teacher Professional Development in Ukraine and Its Implementation

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Abstract

An innovative model of in-service professional development for Kyiv region school educators using distance learning format is described. Kyiv Regional In-Service Teacher Professional Development Institute offers its vision and experiences in providing effective, up-to-date professional development using online technologies.

Key Words
Teacher professional development, professional development, distance education, regional system

Introduction

In the process of information society development, the system of education has to meet the following requirements: correspondence of the changes that take place to social, economic, and environmental challenges; adequacy of education to the constantly growing volume of information and new expectations; and rapid deployment of new information technologies. Therefore, the innovative paradigm of "lifelong education," or continuous education (Bolubash, 1997) replaced the old "teaching," or "supporting" paradigm.

Nowadays, information and communication technologies are integrated in different branches of public life and specifically in in-service teacher education. The process of in-service professional development targets not only the development of teachers' general pedagogic competencies and deepening their subject knowledge, but also the formation of a high-level teacher information culture (Zhaldak, 1989; Kartashova, 2004; Kozlakova, 2004; Serdyukov, Hill, & Serdyukova, 2009; Smirnova, 2004). The teacher information culture needs to be of sufficiently high level to ensure effective use of information and communication technologies in teaching, in preparing the learning process, and in improving teacher professional capabilities via self-education.

Distance Education in In-Service Teacher Professional Development

One form of integration of information and communication technology (ICT) in education is distance education, which is gradually being implemented in the practice of in-service teacher professional development.

The expedience of introducing distance education in the system of in-service teacher education is justified by the following advantages:

Flexibility in educational process (comfortable time, place, rate of studies).
Modular learning structure (personal motion trajectory for every teacher).
Cost savings (on travel, food, accommodations, and salaries for substitute teachers).
Stability of the educational process (diminishing the number of substitutions, decreasing changes in the schedule).
Increased motivation of self-education.

The fact that online leaning induces teachers to upgrade their level of informational culture (mastering hardware and software, using information and communication technologies in the classroom).

At the same time, it is worthwhile to mention the problems that arise in the process of ICT application and in the distance-learning format. Technical equipment in our schools is obsolete and insufficient in the delivery capacity, and the telecommunications network in the country is of low quality when schools may not have access to the Internet. In 2009 only 85% of Ukrainian schools were equipped with computer technology that, incidentally, did not meet contemporary requirements. Other schools do not have computers at all. The important criterion that demonstrates the level of computer support for the educational process is the number of students per computer. In the beginning of 2007, the average number of students per computer decreased from 49 to 41 students, and in the beginning of the 2008–2009 school year it improved to 25 students per computer.

An important challenge is teachers' psychological unpreparedness for independent study, and non-acceptance of new, innovative ideas. The main reason for this is not teachers' unwillingness to improve their professional skills, but rather a lack of necessary conditions for self-education in educational institutions, and inadequate use of information and communication technologies in their professional activities. This problem is particularly critical for rural educational institutions. The computer classes available in these schools do not help solve the problem, because both the hardware and the software are obsolete and do not meet modern requirements. Many of the computers are not connected to the Internet.

Teachers' computer literacy proficiency is generally low. The conducted research revealed that in the past few years this question has become a concern for many teachers, especially those ranging in age from 35 to 55, whose work experience was from 15 to 35 years. Usually, these professionals were the teachers highly recognized not only within the school they worked for, but also within the district, city, or region. However, the research found that 65% of them were unable to use modern ICT in their teaching practice, which caused considerable psychological discomfort, impacting their professional ratings and reducing the demand for their educational services.

Access to the Internet in Ukraine is not free. Although there has been an improvement in the availability of computers in schools, the situation with connecting schools to high-speed Internet needs to be improved. It is especially important for remote rural districts, where the integration of distance education is particularly crucial. It is important to note that teachers still have low motivation to use Internet resources, because they do not know how useful these resources are and how to use them in their work.

There are no legal standards for regulating the activities of educational institutions that offer distance learning programs. Contradictions that exist in the system of in-service teacher professional development also complicate the process of decision making, particularly a permanent growth in the number of trainees who cannot afford full-time attendance due to geographic location, travel expenses, the need to employ substitutes who may not be available in that area, the resulting changes in school scheduling, and other similar issues (Kozlakova 2004). Understanding the importance of modern ICT in providing equal access to high-quality education, especially for teachers in rural areas, was a motivation for the present authors to search for methods and tools to resolve these issues at a regional level.

Research in Distance Professional Development

Some of the results obtained during research are presented in this article. Having learned the national and foreign research and practical works where this problem has been studied (Polat, 2006; Serdyukov, Hill & Serdyukova, 2009; Smirnova, 2004; Irani & Telg, 2002), and using the experience of other Ukrainian educational institutions (The National Academy of Public Administration, Central Institute of Post-Graduate Pedagogical Education), Kyiv Regional In-Service Teacher Professional Development Institute developed the model of organization of in-service professional development for teaching staff of the Kyiv region schools, using a distance format of delivery.

The regional distance education center was established in the Institute in 2006. There are now 54 local distance centers in 31 districts and towns of Kyiv region. There were 74 instructors prepared to work in these centers. Advanced professional development of in-service teachers via distance-learning format is carried out in the institute in accordance with the following authorizations: Legislation of Ukraine in the field of Education, and the Concept of Development of Distance Education in Ukraine (hereafter termed "the Concept"); statute on organization of educational process in higher educational establishments, regional program of development of distance education of Kyiv region in 2006-2010; and statute on distance education in the system of in-service professional development of educational staff of the Kyiv region.

In accordance with the Concept, "distance education" is a format of studies, equal to full-time, part-time, evening, and external studies, which is delivered mainly via distance-learning technologies. An important notice was added in the Concept, regarding some of the educational processes of distance education that can be carried out in class (examinations, practicums, laboratory work, etc.).

The model for in-service professional development of pedagogical staff of Kyiv region combined on-site and distance forms of education. Such approach presupposed an integration of ICT, which ensured interaction and cooperation of trainees and high outcomes in the educational process.

For in-service distance teacher professional development, it was determined that the most reasonable form was a mixed approach to distance education (using case studies and network-ing), because it took into account the individual abilities and circumstances of every trainee. This combination also took into consideration the financial capacity of the majority of trainees and, therefore, was the most acceptable for them.

In-service teacher professional development was implemented via a blended format, and included three stages:

1. An organizational introductory session offered on campus.
2. Trainees' independent work, done online with instructor guidance
3. A final session done on campus.

During the intersession period, the trainees studied remotely, combining work and study. Distance lessons (lectures, seminars, practical assignments and individual sessions, independent work, study of learning materials, etc.) were conducted with the use of both traditional and modern ICT. The work performed by independent trainees was their principal way of gaining knowledge. Quality control of distance trainees' knowledge and skills was carried out by con-ducting assessments during on-site and online sessions. Throughout the learning process, trainees had to learn how to obtain and use knowledge, search and find the necessary sources of

information, work with this information, analyze it, and identify and address the problems of the intellectual and moral development of students. In order to receive certification, trainees who had taken the distance course took an online tutorial and defended a creative project.

Faculty of the Kyiv Regional In-Service Teacher Professional Development Institute developed 39 programs for teachers and administrators, the electronic versions of which are constantly being accumulated and integrated into the unique information system. Distance learning, which was mainly independent due the character of online learning, included the opportunities for communication with the instructor and other trainees and collaboration in the process of various cognitive and creative activities.

For organization and management of distance education, the traditional Learning Manager System (LMS) was used. This platform offered the two packages that supported creation of online courses, support-services registration of trainees, course management, administration of the learning process, assessment, and the generation of reports on educational achievements.

Specifically, Prometheus, the distance learning system used at Kyiv Regional In-Service Teacher Professional Development Institute (Prometheus, 2010) is used in many countries of the world. This system was developed for the organization of distance learning process and/or independent testing of knowledge. It can serve a large number of trainees, and it can be used as an additional means for traditional studies.

Thus, the model of distance learning used in the system of in-service teacher professional development offers the following advantages:

> Makes the process of in-service teacher professional development more open, continuous, and flexible.
> Improves professional skills without abandoning basic activity.
> Individualizes the process of studies focusing on the abilities and professional level of the teacher and the conditions of his or her pedagogical activity.
> Upgrades the level of ICT competences.
> Offers in-service teachers of Kyiv region the opportunity for self-study and self-development through distance courses during a 4-year period.
> To make trainees' work active during in-service teacher professional development, the present authors developed a model of trainee's activity, as shown in Figure 1. All types of activities are assessed and evaluated by a certain amount of points. Two weeks before completion of studies, a trainee must have earned at least 270 points. The number of educators who choose such form of studies (an over five-fold increase compared to previous two years.
> The number of options for preparation offered for learning (an increase of 2.3 times compared to previous two years).
> The number of districts having teachers who take distance courses (an increase of 1.9 times compared to the previous two years).
> The number of district and city centers of distance learning (an increase of 1.4 times compared to the previous two years), which demonstrates that the important of this issue is understood.
> The number of trainees who have required knowledge of computer equipment.

Furthermore, during these years, positive dynamics were observed that demonstrated the growth of the following factors, as shown in Table 1:

Table 1. *Improvements Through Distance Education*

Years/Data	Number of Teachers	Number of Options for Preparation	Number of Districts	Number of Centers	ICT Skill Improvement
2009-2010 School Year	213	30	21	54	68%
2008-2009 School Year	42	16	13	38	32%
2007-2008 School Year	38	13	11	25	26%

№ з/п	Діяльність слухача	Кількість балів
1.	Взяти участь у форумах (участь у форумах є обов'язковою) Пропонуються форуми: 1) два загальнодоступних форуми (організаційний та по вирішенню загальних питань із курсів соціально-гуманітарної та професійної підготовки). 2) фахові форуми для обговорення питань викладання конкретного предмету (спеціальності) та нагальних проблем, що виникають під час викладання предмета або трудової діяльності (тему для обговорення можете запропонувати Ви).	10 балів за кожне суттєве повідомлення (мінімум 5 повідомлень) Вимоги до повідомлень: – висловлювати власну точку зору; – робити посилання на Інтернет-ресурси (якщо це можливо); – не дублювати чужі повідомлення; – створювати повідомлення не в один день і не в останній; – робити посилання на літературу, на власний досвід роботи; – повідомлення не повинно бути досить громіздкими. Першими повідомленнями у групі мають бути повідомлення у яких розміщається: – інформація про себе, – тема, над якою працюєте, – цікаві напрацювання, якими Ви можете поділитись, – проблеми, що виникають під час викладання предмета або трудової діяльності
2.	Пройти поточне тестування знань	бали, набрані під час поточного тестування (у відсотках)
3.	Надіслати тьютору всі виконані Вами практичні завдання до модуля 1 "……", модуля 2 "……", … модуля n "…."	200 балів за повне виконання всіх практичних завдань
4.	Надсилати тьютору електронні повідомлення зі своїми зауваженнями та пропозиціями.	2 бали за кожне повідомлення (+3 бали за суттєві зауваження та пропозиції)
5.	Створити та надіслати тьютору авторський проект	50 балів за дотримання всіх вимог до виконання роботи та її оригінальність
		Всього 360 балів
	Увага! За 2 тижні до завершення навчання Ви маєте набрати не менше 270 балів	

Figure 1. A model of trainee's activity during studies.

The model permitted the following:

Transition from passive knowledge to active use of teaching methods.
Activation of cooperation between the trainee and instructor and among the trainees.
Increase in trainees' motivation.

The authors followed the recommendations of Dr. Peter Serdyukov, Professor of National University, USA, who had been advising since 2008 that, for every new distance course developed, a set of practical tasks should be devised to test the trainees' skill levels. Thus, in the 2009–2010 school year, 69% of all trainees completed practical tasks, as shown in Figure 2.
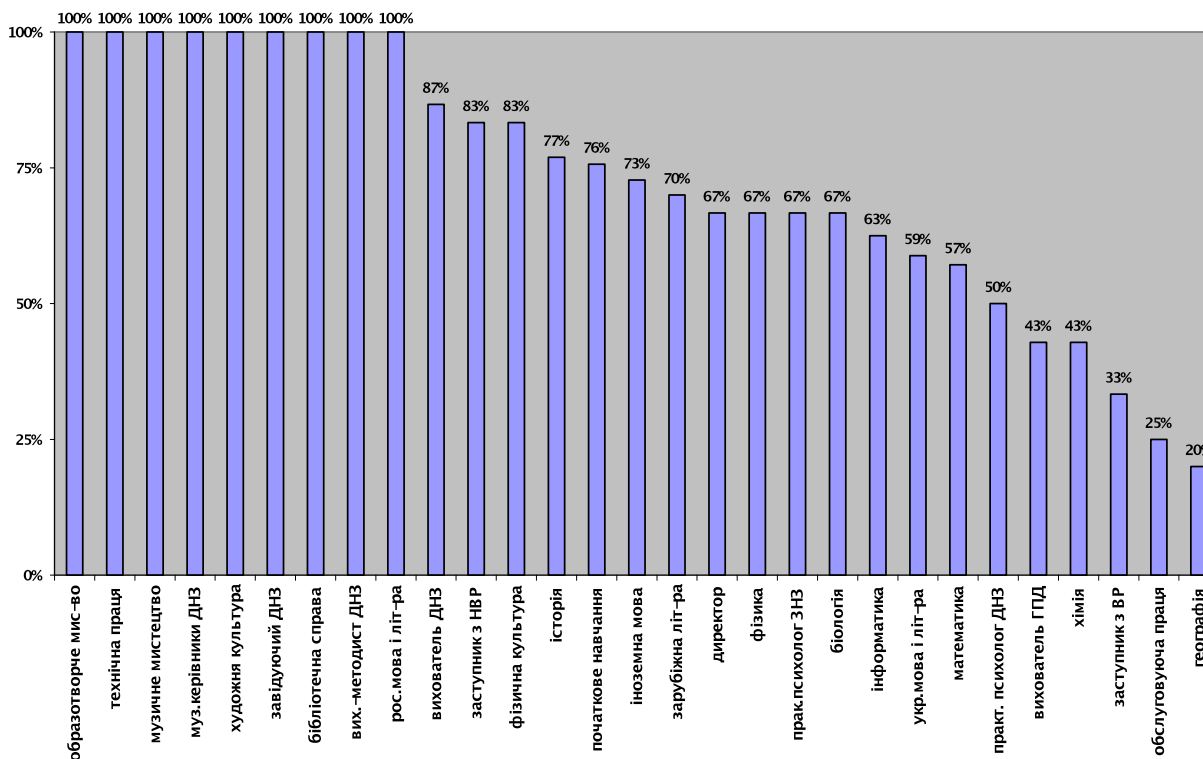
Figure 2. Trainees' activities in 2009–2010.

Examples of the learning tasks offered to the trainees (Tasks 1.1 and 1.3 in the module titled "Theory and Methodology of Teaching Foreign Languages" for teachers), are as follows:

Task 1.1. Teachers were asked to revise part of the lesson using modern methodological terminology, to write the script of this fragment, specifying students' age, their proficiency level, educational goals, educational tools, sequence of task implementation, and time spent.

Task 1.3. Teachers were asked to familiarize themselves with a sample of the student's work. They had to correct mistakes, specify their types, comment on the work and give the students an explanation, and assess the work in accordance with current assessment criteria.

For the communication and interaction of the participants (trainees, tutors, and organizers), forums are actively used. Every year, growth was observed in the number of trainees who take part in the forums, as shown in Figure 3.
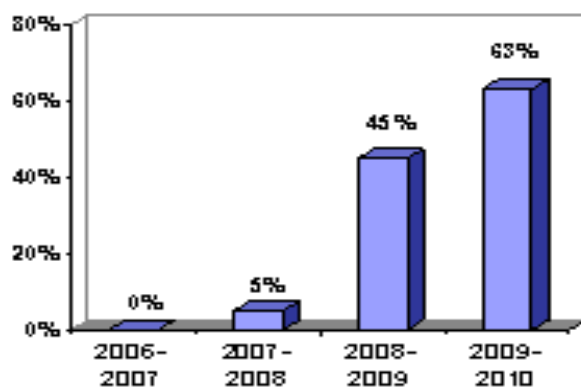
Figure 3. Participation in forums.

In the 2009–2010 academic year, 63% of trainees took part in the forums; of this number, 36% were active participants. Such indexes can be explained by different trainees' level of preparation for such activities and the small number of trainees (one to three) in some groups.

A few examples of conducting forums illustrate the process. Example 1, as shown in Figure 4, exhibits the page of an organizational forum, which is open for all program participants (trainees from different groups, instructors, and administrators). The purpose of this forum was to discuss general organizational questions, and to offer online-program support and advice to trainees. Moderation of the forum was done by A. Borbit, the administrator of distance in-service teacher professional development courses.

Different types of forums were also used during the courses, with access restricted to trainees and instructors in different specializations. Problem issues in different educational areas were discussed in such forums.

Example 2, as shown in Figure 5, exhibits the page of a forum for the methodologists of preschool educational institutions. (The forum moderator is T. Korzh.) A question of children's preparation for school was of concern to the preschool teachers. Therefore, it was suggested to read and discuss the article by G. Dzhemula (2009), "Not a Ready Knowledge, but the Readiness to Obtain It," and to express individual opinions. The trainees shared the experience of their pre-school institution related to this question, providing an overview of the aspects of preparation, forms of work with parents, forms of cooperation of preschool institution and primary school, etc.

Example 3, shown in Figure 6, exhibits a page of the forum for the teachers of the Ukrainian language and literature. (The forum moderator is N. M. Grabar) The teachers were asked to describe their attitude towards the language situation in Ukraine, the introduction of the second official language, and argue their position. Teachers of languages supported bilingualism but agreed that there must be only one official language of the country. It did not mean the role of national minorities' languages was diminished. As the saying goes, 'The more languages a person knows, the more personable [human] he is.'

Повідомлення	Видалити	Автор	Дата
• Запитання-консультація 👤 🖼	☐	Жупина В. В. [с]	15.02.2010:16:10

Шановна Тетяно Михайлівно, як не намагалася, ніяк не вдається відправити завдання 5.1 і 6.1 до модулів 5 та 6. Завдання грузяться, а потім пише "помилка підключення".

| • Запитання-консультація 👤 🖼 | ☐ | Борбіт А. В. [а о т] | 16.02.2010:08:19 |

Спробуйте відправити через електронну пошту.

| • запитання 👤 🖼 | ☐ | Корнієнко І. С. [с] | 11.02.2010:17:30 |

Серед завдань є два, які передбачають створення презентацій. Чи є якісь обмеження щодо обсягу файла? У мене один пройшов у систему Прометей без проблем, а другий ніяк не йде, система видає як помилку. Порадьте, будь ласка, як бути

| • запитання 👤 🖼 | ☐ | Борбіт А. В. [а о т] | 12.02.2010:08:17 |

Обсяг презентації до завдання 3.5 зазначено 10 слайдів. А у завданні 2.1можна розробити фрагмент заняття (текстовий файл), а якщо це презентація, то гадаю не більше 10 слайдів.
Стосовно розміщення файлів у системі Прометей. Практично будь-який файл будь-якого обєму має розміщатись у системі, якщо він не завірусований. Я не знаю чому виникла така проблема. Тому перевірте на наявність вірусів і спробуйте ще раз розмістити. Якщо ні, то можливо спробуйте стиснути його.

| • Запитання. 👤 🖼 | ☐ | Губарева М. М. [с] | 10.02.2010:21:10 |

Скажіть, будь ласка, чому не зараховано творчий прект та деякі відповіді до модулів ?Щось не так виконано? Чи ще не оброблена інформація?

| • Запитання. 👤 🖼 | ☐ | Борбіт А. В. [а о т] | 11.02.2010:08:17 |

Дана таблиця ще не розміщена, оскільки щодня надходить багато інформації від слухачів.

| • Запитання 👤 🖼 | ☐ | Єрміліна Є. В. [с] | 10.02.2010:12:46 |

У завданнях є вправа, де треба розробити фрагмент уроку з використанням сучасних інформаційних технологій. Я так розумію, це створення презентації (PowerPoint). Чи не так? Але при розмові з Бендерець, я зрозуміла, що презентація при переселанні через електронку погано запускається.У мене не буде проблем? Чекаю відповіді.

| • Відповідь на запитання 👤 🖼 | ☐ | Борбіт А. В. [а о т] | 10.02.2010:13:40 |

Дійсно, презентація дуже важка для пересилки електронкою. Хоча можна спробувати. І ще є вихід з даної ситуації - це розмістити презентацію у системі Прометей. Для цього потрібно:
1) вибрати у розділі СПІЛКУВАННЯ --- ФАЙЛИ
2) вибрати ВІДПРАВЛЕНІ
3) натиснути СТВОРИТИ
4) зі списку вибрати ТЬЮТОРИ і напроти цього напису натиснути СКЛАД
5) з'явиться ПІП тьютора і навпроти Бендерець Н.М. у квадратику поставити галочку
6) натиснути ОК (зелена кнопка з галочкою)
7) заповнити поля ЗАГОЛОВОК і через ОБЗОР вставити потрібний файл
8) ОК.
Спробуйте виконати дану інструкцію, має все вийти.

| • Запитання 👤 🖼 | ☐ | Олійник М. В. [с] | 09.02.2010:21:23 |

Скажіть, будь ласка, поточний контрольний тест, який оцінюється, буде якось особливо позначатись(- тестування-екзамен -) чи це звичайний тест на самоперевірку, який можна виконати будь-коли? Дякую.

| • Запитання-відповідь 👤 🖼 | ☐ | Борбіт А. В. [а о т] | 10.02.2010:08:22 |

Поточний контроль - це тест для самоперевірки. Його можна виконати в будь-який час і кількість спроб необмежена. результат обирається найкращий.

| • Привітання 👤 🖼 | ☐ | Горніцька А. В. [с] | 06.02.2010:16:43 |

Вітаю організаторів та колег-філологів, які проходять курси дистанційного навчання. Не
думала, що ця форма підвищення професійної майстерності мені сподобається. Але це здорово. За таким навчанням майбутнє. Бажаю всім успішно справитися із завданнями, творчості і натхнення на педагогічній ниві, взаєморозуміння з колегами та учнями, особистого щастя.

Figure 4. One of the pages of the organizational forum.

Повідомлення		Автор	Дата

● **Обговорення статті** 🗨️   Корж Т. М. [т]   10.11.2009:08:17
Шановні колеги, пропоную Вам ознайомитися зі статтею Джемули Г. Не готові знання, а готовність їх здобувати // Дошкільне виховання. – 2009. – № 9. – С.24-25 та висловити свої міркування щодо зазначеної проблеми. Сподіваюся на вашу активність.

  ● **Обговорення статті** 🗨️   Басюк Н. М. [с]   13.11.2009:23:48
Так, дійсно. наступність не можна розглядати лише з сторони днз - батьки, наступність розглядається днз - сім"я - початкова школа. В нашому днз приділяється достатня увага даній проблемі. Ми проводимо такі форми роботи як відвідування дітьми старших груп лінійки першого і останнього дзвоника, відвідування уроків, шкільної бібліотеки, їдальні. Запрошуємо вчителів початкових класів на свята, відкриті заняття, семінари, практикуми та педагогічні ради, які проводимо на базі днз. Вихователі разом з батьками приймають участь в першій підготовці дітей до навчання, як проводять вчителі в школі. Проводять спільні бесіди з майбутнім вчителем, під час яких надають практичні поради щодо особливостей розвитку, характеру конкретних особистостей дошкільнят. Приймаючи дітей до школи вчитель має перед собою вже певні знання особливостей даного дитячого колективу, що запобігає виникненню конфліктих ситуацій та полегшує період адаптації дитини до навчання в школі та знайомство вчителя з новим колективом. Педагогам днз та психологом в процентному відношенні (але ні в якому разі не називаючи особистості) подаються дані розумової та психологічної підготовки дітей до навчання в школі. Особисті дані знає лише психолог та батьки, які цікавились висновками конкретно своєї дитини. А батьки, якщо вважають за потрібне про щось попередити вчителя, можуть подати ці дані про власну дитину.

    ● **Обговорення статті**   Корж Т. М. [т]   23.11.2009:09:58
Цікаво було б дізнатися, які методики для визначення шкільної зрілості дітей використовують психолог та вихователі?

      ● **Обговорення статті** 🗨️   Басюк Н. М. [с]   24.11.2009:22:31
>Вихователями для визначення готовності до школи проводяться тести на визначення

        ● **Обговорення статті** 🗨️   Корж Т. М. [т]   25.11.2009:11:37
Наталіє Михайлівно, повторіть Ваше повідмлення ще раз, будь ласка. Для реагування на повідомлення, натисніть значок ЧОЛОВІЧКА, що знаходиться поряд з цим повідомленням, вдрукуйте текст, а потім - ОК.

          ● **Обговорення статті** 🗨️   Басюк Н. М. [с]   25.11.2009:17:45
Вихователями для визначення рівня готовності дитини до навчання в школі проводяться тести, завдання на визначення практичних умінь та знань з різних розділів програми (грамота та розвиток мовлення, математично-логічний розвиток, зображувальна діяльність, природа...)
психологом, діагностуючи рівні готовності дитини до школи проводились такі субтести:
- методика "Виключення": оцінювання рівня сформованості розумових операцій узагальнення і аналізу;
- "Диктант" (адаптація Н.В. Нечаєвої): виявлення сформованості психологічних функцій дитини - сприняття інформації, рівень фонематичного слуху;
- "Будиночок": виявлення умінна дитини орієнтуватися у своїй роботі на зразок, копіювати його;
- "Візерунок" (адаптація Г.Ф. Кумарта): діагностика інтелектуальних функцій, розвиток дрібної моторики руки, здатність до зорового аналізу;
-"Сходинки": визначення самооцінки і емоційного стану дитини.
Також проводився тест Керна-Ірасика та субтести "Будиночок", "Руки", "Графічний диктант"

        ● **Обговорення статті** 🗨️   Корж Т. М. [т]   26.11.2009:15:30
Наталіє Михайлівно, що, на Вашу думку, є найважливішим у забезпеченні готовності дітей до шкільного навчання? Які пріоритети виділяють педагоги Вашого дошкільного закладу, а які - батьки?

          ● **Обговорення статті** 🗨️   Басюк Н. М. [с]   27.11.2009:17:04
Пріоритетами визначення готовності до навчання в школі педагогами нашого садка надається перевага таким параметрам:
1.планування - вміння дитиною організовувати свою діяльність відповідно до її мети;
2.контроль - уміння зіставляти результати своїх дій із поставленою метою;
3.мотивація навчальна - прагнення знаходити приховані властивості предметів, закономірності у властивостях навколишнього світу та використовувати їх;
4.рівень розвитку інтелекту;
5. практичні вміня та знання з різних розділів програми (математики, розвитку мови, грамоти, природи, зображувальної діяльності);
6.готовність руки до письма - розвиток дрібної моторики руки;
7.знання та виконання правил елементарної культури поведінки та вміння співіснувати в колективі;
8.фізична готовність.
Батьками здебільшого звертається увага на накопичення знань: знати алфавіт та читати, вміти рахувати, елементарні знання іноземної мови. Пояснюючи, що включає в себе поняття "готовності дитини до навчання в школі" інколи можеш почути у відповідь:"А хто це таке придумав? Кому це потрібно?" Тому батьківські збори та консультації на тему готовності до шкільного навчання проводимо спільно з психологом, заключаємо до співпраці вчителів початкових класів, з якими також попередньо обговорюємо питання наступності та підготовки старшого дошкільника до навчання

            ● **Обговорення статті** 🗨️   Корж Т. М. [т]   02.12.2009:16:52
Погоджуюся з Вами стосовно позиції батьків. Але і педагоги ДНЗ, визначаючи компоненти готовності дітей до шкільного навчання, не

Figure 5. A page of the forum for methodologists of preschool institutions.

Повідомлення		Видалити	Автор	Дата

● **Тема для обговорення** 🗨️ 🖼️   ☐   Дерев'янко Л. П. [с] 20.03.2010:16:27
Почну з висловлювань визначних особистостей.Пригадуєте, ще в інституті вчили:"Мова така ж давня, як і свідомість... мова виникає лише з потреби, з настійної необхідності спілкуватися з іншими людьми". Отже, мова є знаряддям спілкування людей.Тоді мова стає засобом відображення їх навколишнього світу і передати його вони можуть українською чи російською, кому як ближче до душі, враховуючи, можливо, і їх національну приналежність. У цьому випадку можна говорити про право двомовності. Але! Говорячи про мову державну, мову народу нашої держави - України, використовую завжди слова Володимира Винниченка:"В Україні повинна мати силу лише українська мова"

● **Мовна ситуація** 🗨️ 🖼️   ☐   Богуненко Т. В. [с] 18.03.2010:20:57
Світланко, ми не говоримо про заборону для дітей рідної мови. Нехай вони здають іспити російською чи будь-якою іншою.Варто піднімати престиж державної мови!

