Assessment of a University-Based Distance Education Mentoring Program from a Quality Management Perspective

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This study describes assessment results from the Distance Education Mentoring Program (DEMP) at Purdue University Calumet, Indiana, USA. The program, sponsored by the university's Vice Chancellor for Academic Affairs, was made available to all teaching faculty who wished to become protégés and develop their skills at teaching online courses. The DEMP is a university initiative designed to enhance the development of high-quality online courses by mentoring faculty in instructional design principles. Faculty member protégés who completed the mentoring program were surveyed using an anonymous questionnaire. Data were obtained from 34 faculty respondents who completed the program during the last three years. Using regression analysis, we found that the Pyramid Model explained 83% of the variance in perceptions of teaching improvement attributable to the DEMP. The program's process orientation, continuous improvement approach, and focus on customer satisfaction explained protégés' perceived improvement in teaching. In addition, protégés believed their peer faculty mentors provided more psychosocial support than career development. Implications for implementation of a mentoring program in a university setting are discussed.

Keywords: career development, faculty development, mentoring, online learning, psychosocial, quality management

Importance of Quality in Online Education

In this article we describe and evaluate the efficacy of a unique program designed to mentor university faculty in online instruction. The program is both innovative and necessary because teaching online can be a challenge for university faculty (Gomes = Mullen, 2005). Poor online teaching, or online teaching which is conducted no differently from what occurs in a classroom setting, can jeopardize student satisfaction, instructional effectiveness, and perceptions of the university. Student satisfaction is an important issue, largely

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because the number of students learning online has been increasing dramatically (Allen & Seaman, 2007). Further, with the now routine practice of assessing learning outcomes, the need for high-quality delivery of online courses is becoming critical. It is generally accepted that teaching online is different from teaching face-to-face; it requires new skills and techniques. Faculty members may struggle with learning the necessary technological skills, adapting their pedagogic strategies for the online environment, adjusting to the more learner-centered focus inherent in online courses, conceptualizing their courses differently to fit the new environment, and finding the time necessary for developing an online course. To address the distinctive challenges related to teaching online, Purdue University Calumet developed the Distance Education Mentoring Program (DEMP) (Barczyk, Buckenmeyer, & Feldman, 2010). The program is built on a foundation of quality principles that focus on customer satisfaction and continuous process improvement.

From a business standpoint, it makes strategic sense for universities to invest resources in the certification of professors who teach online courses. The DEMP provides certification in online instruction, which is a valuable form of faculty development. This investment in the quality of faculty and the online courses they deliver has the potential to reap substantial dividends. The Sloan Consortium reports that online learning represents a large market segment (Allen & Seaman, 2007), that continues to grow. In their most recent annual survey of chief administrative officers at 2590 colleges and universities, Allen and Seaman (2010) found that "over 4.6 million students were taking at least one online course during the fall 2008 term [representing] a 17 percent increase over the number reported the previous year" (p. 1). They also found that "the 17 percent growth rate for online enrollments far exceeds the 1.2 percent growth of the overall higher education student population" (p. 1). This means that more than one in four higher education students now take at least one course online.

Program Design

The architecture of the DEMP is andragogical in nature (Holmes & Abington-Cooper, 2002), a manner of learning appropriate for adults. Hu, Thomas, and Lance (2008), citing the classic work of Kram (1988), defined *mentoring* as "an interpersonal exchange between an experienced senior colleague (mentor) and a less experienced junior colleague (protégé) in which the mentor provides the protégé with career functions related to career advancement and psychosocial functions related to personal development" (p. 727). From the protégé standpoint, mentoring is a way to attain higher professional and personal rewards, including compensation, personal learning, and commitment. In the DEMP, learning about teaching online takes place when faculty members who possess superior knowledge of instructional design (mentors) engage with professors who are newer or less experienced in online education (protégés).

For the most part, professors at a university are quite independent, highly educated in their disciplines, and entrepreneurial in their work. The culture of higher education and the preparation of its faculty tend to favor research productivity over development of pedagogical and instructional design skills. It is the latter skills, however, that are critically important to the development of instructionally sound online courses (Caplan, 2004). The DEMP recognized this limitation in professors' training and provided a quality-focused mechanism to facilitate faculty development and assist faculty members obtain the critical expertise necessary to develop and deliver high-quality online instruction.

The DEMP uses a rubric contained in Quality Matters, a faculty centered, peer-review process designed to certify the quality of online courses and their components (Maryland Online, 2006). Faculty members who have completed the Quality Matters certification process and have online teaching experience serve as mentors. Each faculty member protégé is paired with a mentor from outside his or her discipline to ensure a focus on instructional design rather than course content. In sum, the DEMP represents an attempt to ensure the academic quality of distance education by aligning the conditions for optimal learning with the best technology available for online delivery. This unique program facilitates the development of faculty and quality online courses by mentoring professors in the principles of instructional design.

