Faculty Teaching Goals at Senior Research Universities

Lisa Dawn Johnson

Dissertation submitted to the Faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of

Doctor of Philosophy
in
Educational Administration

Dr. Don G. Creamer, Chair
Dr. John A. Muffo
Dr. Mary Ann Lewis
Dr. Richard F. Harshberger
Dr. David E. Hill

July 11, 1997

Blacksburg, Virginia

Keywords: Faculty, Teaching goals, Biglan, Research universities

FACULTY TEACHING GOALS AT SENIOR RESEARCH UNIVERSITIES

Lisa Dawn Johnson

(ABSTRACT)

The purpose of this study was to identify faculty teaching goals at senior research universities and to determine variables which could be used to predict these goals. The eight disciplines used in this study were: accounting, chemistry, computer science, economics, English, math, mechanical engineering, and psychology. The independent variables were: gender, academic rank, course level, tenure, and four Biglan categories (pure-hard, pure-soft, applied-hard, and applied-soft).

Using the Teaching Goals Inventory (Angelo & Cross, 1993), the teaching goals and primary teaching role of faculty at senior research universities across eight academic disciplines were identified (N = 352). Through a principal axis factor analysis, seven factors emerged for the data gathered from the Teaching Goals Inventory, results of which were slightly different from that of previous research. Further analyses indicated differences between the teaching goals and primary teaching role of faculty at senior research universities, community colleges, and four-year colleges.

Seven one-way ANOVAs and subsequent post-hoc comparisons were conducted which indicated significant differences ($p < .05$) among the factor means across the eight academic disciplines. Comparisons of the primary teaching role across the eight academic disciplines also indicated significant differences ($p < .05$) in the percentage of faculty selecting each of the six roles.

Furthermore, this study provides additional evidence to support the theory that the Biglan categories help explain the differences in teaching goals across academic disciplines. Significant differences ($p < .05$) were detected in the teaching goals and primary teaching role of senior research university faculty across the four Biglan categories. Through regression analyses, three of the four Biglan categories, gender, and level of course entered as predictors of teaching goals. Academic rank and tenure did not enter into any of the regression equations; however, further analyses indicated these variables were intercorrelated with several other independent variables. Implications for these findings are discussed.

ACKNOWLEDGMENTS

I extend my most sincere appreciation to the members of my committee who shared with me their time, knowledge, and expertise. Over the last several months, the support, understanding, and motivation provided by Dr. Don G. Creamer and Dr. John Muffo enabled me to complete this paper. Their insight, expertise, and wealth of knowledge was invaluable in helping to structure, guide, and complete this study.

My heartfelt appreciation is extended to Dr. Richard Harshberger, Dr. Mary Ann Lewis, and Dr. David Hill. Their advice and interest in this project provided me encouragement and exhilaration--from start to finish.

Lastly, I acknowledge those faculty members who gave of their time to complete the inventory used in this study. Without their willingness to respond to the inventory, this study would have been impossible.

DEDICATION

This study is dedicated to:

My parents, ***Kenny*** and ***Linda,*** whose dreams for their children always came before their own wants and needs. They instilled in me the simple yet complex values of life: honesty, trustworthiness, loyalty, and perseverance. Their unconditional love and never-ending support has been the anchor throughout my life.

My sisters, ***Teresa, Karen,*** and ***Susan***, whose love and reassurance have given me the strength and endurance to finish this project. Although miles now separate us, we still share an indestructible bond that will forever keep us intertwined.

My best friend, ***Vincent,*** whose faith in me and love for me has not wavered. His encouragement and support has given me the security, stability, and motivation necessary to complete my degree.

To my ***grandparents***, whose tenacity, ambition, love of life, and devotion to others has inspired me throughout my life. I've always tried to "stick out my chin and be tough".