    ● **Мовна ситуація** 🗨️ 🖼️   ☐   Радіч С. В. [с]   19.03.2010:18:56
В цьому я тебе підтримую, бо соромно іноді навіть телевізор вмикати.

      ● **Мовна ситуація** 🗨️ 🖼️   ☐   Корнієнко І. С. [с] 20.03.2010:00:49
Цілком згодна з вами, шановні колеги. Особливо щодо телебачення - все частіше такі "перли" чуєш від ведучих, які в рамки ні здорового глузду, ні норм літературної мови не вкладаються. З такими "популяризаторами" мови ніякі вороги не потрібні - чого вартий лише випадок з "уроком" львівської пані-депутата у дитсадку

● **Мовна ситуація** 🗨️ 🖼️   ☐   Радіч С. В. [с]   18.03.2010:20:09
Таня, я тебе повністю підтримую щодо однієї державної мови. Але здавати іспити діти повинні своєю рідною. Я це дуже відчуваю в російських класах.

● **Мовна ситуація** 🗨️ 🖼️   ☐   Богуненко Т. В. [с] 18.03.2010:17:48
Знати мов можна багато, державною має бути тільки одна! В Росії проживає величезна кількість українців. Чому я там не можу водить другу державну мову? В країнах Прибалтики всі державні службовці обов'язково володіють державною мовою, а російська - іноземна. Давайте врешті поважатимемо себе!!! Україна - українську мову!!!

    ● **Мовна ситуація** 🗨️ 🖼️   ☐   Корнієнко І. С. [с] 20.03.2010:00:42
На мою думку, найбільше про другу державну кричать саме ті, хто лінується вивчити як слід хоча б одну. Коли чуєш, як говорить людина, що досконало володіє російською, особливо після котрогось нашого "російськомовного" співгромадянина, - контраст відразу ріже вухо. Практично жодного разу не доводилося чути якісь випади щодо будь-якої мови від людини, чиє мовлення відрізняється чистотою та багатством. Ось таке спостереження з життя. Висновки очевидні

● **Тема для обговорення** 🗨️ 🖼️   ☐   Грабар Н. М. [т]   18.03.2010:14:33
Ваше ставлення до сучасної мовної ситуації - введення другої державної мови. Дайте аргументи і пропозиції щодо своєї позиції

Figure 6. A page of the forum for teachers of Ukrainian language and literature.

All trainees were required to take diagnostic tests during the courses. As a result of entrance and exit surveys, the average indices of self-evaluation of trainees' knowledge and skills in the beginning of the course and after course completion were learned, as shown in Figures 7 and 8, which demonstrated that the main goal of distance in-service teacher professional development courses was accomplished.
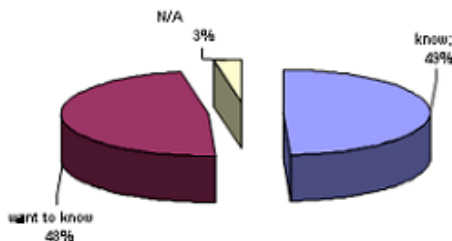
Figure 7. Average index of trainees' self- assessment of present knowledge and abilities *(entrance survey).*
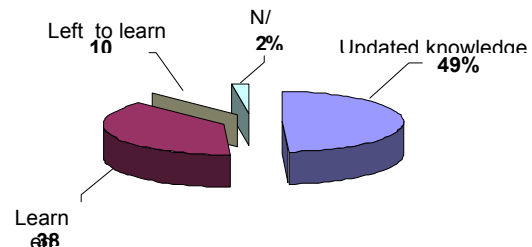
Figure 8. Average index of trainees' self-assessment of the learning outcomes *(exit survey).*

Trainees confirmed that during the course they not only obtained professional preparation but also improved computer skills, as shown in Figure 9:

Computer use in the learning process grew, from 68% in the beginning of the course to 91% after completion of the course.

Communication using Internet technologies (e-mail, forum, chat) grew from 33% in the beginning to 80% after course completion.

Searching for and finding necessary information on the Internet grew from 50% in the beginning to 86% after course completion.
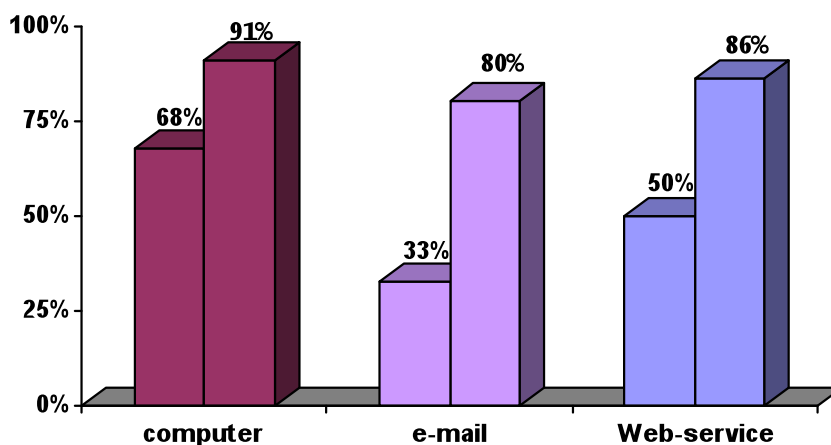
Figure 9. Level of computer skills in the beginning and in the end of the program.

These results confirmed the conclusion that the program motivated teachers to raise their level of ICT proficiency and became a stimulus for self-education, as shown in Figure 10.

Figure 10. Trainees' comments on the distance in-service
teacher professional development.

Conclusion

Though the present authors' research demonstrated effectiveness of distance in-service teacher professional development, these concerns remain to be addressed:

District and town methodologists need to promote the possibilities and specifics of distance in-service teacher professional development, and explain the work of district and town centers of distance education.

Teacher ICT proficiency should be continuously upgraded in preparation for distance professional development.

Quality of instructional methodology should be improved at district and town centers of distance education. For that, the Institute developed a thematic course, "Organization and Content of Distance In-Service Teacher Professional Development Courses," for novice methodologists and instructors.

As has been established, the quality of distance education is as high as the quality of on-site learning, because the best faculties are involved in the preparation of instructional materials for professional development programs, and the most current educational and methodological mate-

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rials are used. However, individual skills, knowledge, experiences, and professional level of trainees play an important role in the system of distance education. The outcomes of the trainees' professional development depend on the trainees, their willingness to learn, their motivation, and the responsibility they take in the process.

The use of ICT in the system of in-service teacher professional development offers new methods of presenting educational materials, stimulates trainees to engage in effective self-educational activities, enables teachers to realize their own potential, and to adapt learning to trainees' individual capabilities and requirements. Overall, the use of ICT in the in-service teacher professional development system can be effective only after the development of scientifically grounded technologies of studies, in relation to both the subject matter and the educational establishment as a whole. In addition to the need to modernize materials used in the educational environment, there is a need for substantial modernization (scientifically grounded and pedagogically expedient) of organizational forms of studies and instructional methodology, as traditional organization of the educational process does not meet current requirements related to the educational process and results.

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Teacher Dispositions: What Kind of Candidates Do We Have in a Teacher Preparation Program, and How Can We Make Them Better?

Peter Serdyukov and Britt Tatman Ferguson

> "In a human being everything must be beautiful: the face,
> and the attire, and the soul, and the thoughts."
>
> —Anton Chekhov

Abstract

As dispositions have become a part of teacher professional qualifications and the issue of dispositions has become a growing concern for all parties involved in education, teacher educators have started discussing attributes related to candidate dispositions and ways to develop them consistently. A study identifying four different dispositional categories was conducted that included research of individual dispositions and candidates' perceptions while examining patterns of dispositions and their change as the candidates move through their preparation program.

Key Words
Dispositions, attribute, qualification, candidate, teacher

Introduction

What kind of people are the pre-service candidates who enter teacher-preparation programs? What are the implications of their personalities, traits, attitudes, and dispositions for K–12 education and especially for the K–12 students? How do the teachers' personal characteristics influence their own learning in these teacher-preparation programs, and how can those who educate teachers affect these traits if necessary? Ultimately, what is it that we understand to be a highly qualified and effective teacher? We in teacher education should be concerned not only about what we want our candidates to *know* by the end of the program but also about *whom* we are accepting into this profession and preparing to teach our children. Issues related to who is teaching children and youth in schools definitely have more significance than just quality of professional study in a credential or an advanced-degree program.

In teacher preparation programs, the teachers of teachers will be better informed about how to plan, organize, and maintain an environment of learning excellence if they better understand the candidates who will be teaching next year, 10 years, or even 20 years from now in all educational settings. Moreover, they will know better how to provide full support for teacher candidates, preparing them to work effectively in the classrooms with students, to collaborate with parents, and to work in partnerships with families.

Colleges are commonly concerned about what students will know when they graduate. However, additionally it is critical to be aware of who we are teaching, including what kind of abilities they have, but also what individual features (typically referred to as "dispositions" in the literature) they possess that will influence their teaching and teaching success (Harrison, Smithey, McAffee, & Weiner 2006); Rice 2003; Schussler, Bercaw, & Stooksberry, 2008). These qualities are important because they will significantly affect how the teachers will transfer knowledge into their classroom and how they will model the desired behaviors and attitudes

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(Serdyukov & Hill 2007). Regrettably, today's teacher education candidates often lack important qualities that are needed to make them effective, quality teachers. For instance, research conducted by Berry and O'Neil (2007) demonstrates that only 53% of the surveyed teacher candidates felt adequately prepared in subject matter, and only 45% believe they have an adequate understanding of the variety of discipline and class management skills. Lee and Dallman (2008) identify issues with dispositions related to diversity and multiculturality that pre-service teachers have as they enter teacher education programs. Lee and Herner-Patnode (2010) argue, based on the analysis of teacher candidates' dispositions, that these candidates are not adequately prepared for teaching diverse students.

Moreover, some teacher educators have experienced young candidates who, while taking a postgraduate (credential) teacher preparation program just a few years after an undergraduate university program, believe they know all that is necessary to be a teacher; that they do not need to learn more. Yet they still expect high grades and a credential. Does this attitude reflect a dispositional concern? When the time comes for such candidates to actually teach different students from families with diverse backgrounds, will they be able to demonstrate the skills and dispositions necessary to be effective? If not, then perhaps it is the charge of educators of teachers to address such dispositions in teacher-preparation programs. The importance of dispositions lies in the fact that they not only affect a teacher's current behavior but also can predict future behavioral trends (Katz & Rath, 1986). That is why, more and more, disposition identification and development in teacher-preparation programs is being seriously addressed. But how can dispositions be modified in adults?

Something to Consider

What *is* our *charge* when it comes to dispositions of our candidates? Perhaps this example will help us consider depth and direction of our "charge." Some years ago, when conducting follow-up to staff development at a juvenile detention facility in Northern California, one of the present authors was visiting the classrooms at the facility. One teacher spent time telling this author about the particularly distasteful crimes perpetrated by the youthful offenders he taught. The author suggested the merit of social-skills instruction. To the author's surprise, the teacher replied that we had no right trying to change these young offenders; it was their right to be who they had chosen to be. His response was distressing. First, did he not understand that unless the youth learned about and could use more appropriate behaviors, they would not truly be able to choose anything other than criminal behaviors? Second, did the teacher genuinely believe he did not have a responsibility to impart new and different knowledge, skills, and dispositions to the students he taught each day?

Why is this story important? First, the disposition displayed by the teacher had a limiting effect on the students he was teaching. That is, he limited what he was willing to teach and provided a faulty rationale for doing so. Second, the teacher's dispositions apparently had not been addressed in his teacher preparation program, or even on the job.

The moral of this story is that the teacher's dispositions influence his behavior, and the teacher's behavior has a direct impact on the success of the students in school, and on other factors in the school as an organization. Unacceptable in the profession are teacher dispositions that result in their behaviors that fail to promote student success. (Note: By *success* we mean not only learning but also individual development as a human being and a citizen).

Teacher Candidates Qualifications

Student learning outcomes in PK–12 educational environments are defined in the state standards, but their achievement can depend on many factors and people, chief among them, the teacher. Teacher quality is the most important school-related factor influencing student achievement (Rice, 2003). The teacher's performance has a major influence on the students' success or failure

(Wayne & Youngs, 2003). Teacher performance, however, is defined by both professional qualifications and personal characteristics. Teacher professional qualifications are commonly assessed by measures of content knowledge (subject matter), sometimes against teaching competence (pedagogy, methodology), and only recently by personal attributes, with particular importance attached to dispositions. While candidates are expected to learn the content knowledge and pedagogy at university, dispositions are inherent in the individual upon matriculation. Therefore, identifying and fostering proper disposition must be a part of teacher-preparation programs.

Examination of essential qualifications, or attributes, of individuals entering college and graduate school, and especially of those in teacher-preparation programs, raises questions about an assortment of variables related to these individuals. Variables impacting candidate dispositions may include (a) basic knowledge, (b) ability to learn and apply knowledge, (c) critical thinking, (d) attitudes and dispositions, and (e) work ethics (Thurston, Ferguson, & Street, 2010).

Teacher professional qualifications are commonly described by identifying such essential competencies as the following:

> Expertise in the subject area
> Pedagogical competence
> Socio-cultural competence
> Communicative competence
> General erudition (Serdyukov & Ryan, 2008)

Personal attributes of the teacher are not included among these competencies, even though it has been shown that the "teacher's instructional decisions and performance on the whole may be greatly influenced not only by her knowledge or skills, but also by her dispositions that affect decision making and behaviors and, consequently, student learning outcomes and behaviors" (Schussler et al., 2008, p. 108). According to Walker (2008), students, when asked, refer to *personal* qualities (qualitative) of their most memorable teacher, not to the teacher's academic qualifications (quantitative), underscoring the importance of said qualities.

Moreover, candidate attitudes result in a readiness to respond to certain stimuli in a specific way that is determined by inner filters (what the present authors term *dispositions*), formed by a person's development, culture, education, and other factors, which affect their performance in the profession. Therefore, in addition to content and teaching competence, personal attributes, such as moral values, principles, worldviews, attitudes, character, and habits, are also critical variables that impact effective teaching. Goodlad, Soder, and Serotnik (1990) and Goodlad (1998) suggest that all teaching involves values and therefore should be guided by normative principles arising from the school's responsibilities to its students. In Yost's (1997) research, teacher candidates emphasized that their numerous and diverse clinical experiences, coursework, professors' influence, and readings significantly affected their beliefs regarding the moral dimensions of teaching. As teaching is, to a great extent, role modeling, teacher preparation cannot ignore candidates' dispositions and should purposefully rear the desired qualities. These qualities should be an integral part of the readiness set that determines the teacher candidates' preparedness for the teaching profession.

As the issue of dispositions has become a growing concern, teacher educators have started discussing candidate attributes, referred to as *dispositions*, and looking for ways to study them, as well as to develop them consistently (Harrison et al., 2006). Schussler et al. (2008) found that "the recognition that effective teaching extends even deeper than knowledge and skills is steadily creeping in teacher education policy arena as organizations like INTASC and NCATE incor-

porate dispositions into program evaluation standards and benchmarks for teacher candidates" (p. 119). However, despite the interest for the issue and the developing discussion in the professional community, too little is known about what dispositions actually are, how to identify them, how to measure them, how they impact a candidate's performance in the class and overall actions, and how to change or improve them. Often dispositions have been addressed in teacher preparation programs only in limited ways, if at all. It is suggested that if appropriate teaching dispositions are to be developed within candidates, teacher educators first must use a set of criteria or a profile that identifies the dispositional attributes of an ideal teacher; then compare candidates to this profile and identify areas of concern; and then address these areas in the teacher-education programs. This has not yet been done, although Ventures for Excellence (2008) offers an interesting approach for the selection and development of professionals for education systems through systematic selection and development. The present research attempts to investigate the issue of dispositional attributes using a study conducted in National University's teacher-education program in 2010.

Dispositions: Theoretical Discussion

Dispositions have been defined by professional organizations and researchers in general terms. The National Council for Accreditation of Teacher Education (NCATE), for instance, labeled Professional Dispositions as "professional attitudes, values, and beliefs demonstrated through both verbal and non-verbal behaviors as educators interact with students, families, colleagues, and communities. These positive behaviors support student learning and development" (NCATE 2007, paragraph 3).

NCATE expects institutions to assess professional dispositions based on observable measures, that is, how they manifest themselves through behaviors in educational settings. The two professional dispositions that NCATE expects institutions to assess are fairness and the belief that all students can learn. Based on their mission and conceptual framework, professional education units can identify, define, and operationalize additional professional dispositions (NCATE 2007).

Robinson (2008) uses *disposition* as a generic term for dispositional properties: powers, capacities, tendencies, liabilities, etc. (p. 1). Katz and Rath (1986) call dispositions a class of outcomes, evidently meaning the outcomes of teacher preparation. They characterize dispositions as an attribution that summarizes the trend of a teacher's actions across similar contexts. Yost (1997) uses *disposition* as a generic term for dispositional properties: powers, capacities, tendencies, liabilities, etc. (p. 1). Schussler et al. (2008) indicate that dispositions function as "an internal filter that affects the ways a teacher is inclined to think and act on the information and experiences that are part of his/her teaching context... This filter is shaped by a teacher's previous experience, beliefs, culture, values and cognitive abilities" (p. 106). These authors suggest that "exemplary teaching lies at the intersection of three domains of dispositions—intellectual, cultural, moral—referred to as the "ICM framework" (p. 106).

Intellectual dispositions, as defined by Schussler et al. (2008), refer to "...a teacher's inclination to think and act around issues related to content and pedagogy. A teacher's knowledge base includes content knowledge, pedagogic knowledge, and pedagogical content knowledge.... However this knowledge is inert and useless if teachers cannot transfer their knowledge to teaching situations...overcoming...the problem of enactment" (p. 107). While it is essential to have sufficient knowledge, competencies, and cognitive skills in order to teach, it is

also essential to be able to transfer and implement the knowledge, competencies, and skills to the classroom. To a large extent, this transfer mechanism is developed through a teacher's own continuous learning and practicing of instructional methodology in real-life educational environments (pedagogical competence).

Cultural dispositions include "teachers' inclinations to meet the needs of the diverse learners in the classroom" (Schussler et al., 2008, p. 108). However, this definition is narrow, focusing only on bridging cultural identities of teacher and students. The cultural domain covers a wider area and certainly includes the teacher's cultural identity as a composite of broad societal culture, as well as the teacher's personal, internal culture, which is a product of the teacher's own development; family upbringing; education; and local, national and international culture. This "internal" culture influences all teacher behaviors, including social, communicative, and personal behaviors, and impacts relationships with students, parents and colleagues (Tatum, 1999).

Moral dispositions "encompass awareness of one's own values, the inclination to think through the assumptions and ramifications behind one's values, considering desirable ends and the processes to achieve those ends, and the responsibility one has to others and to helping others meet their needs…" (Schussler et al., 2008, p. 108). The present authors believe moral dispositions are the derivatives of an individual's principles and beliefs, together with the core values that may be societal, communal and personal.

If moral development is a primary disposition and clearly affects all other dispositions, then integration of a moral-development component in teacher preparation programs would be important, as it would foster desired intellectual, cultural, and other dispositions. Depending on the mission statement, philosophy, or affiliation of a particular institution of higher education, the specific manifestations of those dispositions and attitudes may vary. Dispositions may result in specific behaviors (Serdyukov & Hill, 2007).

Unfortunately, there is no consistent classification of dispositions, while the construct of definitions remains vague. Based on the present research and current literature (Alawiye & Williams, 2010; Notar 2009; Schulte 2008; Kidd, Sánchez, & Thorp 2008; Sockett, 2006), the present authors suggest four different dispositional categories that seem to more precisely describe teachers' internal filters affecting their professional behaviors and performance: *professional, moral, attitudinal, and character*.

Professional dispositions relate to the teacher's educational preparedness and activities and include the ability to:

> Demonstrate sound knowledge of subject matter, high level of education, expertise, culture, excellence in work, work ethics, professional conduct, and pride in the teaching profession and the job (school)
> Act professionally and responsibly; model best qualities and behaviors
> Think critically; utilize developed analytical and synthetic skills
> Solve problems rationally
> Apply pedagogic skills effectively
> Clearly articulate assignments, tasks, requirements, and feedback; ensure rigor of learning
> Create a safe, nourishing, and inclusive learning environment; successfully organize and facilitate class, team, and individual work
> Communicate effectively, both orally and in writing
> Actively engage in research and lifelong learning
> Consistently help to develop a learning culture and a community of learners

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Provide effective support and constructive feedback to students
Objectively assess student performance and knowledge
Participate actively in organizational and community activities
Work collaboratively; relate effectively to colleagues, administrators, and students
Receive critique and feedback; be adaptable; provide collegiate support and feedback
Show awareness of personal strengths and weaknesses; reflect on own behaviors; be willing to improve
Initiate actions and provide effective leadership
Be proactive, organized, prepared, diligent, consistent, focused, dutiful, dedicated, dependable, responsible, imaginative, reflective, accurate, and punctual

Moral dispositions relate to the individual's core values, principles and beliefs, and can be described by such attributes as:

Being honest, principled, faithful, trustworthy, sincere, just, and dedicated to students and job obligations
Demonstrating ethical and human attitudes and behavior
Having integrity of character

Attitudinal dispositions are relational and interactional, and include the ability to:

Demonstrate understanding, kindness, and sensitivity; treat students respectfully; appreciate diversity and different learning styles
Be polite, courteous, and respectful
Be fair, impartial, unbiased, just, and prudent
Be forgiving, accommodating, accepting, compassionate, caring, supportive, and flexible
Be open, informal, outgoing, and friendly
Be curious, enthusiastic, and passionate
Be cheerful, engaging, encouraging, and inspiring
Be cooperative and appreciative of feedback

Character dispositions describe such individual traits as:

Being kind, patient, calm, and modest
Being adaptable, appreciative, receptive, sensitive, considerate, and generous
Being diligent, hard-working, steadfast, persistent, determined, focused, consistent, sagacious, and serious
Being active, energetic, eager, and humorous
Being orderly, rational, attentive, and thoughtful
Being reliable and dependable
Being confident and self-sufficient
Being creative
Being resourceful
Having self-esteem

This list is by no means complete, but it helps to identify essential attributes for assessing teacher dispositions. Undoubtedly, all dispositions are interrelated and interact to shape a person's views, behaviors, and performances. Schussler et al. (2008) observed:

Tremendous overlap exists across the domains. Culture helps to shape values which affect how one considers content and pedagogy…. One of our assumptions is that effective teachers

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demonstrate an awareness of how dispositions within the cultural and moral domains affect the intellectual. Therefore it is important first to understand how candidates' thinking manifests within each of the three domains and whether any shifts occur. (p. 108)

Moreover, together they form an invisible internal "portrait" of a person and a professional who lives and works in a particular environment. Actually, such a portrait could become a teacher profile that may be developed into a model of the teacher as an abstract construct, accumulating major attributes desirable for that specific profession. Construction of a model or a profile would allow us to compare the candidate to the model and make some assessment as to closeness of fit.

A teacher profile is a research-based prototype of a professional who is engaged in teaching and bringing up school-age children and youth. Various models of teacher professional competence commonly describe essential components of a teacher profile (Rice, 2003; Serdyukov & Ryan, 2008). However, as mentioned previously, until recently these models focused primarily on professional characteristics. In addition to using their content knowledge and pedagogical skills in the classroom, teachers also have to forge human qualities and relationships that influence students' motivation and efforts to learn, and that also affect student behaviors and development (Dyrud, 2000). Therefore, an important part of the teacher-preparation process should be to focus on personal qualities, such as high moral principles, values, and ethics (Goodlad, Soder, & Serotnik, 1990; Yost, 1997), and dedicated to helping the individual teacher candidate develop them. Hence, the profile of a contemporary quality teacher must take into consideration both knowledge and skills, and also dispositions.

Experiment

In the fall of 2010, the researchers from the teacher-preparation programs at National University undertook an investigation of teacher candidates' dispositions. The goal of the research was to identify teacher attributes, both professional (competencies) and personal (dispositions), in order to better understand the candidates who enter the field of education. It should be noted that a great number of candidates at NU have already been in the teaching profession for some time and are returning to complete their credential program or Master's degree, or to obtain a second credential; so it was even more interesting to observe what attributes they already had. The researchers conducted a pilot study, surveying students from one of the general education courses, in order to identify dispositional descriptors that the students found salient. The survey was offered to ten candidates of a TED 665 course titled Culture, Cognition and Language. Some preliminary results of this pilot are presented below. Ultimately, this approach will be expanded to include candidates from the entire general- and special-education programs.

Instrument

An instrument for this study was developed specifically to identify some of the dispositions and other relevant issues:

1. Demographic information: age, sex, ethnic background, family status, previous studies, degrees, work years, and current employment.

2. Assessment of candidate's decision to study and general satisfaction with the school: the reason for going to the college, the reason for selecting National University, and satisfaction with the classes.
3. Understanding of basic educational terms, such as assessment, evaluation, method, curriculum, strategy, activity, lesson plan, learning objective, learning outcomes, and constructivism.
4. Identifying of dispositions by selecting preferred attributes from a list of specially selected attributes. For simplicity, each disposition was denoted by one key word, e.g., knowledgeable, honest, fair, respectful.
5. Description of their actions in two case studies, in which the candidate acts as a student and then as an administrator.

The pilot study attempted to identify candidates' preference of dispositions (a) by offering a list of selected dispositions and (b) by using a case study. The first measure directed the candidate to select and underline five attributes from lists of words in each of four categories labeled *professional, moral, attitudinal,* and *character* and produced from the aforementioned list of dispositions. (See Appendix A).

Most frequently selected attributes ($F \geq 2$) are listed in Table 1 by category. *Knowledgeable, collaborative,* and *responsible* were the most frequently marked in the Professional category. *Ethical* and *trustworthy* were the most frequently marked in the Moral category. *Unbiased, compassionate,* and *encouraging* were the most frequently marked in the Attitudinal category. *Respectful* and *hardworking* were the most frequently marked in the Character category.

Table 1. *Four Attributes Most Frequently Selected From Lists (*N = 10)

Attribute	*n*	Attribute	*n*
Professional		**Attitudinal**	
knowledgeable	3	unbiased	4
collaborative	3	compassionate	3
responsible	3	encouraging	3
reflective	2	understanding	2
effective	2	tolerant	2
prepared	2	fair	2
		cooperative	2
		flexible	2
Moral		**Character**	
ethical	3	respectful	4
trustworthy	3	hardworking	4
has integrity	2	considerate	2
honest	2	reliable	2
principled	2		

The second measure consisted of 10 scenarios with 4 choices each. Choices ranged from least ethical (option 1) to most ethical (option 4). The highest rating, or most ethical, represents the desired disposition. For example, here is a situation for the disposition "supportive":

Circle the item that best describes you.

At my school there is a new, first-year teacher for 2nd grade in our Primary Grades team. He is having hard time in the classroom. What would you do?

a. I don't really have anything to do with this person; I don't know him and we each have our own class. I hear he's having difficulties.
b. I am friendly with this person when I see him in the hallway or Teachers' Lounge. It's too bad he seems to be having difficulties.
c. I drop by the new teacher's classroom to say hi and to tell him if he needs anything, let me know.
d. I suggest in our Primary Grades Team that each month we take turns serving as a mentor for the new teacher.

Ten responses on 10 items resulted in 100 responses for the initial administration and 100 responses for the final administration, for a total of 200 responses. This resulted in a pair of ratings for each candidate, as seen in Table 2.

Table 2. *The Choice of Dispositions by Candidates in Case Study (N=10)*

Attribute/ Candidate	1	2	3	4	5	6	7	8	9	10
Honest	4/4	4/4	4/3	4/4	4/4	4/4	4/4	4/4	4/4	4/4
Supportive	3/3	3/1	4/4	N/A/ 3	3/3	4/4	2/4	4/4	3/3	4/4
Caring	4/4	4/4	4/4	4/4	4/4	4/4	4/4	3/4	4/3	4/4
Reliable	4/4	4/4	4/4	4/4	4/4	4/4	4/3	4/4	4/4	4/4
Consistent	4/4	4/4	3/3	4/4	4/4	4/4	4/4	4/4	4/4	4/4
Accepting	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4	4/4
Understanding	4/4	4/4	4/4	4/4	4/4	4/4	3/3	4/4	4/4	4/4
Principled	4/4	4/4	4/4	4/4	4/4	4/4	3/3	4/4	4/4	4/4
Ethical	4/4	2/3	4/4	3/3	4/4	4/4	3/3	4/4	3/4	4/4
Open-minded	4/4	2/2	4/4	4/4	4/4	4/4	2/2	4/4	4/4	4/4
Total top attributes	9	7	8	8	9	10	4	10	8	10

Most of the 10 candidates responding rated themselves with the highest disposition, that is, the most ethical option (4), in both the initial and final administrations of the survey. However, not all candidates chose option 4 both times.