In this discussion, we describe the structure and implementation of the DEMP and present findings associated with a quality-focused survey of faculty member protégés who completed the program at Purdue University Calumet (PUC) between 2006 and 2009. The survey assesses perceptions of DEMP protégés on 10 of the 18 components associated with the Pyramid Model of Quality Management (Barczyk, 1999) and perceptions of career development and psychosocial benefits they received from this mentoring. A key element of quality management is an organization's commitment to customer satisfaction—in this case, the protégés' satisfaction with what they learned in the DEMP. Therefore, the survey focuses on protégés because they are the internal customers of the mentoring program.

The Pyramid Model

Quality Management (QM) is a philosophy of managing that involves:

(a) continuously improving products as well as services, and
(b) responding to customer needs and expectations (Robbins & Coulter, 2007).

This philosophy was inspired by quality experts, the most notable being W. Edwards Deming and Joseph Juran. QM is a departure from earlier management theories that held that lowering costs was the only way to achieve productivity. Instead, QM posits that a high-quality orientation to process and production that

reduces errors and defects, which minimizes costs, leading ultimately to increased productivity and competitive advantage (Deming, 1986).

The Pyramid Model of QM (Barczyk, 1999) expands this philosophical notion of managing into 18 elements conceptually organized into three levels as shown in Figure 1. It views QM as a pyramid structure that has an apex, middle blocks, and a base. The apex in the Pyramid Model of quality management is made up of three *fundamental* elements: top management commitment to quality, commitment to customer satisfaction, and organizational culture of participation and empowerment.

The second level of a pyramid is made up of blocks that give it structure and height. These blocks make up the *principles of QM.* At the second level of the Pyramid Model are five elements: teamwork, total system integration, quality standards, quality measurement, and continuous quality improvement.

The base of a pyramid provides the structure with a foundation for stability. The base of the Pyramid Model consists of *QM tools and techniques,* the 10 elements of which are benchmarking, training, process orientation, problem identification, problem solving, employee quality assurance, proactive management, supplier quality assurance, communication, and incentives and recognition.

It is appropriate to view the DEMP through the lens of quality management. In making the case for improved quality, Offstein, Morwick, and Shah (2006) argue that quality programs influence a firm's overall competitiveness.
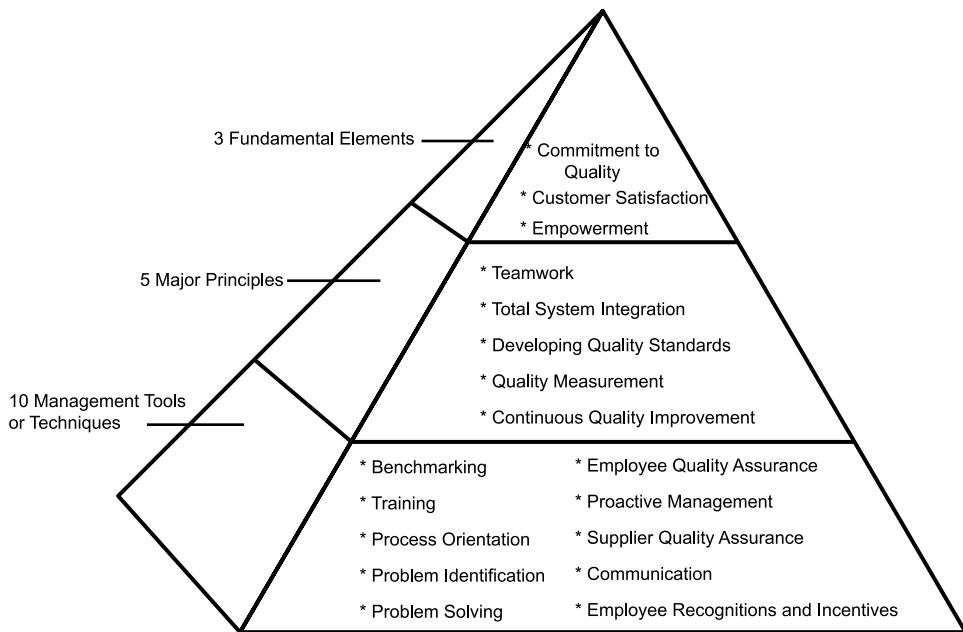

Figure 1.   Pyramid Model of quality management showing the three conceptual levels and 18 elements.