TABLE OF CONTENTS

List of Figures

List of Tables

List of Appendices

Chapter 1

THE PROBLEM

This chapter contains the purpose of the study, a model of factors which influence faculty beliefs, values, and attitudes, explanations for relationships in the model, and an explanation of the need for further investigation. Also, discussed are the research questions, definitions, and limitations of the study.

Background

During the last several decades, much attention has focused on faculty responsibilities at American higher education institutions. At most senior research institutions today, faculty fulfill three tasks: teaching, research, and service. Although drastic transformations have occurred in the role of faculty and the structure of institutions since the 1600s, only moderate change has taken place in university teaching practices (Ellner & Barnes, 1983).

To provide assistance with teaching practices, faculty development programs were implemented in many institutions during the 1970s. Some researchers have suggested that these programs "are almost always too narrowly conceived and even more narrowly implemented" (Schuster, 1990, p. 6) and do not address the differences among and within institutions (Stark, Lowther, Bentley, & Martens, 1990). Previous investigations have found that faculty teaching practices are influenced by individual beliefs and values, institutional contexts, and disciplinary structures (Lawrence, Hart, Mackie, Muniz, & Dickmann, 1990; Light, Mardsen, & Corl, 1973).

Bowen and Schuster (1986) stated that faculty "values are derived from long academic tradition and tend to be conveyed from one generation to the next via graduate schools and also through the socialization of young faculty members as they are inducted into their first academic positions" (p. 53).

Purpose

The purpose of this study is to identify faculty teaching goals at senior research universities, compare faculty teaching goals across types of institutions, compare faculty teaching goals across academic disciplines at senior research universities, and determine variables which can predict faculty teaching goals. The data gathered could be used to help explain the contextual and personal differences in faculty teaching goals at senior research universities and develop profiles of faculty teaching goals within specific disciplines. The data from this research also could be used to strengthen interdisciplinary courses, understand the diversity in teaching goals at senior research universities, and measure faculty consistency (internal congruency), both within colleges and departments.

It is anticipated that significant differences in faculty teaching goals at senior research universities will be found across academic disciplines. Furthermore, it also is believed that the differences in faculty teaching goals will be found across institutional classifications. Lastly, it is

suggested that specific variables (Biglan classifications, rank, gender, tenure, and course level) will allow researchers to predict faculty teaching goals at senior research institutions.

Based on previous research, the model for this study was developed depicting factors which influence faculty members' beliefs, attitudes, and values, thus influencing faculty teaching goals (see Figure 1).

Research Questions

1. How do the teaching goals of faculty differ across types of institutions?
2. How does the primary teaching role of faculty differ across types of institutions?
3. How do the teaching goals of faculty at senior research universities differ across academic disciplines and Biglan categories?
4. How does the primary teaching role of faculty differ across academic disciplines and Biglan categories?
5. What variables account for these differences?

Definitions

The variables used in this study (academic discipline, Biglan classifications, gender, level of course, rank, and tenure) are defined in the following section (see Table 1). Literature-based and operational definitions are provided.

Academic discipline. For purposes of this study, an academic discipline is defined as a specific subject. The disciplines used in this study are: chemistry, mathematics, computer science, mechanical engineering, English, psychology, accounting, and economics.

Academic rank. Guralnki (1980) , in Webster's dictionary, defined rank as "a relative position, usually in a scale classifying persons" (p. 1176). Within the academic setting, years of experience and level of productivity assist in determining a faculty member's status. This study asked participants to indicate their academic rank in one of the four categories: lecturer, assistant professor, associate professor, and professor. Lecturer was used instead of instructor because this rank was used at institutions selected for participation in this study.

Biglan classification. "Three dimensions [which] appear to characterize the subject matter of academic areas in most institutions. The dimensions are (a) the degree to which a paradigm exists, (b) the degree of concern with application, and (c) concern with life systems" (Biglan, 1973a, p. 202). This study utilized two dimensions, hard-soft and pure-applied. The life-nonlife dimensions was excluded from this study because it was under-represented at several institutions and has been shown to have the weakest evidence of validity of the three dimensions.