For the pre-class measure, 84 candidate responses chosen were a 4, while 16 candidate responses chosen were below a 4. For the post-class measure, 85 candidate responses were a 4, while 15 candidate responses chosen were below a 4. Out of 100 pairs, 4 pairs of candidate

responses changed from a higher to lower rating, and 4 other pairs of candidate responses changed from a lower to a higher rating. There are several possible reasons for the changes.

The most controversial portion was the candidates' selection of the actions in situations designed for the disposition "supportive" (as in providing support, especially moral or emotional support, or assistance—see http://www.thefreedictionary.com/supportive). Here, as seen in Table 2, their responses differed the most, demonstrating that candidates have a very dissimilar understanding of what "supportive" means and have varying dispositions towards furnishing support. This divergence points to a huge issue present in all important variables associated with effective schools and effective instruction, i.e., the issue of consistency in understanding critical pedagogic notions and terms. For instance, just ask teachers what they think "high expectations" looks like, and you may receive a wide continuum of responses that will differ in many aspects. This issue needs to be addressed in teacher-preparation programs and in school professional-development events.

Discussion

Candidates' selections from among numerous attributes were clustered into the four categories identified previously: *professional*, *moral, attitudinal*, and *character*. The most frequently identified attributes in the Professional category were "knowledgeable," "collaborative," and "responsible." Examination of these attributes suggests that the candidates value that others (a) will know what to do (knowledgeable), (b) can be counted on to do it (reliable), and (c) will work together (collaborative). It is important to note that "collaborative" and "responsible" are behaviors that might fit within the domain of dispositions.

The most frequently identified attributes in the Moral category were "ethical" and "trustworthy." Both these attributes suggest candidates' expectation that teachers can again be counted on and counted on to do the right thing (ethical). "Unbiased" stood out from the rest of the attributes in the Attitudinal category. By the choice of "unbiased," they demonstrate an expectation and desire for teachers to treat others equitably. Finally, in the Character category, "respectful" and "hardworking" were selected the most. Each speaks to the dignity of the profession and the expectation that teacher colleagues will perform. The selection of "respectful" suggests the valuing of each student by the teacher. "Hardworking" suggests a dedication to the profession, a need to invest effort to achieve outcomes.

On the second measure, 10 responses on ten items resulted in 100 responses for the initial administration and 100 responses for the final administration, for a total of 200 responses. This resulted in a pair of ratings for each scenario by each candidate, 10 pairs per candidate. Whether the candidates chose a high rating (a 4) or a rating less than a 4, pairs generally did not change from the first to the second administration of the survey. This may be related to the fact that when the course ended at the time of the second administration, only a few weeks had passed since the first administration. At least two explanations can be offered. Perhaps candidates remembered how they marked the item previously and wanted to mark consistently. It is also possible that candidates' dispositions underwent no change during the time period. Options selected consistently indicate that candidates at least know which option represents the preferred disposition.

Most of the 10 candidates chose the option with the highest disposition, that is, the most ethical option (4), in both the first and second administrations for each of the 10 scenarios. However, while many chose option 4, a few other selections indicated that at least some of the

candidates were reflecting on the options and considering other choices. Choosing option 4 consistently suggests that candidates *know* what the preferred disposition is, and know to indicate this as being most representative of their own dispositions. This data does not ensure they would actually behave in accord with the selected option in real life.

Results of the first administration showed that 84 candidate choices were a 4, while 15 candidate responses were below a 4. "Honest," "reliable," and "accepting" were marked as a 4 by all candidates on the first administration of the survey. Choices less than a 4 were marked for *supportive, caring, consistent, understanding, principled, ethical, and open minded.*

Results of the second administration showed that 85 candidate choices were a 4, while 16 candidate choices were below a 4. Only "accepting" was rated consistently at a 4 when the survey was administered the second time. All other items included at least one choice lower than a 4.

Response pairs for five candidates underwent no change from the first to second administration, whereas response pairs for the other five candidates did have at least one change: Out of 100 pairs, 4 pairs of candidate responses changed from a *higher to lower* rating, and 5 pairs of candidate responses changed from a *lower to higher* rating. (Note: No data was available from the first administration for candidate number 4 on "supportive.")

Several pairs of responses did change. Several possible explanations exist related to the change patterns of those pairs which fluctuated from a higher to a lower rating. First, the candidates may have not reported truthfully.

Second, the first administration of the survey candidates may have been influenced by ingrained testing behaviors, that is the urge to select the "right" answer on the test—after all, they are students themselves, trying to get good grades—and by the end of the class they may have been more clear about those items on which their grade truly depended.

A third possibility is that between the first and second administrations of the survey candidates became more introspective, better aware of who they are and how they behave, and thus developing a new appreciation of the selected dispositions. It would be desirable for the candidates to become more aware of their true dispositions. When they are aware of their true dispositions, and if these dispositions are less than desirable, the candidates can take steps either to change the disposition or to ensure that resultant behaviors do not negatively impact their students. If they are unaware of their true dispositions, they cannot be expected to consider any change.

Finally, the shift of choices from higher to lower may represent a decline in the area of dispositions for the candidates. This would be alarming, and steps would need to be taken to correct such a change, possibly in the form of group discussions in class and individual advising.

An obvious possibility exists for the change patterns of those pairs whose ratings fluctuated from lower to higher, i.e. that growth was experienced and that the candidates' dispositions had changed as a function of learning in this class. If the candidate ignores what is learned, then genuine growth cannot occur. The university may want to consider how better to promote an atmosphere of acceptance and support for the candidate.

We have already mentioned that marking consistently from the first to second administration may reflect the candidates' *remembering* their first markings and possibly not wanting to appear inconsistent. Similarly the consistency in marking from the first to the second administration of the survey may reflect *no change* in the candidates' dispositions, and perhaps they do, indeed, *possess desirable dispositions*. At the very least, it can be said that the candidates who chose the 4th option on both administrations of the survey *know the preferred disposition*. If they marked

the same way in both pre and post settings, then the marking may reflect that the candidate is *not very introspective*. That is, the candidates select the "right" answer, if you will, and do so without reflecting carefully or deeply about how this answer represents their true dispositions. Since the candidates' true dispositions will be visible and will influence their teaching and other professional behaviors, the university may want to implement interventions to help the candidates (a) become more introspective of their dispositions and (b) learn to better understand their true dispositions. It can be expected that some candidates may not want to change their dispositions. To be successful educators, however, they need to understand the desirability of modifying their dispositions and changing their resulting behavior so it will not have a negative effect on the students they teach and others with whom they work. Attitudes and actions must be congruent on an ongoing basis; they must be consistent to ensure a balanced, integral teacher behavior in the classroom and beyond.

Conclusion

While results from this small pilot study cannot be generalized, they have provided the researchers with a starting place for understanding awareness of the dispositions of teachers in four pre-identified categories. The attributes they selected are admirable and suggest that they hold high standards for their profession and, we can assume, for them as well. This pilot also shows candidates may have a different understanding of some dispositions, and this approach may help identify some problems in teacher dispositions. It may be necessary to clearly define key terms so that all participants are responding to the same idea. The next stage will be to update the instrument based on the pilot, refine methodology, and start collecting data from candidates engaged in several programs in the School of Education at National University.

Further work needs to be done to determine the meaning of the changes in ratings, for those individuals whose ratings changed, as well as to understand the stability in ratings for those whose ratings stayed the same. More work on the instrument is needed. An instrument with a prompt and opportunity for *two* sets of responses will allow identification of (a) what they believe is the preferred disposition, and (b) also the response the candidate would *really* make in the situation. Analyzing the gap between the two sets of markings will help us determine more accurate meaning from the candidates' responses.

Administering the survey at the beginning and end of the candidates' programs, rather than at the beginning and end of just one class, would allow us to better infer the impact of their program on their dispositions by considering the influence of both time and program content.

Teacher dispositions are an important variable in teacher success and, ultimately, student success. Therefore institutions of higher education must provide teacher candidates with preparation not only in the areas of academics and pedagogy of teaching, but also in the area of dispositions. This study has enabled the researchers to begin to objectively identify patterns of dispositions and to examine change patterns in the dispositions as the candidates move through their preparation programs. Ultimately, the reason for doing this will be to provide support around undesired and/or potentially harmful dispositions when needed, and to help candidates achieve congruence, both internal and external, between what they feel and what they do.

An effective teacher must be an accomplished person, both professionally and personally. An effective teacher preparation program, therefore, should be based on a system of developed dispositions that will manifest in professional behaviors in the classroom.

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Appendix A
Survey on teacher dispositions

Survey Prompt: Select five attributes that best, in your opinion, demonstrate teacher's dispositions in each of the four areas and underline them:

Professional: educated, knowledgeable, skillful, professional, cultured, effective, diligent, organized, prepared, planning, imaginative, proactive, reflective, focused, clear, excellence, specialist, expert, communicator, learner, analytical, detailed, data driven, thoughtful, scientific, collaborative, erudite, orator, researcher, facilitator

Moral: principled, moral, ethical, honest, sincere, faithful, trustworthy, devoted, integrity, love

Attitudinal: understanding, forgiving, tolerant, supportive, accommodating, compassionate, caring, fair, impartial, unbiased, enthusiastic, encouraging, facilitative, engaging, open, curious, informal, responsible, dutiful, demanding, rigorous, careful, introspective, flexible, persistent

Character: kind, gentle, sensitive, polite, courteous, friendly, easy-going, adaptable, accepting, receptive, patient, calm, warm, considerate, generous, cheerful, eager, affectionate, outgoing, appreciative, humorous, modest, diligent, hardworking, steadfast, perfectionist, consistent, sagacious, serious, determined, focused, fearless, firm, active, energetic, orderly, rational, attentive, thoughtful, dependable, creative, cooperative, confident, independent, self-esteem, self-sufficiency, pride.

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21st Century Skills: A High School and University Collaboration to Increase Relevance in the Classroom

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Abstract
At the end of the first decade of this millennium, the phrase "21st Century Skills" is becoming increasingly common in the general media and in scholarship. In this article, the author examine the implementation of an initiative involving three colleges within a university and nine public high schools addressing the teaching and learning of skills deemed necessary for success in the 21st century workforce. A total of 14 units of instruction were collaboratively developed by high school and university professors with the intent of fostering these skills in college and high school students.

Introduction

HS/U-21, the initiative described in this article, is a product of work generated by a Midwestern university's task force in collaboration with area high schools. This task force was formed in 2005 to examine the transition from high school to college and create conversation within the university about the reform efforts in area high schools. Faculty and administrators from four academic colleges and undergraduate admissions initially participated in the task force. Eventually, representatives from nine high schools attended the twice-per-semester planning and development meetings held at the university.

In January 2008, a local foundation funded HS/U-21 with the following stated objectives:

1. Development of a number of project-based lessons that stress not only content knowledge, but also interpersonal communication skills—but also the range of skills identified by the Partnership for Century Skills (http://www.21stcenturyskills.org/).
2. Collaboration among secondary and post-secondary faculties, ensuring that students receive the necessary (content and experiential preparation) education to make their post-secondary schooling successful.
3. Partnership with the local business community that allows school districts to better understand and meet the needs of businesses here and globally.
4. Demonstration of 21st century skills via student presentations.
5. Presentation of project-based lessons and dissemination of these lessons to school districts in the area to better reinforce 21st century skills.
6. Explanation and dissemination of information on generational differences; the need for more rigor, relevance, and relationships in secondary schools; and the trends that will drive and challenge society.

The Project

At the first meeting, teachers and administrators from five high schools, along with representatives from the colleges of education, liberal arts and social sciences, and science, created teams based on their areas of expertise. For instance, a physics professor met with high school science educators. One district administrator met with English professors and high school language arts

teachers as she supervised literacy programs for her schools. The teams were introduced to the four categories of 21st century skills identified by the Partnership for 21st Century Skills, with whom they would meet later that month. These three areas were

Creativity and innovation
Critical thinking and problem solving
Communication and collaboration

Later in the meeting, the teams were directed to discuss the lessons they had taught in the past that enable their students to learn these skills. They brainstormed topics that could be the focus of units of instruction to be taught in high school and/or in freshman classes at the university, units that would incorporate one or more of the 21st century skills. All groups reported out to the K–12 and university faculty and administrators in attendance. It was decided that these ideas would be re-examined after Ken Kay, Executive Director of the Partnership for 21st Century Skills, made a presentation on his work a few weeks later.

All participants attended Kay's presentation, in which he emphasized the three sets of 21st century skills in the context of rapid globalization, demonstrating the need for these to be fostered in our high school and college graduates in order for them to be successful in the global economy, as well as become thoughtful participants in a democracy. Several in attendance posed questions centering on high school and college curricula, although a few expressed concerns that accountability could hinder the teaching of such skills in lieu of test preparation. Kay acknowledged this concern but emphasized the importance placed on these skills by the over 400 employers his organization had surveyed.

At the work session following Kay's presentation, the teams began drafting their units of instruction. Each team determined how and when they would meet prior to the April Task Force meeting, where they would be asked to present their projects—units of instruction that would be implemented by the end of May.

At the April task force meeting, the director of the university's educational development center facilitated the presentation of the High School Transformation 21st Century Skills project to the project's participants and interested parties from local school districts and the university. By this time, the number of projects had increased to nine, as more high schools had heard of the venture through their professional networks and asked to participate.

In May, HS/U-21 participants attended a presentation by Chuck Underwood entitled "Generational Imperatives." Underwood presented an overview of his current work in generational research, demonstrating the often dramatic differences in generational perspectives that impact our schools and businesses, particularly in the area of technology. Underwood also emphasized that generational changes are ongoing and that as educators and others look at the impact of globalization on the economic future, they also must be aware of the impacts of generational changes.

Between the April task force meeting and the July presentations, three more groups had joined the project, bringing the total number of projects to 11. This adding of groups may be attributed to the excitement created by the project and the constant information communication among area schools and the university.

In July, Willard Daggett, President of the International Center for Leadership in Education (ICLE, 2010) and a high school reform advocate, addressed the approximately 80 attendees at the studios of a local public television station. In addition to the HS/U-21 participants, several community members from area businesses, the university, and school superintendents were in attendance. Daggett spoke about the need for "rigor and relevance" (ICLE, 2002) in order to

inspire students to learn at higher cognitive levels and apply that knowledge in real-world predictable and unpredictable situations. Daggett also noted the importance of this knowledge and application to the needs of the 21st century economy, coinciding nicely with Kay's earlier presentation to the project's participants. ICLE's rigor/relevance framework is being used in current High School Transformation professional development activities nationwide.

In the afternoon, the following projects were presented and televised to public television stations across the state.

High School A: Social Studies
Topic: World Conflict
Products: historical persuasive essay, multimedia presentations.
21st century skills: Communication, Collaboration, Critical Thinking, Problem Solving
Notes:

> Students communicated their position on various modern world conflicts using a thesis.
> Defended their theses using logical evidence.
> Worked in groups of 2 or 3 to collect resources.
> Evaluated information needed to defend their theses.
> Classified information into three subtopics of evidence to support their theses.
> [The action verbs used above signify high cognitive learning, which Daggett referred to as the "rigor" level of learning—Bloom's Taxonomy of Cognitive Domains' top half.]

High School/Middle School B: Social Studies
Topic: Political Campaigns
Products: video stream/60-second commercial.
21st century skills: Communication, Collaboration, Critical Thinking, Problem Solving
Notes:

> Assessments: self reflection, peer evaluation, teacher assessment/rubric.
> [The Partnership for 21st Century Skills lists self-directedness under the theme of Life and Career Skills.]

University: Social Studies
Topic: World Conflict
Products: role-playing different nations that are in conflict, UN-style debate, with the theme of common humanity.
21st century skills: Communication, Collaboration, Critical Thinking, Problem Solving
Notes:

> Aim was to increase cultural awareness among college freshmen and sophomores.
> Videotape of role playing activity where they must play people much different from themselves, and take on values and beliefs that would be much different from their own.
> Self-directedness.
> Professor reported the following were addressed: power, values, race, and moral responsibility/empathy.

High School C: Mathematics

Topic: Package Redesign Using Geometry
Products: redesign, repackage products found at store
21st century skills: Communication, Collaboration, Critical Thinking, Problem Solving
Notes:

> Collaborated in groups.
> Self-directedness: Students were given an assessment checklist in order to help them progress through the project.

High School D: Mathematics

Topic: Ohio Graduation Test Data Analysis
Products: data analysis, presentation to mathematics department at the school (student-generated videos showing students working with students; and worksheets developed for other students)
21st century skills: Communication, Collaboration, Critical Thinking, Problem Solving
Notes:

> Groups worked on different portions of the Ohio Graduation Test data for the school.
> They identified common mistakes.
> They compared school with statewide results.
> Mixed ability groups (organization, presentation, mathematics).
> High-achieving students wanted to do just the math, and not determine what the data meant.
> Results were distributed school-wide.

High School E: English/Language Arts

Topic: State Testing Preparation: What Works?
Products: Google Docs presentations to show how students can help students prepare effectively for state tests
21st century skills: Communication, Collaboration, Critical Thinking, Problem Solving
Notes:

> Groups of four were formed throughout the school to work on preparing for the state test for 10th graders (Ohio Graduation Test "Blitz").
> Students interviewed students about what works within these groups, as they prepared for the test.
> Data suggested that Ohio Graduation Test cannot be "crammed" (memorized); it must be integrated throughout the curricula.
> Results were placed on school's website for all to access.

High School F: English/Language Arts

Topic: Credit and Debt Awareness
Products: flyer with helpful hints about using credit cards
21st century skills: Communication, Collaboration, Critical Thinking, Problem Solving
Notes:

> Technical writing examination.
> Calculating debt.
> Interdisciplinary.

Students' flyers were distributed to students throughout the school as a way to warn them against accumulating debt. [Ironically, that morning Daggett had noted that the U.S. is the worst debtor nation, saving at –4% versus India's +25% and China's +50%.]

High School G: English/Language Arts
Topic: Analyzing Poetry in an Advanced Placement Class
Products: presentations of their interpretation of a Donne poem
21st century skills: Communication, Collaboration, Critical Thinking, Problem Solving
Notes:

Increased awareness of communication skills.
Applying what is learned in poetry analysis to real-life communication.
Online discussion board, "How does punctuation influence meaning in Donne's poem?" This allowed for more engagement in discussion that would generally be found in an in-class discussion. Instructor reported more thoughtful responses than in a traditional classroom discussion.

High School H: English/Language Arts
Topic: Nuts and Bolts
Products: creating a product, writing assembly instructions afterward, developing advertisements, assembling others' products based on instructions
21st century skills: Communication, Collaboration, Critical Thinking, Problem Solving
Notes:

Technical writing.
Groups devised by teacher (intentional grouping).
Peer assessment.
Periodic deadlines.
Cooperative learning (roles and duties assigned).
Students' presentation of their advertisements on video.

High School I: English/Language Arts
Topic: Opening and Expanding the World to English Literature
Products: Creating a blog screen for *Catcher in the Rye*
21st century skills: Communication, Collaboration, Critical Thinking, Problem Solving
Notes:

Students were able to share thoughts about the book without fear of speaking out in class. They could also do this on their own time, allowing them to give their comments more thought.
Results, according to the instructor, were increased engagement and a higher level of discussion.

High School J: in collaboration with the University: Science
Topic: Energy Efficiency in School Building
Products: analysis of energy efficiency based on infra-red readings, letter to school board outlining findings
21st century skills: Communication, Collaboration, Critical Thinking, Problem Solving
Notes:

> Students complained about differences in room temperature around campus.
> Pictures were taken with infra-red and analyzed.
> A report and pictures were shown to school district administrators.
> Administrators are using the data to make cost-saving changes.

All HS/U-21 presenters declared they had used all four 21st century skills. Since Daggett had presented the ICLE Rigor/Relevance Framework earlier in the day, it was incorporated into the audience/participant rating of the projects as a means of gathering a diverse perspective on the degree to which the partnerships had met their goals. The audience was also in agreement that the three sets of 21st century skills were found in each of the HS/U-21 projects.

Discussion and Recommendations for Future Collaboration

Project participants were surveyed (see Appendix A) and interviewed (see Appendix B) in the two months following the presentations. What was evident to those involved in the project and to those in attendance at the July presentations was the lack of university involvement (Objective #2 listed earlier). Only four professors were in contact with the teams; and even then, only one professor was engaged with the actual high school project (other than simply being informed of what was happening at the schools in his/her content area). The additional groups that joined the project between April and the end of July can be attributed in part to the excitement high schools had for working on such a collaborative effort with the university. Time and again, high school personnel would say at meetings that they were pleased to be working with the university, especially those outside of colleges of education. Typically, they noted, education professors were the only university personnel they were in contact with at their schools, and this was only in the context of working with pre-service teachers. Despite the promise of this project—the opportunity for it to help build a bridge between the high schools and the university (especially university personnel outside the college of education)—essentially the results were several very thoughtful and creative projects from both the high schools and the University, but projects designed and implemented in isolation.

Simply put, the key recommendation for future collaborations is to get a better commitment from the university. It is understood that university professors have time limitations for working on such projects; teaching, service, and research can equal 100-hour weeks, as was noted by one of the participants. To gain more university involvement would require professors whose research focus is on K–12 education (further limiting the possibilities of working with those outside of colleges of education), or buying teaching time for the professor through "course releases." The professors and teachers were given a small stipend for their work, but this apparently did not buy the time needed for significant collaboration.

Another suggestion is that these projects be made available to college of education faculty working with pre-service teachers, curriculum, instruction, and related courses. If these truly are exemplars of student projects that will foster 21st century skills, then it is imperative that college of education faculty ensure their students are prepared to develop and enact lessons that produce such projects. And this brings up a conundrum: What if the colleges of education are already teaching pre-service teachers to develop lessons that produce 21st century skills projects, but are not implementing them when they get into the field? If this is the case, where is the disconnect between the university and schools?

Although the business community did not come out in great numbers to the July presentations, the fact that the public television station took an interest in this venture and publicized it as part of their Science and Mathematics Achievement Required for Tomorrow (SMART) consortium is a good indication that the business community is listening. Therefore, Objective #3 was somewhat achieved. The strong case can be made that the other objectives, with the exception of #2, were met.

Conclusion

This is just one small venture into collaboration between higher education and secondary schools to ensure that students are being prepared for the 21st century workplace and society. For the most part, it was successful; all but one objective was met. But that objective was a significant one: collaboration. The bridge between these two levels of schooling must be built and reinforced through constant engagement. Some research with "boundary spanners" exists (Joint Task Force for Metropolitan Schools, 2004; Stroot, 2006), personnel who are employed by both the school district and the university. But this research invariably notes collaboration between and among high schools and colleges of education. If content experts in fields such as math and science are to remain in short supply in our high schools, then it is crucial that our high schools have access to university scholars in these fields. This project was one attempt at helping a few high schools gain such access; and, despite the apparent failure to do so, the project may have opened some avenues for future collaboration and access to higher education scholarship for high school teachers and their students.

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Appendix A
Rigor and Relevance in the 21st Century

In order to further our understanding of how to better prepare students for the 21st century workforce, we encourage you to complete the demographic information below AND to apply what you believe to be the appropriate Quadrant Letter for each project presented.

Do not write your name on this survey.

What is your job title? _____

What type of industry do you work in? _____ **Years in this position?** ____

Please ✓**check the following:**

Gender: ___ **Female** ___ **Male**

Generation: ___ **Millennials born 1983–** ___ **GenX'ers 1965–1982** ___ **Baby Boomers 1946–1964**
___ **Silents 1930–1945** ___ **G.I. Generation 1915–1929**

High Cognitive Level

Evaluation

Synthesis

Analysis

Application

Comprehension

Knowledge/
awareness

Real-life application Low skill content **C**	High real-life application High skill content **D**
Low real-life application Low skill content **A**	Low real-life application High skill content **B**
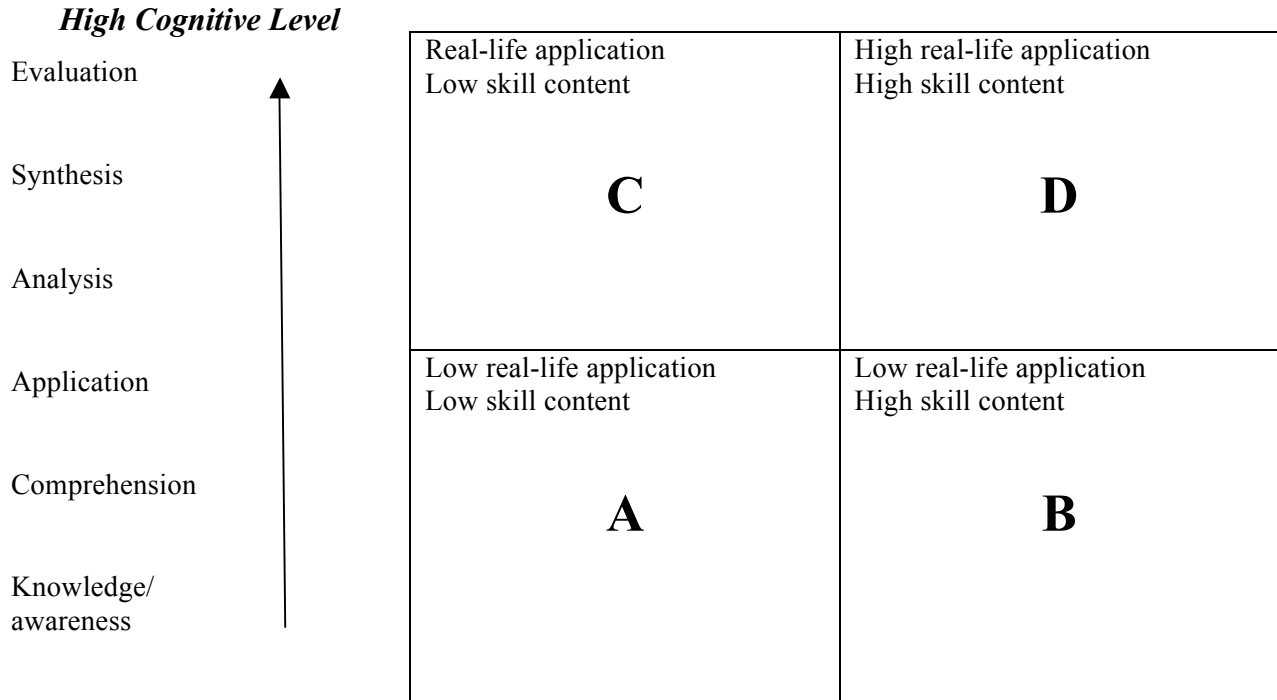
Low Cognitive Level

Low Application Level   *High Application Level*

Knowledge in one discipline	Apply in one discipline	Apply across disciplines	Apply to real-world predictable situations	Apply in real-world unpredictable situations
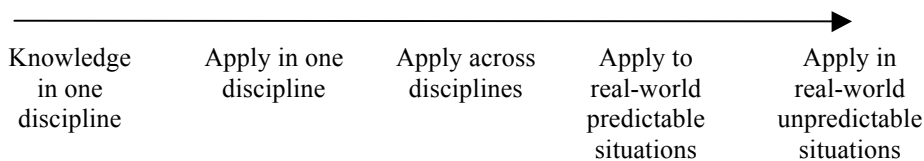
High School A: Social Studies
    Topic: World Conflict   Quadrant_____   Comments _____

High School/Middle School B: Social Studies
    Topic: Political Campaigns Quadrant_____   Comments _____

University: Social Studies
    Topic: World Conflict   Quadrant_____   Comments _____

High School C: Mathematics
    Topic: Package Redesign   Quadrant_____   Comments _____

High School D: Mathematics
    Topic: OGT Data Analysis   Quadrant_____   Comments _____

High School E: English/Language Arts
 Topic: State Testing Prep   Quadrant_____   Comments _____

High School F: English/Language Arts
 Topic: Credit and Debt Awareness   Quadrant_____   Comments

High School G: English/Language Arts
 Topic: Poetry AP Class   Quadrant_____   Comments _____

High School H: English/Language Arts
 Topic: Nuts and Bolts   Quadrant_____   Comments _____

High School I: English/Language Arts
 Topic: English Literature   Quadrant_____   Comments _____

High School J in collaboration with the University: Science
 Topic: Energy Efficiency   Quadrant_____   Comments _____

Appendix B
Focus Group Questions

1. What previous experiences have you had with high school–university collaborations?

2. What do you believe 21st Century Skills to be? What questions do you have about these?

3. Will you continue to use 21st Century Skills in your future lessons and assessments of learning?

4. What did you like best about your project?

5. What would you change if you had the opportunity to do so?

6. How did these lessons differ from how you usually teach?

7. What did you learn from the process?

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A Study of the Predicting Power of a Screening Protocol
for Successful Teacher Performance in a
University Internship Program

Thomas J. Doyle and Clara Amador-Watson

Abstract

Alternative teacher certification programs, also known as teacher internship programs, have been designed to ensure candidates' expert subject matter content knowledge and develop pedagogical skills. The focus of the study is to determine National University's ability to predict the success of interns by comparing their scores in a pre-admission interview with University Supervisors' formal evaluations after the second and eighth month. Findings indicate that interviews are not strong predictors of success of candidates enrolled in internship programs.