They believe that profit is strongly related to quality and as such "changes in relative quality have a far more potent effect on market share than do changes in prices" (p. 34). An emphasis on quality has implications for universities interested in being successful in today's competitive market, while facilitating faculty development. Universities can enhance the quality of their online courses by certifying their faculties in online education, thus enabling them to capitalize on the growing market of students interested in taking university courses in an online format. Since faculty completing the DEMP receive certification to teach online, it is prudent to examine the elements of this program from a QM perspective.

High-quality mentoring programs facilitate training outcomes, enhance skill development, and contribute to significant returns on investment (Gardiner, Tiggermann, Kearns, & Kelly, 2007; Noe, 1988). In a study of South African managers, Meyer and Mabaso (2001) found that mentoring may be particularly useful to develop equity and managerial skills and describe barriers that inhibit the success of mentoring initiatives. The barriers to mentoring success include not having senior management commitment, participative management and empowerment, training, open communication, a process orientation, and a mechanism for evaluation based on continuous quality improvement—elements found in the Pyramid Model of QM.

Organizationally this paper is divided into five sections. The first provides an overview of mentoring and reviews a portion of the relevant literature. The second describes the DEMP and poses two research hypotheses related to the perceptions of protégés in the mentoring program. The third outlines the research method. The fourth section summarizes the results of the study, which includes a description of the survey respondents, statistical findings related to the hypothesis tests, and descriptive statistics of the protégés' perception of the DEMP on variables associated with the Pyramid Model of QM. The final section discusses the survey results and presents some limitations of the study.

Mentoring: A Brief Overview

What is Mentoring?

While definitions vary, the one we use herein is derived from Murray and Owen (1991) who view mentoring as "a deliberate pairing of a more skilled or experienced person with a lesser skilled or experienced one, with the agreed-upon goal of having the lesser skilled person grow and develop specific competencies" (p. xiv). A mentor interacts in ways that bring about learning, skill development, and growth of the protégé.

The concept of mentoring reflects a basic principle of survival: that humans learn skills, values, and culture directly from other humans whom they respect and admire. People tend to emulate or model the behavior they see in others,

especially if that behavior is rewarded (Bandura, 1986). Mentoring also reflects basic concepts of motivation: that humans need relationships and engage in competence-seeking behavior. Individuals seek relationships because of their inherent need for belongingness. They also desire competence in their life's work (Maslow, 1970). Mentoring relationships can help people achieve those needs for connectedness and career achievement.

Mentoring and Faculty Development

Mentoring is often used by universities to develop new faculty members into active and productive members of the academy. Valeau and Boggs (2004) asserted that in the last 30 years, education literature acknowledges the extraordinary positive effect of mentoring on faculty competence in both teaching and publishing. Mentoring programs increase the potential for academic success, improve new faculty decision making, and ultimately increase retention (Bowers & Eberhart, 2001).

Describing a mentoring approach developed at a private religious-based university, Nastanski and Simmons (2007) cited protégés in their institution's program who expressed that their mentor not only saved them time and frustration but functioned as a friend when "a sounding board" was needed (p. 10). Mentors served both career development and psychosocial functions, providing protégés with specific direction and, later on, support for difficult professional decisions.

In addition to developing faculty members into scholars and master teachers, mentoring can be useful in assisting faculty members with the transition to more technology-based teaching. Gomes and Mullen (2005) suggested that faculty development offices should identify and instruct faculty in using technology in their teaching. These faculty members would in turn "impart the same information to other[s]…in their departments, thereby serving as peer mentors" (p. 139). This idea builds on Bates' (2000) notion of mentoring wherein he states that "faculty members learn best from their peers through show-and-tell demonstrations by faculty 'stars' who have developed good examples of technology-based teaching" (p. 102).

Luna and Cullen (1995) argued that universities waste talent when faculty members are not mentored. Mentoring serves to support faculty renewal and professional growth, which in turn empowers faculty members. Consequently, teaching and research improves, along with job satisfaction and organizational socialization. Both mentor and protégé experience these positive outcomes.