Gender. Participants were asked to indicate whether they were male or female.

Faculty. For purposes of this study, faculty selected for participation were listed in each college's catalog or on it's web page and had taught a course within the last year. The inventory's directions address the condition, "taught a course within the last year."

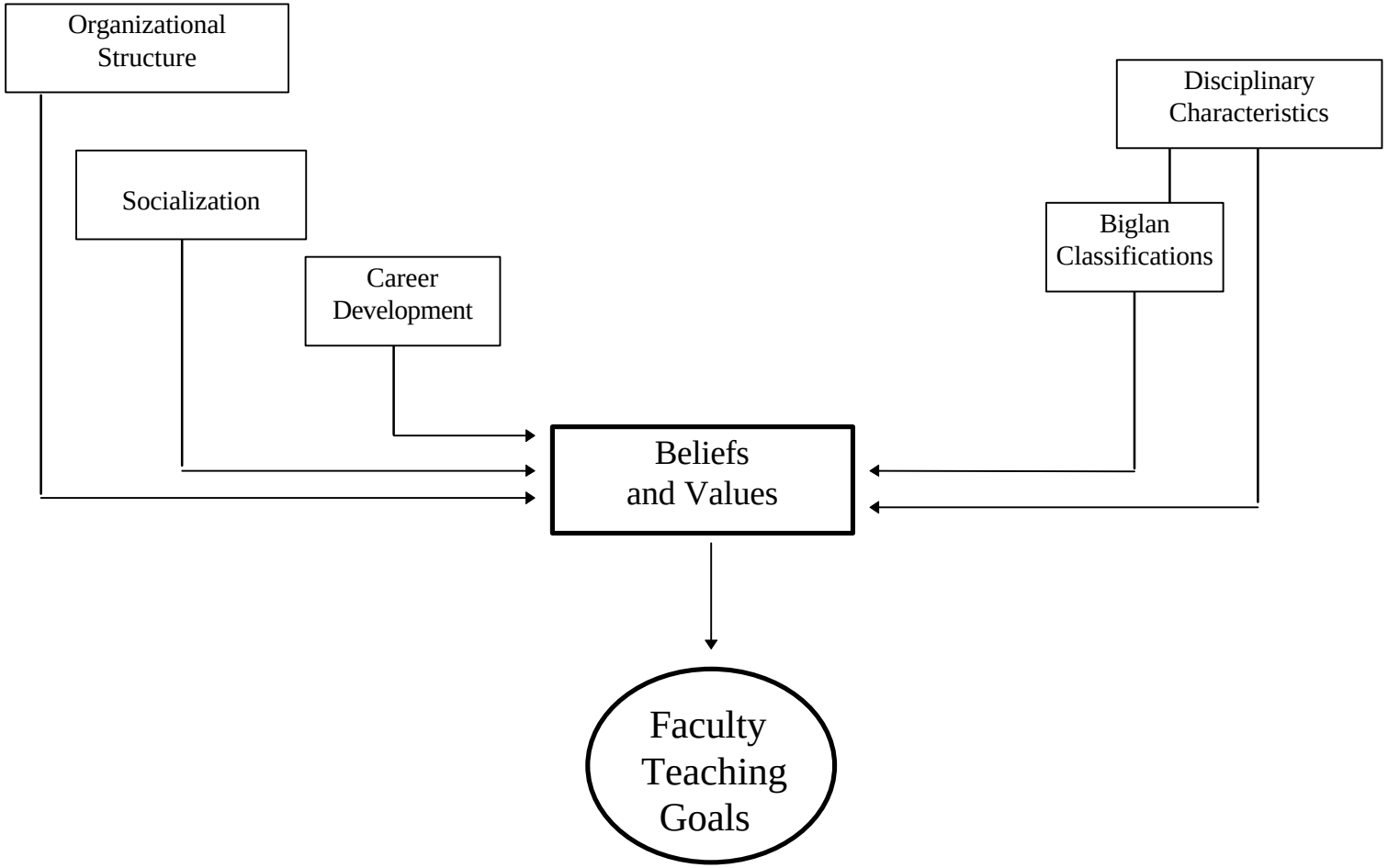

Figure 1. Influences on Faculty Beliefs, Attitudes, and Values

Table 1
Variables Used in Study

Dependent Variables	Independent Variables
Cultural & Societal Appreciation	Pure-Soft Biglan Category
Personal & Professional Development	Applied-Soft Biglan Category
Discipline-specific Knowledge	Pure-Hard Biglan Category
Higher-order Thinking Skills	Applied-Hard Biglan Category
Work-related Skills	Level of course
Self-improvement	Gender
Basic Skills	Tenure
	Academic Rank

Institutional classification. This is a systematic method to categorize higher education institutions. The number of degrees awarded, the amount of research dollars generated, the size of the institution, and the source of funding are factors that help determine an institution's classification. This study relied on the Carnegie classification system to identify institutions for participation. The Carnegie system has ten classifications: Research University I, Research University II, Doctoral University I, Doctoral University II, Comprehensive University I, Comprehensive University II, Liberal Arts College I, Liberal Arts College II, Two-Year Institutions, and Specialized Institutions. (See senior research universities definition below.)

Level of course. Participants were asked to select one course they had taught within the last year and respond to the inventory with that course in mind. As a follow-up question, participants were asked to indicate the course level they had selected from three options: freshman/sophomore, junior/senior, and graduate.

Senior research universities. Also referred to as Research Universities I, senior research universities "offer a full range of baccalaureate programs, are committed to graduate education through the doctorate degree, and give high priority to research. They receive annually at least $33.5 million in federal support and award at least 50 Ph. D. degrees each year" (Carnegie Foundation for the Advancement of Teaching, 1987, p. 7). For purposes of this study, senior research universities were randomly selected from the Carnegie Foundation for the Advancement of Teaching (1987) listing of Research Universities I.