Key Words

Teacher certification, internship programs, pre-admission, predictors of success.

Context and Purpose of the Study

Urban and rural school districts often have difficulty attracting and retaining highly qualified teachers. In an attempt to remedy this situation, California has developed a state-approved internship program. Universities that offer internships must have programs approved by the California Commission on Teacher Credentialing (CTC). These universities must provide a program document to the CTC that demonstrates their ability to provide a quality program. Only after these programs are approved by the CTC can a university offer the intern option. National University has a State-approved internship program. Interns are hired by school districts that have contracted with National University. Interns are paid as teachers of record in their own classrooms while being supported by the university and school district.

Typically, candidates for the internship program are adults with significant life experiences. Many of the candidates are pursuing teaching as a second career. Often candidates indicate that teaching is a lifelong dream that was put off because of other career choices and/or family or personal issues. Most of these candidates exhibit the maturity of character and high level of commitment typical of individuals who have made a thoughtful decision to become a teacher.

Currently National University has the largest university internship program in the state of California. The university has established active partnership agreements with over 600 districts serving K–12 students in General Education and Special Education.

This university has Faculty and/or University Supervisors administer a 10-question interview that uses a 5-point Likert scale (1 being low potential for success and 5 being high potential for success). The questions focus on prior experience with children, ability to work with a supervisor, and ability to work on a team, along with case studies with real-life classroom issues. School districts also have the opportunity to interview potential candidates. The interview, along with a number of other determiners for selection, is used to select potentially successful candidates.

National University, in cooperation with local school districts, provides bi-monthly informal assessments and two formal assessments, one after the second month and one after the eighth month. Some of the factors that make the internship program so rigorous include, but are not limited to, the following:

The urban and rural schools in which interns are typically placed are sometimes considered "the toughest schools."

Interns are often placed in schools with low to very low Academic Performance Index (API).

Candidates must attend classes simultaneously throughout their internship.

Candidates must attend monthly Saturday seminar meetings with other interns.

Many of the candidates have had little to no experience in the classroom.

The focus of the study is to determine whether the screening interview is an effective predicttor of success in the Internship Program. Comparison will be made between the composite scores on the interview and the scores received in the formal evaluations required in the second and eighth months of the program. Our study consisted of three distinct phases:

Phase I examined the predictive power of the screening interview as it correlates (Correlation Coefficient Analysis) to the diagnostic assessment of teaching performance at the end of the second month of Internship.

Phase II examined the predictive power of the same screening interview as it correlates (Correlation Coefficient Analysis) to the evaluative assessment after the eighth month of the internship experience.

Phase III compared candidates' scores in the second and eighth months to determine whether the scores on the assessment in the second month predict the scores in the eighth month.

This study addresses an important area of professional teacher preparation. It emphasizes the necessity of multiple screening protocols that will maximize candidates' learning experiences and determine whether these protocols are effective predictors of success in the internship program. The protocol considered in this study is the screening interview conducted by a full-time faculty member or a trained University Support Provider.

Review of Literature

"Alternative teacher certification program (ATCP) is widely used as a term for a variety of programs designed to train and credential teachers in an expedited fashion" (Scribner & Heinen, 2009, p. 179). However, in practice ATCPs consist of a loose confederation of programs and practices ranging from "emergency certification to very sophisticated and well-designed programs that address the professional preparation needs of the growing population of individuals who already have at least a baccalaureate degree and considerable life experience who want to become teachers" (Feistritzer, 1998, p. 2).

Policy makers believe that in providing alternative teacher certification programs they will attract

Persons with valuable professional experience;

Persons with professional experience who translates into effective teaching;

Mature adults who will be more likely to persist in the profession longer than traditionally trained teachers; and

Teachers from underrepresented groups.

In 2010, 48 states and the District of Columbia reported having alternative routes to certification; only Alaska and Oregon did not. Data from the National Centers for Alternative Certification

indicates that 59,000 candidates received certificates through alternative routes. The recession has impacted the hiring of teachers, including those who have completed alternative teacher certification programs. The 59,000-candidates figure is down 300 from 2009. Most surprisingly, on a national level, approximately one-third of new teachers being hired are coming through alternative routes to teacher certification. Since the mid-1980s, approximately 500,000 teachers have entered the profession through alternative routes (National Center for Alternative Certification, 2010).

California, New Jersey, and Texas were the first states to offer alternative routes to teacher certification. New Jersey reports that about 40% of new hires come through alternative routes. In Texas and California, approximately 30% of new hires have been trained in programs of alternative certification (National Center for Alternative Certification, 2010).

Requirements vary among alternative teacher certification programs. These requirements include both acceptance into the programs, retention in the programs, and supervision that provides support for the beginning teachers. These requirements are in place in order to meet the No Child Left Behind mandate to prepare highly qualified teachers (Walsh & Jacobs, 2007). While requirements for retention and supervision are important, the focus of this study is the selection of qualified candidates into an alternative teacher certification program.

All universities offering alternative programs for teacher certification have some minimum requirements. After reviewing the requirements of 10 universities offering an internship program, it was determined that most programs require satisfactory ratings or results in the following entry requirements:

> GPA
> Content specialization
> Field experience
> Competency test
> Criminal background check
> Letters of recommendation
> Personal interviews in which potential candidates demonstrate and convey dispositions necessary for success in the classroom.

GPA, content specialization, field experience, competency tests and passing a criminal background provide data that can be quantified.

Letters of recommendation and personal interviews provide information concerning candidates' dispositions. This data is more subjective than the data that can be measured.

Dispositions are defined by the National Council for Accreditation in Teacher Education (NCATE) as "Professional attitudes, values, and beliefs demonstrated through both verbal and non-verbal behaviors as educators interact with students, families, colleagues and communities. These positive behaviors support student learning and development" (Ball State University, Teachers College, 2010, 1).

NCATE (2008) states in Standard 1, "Candidate Knowledge, Skills and Dispositions," Element 1G, that the target for dispositions in teacher candidates is as follows:

> Candidates work with students' families, colleagues, and communities in ways that reflect the professional dispositions expected of professional educators as delineated in profession, state and institutional standards. Candidates demonstrate classroom behaviors that create caring and supportive learning environments and encourage self-directed learning by all stu-

dents. Candidates recognize when their own professional dispositions may need to be adjusted and are able to develop plans to do so. (20).

In one study at Texas A & M University (Denton, Davis, Capraro, Smith, Beason, & Graham, 2009), 170 applicants into an alternative teacher certification program were used to collect data concerning the application process and the effectiveness of each of the criteria to predict beginning teachers' success in the classroom. The university used both the hard data and the soft data mentioned earlier to determine students' ability for potential success in the classroom. Out of the 170 applicants, 37 failed to complete the admission procedure. These applicants self-dropped themselves from consideration in the program. Five applicants were denied entrance into the alternative certification program because of low undergraduate GPAs. Finally, only 2 candidates out of the 170 were denied entrance into the program because of soft data, indicating that these applicants did not demonstrate appropriate dispositional behaviors. Admission was typically based more upon hard data than soft data; the university did not determine whether the interview had any predictive power.

Researchers in the Texas A & M study indicated soft data may be able to further inform their recruitment efforts by incorporating inventories that seek to measure the applicant's soft attributes, which are believed to impact whether beginning teachers succeed and complete their internships.

Although articles and information existed describing the admission process, the researchers of this study were unable to find data to indicate that an interview with a professor and/or supervisor would predict teaching success. One exception is the Haberman Educational Foundation (2008). This Foundation boasts of having a pre-screening interview that predicts with 95% accuracy the potential students who will stay and succeed in teaching and those who will fail.

Data Collection and Analysis

Colleges and universities admit candidates into teacher preparation programs using a number of criteria. The most common means for assessing potential candidates' success are test scores, recommendations, TB test, coursework, grades, FBI clearance, and interviews. In some cases, the rationale for using specific means to determine admissions has limited data to back up their use.

For years National University has used an interview to determine the eligibility and suitability of candidates for the teacher education program. The present study was designed to determine whether the interview is a positive predictor of success in an internship setting. The internship program is described as follows in the *National University Internship Handbook* (2010):

> This alternative teacher certification program is designed to provide interns with an eight-month cycle of internship clinical practice that involves a combination of coaching and mentorship from the intern's employer, in addition to coaching, mentorship, assessment and evaluation from National University. As the teacher of record in your own classroom you have an all encompassing responsibility as both a teacher and a learner in a "learning to teach and teaching to learn" paradigm. The eight-month clinical practice (TED 628I Internship Clinical Practice) is designed to teach and coach you on the immediate skills needed to be effective in the classroom as well as to provide the feedback, direction and guidance needed

to learn, practice and demonstrate competency on the thirteen Teaching Performance Expectations. (1)

Interviews were conducted by full-time faculty and university-trained supervisors. Candidates answered 10 questions to determine eligibility for admission into the program. The person administering the interview was asked to write comments regarding the candidates' responses to the questions and score responses on a five-point Likert scale, with 1 representing low potential for success and 5 representing high potential for success. The interview was then scored by adding the numerical value of each of the ten questions; strong candidates were those who received a 41–50, acceptable candidates scored 30–40, and unacceptable candidates scored 29 or below. It should be noted that a large percentage of completed interview forms had few, if any, comments. A number of the documents evaluated every response as 5, although no comments were given by the interviewer to justify the scores.

At the end of the second month of the internship program, candidates received a formal assessment that measured their ability to demonstrate the Teacher Performance Expectations of the California Commission on Teacher Credentialing. This assessment was formative in nature and provided the candidate scores and comments that were meant to assist in developing a plan for improvement. The candidates' teaching behaviors were evaluated using the formal assessment by the University Supervisor and the Site Support Provider. The scores were once again scored on a five-point Likert scale, with 1 demonstrating beginning skills and 5 demonstrating innovating skills. The candidates took the information gathered in the evaluation, and with the assistance of a University Supervisor and Site Support Provider, sought ways to improve their skills.

At the end of the eighth month of the internship program, candidates were assessed using the same formal assessment procedure that had been completed at the end of the second month. The formal assessment at the end of the internship experience was summative and was used to determine whether candidates had successfully demonstrated the integration and implementation of Teacher Performance Expectations. Behaviors were once again scored on a five-point Likert scale, with 1 demonstrating beginning skills and 5 demonstrating innovating skills. An average score of 3.0 was required to successfully complete the internship program with a passing score. A candidate who did not pass the internship received an Unsatisfactory (U). Candidates who received an unsatisfactory could receive a candidate improvement plan, be removed from the program, and/or ultimately lose their teaching position.

The participants in this study were individuals who had been accepted into the National University internship program. The program coordinator of the California State internship program for National University, Dr. Clara Amador-Watson, requested placement specialists across the State to send candidates' completed screening interviews and the evaluations completed after the second and eighth months. Over 300 interviews, second-month evaluations, and eighth-month evaluations were submitted. In order to complete the study, the scores that candidates received on the interview needed to be compared to their second- and eighth-month formal evaluations. Student IDs were used to match interviews and evaluations. 40 ID numbers were matched with the interview, the second-month evaluation, and the eighth-month evaluation, indicating that these 40 candidates had completed all three phases.

In the first part of this study, the researcher took scores from the interview and totaled them for each of the candidates. The researcher then totaled the scores of the evaluations. The total scores of the interview were then compared to the total scores on the evaluations. A correlation coefficient analysis was completed to determine the strength of relationship between the inter-

view scores and the scores on the formal evaluation given after the second month. In the second part of this research study, researchers attempted to determine the degree or strength of the relationship between the interview and the formal assessment, using the correlation coefficient analysis given at the end of the eighth month.

For the first part of this study, a simple correlation coefficient analysis was used to determine the strength of the interview as a predictor of success, as measured by the formal assessment after the second month of the internship experiences. For this purpose, the dependent variables are the formal evaluation scores after the second and eighth month of the internship experience. These scores are identified as *y* and plotted on the *y*-axis of a graph. The pre-admission interview is the independent variable and is plotted on the *x*-axis of the graph (see Figure 1). The data indicates no correlation between the Pre-assessment Interview and the Evaluation of Intern Teaching Performance (second month).
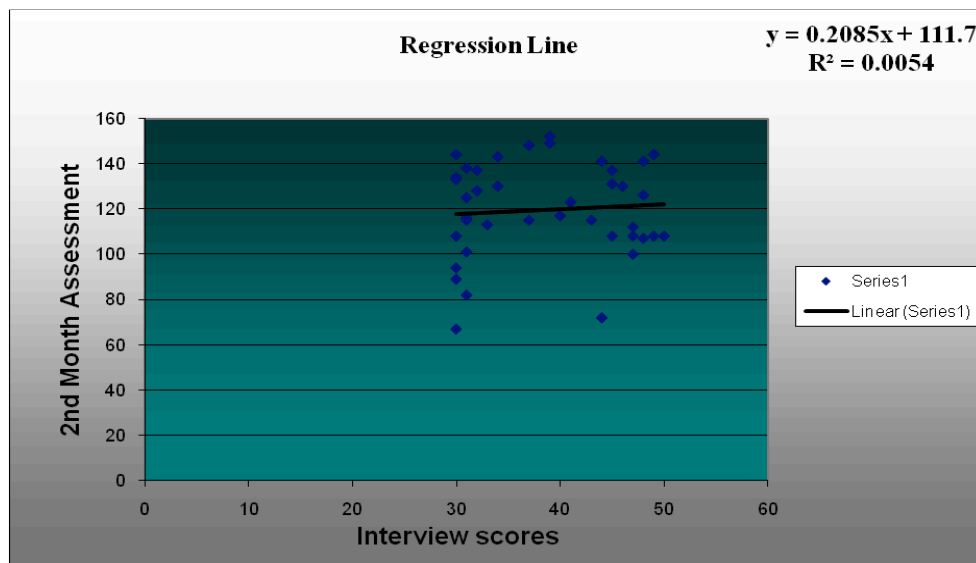
Correlation Coefficient: .073

Figure 1. Correlation analysis: *y* = dependent variable (scores second month);
x = independent variable (interview scores).

For the second part of this study, a simple correlation coefficient was used to determine the strength of the interview as a predictor of success on the eighth-month formal assessment. Once again, the dependent variables are the scores on the evaluation given after the eighth month of the internship experience. These scores are plotted on the *y*-axis. The interview, the independent variable, is again plotted on the *x*-axis (see Figure 2). The data indicates no correlation between the interview and the scores gathered in the formal evaluation after the eighth month of the internship experience.

Correlation Coefficient: .05
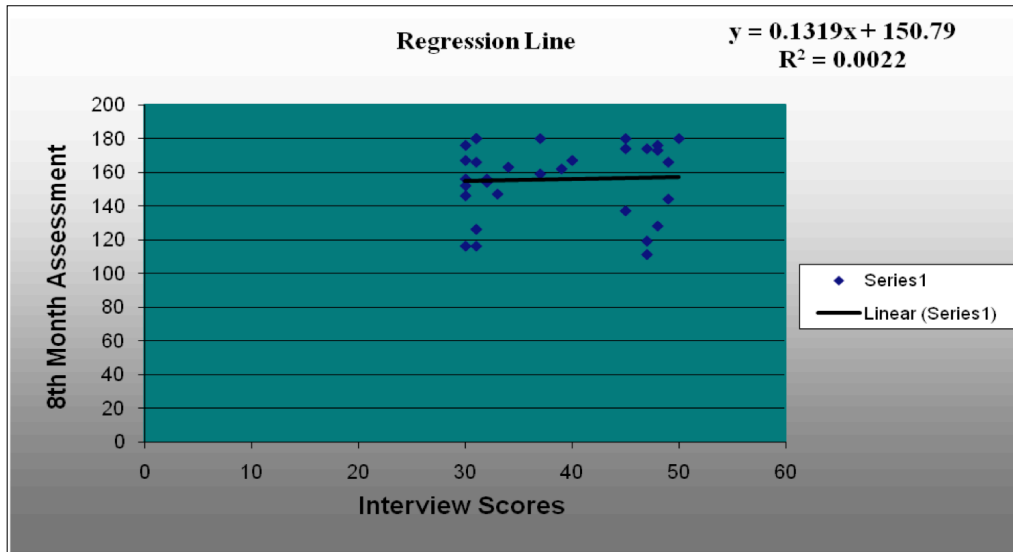
Figure 2. Correlation analysis: *y* = dependent variable (scores eighth month);
x = independent variable (interview scores**).**

For the third part of this study, a correlation coefficient analysis was conducted to demonstrate the strength of the relationship between the second- and eighth-month evaluation scores. This simple correlation coefficient determined whether candidates' assessment scores remained relatively consistent at the beginning of the program and the end of the program (see Figure 3). The data revealed that the scores on the 2nd month assessment were slight predictors of the scores on the 8th month assessment with a correlation of 3.9.

Conclusions and Summary

The review of the data indicated little to no correlation between the scores candidates received in the interview and the scores candidates received in the formal evaluation in the second and eighth months of their internship experience.

The interview for admission into the internship program needs to be redesigned in order to provide significant information concerning the potential success of candidates entering the teacher education program. An analysis to compare each interview question to specific teaching behaviors measured in the second- and eighth-month assessments would give researchers the ability to predict more accurately candidates' success based upon interview responses.

A small positive correlation existed between the scores the candidates received in the formal evaluations in the second and eighth months. The formal evaluation given to candidates after the second month can predict to a small degree the scores the candidates will receive in the eighth month.

Figure with regression line, $Y = .4219x + 105.06$, $R^2 = 0.1505$, plotting 2nd Month Assessment (x-axis) against 8th Month Assessment (y-axis).
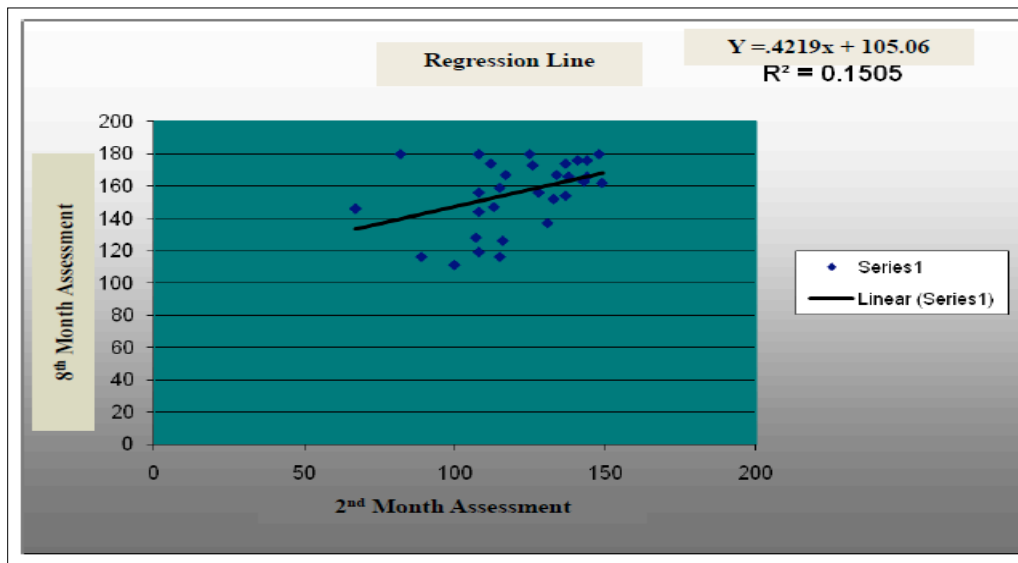
Correlation Coefficient: 3.9

Figure 3. Correlation analysis: *x* = second-month assessment scores;
y = eighth-month assessment scores.

Recommendations for Further Study

Universities need to make informed admission decisions as they relate to the predictive power of admission procedures. All universities use multiple measures for determining admission into teacher-education programs. Often alternative certification programs compared to traditional programs use additional screening measures to predict success. The majority of these measures include hard data. This hard data includes test scores and undergraduate grade point average. These measures have proven to be somewhat useful in predicting a teacher's success in the class-room. Soft data that includes information about a candidate's dispositions provides one more piece of data to predict success. Often this dispositional information can be found in writing assignments, interviews, and letters of recommendation. Although soft data may be open to greater bias, it can provide valuable information concerning the candidate's attitudes and values.

Continued research needs to be completed to determine valid and reliable means to predict the potential success of candidates in alternative teacher education programs. If an admission procedure does not predict success, then it should be deleted from the admission criteria, edited, or revised to make the data more reliable. An extension of this research would be to determine the questions that might best predict the success of candidates in the internship program. These questions could be adapted using the responses that successful interns provide during their interview. Also, questions need a clear rubric for each numeric score, 1–5, so the interviewer can determine what score a response should receive.

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Coaching as a Methodology to Build Professional Practice

Donna L. Elder and Wayne Padover

Abstract

This study examines the effect of implementing a peer coaching model in a private northeastern secondary school. Research has shown that adding coaching to professional development increases the likelihood of new-practice implementation. The study examined both the coaches and coachees' perspectives of the model's effectiveness in the first year of implementation. Both coaches and coachees felt that the experience helped improve teacher practice. This action research study demonstrates that peer coaching can be used in a school to provide support for improving teacher practice.

Key Words

Peer coaching, coaching, professional development, reflective practice, changing teacher practice

Statement of the Issue

As schools and universities are continually looking for approaches to improve teacher quality, peer coaching is a promising methodology. The studies on successful professional development point out the following as key features: reflective practice, learned skills immediately applicable to the classroom, a safe environment for trying new practices, and a feedback loop (Putman, Smith, & Cassady, 2009).

Numerous studies (Bush, 1984; Joyce & Showers, 1982; Truesdale, 2009) have shown that simply participating in professional development does not change teacher practice. Practice is changed when teachers are involved in "reconstructing their existing knowledge and beliefs," which is the purpose of peer coaching (Spillane, 2000, p. 17). In a 5-year longitudinal study, Bush (1984) found that if teachers were simply given a description of the practice, there was a 10% implementation rate; but when teachers received description, modeling, practice, and feedback, there was a 16% to 19% implementation rate. When coaching was added, the rate jumped to 95%. Joyce and Showers (1982) did extensive research on the impact of coaching on the successful implementation of new teaching strategies. Their research paralleled the findings of Bush (1984). Truesdale (2009) completed a study of 20 teachers who received traditional staff development. Among these teachers, 10 received peer coaching and the other 10 did not. Over the course of 15 weeks, those teachers who received peer coaching implemented the new skills, while the 10 who did not lost interest and did not implement the new strategies. Are there practical ways to implement a school-wide peer coaching program and change the school culture to one of reflective practice?

Literature Review

Peer coaching is a methodology that can improve teacher practice. It is an important idea to explore as more and more induction programs are using mentoring or coaching as a part of the induction process. In 1990, 40% of new teachers were in an induction program, and in 2006, 80% participated in an induction program ("Teacher Induction Programs," 2006). Identifying some of the most important practices in coaching is important to assure high-quality experiences for both new and veteran teachers. Researchers (Joyce & Showers, 1982; Bush, 1984; Truesdale,

2009) have shown that when coaching is added to professional development activities, the implementation rate is 95%. McGatha (2008) states:

> Most of the limited research that has been conducted on coaching focuses on (a) improving instructional practice (Licklider, 1995; Showers & Joyce, 1996; Kohler, Crilley, Shearer, & Good, 1997; Delany & Arredondo, 1998; Becker, 2001; Race, Ho, & Bower, 2002; Ai & Rivera, 2003); and (b) applications within teacher preparation programs (Morgan, Menlove, Salzberg, & Hudson, 1994; Mallette, Maheady, & Harper, 1999; Brooks, 2000; Bowman & McCormick, 2001; Veenman, Denessen, Gerrits, & Kenter, 2001). Fewer studies have focused on the role of the coach (Feldman & Tung, 2002; Coggins, Stoddard, & Cutler, 2003; Mangin, 2005).

Although there are many models of coaching, three models that were used in the present study will be discussed. Each has components that are important in providing a worthwhile experience for the recipient of the coaching. Hargrove (2008) discusses Masterful Coaching. The coaching model is from the business industry and is used for executive coaching. "Leaders at every level are recognizing that they can leverage their personal success in accomplishment by coaching others to be successful at accomplishment" (Hargrove, 2008, p. 1). Hargrove (2008) explains the three tenets of Masterful Coaching as inspiring people to realize the impossible, reinvention and transformation, and breakthroughs in both organizational and personal thinking. A Masterful Coach is a person with a track record of accomplishments who has wisdom, compassion, and a sense of humor. Hargrove further states that coaching is not a remedial activity. The purpose of coaching is to transform the person and the organization.

The Cognitive Coaching model was constructed by Costa and Garmston (1993) as a model to be used by a supervisor as an alternative method to a standard evaluation program. The four tenets of the model are: thought and perception produce all behavior, constant decision making occurs in teaching, new learning requires engagement and change in thought processes, and cognitive growth is continual. The model has a list of protocols and engages the concept of states of mind. Costa and Garmaston define the states of mind as consciousness, efficacy, flexibility, craftsmanship and interdependence. The tools that coaches use are rapport, meditative questioning, response behaviors, pacing and leading (Costa & Garmston, 1993).

The Blended Coaching model was developed at the New Teacher Center at Santa Cruz, California. The four elements of the Blended Coaching Model are articulation of best practices, balancing immediate and long-term needs of coachee, approaching coaching as inquiry, and commitment to the collaborative process. Blended Coaching strives for transformational learning. The tools are rapport building, listening, questioning, and goal setting (Bloom, Castagna, Moir, & Warren, 2005). Each of these models—Masterful Coaching, Cognitive Coaching, and Blended Coaching—has a slightly different focus and uses some different tools, but all are building a relationship that moves the person being coached to a new reality.

Swartz (2005) reported in a comprehensive study of literacy programs that professional development was more important in student achievement than the literacy program implemented, and that adding a literacy coach showed even better student achievement results. Shidler (2009) studied literacy coaches over a 3-year period. There was increase in student achievement, but a more interesting finding was that the focus of the coach on assisting teachers to improve their skills rather than focus on content was more effective, from the teachers' perceptive. Thus it is more important for the coach to assist the teacher in improving skills than in being an expert in the content area.

McGatha's (2008) case-study research supported the importance of a focused approach to coaching. The more successful relationship set goals early and maintained the focus throughout the coaching experience. Coaching can help teachers improve their instructional effectiveness by providing them with feedback on their functioning and stimulating them to be more reflective (see Pajak, 1993). "Reflection is considered necessary to bridge the gap between espoused theory and actual practice, between the intended outcomes of teaching and the outcomes actually attained" (Veenman & Denessen, 2001, p. 317).

Peer coaching is a practice that has been used in varying contexts for many years. It is continuing to prove its benefit for improving teacher practice. It can be used not only for current practitioners, but also for pre-service teachers. Fabry (2010) reported the success of a peer coaching model to improve pre-service teacher practice. Peer coaching is building on a strong base of the importance of coaching as a way to provide quality teachers for our classrooms.

Methodology

The study examined the implementation of a peer coaching program that was implemented in a private school setting in Pennsylvania. Participating in the pilot program were 7 coaches and 18 coachees. The intent of the pilot was to determine how to implement this practice within the school program and make it part of a continual improvement cycle. The school had taken one year to study the approach and to make plans for implementation. In August of 2009, the researchers visited the school and met with the planning committee and school leadership team. The researchers also presented a one-day workshop for the coaches and coachees. During the school year, the coaches also participated in monthly coaching meetings that were based on the book *Blended Coaching* by Bloom, et al. (2005). The meetings were led by the Assistant Head of Schools.

An action research approach was taken for this study. Stringer (2007) states, "Action research is a systematic approach to investigation that enables people to find effective solutions to problems they confront in their everyday lives" (p. 1). The researchers worked in collaboration with the school planning committee to establish the research protocol. In addition to learning about the effects of peer coaching on improving teacher practice, the study also wanted to take action to improve the process as data were collected. Coghlan and Brannick (2009) state, " … action research is an approach to research which aims at both taking action and creating knowledge or theory about the action. The outcomes are both action and research outcome, unlike traditional research approaches which create knowledge only" (p. ix).

In May 2010, an electronic survey was sent to all the participants to determine the effectiveness of the program on teaching practice. There was a survey for the coaches and a survey for the coachees. Similar questions were asked of each group, as well as questions that pertained only to their experience. A four-point Likert scale ranking was used for 10 questions, and 8 questions were open ended. Survey respondents consisted of 5 coaches and 12 coachees.

The school leadership determined that the approach was worthwhile and will continue the process in the 2010–2011 school year. The researchers will continue to work with the school by providing training for new and returning coaches in August of 2010 and will repeat the survey in spring of 2011.

Results

The results are presented as descriptive statistics, as well as a summary of the open-ended questions.