A Distance Education Mentoring Program

Background and Description

The DEMP began as a result of:

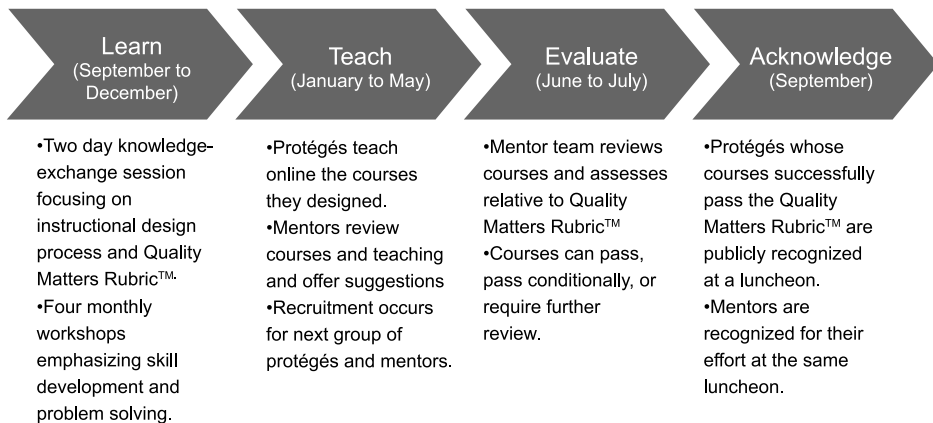| Learn (September to December)	Teach (January to May)	Evaluate (June to July)	Acknowledge (September)
•Two day knowledge-exchange session focusing on instructional design process and Quality Matters Rubric™. •Four monthly workshops emphasizing skill development and problem solving.	•Protégés teach online the courses they designed. •Mentors review courses and teaching and offer suggestions •Recruitment occurs for next group of protégés and mentors.	•Mentor team reviews courses and assesses relative to Quality Matters Rubric™ •Courses can pass, pass conditionally, or require further review.	•Protégés whose courses successfully pass the Quality Matters Rubric™ are publicly recognized at a luncheon. •Mentors are recognized for their effort at the same luncheon.

Figure 2. Timeline illustrating the four stages in the model of the Distance Education Mentoring Program.

(a) an identified gap between faculty instructional needs and technology services on campus and

(b) an awareness of the enrollment growth in online education.

In 2004, the Vice Chancellor for Academic Affairs at PUC appointed a multidisciplinary task force comprised of faculty members and administrators representative of the academic community. The task force studied the quality and scope of distance education offerings at the university and recommended plans for a mentoring program to assist faculty in the instructional design and delivery of high-quality distance learning courses. The Vice Chancellor mandated that all faculty members who wished to teach online would have to be certified online instructors. The DEMP was one method by which faculty could become certified. A total of 17 mentors and 69 protégés participated in the first three years of this ongoing program. The DEMP was coordinated by the Office of Instructional Technology under the auspices of the Vice Chancellor. A graphic showing the four stages of the DEMP model is captured in Figure 2.

The learning stage. Having mentors who had successfully developed and taught online courses was critical to implementing the DEMP. Faculty mentors were chosen from various academic disciplines on campus. They were expected to participate in the Quality Matters training program (Maryland Online, 2006) to become certified for peer mentoring and quality online course development. Six mentors were identified who agreed to pilot the initial mentorship program.

The learning stage took place during the fall semester of each year. The mentors were assigned protégés outside their areas of expertise. They met with their protégés during a two-day knowledge exchange session, which emphasized the Quality Matters criteria for successful online course development. During this session, mentor-protégé rapport was established and expectations were clarified. Four lunches held once a month followed the knowledge exchange. The lunches served as workshops in which various applications were demonstrated and their effective uses were modeled. The workshops were supplemented with an online course, the Distance Learning Institute, which was created in the university's course management system. Learning materials and additional resources were uploaded to the course's website. This online course was designed by the faculty mentors to model best practices of online instructional design.

The teaching stage. During the semester break following the learning stage, protégés self-assessed their courses against the Quality Matters standards provided to them. A team of mentors then evaluated each protégé's online course according to the Quality Matters' Rubric™. Protégés received feedback about whether their course reasonably complied with the standards of the rubric. Mentors also provided protégés with advice to strengthen the quality of their online courses. Once approved, the protégés delivered the courses they had developed.

The evaluation stage. Following the teaching stage, the mentors, organized into two teams of three, evaluated all courses that the protégés delivered online. In order to ensure objectivity, mentors did not review their protégés' courses. To successfully complete the program and receive certification to teach online, courses were evaluated using the Quality Matters Rubric™. Protégés' courses were scored as either "pass", "conditional pass", or "fail". In order to pass, courses had to satisfy all of the rubric standards considered essential and a majority of those standards considered "very important" and "important". To receive a conditional pass, courses had to satisfy the essential standards. However, few of the other standards had to be satisfied.

The acknowledgement stage. In the final stage of the program, both the mentors and the protégés were formally recognized at a luncheon and each received a certificate of recognition. For the protégé, this ritual was a symbol of having moved from being a faculty member unfamiliar with teaching in an online environment to being a certified professional in distance education. For mentors, this type of symbolic public recognition of competence and leadership

was an effective reward for the contributions each made to the growth and development of their protégés (Murray & Owen, 1991).