Teaching goals. For purposes of this study, a faculty teaching goal was a faculty member's description and rating of "what they want students in their courses to learn" (Angelo & Cross, 1993, p. 13). In this study, a teaching goal was considered "essential" if the faculty member always or nearly always tried to achieve the stated objective. Teaching goals in this study were those identified by Angelo and Cross (1993) in the Teaching Goals Inventory (Appendix A).

Tenure. Guralnki (1980), in Webster's dictionary, defined tenure as "the status of holding one's position on a permanent basis" (p. 1466). The inventory asked participants to indicate whether they had received tenure.

Limitations

Limitations exist during any survey research. The fact that the Teaching Goals Inventory was developed and tested using faculty members from four-year colleges and community colleges is of concern. The goals on the inventory may not be an accurate representation of the teaching goals of faculty at senior research universities.

The lack of past research examining the teaching goals and behaviors of faculty at senior research universities is a second limitation. The prior research has studied faculty teaching goals at other types of institutions.

Another limitation of this study was the underrepresentation of female faculty in the list of participants. Although the proportion of female respondents is very similar to that of actual research universities, the small number of female participants made it difficult to determine if gender could be used to predict faculty teaching goals statistically.

A fourth limitation of this study was the selection of faculty participants. The researcher could not be certain that the listing available was accurate and current. Several names that were selected had to be eliminated because they were unreachable.

The results of this study cannot be generalized to groups other than senior research universities. Doctoral and research universities II would more than likely produce slightly different results.

Summary

The purpose of this study, a model of factors which influence faculty beliefs, values, and attitudes, the explanations for relationships in the model, and the need for further investigation were presented. Additionally, the research questions, definitions, as well as the limitations of the study were discussed.

Chapter 2

REVIEW OF RELATED RESEARCH

In this section the research related to factors which influence faculty beliefs and values is reviewed. These factors include the organizational structure, faculty socialization, and career development. Also, the research related to institutional and disciplinary characteristics and their influences on faculty beliefs and values is examined.