Figure 1 shows how coachees and coaches responded to similar questions. There was agreement on how they both viewed the coaching act. Both groups would recommend coaching to colleagues. The coaches (3.75) felt the time spent coaching was appropriate, while the coachees (2.75) felt it was not appropriate. Both groups would recommend coaching to others, with coaches at 3.67 and coaches at 3.3.
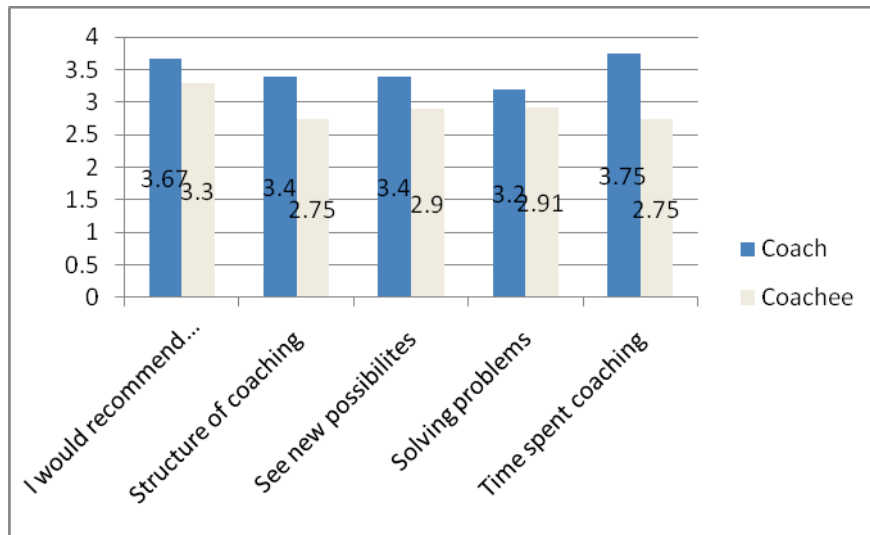
Figure 1. Comparison of coaches' and coachees' responses,
using a four-point Likert scale.

Figure 2 shows the coachees' responses to specific questions. Coachees would like to work with a coach again (3.27) and saw some improvement in their teaching practice (2.5). Coaching did help them to see new possibilities (3.08).

Figure 3 shows how the coaches answered questions specific to them. The most interesting finding was that the coaches learned more about their own teaching through the coaching process (3.75). Coaches felt least confident about their coaching skills (2.8).

Findings from the study include the following:

Among the coaches, 75% stated that they learned more about their own teaching by coaching.
Among both coaches and coaches, 100% would strongly agree or agree that they would recommend coaching to a colleague.
Only 1 coach (14%) felt capable of assessing whether the coaching changed teacher practice, while 58% of the teachers agreed that coaching changed their practice.
All coaches (100%) either strongly agreed or agreed that they would work with a coach again.

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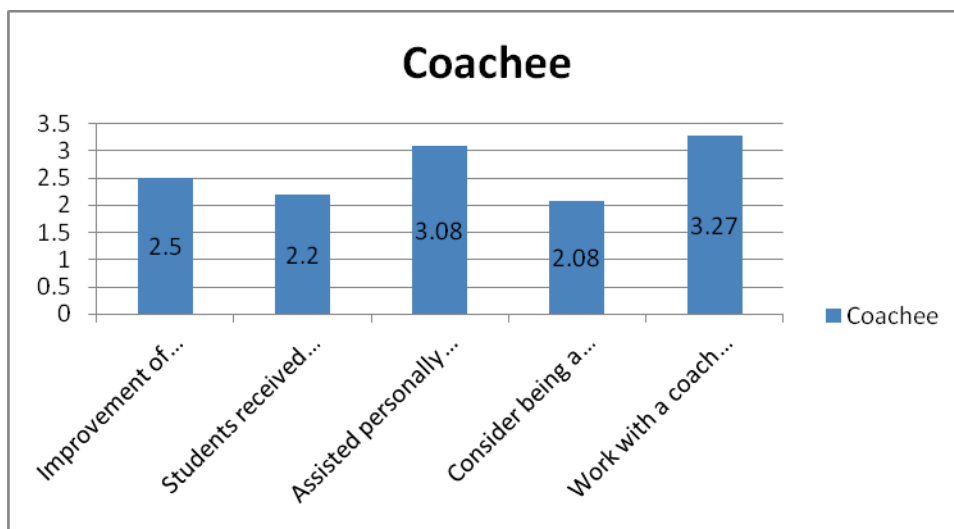
Figure 2.

Coachees' responses, using a
four-point Likert scale.
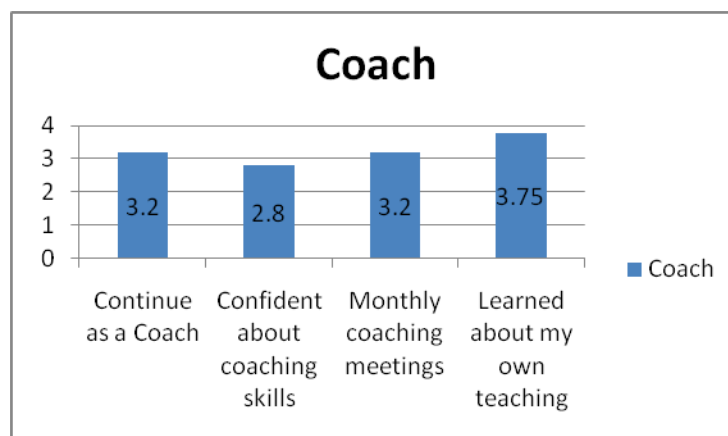
Figure 3. Coaches' responses, using a
four-point Likert scale.

In addition, both groups responded to open-ended questions. Both groups felt that the experience helped to improve teacher practice. Coachees appreciated having someone who was available to talk about instructional practice, and they appreciated having feedback on their teaching. The experience proved successful in assisting teachers to improve their teaching. Coachees wanted coaches to spend more time observing their teaching and giving feedback. The coaches found the monthly coaching meeting to be beneficial, as it gave them an opportunity to problem-solve with other coaches. The biggest challenge for the coaches was to find the time to coach, as they were teaching full time and had other assignments. The coaches all wanted to improve their listening skills. All the coaches would coach again. One coach wrote, "I really

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enjoy having the time and opportunity to work with colleagues and help them reach their personal and professional goals."

Implication for Action

This study demonstrates that peer coaching can be an effective way to assist in improving teacher practice in a school setting. With training and support, teachers can do peer coaching effectively. Swartz's (2005) study also points out that knowledge of strategies is more important than the coaches' content knowledge, which means that coaches can coach others in disciplines outside their own area of expertise. Researchers (Joyce & Showers, 1982; Bush 1984; Truesdale, 2009) have shown that a 95% implementation rate of a new practice occurs when coaching is provided, while only a 10% rate implementation rate of a new practice occurs with training alone. Peer Coaching provides a cost-effective way to institute a coaching program in a school.

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Mathematics Teacher Preparation Using CSET: Problems and Solutions

Nina Stankous

Abstract

In the light of mathematics teacher shortages and low student performance, the issue of mathematics teacher preparation becomes critical. This paper addresses a few important issues focused on mathematics teacher preparation, specifically on preparation for California schools. This study identifies problems related to mathematics teacher preparation and describes the main concerns of CSET Single Subject Math exam takers. The study also offers an effective way to evaluate and address those concerns and provides a list of recommendations to improve the quality of future mathematics teachers.

Key words

Mathematics teacher preparation, CSET Single Subject Math, CSET exam challenges, conceptual approach, logical reasoning

Introduction: Mathematics Teacher Preparation and Its Challenges

Mathematics education in this country is in need of radical improvement, as is acknowledged by politicians, educators, and society in general. To meet these expectations better teachers need to be prepared for schools, yet this problem is quite complicated. In his article, "Strengthen Teacher Quality," Whitehurst (2002, p.6) wrote, "We would not tolerate a system in which airline pilots varied appreciably in their ability to accomplish their tasks successfully, for who would want to be a passenger on the plane with the pilot who is in the 10th percentile of safe landing[?]" And yet, that is unfortunately true about mathematics teachers.

A new report from the Teacher Education Study in Mathematics posted on April 19, 2010 (Center for Research in Mathematics and Science Education, 2010), stated that U.S. mathematics teachers are not as prepared as their international counterparts. Based on a survey of more than 23,000 future teachers in sixteen countries, including about 3,300 in the U.S., the research found that the top-achieving countries allocated half of their teacher-preparation courses for future middle school teachers to the study of formal mathematics, compared to 40% in the United States. In the top-performing countries, at least 90% of future mathematics teachers took both linear algebra and a basic year-long sequence in calculus—considered core courses in the study of formal mathematics—compared to the 66% of teachers who took linear algebra and 55% of teachers who took calculus in the U.S.

To address these disappointing results, the report's authors recommend recruiting teachers with stronger mathematics backgrounds, establishing more rigorous state-certification requirements for mathematics teachers, and requiring more demanding mathematics courses in all teacher-preparation programs.

The history of research on mathematics teachers' preparation is long and contradictory. In 1966, sociologist James Coleman (1966), in his work, "Equality of Educational Opportunity," suggested that differences in teachers, such as their scores on a vocabulary test, level of education, years of experience, etc., did not matter much for students' achievement. The study involved 60,000 teachers in over 3,000 schools.

More recent studies (Goldhaber & Brewer, 1997; Monk, 1994; Monk & King, 1994; Rowan, Chiang, & Miller, 1997) have shown much greater influence of teachers on student academic

achievement than what was reported by Coleman (1966). One of the major characteristics of effective teachers is subject-matter knowledge. The effects of teacher preparation on student academic achievement become clearer when the focus of research moved to subject-matter knowledge. The research is generally consistent in indicating that high school mathematics and science teachers with a major in their field of instruction have higher-achieving students than teachers who are teaching out-of-field. (The term *out-of-field* means that the teachers may be fully prepared but are assigned to teach science and mathematics, which are outside their area of expertise.) These effects become stronger in advanced mathematics and science courses, wherein the teacher's content knowledge is presumably more critical (Monk, 1994; Chiang, 1996).

The situation with mathematics teachers in California is just a reflection on the national picture. The California Council on Science and Technology (2007) issued the report, "Critical Path Analysis of California's Science and Mathematics Teacher Preparation System." The report revealed that more than 10% of all mathematics and science teachers are underprepared and lack the training and experience necessary for a teaching credential in the subject they teach. More than one-third of novice teachers (those in their first or second year) teaching mathematics or science are underprepared. They call teachers "fully prepared" when they are credentialed and are teaching courses in which they are certified, while the rest of the teachers are considered underprepared. If the numbers are examined more carefully and broken down into the two categories of middle and high schools, it becomes clear that the most critical situation is in high school.

According to this report, at the middle school level, 10% of science and mathematics teachers are underprepared, and nearly 30% of novice science and mathematics teachers are under-prepared. About 9% of science teachers and 12% of mathematics teachers teach out-of-field.

At the high school level, 9% and 12% of science and mathematics teachers, respectively, are underprepared; and an even larger percentage (35% and 40% of novice science and mathematics teachers, respectively) are underprepared.

The conclusion of the report is troubling: Despite efforts in California to boost the quantity and quality of fully prepared and effective teachers, a shortage of these teachers in science and mathematics persists. If current trends continue, California will remain in the distressing condition of leaving students with underprepared science and math teachers, and out-of-field teachers throughout the entire state school system.

After becoming acquainted with the analysis of mathematics-teacher preparation, one may be tempted to ask this question: What is so difficult about the preparation of mathematics teachers? That is the title of a report by Wu (2002) devoted to this problem. One can also find discussion of this topic in many other publications (Ball, 1991; Cuoco, 2001) starting in late 1980s through recent times. As stated by Wu (2002), "It is generally recognized that the absence of logical reasoning from mathematics classrooms is a main culprit in bringing about the present mathematics education crisis" (p. 4). At the end of this report, Wu stated his basic conviction: "In mathematics, content guides pedagogy." This does not mean that the content knowledge is all it takes to be a good teacher; it just means that a solid knowledge of mathematics is crucial in competent mathematical teaching. One cannot discuss pedagogy without reference to mathematical content; pedagogical considerations make sense only after the teachers are comfortable with the content. One problem of mathematics-teacher preparation is that those prospective teachers already graduated from schools with the existing mathematics education troubles, and

they bring their fear and anxiety of mathematics to the higher-education classroom. To break that vicious cycle is the primary challenge of mathematics-teacher preparation.

CSET as a Tool for Improving Mathematics Teachers Preparation

Two alternatives have been established by the Ryan Act for prospective teachers to satisfy the subject-matter requirements:

> To complete an approved subject matter program, or
> To achieve a passing score on an adopted examination.

The California Subject Examinations for Teachers® (CSET®) have been developed by the California Commission on Teacher Credentialing (CCTC) for prospective teachers who choose to or are required to meet specific requirements for certification by taking examinations (CSET Single Subject Math, 2001). Completion of a Commission-approved program in mathematics, as an alternative way to meet the subject matter requirements, takes on average 3 to 4 years of study in an accredited College or University. This option is designed to provide the opportunity to be exempt from the CSET testing, and only 50% to 60% of all prospective mathematics teachers enroll in such programs. The remaining 40% to 50% dare to challenge the CSET examination in mathematics.

The CCTC has approved the content area examination for Single Subject areas. Successfully passing the examination is one of the statutory requirements for the California Single Subject Teaching Credential. The tests of the CSET are criterion referenced and based on CCTC-approved subject-matter requirements (also called *content specifications*). A criterion-referenced test is designed to measure a candidate's knowledge and skills in relation to an established standard. It is designed to measure domains of subject-matter content knowledge. All subject matter requirements are developed for the CSET program by committees of California educators and approved by the CCTC.

Test questions matched to the subject-matter requirements were developed using, in part, textbooks, California curriculum syllabi, teacher-education curricula, and teacher-credentialing standards. The questions were developed in consultation with and approved by committees of educators, teacher educators, and other content and assessment specialists in California.

Among recommendations given in the report, "Critical Path Analysis of California's Science and Mathematics Teacher Preparation System" (California Council, 2007), regarding how to improve and remedy the situation are a few related to the development of programs designed to encourage experienced people from business and industry to enter teaching, especially in the areas of science and mathematics. One way for them to become mathematics teachers is to pass the CSET Single Subject Mathematics exam.

Usually, CSET takers are:

> Current California high school teachers
> Future teachers
> Teachers who move to California
> Teachers who want to change their subject and want to teach mathematics
> People who change their occupations from other industries, such as engineers and high-tech specialists
> Educators from other countries.

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Offering CSET Single Subject Mathematics Preparation classes at National University is one of the initiatives to assist future mathematics teachers in gaining the conceptual knowledge in mathematics and problem-solving skills needed to pass the test and, more essentially, to become good mathematics teachers.

Structure of CSET Single Subject Math Exam

Before describing specific problems related to math–teachers' preparation using CSET, it is instructive to consider the structure of the CSET Single Subject math exam. CSET: Mathematics consists of three separate subtests, each composed of both multiple-choice and constructed-response questions. Each subtest is scored separately. The structure of the examination is shown in Table 1.

Table 1. *Structure for CSET: Mathematics*

Subtest	Domain	Number of Multiple-Choice Questions	Number of Constructed-Response Questions
I	Algebra	24	3
	Number Theory	6	1
	Subtest Total	30	4
II	Geometry	22	3
	Probability and Statistics	8	1
	Subtest Total	30	4
III	Calculus	26	3
	History of Mathematics	4	1
	Subtest Total	30	4

Candidates who are verifying subject-matter competence by examination for a credential in Foundational-Level Mathematics are required to take and pass Subtests I and II only.

CSET Single Subject Mathematics Preparation
Class Practice

Now when one can see which areas of mathematics are required to be covered, he/she can design how to prepare students to demonstrate masteries in them. Students who come to the CSET Single Subject Mathematics Preparation class have practically the same problems as high school

students. Even with some math education at a higher level, they still have trouble passing the test. Some students attempt CSET Single Subject Mathematics exams 6 or 7 times without success.

Results of this study are based on observation of 17 groups of students (about 200 people) who came to National University CSET Mathematics Preparation classes during 2004–2008. The purpose of the research was to determine why the CSET exam is so difficult; what are the most critical issues of the test; and how to dramatically improve student performance, increase the quantity of students with successful scores on the exam, and overcome math anxiety among examinees.

During this research, the primary concerns of the students have been recognized:

1. Examinees do not understand questions.
2. They dislike constructed-response questions.
3. They do not know how to present proofs with reasoning.
4. They do not believe they need to know all the things that are asked in the test.
5. They have to memorize too much.

Let us consider a few typical problems from the CSET sample and the main difficulties related to them. Students always say they are frustrated with the way CSET asks questions. For example: "If $f(x) = -2x^2 + 8x + 16$, then which of the following is the absolute value of the difference between the zeros of f(x)?" (The question is then followed by four choices, as is usual in a test.)

Many students do not understand the question. If they were asked to solve a quadratic equation, it would not be a problem; so what is the difference?

A general form of a quadratic equation is $ax^2 + bx + c = 0$. At the same time, we can write that $ax^2 + bx + c = f(x)$, and if $f(x) = 0$, it means that we can find zeros of the function $f(x)$, and it is the same as solving the quadratic equation $f(x) = ax^2 + bx + c = 0$.

Students cannot make the link between zeros of a quadratic function and roots of a quadratic equation. The reason is that they do not see the whole picture of functions, equations, and their relationships; they do not see the concept.

Often, students do not understand the whole concept; they just remember how to solve some problems using a rule. For example, If $f(x) = \dfrac{e^{5x} + 6}{2}$, and $g(f(x)) = x$, then which of the following is equivalent to $g(x)$?

Most of the time, students think that to find an inverse function it is necessary only to switch variables. They do not understand this is not enough: They should also show that for two functions $f(x)$ and $g(x)$ to be inverses of each other, they need to satisfy the following conditions: $f(g(x)) = x$ and $g(f(x)) = x$. In that particular problem, it is not said that $g(x)$ is an inverse of $f(x)$, it is just said $g(f(x)) = x$; and if students do not understand the whole concept of inverse functions, they do not understand the question; because there is nothing about switching variables in the question.

Many students feel uncomfortable with Trigonometry. Even a simple question about $Cos\vartheta$ behavior makes them confused, and questions in CSET about vectors and dot products are among the most complicated for them. One of the first questions they ask when they come to CSET prep class is, "Will we cover dot product?"

Also, students do not understand the value of definitions. When they are asked to give a definition of some basic mathematical terms, they usually give some futures, or examples

dealing with those terms. For example, "Given any two vectors $\vec{a}$ and $\vec{b}$ such that $|\vec{a}| = |\vec{b}| = 1$, which of the following statements about the inner product, $\vec{a} \cdot \vec{b}$, must be true?"

a. $\vec{a} \cdot \vec{b} = 1$

b. $-1 \leq = \vec{a} \cdot \vec{b} \leq 1$

c. $1 \leq \vec{a} \cdot \vec{b} \leq 2$

d. $1 \leq \vec{a} \cdot \vec{b} \leq 2$

To solve this problem, they merely need to know the definition of the inner product and behavior of main trigonometric functions. Also, if they need to find an angle between two vectors, they need to know two definitions of the dot product,

1. $\vec{u} \cdot \vec{v} = |u| \cdot |v| \cdot Cos\vartheta$

2. $\vec{u} \cdot \vec{v} = u_1 v_1 + u_2 v_2$

and at this point, they are completely lost.

Very often, they mix up definitions and properties. For example, say they that "parallel sides of a parallelogram are congruent by definition [!] of a parallelogram."

Another thing students struggle with is logical reasoning. It is difficult for them to see that there are cornerstone theorems, and their corollaries, which help to solve problems. For example, many students do not know the theorem about conjugate roots: If one root is a complex number, then its conjugate must be the second root. Some of them do not know that polynomial of degree n always has n roots; but all those things come from the Main Theorem of Algebra, which should be considered as a main result of algebra.

The issues discussed above are even more critical when it comes to proofs, especially in geometry. Sometimes, students are asked to solve a word problem, which requires the student to first sketch a picture and then prove some statement. For example, "Prove: If two circles are tangent externally, their common internal tangent bisects a common external tangent." The most challenging thing is to create a picture based on words. They are confused about "external" and "internal" tangents; they try to assume that both circles have equal radii, and if the radii are different, that it cannot be true.

It is surprising how many students do not know how to prove that the sum of angles in a triangle is 180˚. For example:

Given: If a transversal intersects two parallel lines, then the alternate interior angles are congruent. Questions: If the above statement is false, which of the following is also false?

a. If two angles are supplements of congruent angles (or the same angle), then the two angles are congruent.
b. Vertical angles are congruent.
c. The base angles of an isosceles triangle are congruent.
d. The angle sum of every triangle is 180°.

They do not see any connection between the Euclid postulate and the fact that the sum of the angles in a triangle is 180˚.

The most difficult part of CSET math exam is the one related to Abstract Algebra. Every time, when students come to the prep class, they ask, "Will we cover Fields and Rings? And Vectors?" Those topics of Abstract Algebra are the most challenging and confusing for them. The example below shows how several issues related to definitions and proofs come together just within one problem and make it so complicated:

Which of the following statements refutes the claim that GLR(3), the set of 3×3 invertible matrices over the real numbers, is a field?

    a. There exist elements A and B of GLR(3) such that $AB \neq BA$.
    b. There exist elements A and B of GLR(3) such that $det(AB) = det(A)det(B)$.
    c. If A is an element of GLR(3), then there exists a matrix $A^{-1}1$ such that $A^{-1}A = I.$
    d. If A is an element of GLR(3), then there exists a matrix A such that $det(A) \neq 1$.

Again, the way the question is asked is unusual; it reads, "Which statement refutes…." Students cannot distinguish which properties are not related to the definition of a field at all, like $det(AB) = det(A)det(B)$ or $det(A) \neq 1$. Also, they try to prove that the set of 3×3 invertible matrices is a field, and they do not see that to disprove a statement one needs to find just one contradiction; instead, they check all the properties.

The list of the problems can go on, but the main point illustrated by those examples is that practicing a conceptual approach and logical reasoning, students and future teachers can overcome their fear of math and the CSET exam in particular.

The students in CSET mathematics preparation classes complain that mathematics requires too much memorization. It is a common myth related to the fact that they do not understand a concept and do not know how to apply it. Yet this is becoming critical for an advanced level of mathematics, where the volume of information is practically impossible to memorize; and students' skills in logical reasoning, including definitions and proofs, determine their success in problem solving.

Some observations from CSET preparation classes show that even when students can see answers, in 90% of the cases they cannot do the problems on their own with explanations as a constructed response; but it is required in the CSET exam. If they do not understand concepts, they cannot understand the answers, even when they see them.

Although the CSET Single Subject Mathematics Preparation classes are brief and intensive and require quite a strong background in mathematics, the results of that approach are impressive. Over 200 students took those classes during two years between 2004 and 2008; and, based on their e-mail communications with the author, about 80% of the students passed CSET after the classes. When the students first come to this preparation class, CSET looks like a puzzle for them, with no connection between the pieces. Yet, post classes, they say they can finally see the whole picture, and they gain a much better understanding of mathematical concepts and reasoning.

Conclusions and Recommendations

Based on faculty experiences in the CSET Single Subject Mathematics Preparation classes, the following critical issues have been recognized:

1. Examinees do not understand questions.
2. They dislike constructed-response questions.
3. They do not know how to present proofs with reasoning.

4. They do not believe they need to know all the things that are asked in the test.
5. They have to memorize too much.

While practicing the conceptual approach and logical reasoning in CSET preparation classes, practically all the students' concerns disappeared. The idea of understanding mathematical concepts and reasoning is not new. However, an important finding of this study is that high-lighting specific areas of concerns and thus resolving most of the issues blocking successful passing of the CSET examination by that approach, demonstrates the effectiveness of critical analysis of typical problems and practical application of the approach.

Primary recommendations for CSET Single Subject Mathematics examinees include the following:

> Students need to see the whole picture instead of unrelated fragments.
> Understanding of concepts and reasoning is the key to success in CSET examinations and teaching.
> Students should know definitions well.
> Knowing the difference between definitions and properties is a must, e.g. things that can be proved, and which reasoning to put for proofs.
> Students should recognize the basic postulates and proofs of main theorems, and not try to memorize everything.

If examinees follow those recommendations, their chance of success increases dramatically in the CSET Single Subject Mathematics examination and, more importantly, in becoming a good mathematics teacher. These are also good recommendations for instructors who want to become involved in mathematics-teachers' preparation, e.g., college and university professors or professional development experts.

Sometimes students who come to the CSET Mathematics Preparation class lack sufficient background to capture concepts from short preparatory classes. National University offers a high-quality Mathematics-major program that gives students a waiver for CSET Single Subject Mathematics exams. The program covers all SMR (Subject Matter Requirements) for the CSET Single Subject Mathematics exam. In addition, the program provides a solid knowledge of mathematical principles and applications.

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First Attempts at Bibliotherapeutic Lessons:
Special Education Teacher Reflections

Britt Tatman Ferguson and Douglas Rakoczy

Abstract
The focus of this inquiry was the initial use of bibliotherapeutic lessons by special education teachers. Four special education teachers reviewed, adapted, and implemented well-designed bibliotherapeutic lessons that use stories, over an extended period of time, to help students understand and resolve social and emotional issues. Outcomes suggest the value of lessons for students and planning considerations for teachers. The capability of incorporating bibliotherapeutic interventions into naturally occurring instruction and use of the regular curriculum may make such interventions easier to implement and less intrusive in the general education environment, thus facilitating inclusion of students with Individualized Education Plans.

Key Words
Bibliotherapeutic intervention, bibliotherapeutic lesson, bibliotherapy, cognitive coaching, cognitive-behavioral intervention, cooperative learning, emotional or behavior disorder, life space interview

Complementary Interventions Can Lead to Improved Behavior

Special education teachers are required by federal law through the Individuals with Disabilities Education Act (IDEA) to address goals from each student's Individualized Education Plan, or IEP, (U.S. Department of Education 2010), a plan developed by a team of professionals with the student's family and, when appropriate, the student. Goals frequently address concerns related to student behavior. Many interventions can be utilized to address concerns related to behavior such as applied behavior analysis (Alberto & Troutman, 2006), multimodal approaches that incorporate a combination of behavior modification, medication and self-monitoring (Barkley, 2006); cooperative learning that results in social and academic achievement (Johnson & Johnson, 1989); and teacher talk or counseling (Costa & Garmston, 2010; Redl, 1972). However the use of principles from bibliotherapy is neither well known nor used by teachers even though it may have great promise.

Applied behavior analysis has the advantage of requiring a precisely defined behavior that can be measured with improvement recorded over time. Multimodal approaches improve upon single mode approaches as behavior is addressed, chemical imbalances can be remedied, and responsibility for monitoring behavior is shifted from an external to an internal locus of control. Well-structured cooperative learning lessons, which incorporate the five key elements of effective cooperative learning, noted by Johnson, Johnson and Holubec (1998) have the benefit of providing social support from both peers and teachers, and for eliciting improved social skills with regular and consistent usage. Various forms of teacher talk or counseling provide a procedure in which the teacher can help students examine their own behaviors, thinking, and feelings. Through Cognitive Coaching techniques, teachers can help students focus on their own thinking and reflect on what they hope to accomplish. Through Life Space Interviews, teachers can guide students through upsetting events in their school day, examine causes and possible options, and provide closure.

A bibliotherapeutic intervention, usually an instructional lesson, would help students address social and emotional objectives by employing three elements from bibliotherapy, identification, catharsis, and insight when studying a book or story. In order to determine (a) if

bibliotherapeutic interventions have value for students with disabilities and (b) the implications for teacher planning and instruction, the present authors conducted a small study of the use of bibliotherapeutic lessons with classes of students with disabilities.

Four special education teachers agreed to use already prepared bibliotherapeutic lessons and share their reflections on several variables. Two important variables were the value of the lessons for students and the implications for teacher planning. The teachers' reflections suggested the value of these bibliotherapeutic interventions. Reflections also provided a better understanding of issues faced by first-time users and possible modifications in order to facilitate learning to use such lessons effectively.

Both federal law (Office of Special Education Programs, 2006) and best practices from the discipline indicate that research based practices should be given preference in special education, especially with regard to students with behavior problems. It makes sense that some research based practices may be used in combination with complementary practices that have been proven effective, in order to increase frequency of use or to enhance possible outcomes.

By taking into consideration each student's strengths, needs, interests and ways of learning when preparing instruction teachers can increase the likelihood that lessons will be successful and students will succeed. Additionally, in view of the idea that student attitude is composed of three related variables affect, behavior and cognition (Breckler, 1984) which may be considered connected and interdependent, as seen in Figure 1, a change in one necessitates a change in the other two (Burns, 1999).