In addition to the symbolic rewards, all protégés and mentors received substantive compensation from the university in the form of a quarter-time release from teaching. If a mentor could not act on the release, s/he was provided with a monetary payment. The payment was equal to an adjunct instructor's stipend for teaching the course from which the mentor could not be released. Payments ranged from $2500 to $4000. In addition, upon successful completion of the program, protégés were rewarded with $500 as recognition of their dedication to teaching and professional development. The second iteration of the program began when six of the protégés agreed to serve as mentors for the next group of faculty applicants.

Specification of Hypotheses

We believe that a program built on the tenets of QM, as contrasted with one developed without quality considerations, will have greater effectiveness; that is, perceived improvement in teaching. In this context, the extent to which a faculty member perceives his or her teaching has improved is an appropriate dependent variable to measure the effectiveness of the DEMP.

A statistical framework using the elements of the Pyramid Model may explain the factors that contribute to perceptions of teaching improvement. Those elements would serve as the independent variables to explain the workings of the DEMP. A study of Israeli business organizations by Galin and Falk (2008) provides the basis for this approach. They used the Pyramid Model to explain quality outcomes and found that employee encouragement practices (such as process orientation, recognition, and empowerment) impacted organizational quality practices (such as customer satisfaction, training, and quality measurement). These researchers also found that quality practices directly impacted quality outcomes.

Implicit in the definition of "quality" is the notion of continuous improvement—a second level element in the Pyramid Model. Summers (2009) defined continuous improvement as the ongoing enhancement of products, services, or processes through incremental or breakthrough efforts. According to Rodrigues (2007), quality management means having a long-term, ongoing commitment to improvement, with all employees actively participating at all levels. Quality also means that organizations produce goods or deliver services that meet or exceed customers' expectations at the lowest possible cost (Deming, 1986; Juran, 1964). Quality-oriented organizations are highly responsive to customer needs and satisfaction. This is an apex level element in the Pyramid Model.

Based on these studies, we hypothesize that:

H-1: Protégés' perceptions of teaching improvement will be positively affected by the tools (level 3), principles (level 2), and fundamental elements (level 1) of the Pyramid Model that are incorporated into the DEMP.

Mentoring can be viewed from multiple perspectives. According to Merriam (1983), "mentoring appears to mean one thing to developmental psychologists, another thing to business people, and a third thing to those in academic settings" (p. 169). Through content analysis of detailed interviews, Kram (1988) found that mentors provided career and psychosocial support to their protégés. Career support refers to the fact that mentors coach, protect, and provide organizational visibility for their protégés. Psychosocial support refers to the modeling and counseling behavior that mentors frequently provide. It also refers to the positive acceptance and recognition that mentors provide their protégés. In their study of career support, Dreher and Ash (1990) found that individuals involved in extensive mentoring relationships had higher incomes, received more promotions, and experienced greater pay and higher satisfaction.

University faculty members have not typically been trained in the techniques or methods of distance education. The distance learning courses they create often mirror what they do in their on-campus courses. Making a transformation from learner to teacher is usually not overly cumbersome where the environment remains relatively the same. With distance education, however, the environment is very different and many faculty members need expert assistance. This situation is analogous to faculty who graduate from research institutions and then take positions at teaching institutions or community colleges. LeCroy and McClenny (1992) recommended faculty-to-faculty mentoring to facilitate this transition and to create connectedness. When faculty feel connected to others, they view their work as "more positive than if they feel estranged and unsupported" (LeCroy & McClenny, 1992, p. 41). How faculty view their work affects whether it is done excellently, which in turn affects the success (Seidman, 1985), identity (St. Clair, 1994), and perhaps the competitive advantage of the university.

In terms of psychosocial support, Penner (2001) indicated that mentoring provides protégés with friendship, which in the long run may be a productive and enjoyable outcome. Other examples include providing protégés with a role model, encouragement, and counseling (Leon, 1993; Taylor, 1997). Smith, Howard, and Harrington (2005) identified two new behaviors associated with psychosocial support: fostering teamwork (a level 2 element in the Pyramid Model) and developing cooperation with protégés. These researchers also found that psychosocial behaviors were significantly more important to mentors than career development behaviors. They reasoned that perhaps mentors lacked psychosocial support as protégés, and as such, valued it more as a way of correcting past wrongs. It is an empirical question as to whether protégés view psychosocial support as more important than career development support.