Factors Influencing Faculty Beliefs and Values

Researchers have examined factors which tend to influence faculty beliefs and values. These factors range from the organizational structure of the institution, to faculty socialization and career development.

Organizational Structure

The organizational structure of American colleges has changed dramatically since their conception. Kerr (1966) stated:

> The university started as a single community - a community of masters and students. It may even be said to have had a soul in the sense of a central animating principle. Today the large American university is, rather, a whole series of communities and activities held together by a common name. (p. 41)

These changes have helped to create "multiple functions and missions" (Alpert, 1985, p. 275) of institutions, departments, and individual faculty members. At some institutions, the focus has changed from an emphasis on teaching, to an environment that emphasizes teaching combined with research (Katz & Kahn, 1978).

In his discussion of today's higher education institutions and their times of "retrenchment," Alpert (1985) identified two "communities" within the university: the campus community and the disciplinary community. The campus community is concerned with the institution's undergraduate teaching mission and "was originally shaped and its structure defined by the teaching mission of the university" (Alpert, 1985, p. 251). Whereas, the disciplinary community focuses on "graduate education, research, and faculty selection and performance" (p. 251). Additionally, the author stated this community also has become responsible for the priorities in graduate education and for "justifying and selling research agendas to federal sponsors, allocating academic research grants, and implementing the peer review process for the rating of individual and departmental quality" (p. 252).

Furthermore, Alpert (1985) discussed the "national disciplinary community" that exists in today's society. He states that at comprehensive research universities, this community "is typically more meaningful to [faculty members'] professional careers and more familiar in terms of culture and day-to-day contacts than are faculty members in the other departments on their own campus" (p. 252).

Ladd and Lipset (1975) referred to the disciplinary communities as "units of association" in which faculty "will often know members of [their] field at universities across the country better than [they] will know most people in other departments at [their] own university" (p. 56). These communities often share the same "ideas, interests, norms and values, and professional style" (p. 56). Exposure to the unique disciplinary subcultures occurs in undergraduate and graduate school, and continues into the faculty member's career. Ladd and Lipset stated:

> A discipline's subject matter requires a bundle of professional work experience, defines the group's interests which serve as points of reference and association, and seems to attract people of particular value orientation; together these factors contribute to the formation of distinctive discipline subcultures. And once formed, such subcultures apparently become more than the sum of their contributing parts. A set of characteristics, styles, concerns, values, traditions, and general orientation to the social and political world takes shape, and members of the discipline are in intellectual contact with it throughout their professional lives. (p. 69)

Van Maanen (1983) examined the congruency between the organizational culture and the individual faculty member. He concluded that if the faculty member does not fit the institution's culture, transformation will be attempted by the institution. Other researchers have reported that the interactions between institutional elements and personal attributes help to shape faculty behavior and impacts the teaching/learning process (Blackburn & Lawrence, 1995; Peterson, Cameron, Mets, Jones, & Ettington, 1986). These factors include differences in mission statements, resources (including the quality of the facilities), and student and faculty recruits across institutions. Several researchers also reported that faculty and institutional values which were similar created a better learning environment, and faculty who favored research over teaching drifted towards a culture that valued research more than teaching (Fairweather & Rhoads, 1995; Tierney & Rhoads, 1993).

Blackburn and Lawrence (1995), using a sample of faculty from the nine Carnegie classification categories and eight liberal arts disciplines (English, history, biology, chemistry, mathematics, psychology, political science, and sociology), conducted the "Faculty at Work" survey. They found that "a faculty member's discipline and perceptions of institutional values, faculty colleagues, and students (social knowledge) directly affected how often he or she engaged in teaching behavior that prepares undergraduates as scholars" (p. 193). The researchers found that the disciplines "as well as individual career and self-knowledge variables are related to the teaching behavior" (p. 195). The researchers also found that the faculty and administrator views of the work environment differed across institutional types. Furthermore, they concluded that "faculty will continue to be motivated by their perception of the environment--what it honors, values, and rewards" (p. 106).