AFFECT

BEHAVIOR   COGNITION
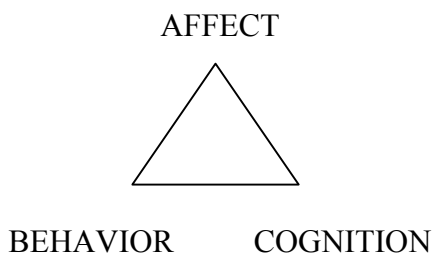
Figure 1. Interdependence of affect, behavior, and cognition.

This more holistic approach has important implications for providing support to students for whom problems have been identified in the area of behavior. That is, by positively impacting affect and providing changes in cognition teachers may be able to improve behavior.

As mentioned, applied behavior analysis, bibliotherapy, and multimodal approaches to behavior, as well as more general approaches such as cooperative learning with social skills instruction and Life Space Interviews, are research based practices that can be used not only with students who have disabilities but also with the general education population and these practices may positively impact affect, behavior, and cognition (Alberto & Troutman, 2006; Pardeck, 1994; Barkley, 2006; Johnson & Johnson, 1989; Redl, 1972).

A wide body of research shows that instruction through well-structured cooperative learning groups, used regularly with fidelity, provide both academic and social support to students, form a context of trust, improve learning, and positively impact behavior through social skills instruction and practice (Kose, Sahin, Ergu, & Gezer, 2010; Johnson & Johnson, 1989; Slavin, 1987).

Higher mental functions (cognition) develop in a child's life through people (e.g. parents and teachers). Children come to understand the habits of the mind, culture, speech patterns, written language, and other symbolic knowledge through this social interaction with parents, with a teacher, and often with peers. It is through these experiences that the child constructs knowledge and derives meaning (Clabaugh, 2011). Sometimes faulty thinking patterns that involve illogic, error or misinformation are derived from these relationships. Because cognition is related to behavior and mood (herein referred to as *affect*) these faulty thinking patterns may negatively impact behavior and affect as well. Therefore we can examine the impact of the faulty thinking patterns on behavior and affect towards the goal of identifying and correcting the flaw (Burns, 1999) and eliciting improvement in all three variables: cognition, behavior and affect.

Learning stressful information about oneself such as one's flaws can create extreme discomfort in some individuals. Defense mechanisms serve to protect individuals from the anxiety about the stressful information so that it does not become too overwhelming (Freud, 1987). Defense mechanisms include but are not limited to denial and distortion and may be seen in children and youth, such as those with emotional or behavior disabilities.

Defense mechanisms are often obstacles when working with students regarding their behavior, feelings, and thinking. However, use of bibliotherapeutic interventions can provide a means for indirectly addressing stressful issues that interfere with student success, and which are difficult to discuss directly with a student when defense mechanisms are routinely triggered. One of the benefits of bibliotherapeutic interventions is that they provide emotional distance from sensitive issues so that the issues can be discussed with less defensiveness (Prater, Johnstun, Taylor-Dyches, and Johnstun, 2006). This social interaction between a responsible adult (teacher) and child (student) can then be completed via a Life Space Interview (Redl, 1972) Cognitive Coaching (Costa & Garmston, 2010), or other teacher talk interventions.

While Bibliotherapy, per se, should legitimately be practiced only by licensed therapists, teachers in both general education and special education can utilize books and other literature to help their students learn about themselves as well as options in life (Prater et. al., 2006; Pardeck, 1994.) Furthermore, bibliotherapeutic lessons can employ the regular curriculum and be integrated into typical comprehension instruction, making it easier to integrate students with disabilities and other special needs with their general education peers (Riordan & Wilson, 1989.)

Cooperative learning, bibliotherapeutic lessons, and some form of teacher talk or counseling (such as Life Space Interview, Cognitive Coaching, or some form of cognitive-behavior intervention) are complementary interventions, as is apparent in Figure 2, these interventions can be used together in order to provide a strong environment and process within which teachers can assist students to address and improve issues related to learning, socialization, and other aspects of their behavior or disability.

Cooperative learning is one of the applications of social psychology in the classroom. The model of cooperative learning developed by David Johnson and Roger Johnson (1989) of the University of Minnesota, involves five key elements that maximize effectiveness: positive interdependence, face-to-face interaction, individual accountability, direct instruction of social skills, and processing. The outcomes of academic and social support provide a context within which students are more likely to trust and be trusted, and conditions which are necessary to engage in genuine reflection, deep discussion or behavior change.
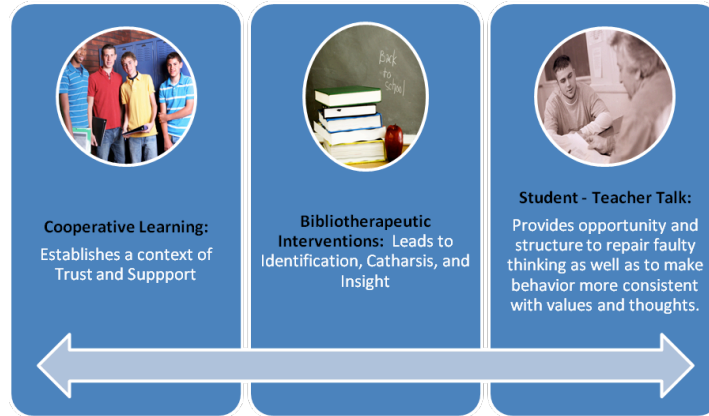
Figure 2. Relationship among three complementary interventions.

Cognitive interventions and applications of cognitive psychology are designed to help individuals reflect on their own thinking (cognitive processes) and to self-regulate their own thoughts (correct faulty thinking), and thus would fall into the realm of meta-cognition. Cognitive-behavior interventions are applications of cognitive-behavioral psychology or therapy (Cherry, n.d.) Although thought is not visible, in cognitive-behavioral psychology the premise is that cognitive behaviors (thinking) can addressed with the laws of behavior modification in order to elicit change.

Since students can develop and improve their thinking behaviors in a relationship with an adult (Clabaugh, 2001) such as their parent or teacher, then teacher-student interaction, or talk, can be an important intervention for individuals with disabilities. Cognitive-behavior interventions include Life Space Interviews, associated with the name of Fritz Redl (1972), as well as Cognitive Coaching, associated with the names of Art Costa and Robert Garmston (2010). Although only the Life Space Interview is specifically designed for use with students with disabilities, other tools can be adapted and utilized with the same student population.

In Life Space Interviews, "… [the] teacher and student explore factors involved in a conflict. It is not punitive but rather corrective of future behaviors" (Braithwaite & Thompson, 1999, p. 112).

Cognitive Coaching, "… is a supervisory/peer coaching model that capitalizes upon and enhances cognitive processes…. to learn something new requires engagement and alternation in thought," (Center for Cognitive Coaching, 2009). The coach's role is not to solve issues but to facilitate others' thought processes so that they solve their own issues the coach serves a mediating function. Some of the basic tools of this model that teachers can use when working with colleagues also work well with students. Tools teachers can use generally take the form of (a) asking cognitively stimulating questions, (b) using reflective listening, and (c) giving directives that require thought.

David Burns (1999), in his book *Feeling Good: The New Mood Therapy* describes one tool he uses with his clients that can be adapted for the classroom as well. It is the formulation of a T-Chart that helps a student examine his thinking and make corrections on those elements of thought which are faulty or untrue. Additionally, by using this model, the teacher can help the

student understand that even a small change in thought can lead to different outcome, often more positive, desirable outcomes.

Application of the essential elements of identification, catharsis, and insight from bibliotherapy in order to solve personal problems has been used successfully with gifted students (Schlichter & Burke, 1994; Schrank, 1982; Frasier & McCannon, 1981). Similarly, bibliotherapeutic lessons can be based on the study of a reading selection to foster reading comprehension and elicit these same three responses towards the goal of examining and discussing, and perhaps resolving, issues related to one's self-concept and behavior (Sridhar & Vaughn, 2000).

Identification occurs when readers find similarities between themselves and one of the characters and associate with these similarities. Catharsis occurs when readers experience and perhaps discharge emotions that have been held in. (It is perhaps catharsis that is the most risky element in bibliotherapeutic interventions. Teachers must be prepared for the students' behaviors and emotions, and be prepared to provide students with support at these times. Support can be provided by co-teaching with the school psychologist, for example.) Finally when readers learn new and novel ways of handling various situations and emotions, it is said that they have gained insight. The goal is for insight to lead to a change in the student's behavior. This can be facilitated through additional activities and planned interventions with the teacher, school psychologist or school counselor.

Bibliotherapy has been shown to be beneficial. McCarty and Chalmers (1997) note the value of discussion and reflection, as well as other forms of expression at a deeper level among students with disabilities. Pardeck and Pardeck (1990) indicate the need to be selective when using bibliotherapy, considering settings and purposes, for example. Use of collaborative groups and bibliotherapy has been shown to improve reading comprehension as well as the overall growth and development of students struggling with reading. Use of email for bibliotherapy discussion among adolescents indicates that the adolescents learned affective information, but the medium was problematic (Rubisch, Carr & Breman, 2000). Little work has been done in this area for special education, and what has been done has had mixed outcomes. Lenkowsky (1987) notes that evidence from objectively evaluated gains is small although there may be some who report "feelings" that bibliotherapy helps.

Could the incorporation into classroom lessons of bibliotherapeutic interventions with its identification, catharsis and insight tools benefit students? Bibliotherapeutic lessons are instructional plans which include some elements of bibliotherapy. In a bibliotherapeutic lesson, the teacher provides typical reading or language arts objectives, but also an objective related to affect, behavior, or cognition, such as friendship and the qualities of a good friend. The teacher introduces to the class the sensitive issue through the context of a carefully selected story (part of the regular curriculum when possible), so that discussion is about the story characters and situation, and ostensibly not about any student in class. This provides certain emotional distance, so defenses may be lower. Lower defenses means more information may be accepted by the students and they will think and talk about the ideas that arise in the lesson.

Once the story has been studied and discussed, including completion of comprehension questions and questions related to identification, catharsis and insight, the teacher can bring the topic closer to each individual student by including an extension activity to the lesson. In this extension activity the teacher has the students take the affective, behavioral, or cognitive issue and extend it in some personal way. If the story has been about friendship, for example, each student may develop a list of qualities personally valued in a best friend, and share the list first with a cooperative learning partner and then with the class. These lists might be posted about the

classroom for future reference. This extension activity provides opportunities for each student (a) to think about the qualities of a friend, (b) to listen to what other students consider to be the qualities of a friend, and (c) to identify the qualities they personally would value in a friend. Perhaps the teacher would further structure the lesson to compare and contrast these qualities. When the lists are posted on the wall, they become artifacts in the room for future reference.

A second important outcome of these lessons is that the issue learned during the bibliotherapeutic lesson provides a basis for teacher-student talk. The role of the teacher and the kind of the relationship between the teacher and students as needed in bibliotherapy has been stressed (Edwards, 1972). This is important information, because in the period following the bibliotherapeutic lesson, the teacher will utilize learnings from the lesson to work directly with individual students.

That is, when related issues arise in the natural course of the school week similar to the issue learned during the bibliotherapeutic lesson there is a basis for discussion. The basis may include vocabulary, the issue itself, and the information shared during the extension part of the lesson. For example, if the lesson was about friendship and qualities of a friend, then the students would have vocabulary that might include "friend," "share," "take turns," "help," and "fun." The students would have discussed the qualities of a friend, and in contrast, the qualities that one might not like in a friend. Finally students would identify and share the qualities they prefer in a true friend. As a result of this activity students have a heightened awareness of the qualities of a true friend and teachers will refer back to these qualities at a future time, in relation to student behaviors in the educational setting.

Now it makes sense and is a more natural event for the teacher to refer back to the affective, behavioral or cognitive issue studied during the bibliotherapeutic lesson during a Life Space Interview, via Cognitive Coaching, or by helping the students examine their thinking pattern related to the affective issue. When Suzie grabs Johnnie's markers and Johnnie becomes upset with Suzie the teacher can talk to both of them about what a friend is, what they each indicated they valued in a friend, and whether they were behaving like a friend. The issue is not new. It is already understood on some level by each student. Vocabulary for discussing the issue has already been introduced and if necessary, discussion can be framed within the context of the characters of the story to reduce the possibility of defensive behavior.

Each of the three interventions was intentionally selected for a specific purpose. Use of well structured cooperative learning establishes a context of *trust* and *support* in the classroom, as well as a sense of interconnectedness among the students so they can begin to understand how their own behavior affects others, and vice versa. Furthermore, by emphasizing the instruction, practice, and use of good interpersonal skills, such as through Johnson and Johnson's (1989) inclusion of social skills instruction, as well as student reflection, students may perceive it to be safer to risk self-examination; it is not out of the ordinary but rather routine for all students.

Including specific cognitive interventions provides effective models of eliciting student reflection and behavioral change through teacher-student interaction and communication. Finally, the use of lessons with extensions that incorporate bibliotherapeutic elements creates content for the teacher and students to discuss during cognitive interventions with the teacher.

By combining cooperative learning, bibliotherapeutic elements, and effective models of teacher-student interaction it may be possible to elicit positive changes in affect (including mood), behavior or cognition (thinking) among students who need such change, with minimal intrusion on the regular curriculum and instruction.

It is the present author's hypothesis that these interventions will result in such multiple and cumulative outcomes <u>as the</u> following:

1. Regular use of well structured cooperative learning in the lessons will result in students' growing perceptions of academic and social support, and more effectively adapting to an environment of trust. Discussion within cooperative learning groups also results in students' hearing many different ideas from peers, not just from adults.
2. Regular use of bibliotherapeutic lessons helps each child examine issues through story characters, develop vocabulary, experience and examine feelings, and learn new and novel responses or options.
3. Regular use of carefully planned teacher-student talk such as by following the Life Space Interview procedure or using elements from Cognitive Coaching helps students apply the learning from the bibliotherapeutic lessons to their lives in order to improve their lives by modifying behaviors, feelings and thoughts.
4. Use of Burns' (1999) cognitive-behavior analysis via a T-Chart (described previously)helps students identify faulty thinking patterns, change those patterns, and benefit from improved outcomes.

Recent personal communication with both colleagues and special education teachers suggests that many teachers may not use or have not heard of bibliotherapy or its use with students in educational settings. The topic may be considered unusual or uncommon.

If bibliotherapeutic interventions are considered uncommon or unusual or have not been heard of by special educators, then it is safe to assume they are not being used or else they are being used infrequently or by only a few teachers, and students are not realizing the potential benefits.

In order to increase teacher use of bibliotherapeutic interventions, it would be helpful to have more information from teachers who have not used them previously. The purpose of this preliminary inquiry is to collect initial teacher thoughts regarding (a) their efforts to use bibliotherapeutic lessons when they have not used them previously and (b) the use of the lessons themselves. Their reflections are clustered and reviewed.

Forays into Bibliotherapeutic Interventions

Participants

Four special education teacherS - three veterans and one novice - expressed interest in the bibliotherapeutic lessons and agreed to participate in a small inquiry related to the initial use of bibliotherapeutic lessons in a special education setting. Table 1 shows the distribution of veteran and novice as well as grade level of these teachers. Veteran is used to describe a teacher with four or more years' experience in special education. Novice is used to describe a teacher in an initial teaching placement in special education.

Table 1. *Participants*

Teacher	Novice or Veteran	Grade Level	Disability Types
#1	Veteran	Primary	Mild / Moderate
#2	Veteran	Primary	Mild / Moderate
#3	Veteran	Secondary	Mild / Moderate
#4	Novice	Secondary	Mild / Moderate

Learning About Bibliotherapeutic Interventions

The investigators provided the four teachers with bibliotherapeutic lesson plans, accompanying books or stories, worksheets or other materials as required by the lesson plan, and structured reflection sheets. While these teachers were not provided inservice training, they did receive print material to read beforehand, that explained cooperative learning and bibliotherapeutic interventions. They implemented the lessons and subsequently completed a follow-up structured reflection after each lesson. Completed structured reflections were returned to the investigators and comments summarized and clustered. Eight lessons were provided to each teacher. Lessons for secondary students were different from lessons for primary students, in that the selections were made to be age and developmentally appropriate.

Procedure

Although no formal training was provided to the teachers, some written information on bibliotherapeutic lessons, as well as on cooperative learning and teacher-student talk interventions was initially provided to each teacher. Teachers read the materials.

Each teacher was then provided with a series of well-structured cooperative learning lessons. Each cooperative learning lesson was a bibliotherapeutic lesson, too. That is, using a cooperative-learning lesson plan format students received instruction related to both the story and the small group skills they would need in order to work together with a partner. They collaborated, studied a story, completed academic objectives related to the story, and completed objectives related to affect or behavior. After each lesson, the teachers processed with the students, discussing what they learned and how well they used their social skills. Each lesson had an extension, so the learnings could be applied by each student. A structured reflection was completed by each teacher and returned to the investigators.

The structured reflections were not anonymous but consisted of brief identifying information so that we could examine patterns of individual teachers over time. Reflections were stored in a private location where only the primary investigator could access them. Each reflection consisted of 10 items (9 open-ended and 1 forced-choice) related to:

Teacher's planning for the lesson
Teacher's implementation of the lesson
Teacher's thoughts while teaching as well as after teaching
Teacher's behavior/words
Teacher's perception of student response to his/her behaviors and words
Teacher's observation of identification, catharsis, and insight
Follow-up activities after the lesson (teacher-student interaction)

Ways the teacher was able to connect the bibliotherapeutic lesson and student learning to follow-up activities (teacher-student interaction)

Teacher perception of his/her effectiveness connecting the follow-up (teacher-student interaction) to the lessons.

Anything else the teacher would like us to know.

Teacher Reflections on the Innovation

It was intended that the lessons would be provided to the teachers and implementation and reflection would be completed during one semester. However, lessons and reflections took the teachers longer to complete than the 45 minutes initially expected. Return of teacher reflections lagged behind implementation of the lessons. One teacher overlooked completing one reflection. Elementary school special education teachers implemented lessons most consistently. One was extremely diligent in returning reflections. The novice teacher lagged furthest behind in implementation and reflections. Data from each reflection were reviewed, but not all data were useful, as they were not always related to the inquiry items or were incomplete.

Three sets of teacher reflections will be discussed: reflections for Lessons 1, 2, and 4.

The focus of this inquiry was the initial use of bibliotherapeutic lessons by special education teachers. Five specific themes emerged:

1. Expenditure of time (related to teacher planning or implementation)
2. Student engagement (students were engaged and wanted to talk)
3. Vocabulary development (vocabulary needed to be introduced)
4. Identification (student related lessons to their own lives)
5. Teacher-Student Interaction (teachers made connections or references to the lessons and learnings at a later time)

With regard to Expenditure of time, two specific messages seem to be present in the data: (a) The teachers wished they had taken more time to prepare for the lessons, and (b) implementation of the lessons took much more time than the teachers had anticipated.

Special education teachers, like their general education colleagues, operate within a very busy schedule each day. Taking time to study and understand a new or different approach to teaching can be challenging. Since each of these teachers volunteered to participate, their interest and motivation can be assumed to be high; even so, at least with the initial lessons, they may not have had an optimal amount of time to study and internalize the instructional plans. One teacher wrote that she wished she had been more prepared. Less than optimal time management may have also contributed to the teachers' not having had enough time to prepare.

Because the lessons took more time to implement, teachers indicated they needed to make modifications in their daily plans. Some of the modifications included chunking the lesson and teaching portions over several days, or modifying materials due to the ability level of the students. Chunking was necessary, in part, because at least one teacher did not have an instructional block of time large enough for the lesson (45 minutes' estimated duration).

With regard to student engagement, teacher comments indicate that the learners were indeed active and engaged, and conclude, "Students loved the story and answered questions as expected." Since the students were more highly engaged in hearing and discussing the stories, the lessons took more time. One teacher indicated "… Students were involved in lots of discussions

… kept raising hands with lots to say," and another, "It took abnormally long because there was a lot of discussion and questions."

Part of the lesson plan called for the class to read the stories three times. One teacher noted that "… the students welcome and ask for each successive reading…." Another wrote, "[I was] … surprised that all three students shared poor choices they had made in the past week, and one even talked about how he fixed his problem." Another teacher wrote that the class spent about 50 minutes per day for about a week on one lesson, and "… there was a lot of discussion and questions brought up."

With regard to vocabulary development, it was noted that one child had limited, if any, expressive language to use with the story, and the teacher noted that he, the teacher, utilized the student's facial expressions to understand him. Vocabulary was introduced, and included phrases like "Show me sad," "Tell me a time when you cried," "friendship," "talking behind another's back," and "listening."

Teachers indicated that indeed identification by the students took place. This is one of the important outcomes of the bibliotherapeutic lessons and the reason the teachers are interested in using them. One teacher wrote that "… when teaching lesson [we] had discussion on actual situations that happened at school." Another teacher indicated she initially had some concern about the lesson that focused on "nerds," as students had had issues with this in their own school. However, she later wrote, "Students were open and honest in telling about situations where they felt in or out of the group," and that the students "were able to engage in discussion about liking people who are different from you."

Finally, with regard to teacher-student interaction, all teachers indicated they related the lessons to other aspects of the students' learning. They mentioned follow-up including the Life Space Interview, teacher-student talk (counseling,) and Cognitive Coaching. The teachers did not elaborate on how well the follow-up helped the student discuss or understand issues. Several comments connected the bibliotherapy discussions to other social skills instruction that the teachers employed.

Discoveries and What They Mean

Data from three sets of reflections only were synthesized as the fourth set was incomplete. Synthesized data clustered into five specific themes and were labeled as Expenditure of Time, Student Engagement, Vocabulary Development, Identification and Teacher-Student Interaction.

Novice teachers already challenged by time management and other demands of being new in a bureaucratic institution may not be appropriate participants in projects requiring change. Data from the first-year teacher were incomplete and not used in this study. However it was clear she believed her students would benefit from the intervention, but she was unable to keep up with the work. Novice teacher Mark Nichol (2007) reveals in his blog the challenges of a novice teacher. He writes, "In my last entry I recounted my challenging first year as a teacher. Here, I'll describe my second-year misfortunes, and my decision to call it quits after my third strike." Nearly half of all new teachers leave teaching within the first five years (Boles & Troen, 2002).

Data indicate participating teachers were surprised that lessons took longer than anticipated. The teachers involved were provided only limited print material to read in preparation for implementing the unfamiliar bibliotherapeutic lessons with a lesson plan format designed by someone else. Provision of inservice training and follow-up support related to the intervention would likely improve their ability to implement the already-prepared lesson plans efficiently.

Lessons took longer because, as teachers clearly indicated, students became active learners and were interested in productive and extensive discussions when presented with engaging materials relevant to their lives, a positive outcome. It is important to recall that discussion is one of the effective ways humans can process information and that the apparent increase in processing is a natural outcome. Talking more and talking about the topic at hand is a necessary factor of lesson effectiveness and reading comprehension. In bibliotherapy, teachers facilitate each student's understanding of the characters, relating the characters' problems and feelings to their own lives, considering the options the characters think about and the choices they make (insight). In this case, the story selections were made specifically for their relevance to student behaviors that needed improvement. Hence students were highly engaged in discussion about behaviors and feelings similar to their own that needed to be modified. It would be interesting to compare the amount and type of student talk during a typical lesson versus a bibliotherapeutic lesson, identifying changes in both quantity as well as quality of talk.

This investigation reminds teachers of the importance of being well prepared so the lesson time is used efficiently. Data suggest teachers should be alerted to the need to allot extra time for planning and delivery of these lessons. This need for extra time should not be perceived as an encumbrance, but an opportunity to engage students in both highly productive academic learning and affective development.

The need to engage in vocabulary development in order for students to participate in the lessons is an important observation by the teachers. Teachers frequently want students to discuss feelings, actions, and thinking with them. Teachers presume students have the language to do so, but do they? Who has not heard a student reply, "I don't know" when asked, "Why did you _____?" If the student does not have the language to discuss the issue, then teachers are neither helping the student understand nor resolving the situation. In fact, teachers may be doing a disservice to the student, as experiences like these can easily become strained and unpleasant.

If teachers expect their students to discuss specialized concepts like affect (feelings and facial expressions), behavior (actions and manners), or cognition (thinking, ideas or beliefs), teachers need to introduce these concepts and help students acquire the necessary vocabulary to do so. Specific terms can help students communicate with teachers, using a shared understanding of the vocabulary. It would be reasonable to employ proven practices in language development towards this end. For example, vocabulary development can be accompanied by visual aids (pictures, graphs with feelings rating scales, or video clips), and vocabulary activities.

Students identify with characters by relating the lessons to their own lives and recognizing similarities between their situations and those of the characters. The excitement noted by teachers (students' blurting out answers, having lots to say) as well as the emotional reaction to the ghost-story murder, for example, suggests that the students also experienced catharsis—a display of feeling aroused through identification. Evidence of catharsis is important because not only were the students able to appreciate similarities between their lives and the lives of the characters, but they were able to empathize, perhaps revisiting emotions they have felt. It is important that each teacher be prepared and recognize that catharsis may bring up emotions that are uncomfortable for the students—so much so that they act out. Proactive teachers will not punish students who experience catharsis but channel their behaviors and words into learning. Allowance needs to be made and immediate support made available for acting out. At a later time, such as during teacher-student interaction, the emotions can be discussed further if appropriate. One can only imagine the empathy a teacher would develop towards a child or teen who feels pain, sadness, anger, or joy in response to a story.

One of the main purposes of the bibliotherapeutic interventions is to provide a foundation for future discussion about students' affect, behavior and cognition (thinking). The teachers seemed to clearly understand the need to relate the learnings from the bibliotherapeutic lessons to subsequent talk with their students. Relating learnings to future behaviors requires each teacher to take a meta-view of their students and their instruction, and facilitate conceptual connections between ideas and behaviors that occur at different times and in ostensibly unrelated situations.

Lessons for each of the four teachers had reading comprehension objectives as well as objectives related to student behavior. Achieving both objectives is important because if teachers can achieve academic and behavior objectives in one lesson, then the inclusion of students with disabilities in general education learning environments can be made simpler, as even objectives related to behaviors can be addressed during regularly occurring instruction of the general education curriculum. This is much less intrusive and makes it easier for the general-education teacher to provide for the learning needs of special education students while ensuring appropriate instruction for students in general education. In fact general education students will likely benefit from the addition of the objectives related to behavior and affect.

Due to the limited size and scope of this investigation, the findings cannot be generalized. However the findings are positive and promising and suggest the importance of further research. Further investigation should be done on a larger scale, over a longer period, possibly incorporating observation data with the teacher self-reports. A next step would be to survey special education teachers to determine how much they know about or employ bibliotherapeutic interventions, as well as how effective they have found them to be.

Employing bibliotherapeutic interventions provides a fresh approach to addressing behavior within regularly occurring curriculum, an approach that can save teachers' planning and teaching time and frame behavior interventions as a natural part of daily life, rather than additions that must be squeezed into already busy instructional days.

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Online Learning

Improving Student Satisfaction with Online Faculty Performance

Cynthia Schubert-Irastorza and Dee L. Fabry

Abstract
Focusing on improving student satisfaction with online faculty performance, the purpose of this study was to determine the key factors influencing negative student evaluation of teaching scores in online classes. A total of 3,294 students who attended 282 online courses taught by 161 faculty members, responded to the current institutionally approved online-evaluation-of-teaching instrument. The study's long-range goal was to use the findings to help online instructors improve their pedagogy and, thus, their student evaluation scores. Study results suggested that negative student evaluations of faculty are most strongly influenced by lack of organization, lack of clarity, and insufficient feedback.

Key Words
Online evaluations, student evaluations, student satisfaction, faculty development

Introduction

The recent Sloan Consortium report, *Learning on Demand: Online Education in the United States, 2009* (Allen & Seaman, 2009), confirms that the exponential growth of distance education at our nation's colleges and universities is changing the face of education in the United States. The report noted that enrollment in higher-education, online-education courses was at 4.6 million students in the fall of 2008, a 17% increase from the previous year. The demand for online education courses far exceeded that of on-site courses for the sixth consecutive year, and over one-quarter of all higher-education students are currently taking at least one online course. The authors of the Sloan Consortium report predict that the growth rate will continue and suggest that the economic downturn and rising gasoline prices are expected to further increase the demand for online course offerings.

As a growing number of colleges and universities across the nation vie for students in the burgeoning online environment, educational institutions are recognizing the strategic advantages of distance education, (Mayadas, Bourne, & Basich, 2009). A 2006–2007 report entitled *Distance Education at Degree-Granting Postsecondary Institutions* (U.S. Department of Education, National Center for Education Statistics, 2008) suggests that many colleges and universities are viewing distance-education offerings as a way to meet student demands for flexible schedules, expand student access to college education, and increase enrollment. As the competition for online students grows, so do efforts to attract and retain students, particularly since the retention rates in online classes have historically been low (Herbert, 2006).