On the basis of the theory and research cited above, we propose the following hypothesis related to the DEMP:

H-2: Protégés will rate the psychosocial contributions of the DEMP higher than the career support contributions of the program.

Method

Survey Instrument

Three authors of this article used their insights as mentors and a protégé involved in the first iteration of the DEMP (as summarized in Barczyk, Buckenmeyer, & Feldman, 2010) to develop the survey questionnaire. Research suggests that skilled faculty members and structured faculty development programs are key ingredients of quality distance courses (North Central Association of Colleges and Schools, Higher Learning Commission, 2007). Faculty who teach online must be provided with both training and continuous support (Willis, 1994). The survey questions created reflect these criteria. Specifically, the questionnaire asked about the development of skills to teach online, the focus on instructional design for online instruction, qualities of the mentoring relationship, working as a team, and general beliefs about online instruction.

The questionnaire contained 72 closed-ended items, 58 of which related to the characteristics and outcomes of mentoring as well as to the quality management aspects of the DEMP. Several items related to the psychosocial and career development functions of mentoring. Fourteen items related to 10 elements in the Pyramid Model of QM. The protégés completed the questionnaire electronically, which was accessible as an assessment in the university's course management system. Most of the items required the protégés to rate their perceptions using a four-point Likert scale where 1 corresponded to a rating of strongly agree and 4 corresponded to a rating of strongly disagree. The questionnaire also contained 14 items that related to demographic and background issues.

Respondents

In this study, we focused on the protégés of the DEMP, all of whom are on the instructional staff at Purdue University Calumet holding academic ranks from instructor to full professor. Sixty-nine protégés were invited to participate in the electronic survey. Thirty-four individuals (49.3%) completed the anonymous questionnaire.

Results

Demographics

Of the protégés reporting gender, 17 (50%) were females and 13 (38.2%) were males (four [11.8%] did not report gender). The race/ethnicity breakdown was

Table 1
University Employment Characteristics of Protégés

Measure	*M*	*N*	*SD*
Courses taught online prior to program	1.94	24	2.03
Years since receiving terminal degree	16.96	28	10.36
Years of university teaching experience	19.07	29	9.26
Years employed at this university	14.47	29	8.84

as follows: 22 (64.7%) Caucasians, 5 (14.7%) Asian/Pacific Islanders, and 1 (2.9%) African American (six [17.6%] did not report race/ethnicity). The tenure status of protégés at the time they started the program was as follows: 17 (50%) tenured, 7 (20.6%) non-tenured but in the tenure track, and 6 (17.6%) non-tenured and not in the tenure track (four [11.8%] did not report tenure status). Tenure and other employment characteristics of the protégés are shown in Table 1.

Hypothesis Tests and Perceptions of the DEMP

Hypothesis 1 was tested using stepwise regression analysis. The hypothesis stated that protégés' perceptions of teaching improvement would be positively affected by the tools, principles, and fundamental elements of the Pyramid Model that are designed into the structure of the DEMP. Perceptions of teaching improvement served as the dependent variable and elements of the three levels of the Pyramid Model served as the independent variables. The hypothesis was supported.

The results of the regression, summarized in Table 2, indicated that the three elements associated with three levels of the Pyramid Model explain 83% of the variance in the protégés' perceptions of teaching improvement. According to the regression model, protégés perceived improvements in their teaching because of the DEMP's focus on customers (protégés), continuous improvement approach, and process-like orientation.

Table 3 shows the protégés' perceptions of the DEMP in terms of the 10 selected elements of the Pyramid Model of QM. Fourteen items are reported

Table 2
Stepwise Regression Model of the Effect of Quality Factors on the Perception of Teaching Improvement

Predictor Variable	*B*	*t*	*p*
Process orientation (Tool—level 3)	.436	3.85	.001
Continuous quality improvement (Principle—level 2)	.324	2.49	.021
Customer satisfaction (Fundamental—level 1)	.329	2.33	.030

Notes. R^2 = .83 for overall model; *F* = 34.27 at *p* < .001.

Table 3
Protégés' TQM Perceptions of the Distance Education Mentoring Program

Pyramid Model Element	M	N	SD
Continuous quality improvement	1.71	32	0.85
Communication with protégés—open door policy	1.73	30	0.79
Customer satisfaction with DEMP—meeting students' needs	1.74	31	0.63
Customer satisfaction with DEMP—overall	1.84	31	0.74
Empowerment of protégés—opinions welcomed	1.87	31	0.89
Empowerment of protégés—opinions considered	1.87	31	0.81
Measurement of quality against established goals or standards	1.87	30	0.82
Top management commitment to the DEMP	2.00	31	0.97
Protégé training	2.07	30	0.74
Process orientation in dealing with problems	2.07	29	0.75
Encouragement of teamwork	2.10	31	0.79
Protégé recognition	2.13	30	0.82
Communication with protégés—feedback	2.19	27	0.74
Protégé incentives for good performance	2.31	29	0.85

Note. Means are based on a Likert scale where 1=strongly agree and 4=strongly disagree.

because some of the 10 elements included multiple questionnaire items. The table is organized in ascending order of mean value, where a lower value relates to a higher level of agreement for the given question. All of the means shown in Table 3 are below the scale midpoint (2.5), indicating that protégés perceived elements of quality in the design of the DEMP.

Hypothesis 2 was tested using a *t*-test. Results indicated that protégés rated psychosocial contributions of the DEMP (*M*=2.52, *SD*= .98) higher than career support contributions (*M*=3.00, *SD*= .88), *t*(26)=2.68, *p*< .01.

Five questionnaire items semantically related to the psychosocial construct were tested for reliability. They are listed in Table 4. Cronbach's alpha was highly significant (α= .94, *N*=5) for items associated with establishing rapport, devoting time, sharing information openly, exhibiting strong interpersonal skills, and engendering trust. Inter-item correlations ranged between 0.67 and 0.92.

Five other questionnaire items semantically related to the career development construct were tested for reliability. They are listed in Table 4. Cronbach's alpha was also significant (α= .80, *N*=5) for items associated with providing access to information, providing knowledge and skills, providing new information, providing course feedback, and facilitating application of instructional design principles. Inter-item correlations ranged between 0.29 and 0.71.

A *t*-test between the means of the semantically constructed psychosocial (PS) and career development (CD) variables was statistically significant, *t*(31)=3.42, *p*< .01. The effect is similar to that found for the original variables

Table 4
Protégés' Perceptions of Career Development and Psychosocial Support Functions of the Distance Education Mentoring Program

Career Development and Psychosocial Support Related Items	*M*	*N*	*SD*
Career Development (CD) Support Functions			
Provided course feedback	1.97	31	1.05
Provided postings in DL Institute	2.00	32	0.80
Facilitated application of instructional design principles	1.87	30	0.90
Provided access to new information	2.07	30	0.79
Provided relevant knowledge and skills	2.17	30	0.91
Cronbach's α= .80			
Psychosocial (PS) Support Functions			
Shared information openly	1.74	31	0.68
Established good rapport	1.78	32	0.83
Exhibited strong professional interpersonal skills	1.77	31	0.88
Engendered trust	1.83	30	0.87
Devoted time to clarifying expectations	1.84	32	0.85
Cronbach's α= .94			

where protégés experienced more psychosocial support from the DEMP (*M*=1.78, *SD*= .74) than career development support (*M*=2.03, *SD*= .70).

Discussion

The results associated with hypothesis 1 indicate that elements from all three levels of the Pyramid Model explain the perception of teaching improvement experienced by protégés in the DEMP. The data summarized in Table 2 show that the use of a process orientation in the program (a tool from level 3) to foster quality improvement (a principle from level 2) in an effort to achieve customer satisfaction (a fundamental from level 1) results in protégés' believing that their teaching improved. These findings support hypothesis 1, which states that protégés' perceptions of teaching improvement are affected by the quality elements incorporated into the design of the DEMP, and are in partial accord with the results of Galin and Falk (2008). They provide evidence for a direct link between the three elements of the Pyramid Model (one from each level) and the dependent variable. The regression model, based on elements of QM, explains 83% of the variance in protégés' perceptions of teaching improvement resulting from the DEMP. It confirms that elements at each level of the pyramid are interrelated and integrated to produce quality outcomes.

The data summarized in Table 3 convey how protégés perceived the DEMP in terms of QM. None of the fourteen survey questions that correspond with the 10 elements in the Pyramid Model of QM (Barczyk, 1999) had a mean

score exceeding the scale midpoint (2.5). It is significant that seven items had mean scores lower than 2.0, indicating that protégés agreed or strongly agreed that the DEMP was designed with a strong quality focus. In protégés' view, the program had excellent mechanisms for communication and focused on continuous improvement. It also satisfied the quality needs of students, empowered participants, provided overall satisfaction to protégés, and measured the quality of work outcomes against objective standards.