Current research in online education suggests a close tie between online student satisfaction and retention (Chang & Smith, 2008; Herbert, 2006; Kemp, 2002). Bollinger and Martindale (2004) suggest that student satisfaction with online courses is influenced by three major constructs; instructor variables, technical issues, and interactivity. They also note that the instructor is the main predictor of student satisfaction with online courses.

Traditionally, post-secondary institutions have measured online student satisfaction with instructional delivery by conducting end-of-course evaluations that rate or rank the instructor's teaching performance according to a set of institutionally approved criteria (Bangert, 2006). While these student evaluations are not the only measure of instructional performance, they are

considered to be an important measure of instructional competence and play a significant role in faculty performance evaluations that lead to merit awards, reappointment and promotion.

The rapid increase in demand for online classes has proportionately increased the demand for online instructors. As Allen and Seaman (2009) note, many established faculty members are not convinced of the merit and/or do not have the skills to deal with the steep learning curve required for successful transition to the online environment. The Higher Education Program and Policy Council's (2000) *Higher Education: Guidelines for Good Practice in Distance Education* cautions against coercing faculty to teach online, citing potential problems with motivation and highlighting the need for extensive technical and pedagogical training specific to the successful delivery of online instruction. However, difficult economic times and shifting student enrollment patterns are requiring traditionally trained, long-term faculty members to transition rapidly into the online environment, sometimes without sufficient motivation and/or adequate training. Many full-time and adjunct faculty are successfully making the transition to online instruction; others are not (Mayadas et al., 2009; Meyer, 2002).

Given the need to help full-time and adjunct faculty transition successfully into the expanding online environment, this study provides an analysis of 3,294 end-of-course student evaluations collected from 282 online courses taught by 161 faculty members during a 4-month period in 2009. Current research on best practices in online education formed the theoretical base for the study, which involved graduate students enrolled in classes offered through the Teacher Education Department in the School of Education at National University. Using the current institutionally approved online evaluation of teaching instrument contained within the university's existing e-College platform, the purpose of this study was to explore the factors contributing to low student evaluations of online faculty and to use the results to develop effective remediation strategies designed to improve the pedagogy and, thus, the student ratings of low-scoring faculty.

Theoretical Framework

The importance of interactive, student-centered instruction has been a central theme in higher education since the original Chickering and Gamson (1987) study on *The Seven Principles for Good Practice in Undergraduate Education*. Subsequently updated for distance education in 1996 by Chickering and Ehrmann, *Implementing the 7 Principles: Technology as Lever* has strongly influenced the development of contemporary research related to best practices and effective virtual classroom instructional strategies for use in the online environment.

Research in best practices for online education emphasizes the importance of promoting interactivity, encouraging student-instructor and student-student interchanges, and building online learning communities (Bangert, 2005; Bannan-Ritland, 2002; Dennen, Darabi, & Smith, 2007; Kennedy, 2004). Recent contributions to the field of Web-based distance education state that interactivity and communication are key components required for successful online teaching and learning (Fabry & Schubert, 2009; Mahle, 2007; Moore, 2001; Tobin, 2004). Citing results from a recent study on the importance of interaction to student learning within Web-based online learning programs, Sher (2009) notes that "Student-instructor interaction and student-student interaction were found to be significant contributors of student learning and satisfaction" (p. 102).

The literature related to interactivity in online learning generally focuses on the traditional trilogy of interaction, which includes (a) learner-content, (b) learner-learner, and (c) learner-instructor (Chang & Smith, 2009; Moore, 2001). Mahesh and McIsaac (1999) took a slightly

different focus on the same theme of interaction, but focused more on communication. Their research study looked at the dynamic of instructor-student communication and the strategies the instructor implemented that encouraged communication within the virtual classroom, including regular feedback. Communication in online classes most frequently takes the form of asynchronous threaded discussions, announcements, virtual office, synchronous chats and e-mail. Instructor feedback on course assignments also plays a crucial role in student success and can be regarded as a specific form of communication. Effective interaction and successful communication include the use of multiple strategies and activities where instructors provide feedback that is both immediate and frequent (Bollinger & Martindale, 2004; Dennen et al., 2007).

Research related to interactivity in online instruction formed the basis for this study that focused on determining which of the interactivity variables—instructor-student, student-content, and student-student—presented faculty with the most challenges in relation to student satisfaction with instruction. By identifying the key variables, the authors sought to develop effective instructional strategies designed to improve faculty performance in specific areas of need.

Description of the Study

This study analyzed the degree of student satisfaction with instructional delivery in graduate-level online teacher-education courses, as measured by the *Assessment of Teaching* items in the *Student Evaluation of Course* tool currently used in National University's e-College platform. The *Assessment of Teaching* evaluations consist of a subset of 16 questions that were grouped by the present authors according to the three research-based interaction variables: instructor-student, student-student, and student-content. Instructor ratings based on student responses were recorded and ranked to highlight the areas that received the lowest student ratings. The student evaluation data served to highlight general challenges faced by all instructors in the online environment and to identify the specific areas of improvement needed by low-scoring faculty.

Based on current research (Bangert, 2005; Bannan-Ritland, 2002; Bollinger & Martindale, 2004; Dennen et al., 2007; Tobin, 2004;), the authors hypothesized that student satisfaction ratings would be closely aligned to the perceived degree of personal interaction with the instructor, meaningful communication with classmates, and positive engagement with the course content.

Purpose of the Study

The ultimate goal of the study was to determine which types of interactions are most important to the students and how to provide low-scoring instructors with the training and support necessary to improve communication and increase interaction in these areas.

This study served three purposes:

1. To identify the factors leading to student dissatisfaction with all instructors in online courses.
2. To identify specific factors leading to student dissatisfaction with low-scoring instructors in online courses.
3. To use the results to inform teacher training and mentoring.
4. To contribute to the research on improving online instruction.

Methodology

The methodology for this study involved the collection of anonymous end-of-course student evaluation surveys from a total of 3,294 students who attended 282 online courses taught by 161 faculty members during a 4-month period from July through October 2009. All of the courses were in the 1-month accelerated format. The data were collected by the Office of Institutional Research and Assessment (OIRA) staff members, who compile and archive student responses as part of their ongoing institutional research process.

Responses to the student surveys were analyzed and ranked according to which areas presented the greatest overall challenges to all instructors and which areas posed specific challenges to low-scoring instructors. The study used 16 questions that focus on the *Assessment of Teaching* excerpted from the *Student Evaluation of Course* instrument contained in the e-College platform. This same instrument is currently employed by the university to measure student satisfaction in all online classes. Since the surveys are anonymous and the identities of the faculty are unknown, the university's Institutional Review Board (IRB) ruled that the study was exempt.

Participant Characteristics

Study participants, all from National University's School of Education (SOE), were graduate students enrolled in Master's degree courses offered through the Teacher Education Department, primarily in the 25–45 age group. The majority of students were from California, but since these are asynchronous online classes, there were also students from across the United States, along with a number attending from various locations in other countries.

Instrument, Data Collection, and Analysis

The School of Education policy requires that instructors maintain a 4.0+ score out of a possible 5.0 on the *Assessment of Teaching* section of monthly student course evaluations. The *Student Evaluation of Course* contains a total of 29 items, including a self-assessment of learning and an evaluation of the technology functions in the class. For this study, the focus was on the 16 items pertaining to the *Assessment of Teaching*. Using the automated online survey to collect course evaluation results, information was gathered from the student evaluations of 28 full-time and 133 part-time instructors, a total of 161 instructors, representing all the instructors who taught 282 courses during the 4-month period covered in this study.

Separate data were also collected regarding the results for the 51 instructors scoring lower than 4.0 on a 5.0 scale. Out of the 161 instructors evaluated during the time period, 51 (31.6%) received evaluations below the 4.0 level. This group of instructors who received less-than-acceptable student-satisfaction ratings consisted of 6 full-time faculty members (3.7%) and 45 adjunct faculty (29%).

Table 1 provides the data for all full-time and part-time (adjunct) instructors teaching during the time period under review.

Table 1. *Full-Time and Part-Time Faculty Participating in the Study*

Instructor Data	Full Time	Part Time	Total
Instructors receiving course evaluations from July to October 2009	28	133	161
Instructors receiving course evaluation scores below 4.0 from July to October 2009	6	45	51

The items from the *Assessment of Teaching* evaluation were analyzed based on the interaction variables. Table 2 shows how the questions were grouped to indicate the type of interaction, or satisfaction variable: student-instructor, student-content, and student-student. The items or questions in this part of the assessment instrument are numbered 8–23. Item 20, regarding the usefulness of chat sessions, was eliminated since the chat tool, Class Live Pro, was not activated in the online course during the time of the study.

Table 2. *Student Interaction Variables: Analysis of Survey Questions*

Research Variables	Question No.	Measure
Student-Instructor Interaction	11	Instructor gave clear explanations.
	12	Instructor was receptive to questions.
	13	Instructor stimulated critical thinking.
	14	Instructor encouraged students to think independently.
	15	Instructor was available for assistance.
	16	Instructor provided timely feedback.
	17	Instructor provided useful comments on my work.
	18	The instructor was an active participant in this class.
	21	Grades were posted to the gradebook in a timely manner.
	22	Instructor responded promptly to e-mails and other communications.
	23	Overall, the instructor was an effective teacher.
Student-Content Interaction	8	Instruction was well organized.
	9	Content areas described in the course outline were covered.
Student-Student Interaction	19	Threaded discussions were useful.

After grouping the evaluation items by interaction variables, the data were then analyzed to determine the rankings of the items. Table 3 details the rankings for all instructors participating in the study, and Table 4 shows the scoring range for low-scoring instructors only

Table 3. *Ranking of Evaluation Items for All Faculty Participants*
(Indicating Areas of Challenge for All Faculty)

Item	Variable	Content of Item	FT	PT	Total
19	Student-Student	Threaded discussions were useful.	4.13	4.07	4.08
11	Student-Instructor	Instructor gave clear explanations.	4.07	4.12	4.11
8	Student-Content	Instruction was well organized.	4.18	4.16	4.16
17	Student-Instructor	Instructor provided useful comments on my work.	4.22	4.18	4.19
10	Student-Instructor	Method of assigning grades was clear.	4.21	4.26	4.25
13	Student-Instructor	Instructor stimulated critical thinking.	4.31	4.23	4.25
16	Student-Instructor	Instructor provided timely feedback on my work.	4.31	4.25	4.26
18	Student-Instructor	The instructor was an active participant in this class.	4.37	4.24	4.27
21	Student-Instructor	Grades were posted to the grade book in a timely manner.	4.33	4.26	4.27
23	Student-Instructor	Overall, the instructor was an effective teacher.	4.29	4.26	4.27
14	Student-Instructor	Instructor encouraged students to think independently.	4.37	4.29	4.30
9	Student-Content	Content areas described in the course outline were covered.	4.33	4.32	4.32
15	Student-Instructor	Instructor was available for assistance.	4.40	4.32	4.33
22	Student-Instructor	Instructor responded promptly to e-mails and other communications.	4.36	4.33	4.34
12	Student-Instructor	Instructor was receptive to questions.	4.39	4.36	4.37
20	Voided	Chat sessions were useful.	3.96	3.87	3.88

Table 4. *Ranking of Evaluation Items for Low-Scoring Faculty*
(Indicating Areas of Challenge for Low-Scoring Faculty)

Item	Variable	Content of Item	FT	PT	Total
11	Student-Instructor	Instructor gave clear explanations.	3.33	3.26	3.27
17	Student-Instructor	Instructor provided useful comments on my work.	3.60	3.37	3.41
8	Student-Content	Instruction was well organized.	3.60	3.43	3.46
19	Student-Student	Threaded discussions were useful.	3.57	3.46	3.48
23	Student-Instructor	Overall, the instructor was an effective teacher.	3.69	3.48	3.51
10	Student-Instructor	Method of assigning grades was clear.	3.57	3.52	3.53
16	Student-Instructor	Instructor provided timely feedback.	3.71	3.50	3.53
18	Student-Instructor	The instructor was an active participant in this class.	3.88	3.50	3.55
21	Student-Instructor	Grades were posted to the grade book in a timely manner.	3.77	3.53	3.57
13	Student-Instructor	Instructor stimulated critical thinking.	3.73	3.58	3.60
22	Student-Instructor	Instructor responded promptly to e-mails and other communications.	3.74	3.60	3.62
15	Student-Instructor	Instructor was available for assistance.	3.93	3.63	3.67
12	Student-Instructor	Instructor was receptive to questions.	3.92	3.67	3.71
14	Student-Instructor	Instructor encouraged students to think independently.	3.93	3.69	3.73
9	Student-Content	Content areas described in the course outline were covered.	3.88	3.71	3.74
20	Voided	Chat sessions were useful.	3.05	3.04	3.04

Findings

The study focused on identifying areas of instructional challenge for low-scoring faculty. However, the authors found it helpful to use data gathered from the 161 faculty members being evaluated, as well as data from the smaller group of 51 low-scoring faculty members. A comparison of the student rankings from both groups suggests students are expecting and seeking certain behaviors from their instructors, giving lower scores when they feel their needs are not being met.

As hypothesized by the authors, students require all three interaction variables. With a slight difference in rank order, the four most challenging areas for faculty members from both groups were in clarity of explanations (student-instructor interaction), provision of useful comments (student-instructor interaction), well-organized instruction (student-content interaction) and usefulness of the discussion board (student-student interaction).

It seems that all faculty, not just the low-scoring faculty, face student challenges in certain areas. As reflected in the tables, the lowest ratings were received for student-satisfaction scores concerning clear explanations, useful comments, organization of instruction, usefulness of the discussion board, methods of grading, timely feedback, active participation, and timely posting of grades; and these areas, therefore, are considered the most important for both groups.

The secondary range of rankings included the stimulation of critical thinking, timely response to communications, availability, receptiveness, encouragement to think independently, and the coverage of course content. Student satisfaction ratings indicating the rank order of these secondary items were also similar for both groups.

It is interesting to note that full-time faculty members in both groups consistently scored higher levels of student satisfaction than did adjuncts. Out of the 161 faculty members evaluated during the time period of the study, 51 (31.6%) received evaluations below the 4.0 level. However, only 6 (3.7%) of the 51 low-scoring instructors were full-time faculty, and 45 (27.9%) were adjuncts. This disparity indicates a significant need for providing more professional development activities for adjunct faculty. Overall, student responses indicated that all types of interaction variables were important for their satisfaction with the online courses. Dissatisfaction results when interaction is low.

Considerations

It is important to note that online student evaluations are voluntary and frequently represent only a percentage of students enrolled in the class. The average response rate of students in the classes involved in this study was 55%. Common belief is that only the students who feel strongly, either negatively or positively, toward the instructor tend to respond. However, the authors of this study focused on identifying patterns and trends, over time, with a large number of student evaluations, in order to arrive at generalizations that would be helpful to instructors receiving lower-than-expected scores.

Discussion of Findings

The responses from students in the *Assessment of Teaching* section of the *Student Evaluation of Course* clearly support the research concerning interaction and demonstrate that student-student, student-instructor, and student-content interactions are significant contributors to student satisfaction in the online-learning environment, as noted by Dennen et al. (2007) and Sher (2009).

The student responses indicate a need for timely and meaningful feedback with useful comments for improvement on assignments. Students want grades posted in a timely manner. They also would like a well-organized sequence of instruction, clear explanations, encouragement, and instructor participation. It would be fair to conclude that students are more satisfied with online instruction when they perceive the instructor is present and an active participant in the course. They need clear and frequent communication concerning assignments and their

performance. It is implied that personal interactions that include meaningful comments and useful feedback result in higher satisfaction. These findings confirm that interaction is a critical element in the learning process. As Meyer (2002) states, "Quality learning is largely the result of ample interaction with the faculty, other students, and content" (p. vii).

Implications

What do these findings mean for online instructors? The results of this study provide clear information concerning instructor performance. In order to increase student satisfaction, instructors need to:

1. *Organize instruction and provide clear expectations.* Organization and clarity top the list of student expectations. This requires instructors to be well prepared with accurate and consistent course schedules, class information, and assignment due dates, as well as clearly stated rubrics and a full explanation of objective grading criteria. Students need clear descriptions concerning what is required in the assignments, where to find additional information, and where to find examples, along with the instructor's assistance, when needed, and encouragement to succeed. Unexpected changes, instructor confusion, conflicting directions, and what may appear to be arbitrary grading policies are sure to bring student complaints.
2. *Provide timely and meaningful feedback.* Effective online practice means that instructors respond to students quickly and provide both helpful information and useful comments on their academic progress. Students need to receive constructive suggestions and explicit directions in order to improve their performance. In addition, they need to know how they are doing in the course while there is still time for adjustment. Grading assignments and posting grades in a timely manner ensures that students know how they are progressing and what they must do to complete the course successfully.
3. *Be actively present.* The instructor needs to be a strong presence in the virtual classroom. Students want to know that the instructor is there and cares about them and their learning. They need to feel that the instructor is actively participating in the course and is readily available for assistance. Establishing a relationship early in the class, maintaining and nurturing that relationship by using the full complement of interactive online teaching tools, and responding promptly to all communications are key factors for ensuring student satisfaction.

Aligning Course Evaluations to Online Practice

The results of this study also indicate some important gaps in the *Assessment of Teaching* form. While 12 queries address instructor-student interactivity, only 1 relates to student-student interaction, the discussion board. The question regarding online chat rooms was disallowed because that function is still under development and most instructors are either not yet using it, or are in the process of learning how to use it. In addition, the two questions that address student-content issues regarding organization and coverage of course content can be strongly influenced by the quality and accuracy of the course design, which may or may not be the work of the instructor teaching the class. An experienced instructor may be capable of overcoming a poorly designed curriculum and know how to compensate for missing or misleading information; however, a less-

experienced or less-skilled instructor may not know how to make last-minute corrections and will suffer the consequences.

A course evaluation that places more attention on interactivity elements within the course would increase the value of feedback to the course instructor. Items relating to the use of course tools, such as announcements, the virtual office, document sharing, and grade-book features, would pinpoint specific areas for improvement. In general, the present authors suggest reviewing and updating the current institutionally approved course-evaluation instrument to ensure that it provides valid and reliable data for measuring student satisfaction in the online environment.

Conclusions and Recommendations for Future Research

The results of this study support current research concerning the importance of interactivity and effective communication in online courses. As a short-range strategy, the data from this study will support recommendations for improving the performance of instructors who regularly receive student evaluation scores below 4.0 on the *Assessment of Teaching* measure.

The immediate recommendations will include a three-phase remediation plan to improve teaching effectiveness and increase student evaluation ratings for consistently low-scoring instructors:

> *Phase 1: Intervention.* Full-time faculty consistently scoring below 4.0 will collaborate with the Department Chair, and adjunct faculty consistently scoring below 4.0 will work with the Course Lead to review the course evaluations and to develop a remediation plan.
>
> *Phase 2: Mentoring/professional development.* The remediation plan will include being assigned to a peer mentor who will work with the low-scoring faculty member to identify needed areas of improvement. In addition to shadowing the peer mentor, low-scoring faculty will be required to complete specific online training modules, as well as appropriate face-to-face workshops.
>
> *Phase 3: Reflection.* The final phase of the remediation plan will include a written reflection on how the faculty member will implement successful instructional strategies in the online class. This will be followed up with an in-depth evaluation of the next class taught; the evaluation will be conducted by the Department Chair, in the case of full-time faculty, and the Course Lead, in the case of adjunct faculty.

Finally, as a long-range strategy, online student course evaluations need to be updated to reflect best practices in the changing world of online teaching and learning. More attention should be given to student-student interaction, and safeguards need to be instituted against having instructors ranked unfavorably because of poorly designed course materials. The present authors will research alternative instruments for providing more accurate evaluations of online instruction and learning and will make recommendations to the Dean of the School of Education and other appropriate authorities for revising the current course evaluation tool.

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Engineering

The Impacts of Direct and Indirect Measures of MS Assessment in Wireless Communications Program

Mohammad Amin, Ronald P. Uhlig, Pradip Peter Dey, and Muzibul Khan

Abstract

Researchers face many challenges to assess a program in a new field, especially when the program changes rapidly to keep up with evolving and emerging technologies. The Master of Science in Wireless Communications (MSWC) at National University is one such example. This program is relatively new and nearly unique; it never existed anywhere before. This article investigates the roles of the Program Advisory Board, program annual reviews, and a five-year program review in the MSWC program and presents a summary of impacts on program changes. All major aspects of program and course-level changes are considered in this investigation.

Key Words

Assessment, measures, agile, wireless, mobile, Internet, technology, software, hardware

Introduction

In wireless communications, signals are transmitted over invisible electromagnetic waves instead of wires. Examples of first-generation wireless devices include garage-door openers, television remote controls, and cordless telephones. Cordless keyboards and mice, personal digital assistants (PDAs), and cellular phones are some commonly used wireless devices in everyday life. Wireless technologies allow new ways to do business and stay in touch at all times with customers, suppliers, and employees. The future of wireless lies in faster, more reliable, and more affordable methods of transferring multimedia data. Smart mobile devices and Wireless Local Area Network (WLAN) services are capable of providing full access to Internet services on handheld devices while users are on the go. At present, mobile phones provide multiple services, including voice, email, text messaging, paging, Web access for socializing, entertainment, travel services, public safety, healthcare services, news, information services, voice recognition services, and much more.

In the space of about 15 years, the mobile PCS has significantly impacted our personal activities and businesses. Each day over a trillion dollars traverse the Internet in various forms of electronic payment mechanisms, such as credit cards, debit cards, ATMs, and electronic checks. Currently, 234 million Americans, 976 million Chinese, and 617.8 million Indians are using mobile phones (Arghire, 2010; Nystedt, 2010). Recently, Ericsson has revealed that the total number of mobile subscribers worldwide reached 5 billion (Sage, 2010), and this number is expected to grow to 5.6 billion by 2013. The rapidly growing wireless industry is predicted to reach over $1 trillion in global revenue by 2012 (Wood, 2010). A white paper by Entner (2008) reported the following: In 2005, roughly 208 million Americans used mobile wireless devices and 77 million American wireless consumers believed that the use of a wireless device had a major impact on productivity, because it helped speed up efficient decision-making, reduced travel time, improved logistics, and empowered small businesses. Currently, mobile subscribers are using 2G and 3G technologies, but very soon they will use 4G technology (LTE) which will soon become available. It is clearly understood that overall mobile activities and productivity depend on bandwidth. On June 28, 2010, President Obama signed a new presidential memorandum to expand the spectrum available for public auction, nearly doubling the currently used

500 MHz of spectrum controlled by the federal government and private companies. After hearing this good news, Mobile Future Chairman, Jonathan Spalter, made the following comment:

> We appreciate President Obama's leadership and foresight in paving the way to efficiently and responsibly make more spectrum available to keep pace with wireless innovation and consumer demand. Today's presidential memorandum sets the course for the next wave of mobile opportunities that will lead to economic growth and continued job creation. This announcement is a step in the right direction and it's critical that the Obama Administration remains focused on spurring growth rather than imposing restrictive regulations that could paralyze the economic recovery, job growth and investment we see in today's thriving wireless sector. ("Presidential memorandum," 2010)

These statistics clearly indicate that the number of mobile subscribers in the future will grow continuously, and the demand for wireless professionals will increase worldwide. There are excellent job opportunities in the wireless industry with technology companies such as Qualcomm, Texas Instruments, and Intel Corporation; wireless infrastructure manufacturers such as Ericsson, Nortel Networks, Alcatel-Lucent, and Siemens; mobile device manufacturers such as Motorola, Apple, Nokia, Samsung, and Sony-Ericsson; and wireless network operators such as AT&T, Verizon, and Sprint-Nextel, as well as many others both nationally and globally.

In order to help fulfill the nation's wireless professional demand, in June 2004 National University launched a new Master of Science program in Wireless Communications (MSWC) with 12 students; admissions increased to around 100 students in 2008. National University's MSWC program is nearly unique in the world. Although a number of Baccalaureate and Master's programs in Electrical Engineering offer a specialization in wireless, the authors are not aware of any other university that offers a program at the Master's degree level that is similar to NU's MSWC program. The details of this program and its courses are available in the NU *General Catalog* (2010). MSEE programs with a specialization in wireless communications typically offer four courses. However, NU's MSWC program is nearly unique in offering students the opportunity to focus their entire degree program through 12 courses devoted to their chosen field of study. Both the uniqueness and the quality of this program are confirmed by the MSWC Program Advisory Board.

Mission of the MSWC Program

The mission of MSWC program at National University is to arm students with the tools necessary to achieve professional success in both theoretical and practical aspects of the field of wireless communication, and to prepare them for lifelong learning in a field that will be in a state of continual advancement throughout their lifetimes (*General Catalog*, 2010). We seek to equip graduates for employment in research organizations, computer centers, and wireless communications businesses and enterprises. Students are also prepared for continuing education in wireless communications, enabling graduates to pursue Ph.D. studies, if they so desire.

All MSWC Program missions are reflected in the MSWC program outcomes, which are designed to ensure that MSWC graduates are proficient in analytical, technical, and critical thinking skills; that they have a sense of professionalism; and that they are instilled with a strong set of values essential for success in the wireless communications field. These provide the base on which they can build through lifelong learning. Lifelong learning is essential in this rapidly

changing program. The MSWC program is a curriculum for lifelong learning, with a focus on students who need to acquire and maintain significant scientific and technical skills.

MSWC Program Assessment Criteria and Process

National University is well known for its teaching excellence and values. The university strives to serve the community by preparing its graduates with high standards of education and training in cutting-edge technology. The faculty in the School of Engineering and Technology are continually engaged in exploring new types of educational programs to meet industry demands by developing new programs and preparing prospective professionals. The MSWC program is one example that prepares professionals for the wireless industry. This is a relatively new and nearly unique program. This program reflects new, evolving, and emerging technologies, socio-economic changes, the global economy, and other factors, and it is under continual review to maintain high quality and ensure appropriate content.

Program assessment is required by both institutional and accrediting agents. Assessment is needed for program evaluation, program updates, program modifications, course evaluation, course updates, course modifications, new course additions, existing course deletions, and, some-times, program termination. Accomplishment of all of these starts with assessment of program learning outcomes and course learning outcomes. Two types of assessment measures are used to assess an academic program. These measures are often referred to as tools (process or methods) used for evaluation of students' performance that determine student learning outcomes (*WASC Resource Guide,* 2009). Direct measures of assessment are used to evaluate student academic work with respect to the learning outcomes for the program. Data collection for direct measures is usually done through student course and program level activities—assignments, homework, exams, project reports, term papers, portfolios, comprehensive exams, Master's research projects, and so on. In all cases, direct measures demonstrate student learning from the program. Direct measures are unable to provide data on student satisfaction and perceptions.

Indirect measures are not based directly on student academic work, but rather on students' reflections on their learning. Indirect measures help to understand student satisfaction. Common examples of indirect measures include surveys (student, alumni and employer), interviews (exit or others), focus groups, advisory boards, program completion rates, doctoral studies, job place-ment data, promotions, self-study reports, class evaluations, peer reviews, external reviews, standardized tests, license/professional exams, certifications, and so on. Some of these direct and indirect measures are used for MSWC Program Assessment.

Every year each program at National University is required to be reviewed through a process called Program Annual Review (PAR). The Program Lead is responsible to gather program-related data and information throughout the year using both direct and indirect measures, and then analyze these data in the PAR report. At the end of each academic year, PAR results are submitted by the Program Lead for review by the Department Chair, School Assessment Com-mittee, School Dean, Council (Graduate/Undergraduate), and Provost. Every five years the Program Lead is also required to prepare a comprehensive report called the Five-Year Program Review. This report summarizes the PAR results for the preceding five years, with additional analysis and reflection. The Five-Year Program Review is also required to be reviewed in some depth by two additional independent experts from outside of the university.

In addition to these two required review processes, an MSWC Advisory Board was formed in 2006. Members of this board are mainly senior-level managers from various wireless industries,

one MSWC graduate, one instructor, one adjunct, and the Program Lead. Ideally, 7 to 10 members serve on this Advisory Board. The Advisory Board is mainly responsible to evaluate industry needs, program quality, and relevance. These members meet twice a year to review the entire curriculum, course contents, textbooks, required technologies, and laboratory facilities. The Advisory Board provides advice on the program's strengths and weaknesses and makes valuable comments and recommendations.

The Program Learning Outcomes (PLOs) are assessed in multiple courses throughout the MSWC program through specific questions on mid-term and final examinations, student projects, and written homework assignments, rather than by a comprehensive exam at the end of the program. The level of these assessments corresponds with a curriculum map, and the details change continually as technology advances. Indeed, any comprehensive exam that might be designed would quickly become outdated because of the rapid advances in wireless communications technology that take place each year.