The protégés' high ratings on important elements of quality provide an objective assessment of how faculty-customers perceive the experience. While senior management at Purdue University Calumet and the program designers may extol the virtues of the DEMP, the critical perceptions come from the true internal customers of the program—the faculty members who participated as protégés. By insuring that programs such as the DEMP are perceived positively in terms of quality, the university enhances its identity (St. Clair, 1994) and perhaps its competitive advantage. Deming (1986) has long held that the role of senior management in organizations is to focus on quality to achieve the benefits of the *quality chain reaction.* For a university, that reaction would be as follows:

(1) to focus on teaching excellence through a highly developed faculty,
(2) to satisfy their customers, both students and faculty,
(3) capture market share in terms of enrollments and credit hours,
(4) stay in business, and
(5) provide jobs for both faculty and staff.

The results associated with hypothesis 2 indicate that mentors in the DEMP provided protégés with more psychosocial support than career development support. This finding extends the conclusions of Smith, Howard, and Harrington (2005), whose work showed that mentors ranked psychosocial functions as more essential than career functions.

In this study protégés reported that their mentors engendered trust, had strong professional interpersonal skills, and established good rapport, which in some cases facilitated the formation of friendships. Perhaps seasoned professors, who in this study had an average of 19.1 years of teaching experience, need psychosocial support or reassurance to deal with the anxieties associated with the use of new technologies. Our assertion appears to be corroborated by the mean score in Table 3 for communication (1.73), which is necessary for good interpersonal relationships. This score indicates that protégés strongly agreed that their mentors in the DEMP had open door policies that encouraged discussion and the sharing of information.

The data summarized in Table 4 reveal how protégés in the DEMP perceived mentors in terms of career development and psychosocial support. The ratings suggest that protégés received more psychosocial than career development support from their mentors. Protégés reported that mentors

established good rapport, engendered trust, shared information openly, devoted time to clarifying expectations, and exhibited strong interpersonal skills. In terms of career development, protégés reported that mentors helped them access new information, increase their relevant skills, and apply newly learned instructional design principles. Our data suggest that university faculty members need mentors who have the soft skills associated with psychosocial support more than technical expertise. Conceivably, seasoned faculty members who have already taught a number of online courses (M=1.94 courses) and who received their terminal degrees some time ago (M=16.96 years) simply need a trusting, sharing, interpersonally adept mentor to assist them through the process of learning new technologies and a new instructional mode.

Implications for Professional Practice

Investing in and continuing a program should not to be done on the sole belief that it will be successful. Programs need to be assessed or studied (Deming, 1986). In that way, managers, decision makers, and participants can see whether their investments of time and resources are worthwhile and should be continued and improved, or eliminated. The results of this study indicate that the DEMP is effective. This has implications for those involved in university-level programs designed to assist professors in the development of high-quality distance education courses. In tight economic and recessionary times when budgets for training and faculty development are often reduced, this evidence is especially critical. Knowing that a program such as the DEMP has bottom-line benefits provides university decision makers with the information necessary to continue funding, and in the process, build quality faculty and online courses. Such benefits give an institution a distinct competitive advantage.

A second implication of this study relates to the quality factors deemed most important to performance—in the present case—the perceptions of teaching improvement. The regression analysis showed that three elements of the Pyramid Model of QM were critical to explaining faculty perceptions of performance improvement. The fact that customer satisfaction, continuous improvement, and process orientation were the elements found to be significant in explaining teaching improvement suggests that the DEMP and similar faculty development programs should continue to emphasize those elements of quality, but not necessarily at the expense of other elements.

A third implication of this study relates to the importance of focusing on the process of mentoring, which consists of both psychosocial and career development functions. When designing mentoring programs for professors and knowledge-based professionals, administrators should emphasize the psychosocial over the career development functions. Those programs should focus on specific behaviors such as the open sharing of information, establishment of good rapport, development of trust, use of effective interpersonal

skills, and clarification of expectations. A process-oriented view of mentoring is consistent with the tenets of QM.

Limitations

This study has two potential limitations. The first relates to the fact that the survey relies on self-report measures. Even though the protégés completed their questionnaires anonymously, self-report has the potential of creating a social-desirability bias wherein participants want to respond in a way that makes them look as good as possible. Respondents may attempt to answer in a socially desirable way and occasionally under-report behaviors deemed inappropriate by researchers and over-report behaviors viewed as appropriate. The nature of the survey and its electronic administration likely prevented participants in the current study from knowing the research hypotheses or desired responses. While the possibility for this effect exists, the probability that it would impact the study's findings is relatively low.

The second limitation relates to the use of a single survey instrument, which creates the potential for common method bias. For this study, a survey was the only feasible means of efficiently collecting data from the protégés. Future research should investigate the use of other data collection methods that may include interviewing a sample of the protégé pool. This mixed method approach would help strengthen the findings and partially rule out the validity threats of mono-method bias observed in organizational behavior research (Donaldson & Grant-Vallone, 2002).

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