The Master's Research Project at the end of the program requires students to integrate what they have learned across the program by completing a research project in a specific area relevant to the field of wireless communications. In their project, students select project topics under the guidance of a faculty advisor, analyze the problem, formulate a detailed plan to reach a solution, perform necessary evaluations and/or experiments, identify and/or propose meaningful results and solutions, test the proposal to the extent possible, and prepare a detailed formal report and associated presentation. A Master's Research Project Assessment contains the detailed criteria used in assessing both the written project report and the project presentation.

Written Master's Research Project Reports in the MSWC program are required to be a minimum of 15,000 words in length and occasionally are as long as 40,000 words. Every member of the team presents during the oral presentation, which is normally 30 minutes in length, followed by a question-and-answer session with the evaluators and the audience. All Capstone projects are assessed by using an assessment tool (a number of questions and corresponding rubrics) developed by the Program Lead.

An Example of Assessment Findings from PAR 2010

National University is actively involved in Program Annual Review and assessment activities. The details of assessment findings, recommendations and implementations of the MSWC program are kept in the university repository, called the Accountability Management System (AMS). These assessment findings and recommendations are too extensive to present in this paper; only a summary of a thorough investigation of these findings and their impacts on the program can be discussed herein. These measures and information were retrieved and copied from the MSWC 2009–2010 PAR. Each year, approximately 20% of all PLOs are selected by the Program Lead for review. In the 2009–2010 academic year, two PLOs—PLO1 and PLO9—were selected (Uhlig, 2010). Each of these PLOs had multiple measures—two for PLO1 and six for PLO9–at the course level and program level (Uhlig, 2008). These PLOs were evaluated with both direct measures and indirect measures. Data for each measure were collected from the appropriate sources in a timely manner, analyzed carefully using rubrics, and interpreted appropriately. Finally, based on these assessment findings, the Program Lead undertook necessary actions for implementation and made valuable comments. Table 1 shows all 2009–2010 measures with analysis and comments of PLO1 and PLO9.

Table 1. *All 2009 – 2010 Measures of Program Learning Outcomes 1 and 9 with Analysis and Comments*

Program Learning Outcome 1:
Evaluate and apply wireless networking, protocols, architectures, and standards to the development and design of wireless communication systems

Quality of MSWC Master's Research Projects

Measure

Program level: Direct–Student Artifact

Details/Description: Scores given by evaluators of written Master's Research Project reports on Analysis and Synthesis (see rubric attached under Outcome 1 above (first measure).

Acceptable Target: Average scores of 7 out of 10 possible points on both Analysis and Synthesis, averaged across all students' Master's Research Project Reports and all evaluators.

Ideal Target: Average scores of 8.5 out of 10 possible points on both Analysis and Synthesis, averaged across all students' Master's Research Project Reports and all evaluators.

Findings

Summary of Findings: A total of 20 students in September 2009 and 5 students in February 2010 enrolled in the WCM 611B Master's Research Project II classes. These students successfully completed their final project reports, presentations followed by prototype demonstrations. All students received scores higher than 7 out 10 in the areas of analysis and synthesis.

Results: Acceptable Target Achievement: Met; Ideal Target Achievement: Approaching

Recommendations: Students gained good analytical skills.

Reflections (If Applicable): In these project classes, students learned how to analyze complex problems and synthesize their knowledge and ideas for finding valuable solutions.

Student satisfaction that they have achieved the Program Learning Outcome

Measure

Program Level: Indirect–Survey

Details/Description: Conduct exit survey with every student at the end of WCM 611 to determine whether they believe the program has achieved this Program Learning Outcome for themselves, and what courses and assignments were the most beneficial for them in achieving this PLO.

Acceptable Target: Average score of 3.5 out of 5 on a 5-point Likert scale that exiting students are satisfied that this PLO has been achieved.

Ideal Target: Average score of 4 out of 5 on a 5-point Likert scale that exiting students are satisfied that this PLO has been achieved.

Findings

Summary of Findings: A survey of all alumni who have graduated from the MSWC program was conducted instead of an exit survey. A total of 28 alumni responded. Of these respondents, 72% indicated agreement ("agree" or "strongly agree") that the MSWC program taught them how to apply wireless networking protocols, architecture, and standards in the development and design of wireless communications systems. The average score on the 5-point Likert scale was 3.611 out of 5. As a result, the acceptable target was achieved for this measure. When asked to select one or two MSWC courses that were the most effective in helping them learn wireless communications technical skills, the top three (3) courses identified were:

   WCM 606–CDMA Wireless Systems (50%)
   WCM 607–3G & 4G Wireless Networks (45%)
   WCM 605–Wireless Systems Security (30%)

Results: Acceptable Target Achievement: Met; Ideal Target Achievement: Approaching

Recommendations: Alumni survey was satisfactory.

Reflections (If Applicable): Students' learning is considered to be very good. They understood the essential theories and main principles of wireless communication, gained some practical experiences, and learned how to apply this knowledge in real world applications in many areas. Program met its goals and served the purposes. No changes/modifications in this program are needed at this time.

Table 1 *(Continued)*

Analysis and Synthesis Scores on Master's Research Projects

Measure
Course Level: Indirect–Other
Details/Description: Scores given by evaluators of written Master's Research Project reports on Analysis and Synthesis (see rubric attached under Outcome 1, mentioned previously, for first measure).
Acceptable Target: Average scores of 7 out of 10 possible points on both Analysis and Synthesis, averaged across all students' Master's Research Project Reports and all evaluators.
Ideal Target: Average scores of 8.5 out of 10 possible points on both Analysis and Synthesis, averaged across all students' Master's Research Project Reports and all evaluators.
Findings
Summary of Findings: A total of 20 students in September 2009 and 5 students in February 2010 enrolled in the WCM 611B Master's Research Project II classes. These students successfully completed their final project reports, presentations followed by prototype demonstrations. All students received scores higher than 7 out 10 in the areas of analysis and synthesis.
Results: Acceptable Target Achievement: Met; Ideal Target Achievement: Approaching
Recommendations: Students gained good analytical skills.
Reflections (If Applicable): In these project classes, students learned how to analyze complex problems and synthesize their knowledge and ideas for finding valuable solutions.

Master's Research Project Oral Development of Main Points

Measure
Program Level: Direct–Student Artifact
Details/Description: The Rubric for evaluation of Master's Research Project Oral Presentation (attached under PLO 1 mentioned previously) includes seven measures (5-point Likert scale) in the section "Development of Main Points" that, taken together, measure student achievement of this PLO. This measure is the average of those seven measures.
Acceptable Target: Score of 3.5 out of 5 averaged across all evaluations of all MSWC Master's Research Project presentations by all students in Academic Year 2009–2010.
Ideal Target: Score of 4 out of 5 averaged across all evaluations of all MSWC Master's Research Project presentations by all students in Academic Year 2009–2010.
Findings
Summary of Findings: A total of 20 students in September 2009 and 5 students in February 2010 enrolled in the WCM 611B Research Project II class. These students successfully completed their final project reports, presentations followed by prototype demonstrations. All students received scores higher than 4 out 5 in their oral presentations.
Results: Acceptable Target Achievement: Exceeded; Ideal Target Achievement: Approaching
Recommendations: Students' overall presentation styles both at the individual and group levels are considered very good.
Reflections (If Applicable): Students performed very well in their final presentations. They learned how to work as team member, cooperate with others in the team, manage a project, design and develop a product in a timely manner, and present at the professional meeting or conference.

and develop a product in a timely manner, and present at the professional meeting or conference.

Table 1 *(Continued)*

Scores on Ethics Questions in WCM 605 Final Exams

Measure

Course Level: Direct–Exam

Details/Description: The topic of ethics in Wireless Communications is discussed specifically in WCM 605, and the final exam always contains at least three questions on ethics. This measure will examine students' answers to the ethics questions on the WCM 605 final exam.

Acceptable Target: Score of 75% or better, averaged across all ethics questions on all WCM 605 finals exams and all students during Academic Year 2009–2010

Ideal Target: Score of 85% or better, averaged across all ethics questions on all WCM 605 finals exams and all students during Academic Year 2009–2010

Findings

Summary of Findings: Two different sets of ethics questions were asked on WCM 605 final exams during 2009–2010. The average score across both sets of questions was 11 correct answers out of a total of 16 possible, or 68.75% correct answers. This is below the acceptable target. Most of the wrong answers were given on a fairly difficult question asking students to analyze an ethical situation, rather than a simple true/false question. The instructor found that the course needs to spend more time teaching students how to analyze and respond to ethical dilemmas.

Results: Acceptable Target Achievement: Not Met

Recommendations: More time needs to be allotted in the future to teaching the ethics segment of the class, to resolve this problem.

Reflections (If Applicable): Students do not fully understand the meaning of ethics and its values. But it is very important for professionals to practice ethics at workplace.

Student Course Projects in WCM 606, 607, 608, & 609

Measure

Course level: Direct–Student Artifact

Details/Description: Average grades on major course projects assigned in WCM 606, 607, 608 and 609. These projects count for 25% or more of the final grade in each of these courses.

Acceptable Target: Average grade of 80% or better, averaged across all students and all projects in all four courses.

Ideal Target: Average grade of 85% or better, averaged across all students and all projects in all four courses.

Findings

Summary of Findings: WCM 608 Course Projects Summary: These data were obtained from four different classes taught by the same instructor in different times (8 students in September 2008, 9 students in January 2009, 19 students in April 2009 and 6 students in September 2009). Instructor assigned a course project to each student, and this project carried 15% of the total course grade. The weighted average score of these projects was 85.14%. WCM 609 Course Projects Summary: 5 students enrolled in the course, and instructor assigned a course project to each student. This project carried 15% of the total course grade. The average score of these projects was 88%. Data for WCM 606 and WCM 607 course projects are not available.

Results: Acceptable Target Achievement: Exceeded; Ideal Target Achievement: Approaching

Recommendations: Data should be collected from WCM606 and WCM607 when next time these courses will be taught for further analysis.

Reflections (If Applicable): Students performed very well in the WCM 608 and WCM 609 course projects.

Table 1 *(Continued)*

Student Satisfaction that They Have Achieved the Program Learning Outcome

Measure

Program level: Indirect–Survey

Details/Description: Conduct exit survey with every student at the end of WCM 611 to determine whether they believe the program has achieved this Program Learning Outcome for themselves, and what courses and assignments were the most beneficial for them in achieving this PLO.

Acceptable Target: Average score of 3.5 out of 5 on a 5-point Likert scale that exiting students are satisfied that this PLO has been achieved.

Ideal Target: Average score of 4 out of 5 on a 5-point Likert scale that exiting students are satisfied that this PLO has been achieved.

Findings

Summary of Findings: A survey of all alumni who have graduated from the MSWC program was conducted instead of an exit survey. A total of 28 alumni responded. 75% of respondents indicated agreement ("agree" or "strongly agree") that the MSWC program taught them to apply critical thinking to analyze and synthesize wireless communications concepts, project management principles, and ethical standards through individual and small-group projects and through the Master's Research Project. The average score on the 5-point Likert scale was 3.85 out of 5. As a result, the acceptable target was achieved for this measure. When asked to select the one or two MSWC courses that were the most effective in helping them learn wireless communications non-technical skills (e.g., writing, working in teams, managing projects, and understanding the wireless industry), the top two (2) courses were:

WCM 611B–Master's Research Project II (45%)

WCM 611A–Master's Research Project I (30%)

It is also worth noting that 70% of respondents reported using the non-technical skills (e.g., writing, working in teams, managing projects, and understanding the wireless industry) that they learned in the NU MSWC program either "often" or "very often" in their work.

Results: Acceptable Target Achievement: Met

Writing Assignments in WCM 605 and WCM 612

Measure

Course level: Direct–Student Artifact

Details/Description: Grades on student writing assignments in WCM 605–Wireless Systems Security (two assignments) and in WCM 612–Wireless Economics Topics (two assignments)

Acceptable Target: Average grade of B or better, averaged across all students in all courses taught in Academic Year 2009–2010

Ideal Target: Average grade of B+ or better, averaged across all students in all courses taught in Academic Year 2009–2010

Findings

Summary of Findings: WCM 605 and WCM 612 each had two writing assignments. The average score across all students for these two writing assignments was 88.3%, or a B+. As a result, the ideal target was achieved.

Results: Acceptable Target Achievement: Exceeded; Ideal Target Achievement: Approaching

Table 1 *(Continued)*

Overall Recommendations and Requested Resources

Recommendation #1

A large decline in enrollment in the MSWC came about in 2009–2010 because of two factors: (a) the economic crisis and (b) problems within the organization that was recruiting international students for National University. A large percentage of the enrollment in the MSWC program was from international students. The economic crisis of 2009–2010 caused the U.S. dollar to appreciate approximately 30% against the Indian rupee. Most of the international students enrolled in the program came from India. The sudden 30% increase in the cost of education at NU caused a significant decline in MSWC enrollments. In addition, the organization that had been recruiting Indian students for NU was disbanded. These two factors resulted in the huge decline in MSWC enrollments.

The large percentage of international students in the program had caused us to focus on international students, at the expense of not enrolling domestic students. Emphasis shifted in 2010 to making the program more attractive to domestic students. Our analysis indicated that we needed to offer the program online, as well as on site, to make the program more accessible to domestic students. This process began in 2010. Development of online versions of the first three courses—WCM 600, 601 and 602—is nearly complete. Development of the remainder of the MSWC courses will be completed in 2010–2011.

Recommendation #2

Regarding the specific findings, the indirect measures strongly support that the Program Learning Outcomes 1 and 9 are being achieved. Nevertheless, it is clear that more attention needs to paid to collection of data from WCM 611–Master's Research Project, to provide direct measures showing that these Program Learning Outcomes are being achieved.

Possible Individual(s) Responsible for Action

Dr. Ron Uhlig was the Lead of this program from May 2006 to June 30, 2010.

Dr. Mohammad Amin was assigned the Lead of this program on July 12, 2010.

Implementation of Changes from the Last Program Assessment

All the targets were met or exceeded in the last (2009) program review, so no new recommendations for change came out of the 2009 PAR.

The assessment data and observations presented in Table 1 show that the problems of ethics were properly identified and appropriate steps were taken immediately that reshaped the teaching of ethics in the MSWC program. Recently, additional measures on ethics and writing were added to many courses in the MSWC program. This had several positive impacts on the program:

1. More writing assignments have been introduced in the course level (course project reports and signature assignments).
2. Questions on ethics are now being asked in more tests (quiz, midterm, and final)
3. A full-time faculty member has been assigned to make sure that the curriculum includes an adequate number of technical writing assignments at both the program levels and course levels.
4. Adequate resources and help are available through the University Writing Center.
5. Mandatory statements on ethics, its importance, and consequence of ethical violations are embedded in all course outlines.
6. A mechanism to verify ethical standards on writing assignments, using TurnIn.com software, is available to all instructors and students.

Recently completed students' final research project reports were found to have minimal ethical violation compared to earlier ones.

It should be clear from data in Table 1 that PARs enable appropriate assessments of curriculum features of the MSWC program. However, standard PARs are designed to address PLO-based assessments; they do not directly address enrollments of the program. Table 1 indicates that the MSWC program did very well, according to the direct and indirect measures on the PLOs; however, the program enrollment declined rapidly. Although comments about enrolments were made in Table 1, these comments were unrelated to the assessment focus. It became clear that in order to address enrollment questions, suggestions from experts and practitioners in the wireless field should be sought in a timely manner, in addition to the program's continuing to conduct regular PARs and the five-year program review.

Selected Comments and Recommendations Received from the Advisory Board and the External Reviewers

The external reviewers and most of the members of the Advisory Board had no prior relationship with either National University or the MSWC Program. These professionals have considerable expertise and reputation in wireless communications. One of the external reviewers, an Industry Executive Leader, said, "National University has created an excellent comprehensive selection of course work well suited to fulfill the mission of the institution in the context of the program: [To] facilitate the learning and application of skills in the field of wireless communications" (Uhlig, 2008). He also further stated:

> Finally, the following topics may be included in more detail in either the Wireless Economics area or elsewhere:
>
> > Startup companies and how they grow;
> > International issues – regulatory, spectrum limitations;
> > IPR, patents, trademarks and technology licensing. (Uhlig, 2008)

Another reviewer, a Professor, made many valuable comments on the MSWC Five-Year Review. Here is one important comment received from the second reviewer:

> The MS program in Wireless Communications is characterized by qualified faculty in the area of wireless communications and graduates [who] are well regarded by industry and academia. The program in unique in many aspects, i.e., its accelerated learning format and its focus upon the wireless communications needs of (primarily) San Diego–area companies. Program started in 2004 with a focus upon working adult students and an entering class of 12 students. All of this changed dramatically in 2006 in response to National University's highly successful international program, which increased the entering class to nearly 100 students in 2006. Such dramatic growth, especially in such a young program, has certainly resulted in stress upon the program [that] was not anticipating such an increase. The program and its leadership is to be commended upon the manner in which it positively responded both to the needs of industry and [to] its rapidly changing enrollment. (Uhlig, 2008)

Recently, the MSWC Advisory Board identified an important need: to incorporate a course on wireless economics. They also commented that lack of understanding of the business aspects is a leading reason for rejecting job applicants who have good technical qualifications. The Advisory Board also urged that the program make clear to prospective employers that students receive

project-management training as part of their Capstone courses. The Board asserted that changing the program to address these concerns would significantly improve the ability of MSWC graduates to be hired into good positions in the industry (Uhlig, 2008).

The details of all commendations and recommendations received from the external reviewers and the Advisory Board are available in the MSWC Five-Year Review and PARs. Lead faculty took the appropriate actions and made the necessary changes based on the recommendations received from the external reviewers and the Advisory Board. Program modifications were approved by the NU Graduate Council in April 2007 and May 2008.

Based on multiple measures of effectiveness, the quality of the MSWC program is considered good. This has been confirmed by the MSWC Advisory Board, external reviewers, School Assessment Committee, University Academic Assessment Committee, alumni, and other review bodies within the university. Both external reviewers have confirmed the primary reviewer's (Lead Faculty's) analysis of the program strengths and weaknesses. Following is a list of these items:

Strengths: excellent curriculum, high quality faculty, good textbooks, good course learning outcomes, strong advisory group, emphasis on lifelong learning, use of small-group projects and teams, and encouragement for students to publish papers with faculty.

Weaknesses: lack of laboratory equipment, lack of technical support for laboratories, lack of adequate number of full-time faculty/overreliance on adjunct faculty, need for faculty to be more involved in wireless research, lack of sponsors for Master's Research Projects, need for a complete IEEE Xplore database in National University Spectrum Library for students, and too little emphasis on wireless video in current curriculum. During the Five-Year Review period, the program had a large number of foreign-student enrollments, but since the end of the review period there has been a significant decline in foreign-student enrollments. It was further suggested that a major marketing effort should be undertaken to enroll domestic students, and that the program should also be made available online to serve more students from remote locations. The MSWC Advisory Board has recommended offering a half-day or one-day seminar in San Diego as part of a marketing effort and recommended that students be encouraged to enroll in the IEEE WCET Certification program.

Assessment of MSWC and Agile Responses Used for the Program Changes

The MSWC Advisory Board met several times from 2006 until the present, reviewed curriculum, and made valuable suggestions and recommendations for some courses and program updates and modifications. Each year, the MSWC program went through the Program Annual Review, and in 2008 a Five-Year Review was conducted. All formal PARs, Advisory Board meeting minutes, and a Five-Year Review report are preserved in the university repository. These reports used both direct measures and indirect measures. The Program Lead collected all data in a timely manner and then carefully analyzed and interpreted the data in appropriate ways. From Fiscal Year 2004 through Fiscal Year 2005, no changes were made to the program as originally approved by the NU Graduate Council. Since 2006 until the present, the following major changes were made in the MSWC program based on the assessment findings and recommendations received from both external reviewers and the Advisory Board:

1. Two key recommendations of the Advisory Committee were to establish a course on wireless economics and to establish a wireless communications laboratory. The Advisory Committee also provided recommendations on internships, coupling of the program with

local wireless industry for internships, and marketing of the MSWC program. The Committee recommended that a Project Management course should be added as a core course. But, upon further examination, instead of a course addition, a Program Learning Outcome on project management was added to the Master's Research Project Courses (WCM 611A & 611B).

2. Both instructors and students identified that all but one of the WCM 603 Learning Outcomes were being covered by other courses in the program. After careful examination of all MSWC courses, the WCM 603 course was eliminated.

3. WCM 610, dealing with fourth-generation wireless systems technology, was combined into the existing WCM 607 course on third-generation wireless systems. The parts of the then-existing course on fourth-generation wireless systems dealing with economics were moved into a new course, WCM 612, entitled Current Topics in Wireless Economics.

4. Two earlier prerequisite courses (WCM 301 and 302) were terminated by introducing a Wireless Foundations Exam to identify a student's preparation for the program before taking any graduate-level course. Later, after careful examination of the student's preparation and needs, the foundations exam was replaced by building a "foundations" course, WCM 600, into the MSWC program. This is the first course in the program, with strong emphasis on application of the theory, using MATLAB with Simulink.

5. The School of Engineering and Technology was the recipient of a $7,500 grant from San Diego–headquartered wireless network operator Cricket Communications for MSWC program laboratory facilities. This was combined with matching funds from National University Chancellor Lee for the initial purchase of wireless-communications laboratory equipment. A new MSWC laboratory facility is now available at the Kearney Mesa Center. The MSWC program also benefited in 2007 from a Technology for Teaching—Higher Education grant to NU-SOET from the Hewlett-Packard Corporation. The grant, valued at $68,000, included $19,000 in cash, along with 21 HP Tablet PCs, two wireless access points, and other equipment. Some of the cash was used to purchase licenses for use of software from the DyKnow Corporation (DyKnow.com). Use of the Tablet PCs with DyKnow™ was incorporated into several MSWC courses, including WCM 604, WCM 605, and WCM 610, with very good results.

6. In 2007, SOET purchased the Telecommunications Instructional Modeling System (TIMS) with 50% donated funds and 50% NU funds to enable introduction of some laboratory projects, particularly in the earlier classes in the program.

7. Students sometimes need to purchase equipment for projects that use real physical wireless communications equipment. Not every student wants to do a project that requires physical equipment. An average of $200 per student in the budgetary plan has been requested for the future MSWC Master's Research Project classes.

8. Recently, additional measures on ethics and writing were added to many courses in the MSWC program. Mandatory statements on ethics, its importance, and consequence of ethical violations are embedded in all course outlines. A software program (TurnIn.com) is arranged for all instructors and students to verify ethical standards on writing assignments.

9. In order to serve the global community, work is underway to develop all courses for online delivery. So far, four online courses have been jointly developed by industry professionals and faculty, and development of the rest is planned. It is expected that the MSWC Program will be available online from Fall Semester 2011.

10. Addition of some new courses in the area of mobile applications, which were suggested by some members of the Advisory Board, is currently under consideration. It is expected that all board members will meet in February 2011 and review these proposed courses and make their final recommendations.
11. Recently, a joint research grant proposal ($8.9 million) on High School Math and Science Program through mobile learning (M-Learning) was written and submitted to the National Science Foundation. If this is accepted, then almost $200,000 per year will be spent to develop some new mobile apps in which MSWC students will play major roles.

Professional Development Opportunities for Students

All students in the last four courses are eligible to participate in internship programs with a company or organization approved by the Lead Faculty. Sometimes these internships are arranged and organized with the help of Advisory Board Members. Many students take advantage of the National University Writing Center when they are completing written assignments throughout the program. Nearly 100% take advantage of this opportunity when they are writing their Master's Research Project Report. All students are invited to participate in the NU Student Scholarship Conference and other conferences organized by National University. Foreign students take advantage of local job fairs as a means of searching for internships and to prepare for Occupational Practical Training (OPT) once they have received their degree. Foreign students who graduate from the MSWC program can seek employment with companies in the USA under OPT for nearly two years following graduation, and almost all graduates take advantage of this opportunity. It is estimated that nearly all foreign students apply for OPT.

Continued Introduction of Innovative Teaching in the MSWC Program

A number of innovations were introduced into the MSWC program over the Five-Year Review period, including small-group projects, industry-expert guest lecturers, company tours, problem-based projects, and technology to enhance and increase interaction in the classroom. Approximately fifty students used the Tablet PCs with DyKnow software in some classes. These new teaching tools were found to be quite helpful in the classes and produced excellent results. Use of the Tablet PCs with DyKnow software enabled introduction of real-time exercises on which all students worked simultaneously during class. Student submission of responses back to the instructor enabled the instructor to immediately identify areas where understanding was incomplete. The instructor was then able to resolve the misunderstanding immediately with individuals, small groups, and the whole class. Measurements of student comprehension of complex information structures showed significant improvement of learning when Tablet PCs were used by every student in class. A full paper discussing results was published and presented at the 2008 Annual Conference of the American Society for Engineering Education (ASEE) and the 2008 ASEE Global Colloquium (Uhlig, Farahani, Viswanathan, Evans, & Sotelo, 2008). Advisory Board recommendations for a course on wireless economics and additional lab work were implemented. These were both ideal additions. Likewise, the recent addition of 4G technology to the curriculum was essential. The increase in the number of classes and students during 2004–2008 is a testimony to the effectiveness of everything from the curriculum to the marketing of the program itself.

The Advisory Board and Industry Collaborations

To better understand the industry needs, a significant number of MSWC students have visited local industries, including Qualcomm, Nokia, Verizon, San Diego Gas & Electric, and Avalon RF. Most of these tours were arranged and organized by different Advisory Board members. Near the end of the degree program, the students were able to select some meaningful research topics for their Master's Research Projects. Under faculty supervision, students successfully completed some valuable projects and developed prototypes for demonstration purposes. They also presented their final project reports and demonstrated their prototypes. Most of their works were highly appreciated by the judges and recognized by professionals. Some of these students attended local conferences and presented results of their Master's Research Projects.

MSWC Student Productivity

A total of 32 students graduated from the MSWC program during 2006–2008. More than 100 students have now received the MSWC degree. All MSWC students were required to complete a Master's Research Project. A large number of Master's Research Projects have been completed by MSWC students under the guidance and supervision of NU faculty and industry practitioners. As per needs of wireless industry, the following notable projects were recently completed by MSWC students:

RFID Security
Wireless Witness
Wireless Mesh Networks
Wireless Applications in Home Automation
Uplink Power Control in LTE
Wildfire Detection and Monitoring System
Smart Phone Book Search
Smart Blood Pressure Monitoring System
Wireless Signage Control System
Littoral Surveillance
GPS- and GSM-Based Automated Accident Detection System
Central Radio Frequency Control System
Next-Generation Vehicle Tracking and Communication System
Replacing Paper Coupons with Wireless RFID Technology
Simultaneous Monitoring of LTE and 1X Paging Channels
A Proposed Rake Receiver Model to Improve SNR by Optimizing Correlator States
Reduction of Peak to Average Power Ratios in Orthogonal Frequency Division Multiplexing
Evaluation and Improvement of OFDM Bit-Error Rate Using AMC-LDPC and BICM

Concluding Remarks

The overall assessment process of this fast-changing and growing program is a challenging task. During the past five years, the program went through several annual reviews and one Five-Year Review. The Office of Institutional Research and Analysis at National University conducted an alumni survey in which a large number of alumni participated and provided extremely positive inputs. In addition to all these, the Lead Faculty conducted an exit survey and obtained quite satisfactory responses. Each class was evaluated at the end of each month it was taught, and all evaluation reports were found to be positive. The outcomes of some student projects produced valuable new product ideas. Some project summaries were selected by different conferences for presentations and published in the conference proceedings because of their quality and meaningful contributions. Most students completed all courses in 13 to 16 months. The completion rate for the program is about 70% of all students who enrolled in the program. In order to enhance program success, a goal has been established to raise this to more than 85%. Numerous reports were received of graduates' having obtained good jobs in the wireless industry, including Qualcomm, Broadcom, Intel, San Diego Gas & Electric, Cisco, Sierra Wireless, Accenture, Teradata, and Avalon RF. The Lead Faculty of this program considered all possible measures and recommendations and documented all information in a timely manner. After careful review of all measures, recommendations, and comments received from all reviewers and the Advisory Board, the program was modified and updated several times to enhance program quality and meet the demands of potential employers. It is clear that timely suggestions from an advisory board are needed in order to deal with enrollment problems. This report finally confirms that the MSWC program in the School of Engineering and Technology at National University is a high-quality program that prepares graduate students appropriately for advancement in the wireless industry, although speedy implementations of Advisory Board recommendations are needed in order to continue to recruit appropriate students for this rapidly changing program. Finally, continuation of the kinds of assessment discussed in this paper will ensure continuing further improvements to the program.

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Stapleton, R. J., & Murkison, G. (2001). Optimizing the fairness of student evaluations: A study of correlations between instructor excellence, study production, learning production, and expected grades. *Journal of Management Education*, *25*(3), 269–291.

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Bernhardt, E., & Hammadou, J. (1987). A decade of research in foreign language teacher education. *Modern Language Journal*, *71*(3), 289-299.

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About the Author (10pt bold, followed by 12pts white space; all type in this section is also 10pt)

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