Faculty Socialization

Socialization occurs when one adopts the values, attitudes, norms, knowledge, and skills to exist within a given environment (Merton, 1957). Katz and Kahn (1978) suggested that individuals' inclinations to select an organization that "fit their needs and abilities is confounded with three other mechanisms that make for such goodness of fit--selection by others (as

contrasted to self-selection), adaptation and socialization in role, and role modification" (p. 211). When individuals enter an organization, members of their subculture (role-set) communicate their role expectations for the new recruit. The expectations are "activities that they [the organizational members] require of the person [the new recruit] to perform their own roles or to maintain their own satisfactions" (Katz & Kahn, 1978, p. 220). However, the behaviors of the new member is dependent on how the expectations were communicated. "It is the received role that is the immediate source of influence and motivation of behavior (insofar as it is influenced by members of the role-set)" (Katz & Kahn, p. 220). As the new members proceed (whether or not they adhere to the prescribed roles), the socialization process continues.

Getzels, Lipham, and Campbell (1968) discussed role adaptation ("an individual performing in accordance with role expectations") and self-actualization ("an individual performing in accordance with his needs") and the importance of these factors in the integration of institutional expectations and individual expectations (p. 119). Congruency between the institution and the individual is obtained through personalization of roles and socialization of the personality. In personalization of roles, "it is assumed that the institutional organization will permit little tampering with roles which have been formulated to achieve the goals of the system" (p. 124). However organizations, in the socialization of the personality, "must deal with the problem of acquiring individuals to fit the roles that already exist or, failing this, to use training and supervision as a way of making the available individuals fit the roles that have to be implemented" (p. 124).

Several studies have suggested that graduate school experiences such as teaching a course or having a mentor, are primary agents of faculty socialization (Bess, 1978; Clark, 1987; Clark & Corcoran, 1986; Eble, 1988; Finkelstein, 1984). Bess (1978) surveyed 236 graduate students at a large, prestigious public university regarding 320 faculty roles previously identified. His analysis of those students who stated their goal was to become a college professor (N = 87) indicated the roles of the "faculty aspirants" were "quite similar to younger faculty and only slightly different from older faculty" (p. 312). The researcher concluded that "students entering graduate school have already anticipated the values and orientations which will be required of them as faculty members" (p. 312). However, due to the small sample size and limited focus of the research (one university), the researcher cautioned the readers to take these factors into account when drawing conclusions from the research.

From their research of the career vitality of faculty at a large, public research-oriented multiuniversity, Clark and Corcoran (1986) concluded that "formal preparation of the faculty member takes place through graduate education" (p. 30). Additionally, they found that "department(s) induct students into the discipline, transmitting skills, knowledge, and a structure of values, attitudes, and ways of thinking and feeling" (p. 30). Furthermore, the researchers reported that "the basic forms and functions of graduate education are similar across disciplines, but actual processes vary among disciplines and departments, and even within departments among pairs of students and advisors" (p. 30).

Other researchers, however, have suggested that early socialization has little influence on time spent on teaching and institution selected for employment (Fairweather, 1996; Fairweather & Rhoads, 1995). Using data collected in the 1987-88 National Survey of Postsecondary Faculty

(NSOPF), Fairweather and Rhoads (1995) examined faculty teaching behavior and faculty attitudes toward teaching. The researchers utilized data for full-time, tenure-track faculty (N = 4,344) and data for full-time, assistant professors (N = 1,031). Type of institution (teaching-oriented or research-oriented) was used as a control variable. They concluded that experiences in graduate school "may not have a significant impact on one's commitment to the teaching role" (p. 191). Furthermore, the effect graduate school experiences have on faculty behaviors, such as time spent on teaching, "may be outweighed by later factors such as faculty rewards and work allocation" (p. 191). The researchers suggested additional studies be conducted to determine the lasting impression of graduate school experiences.

Fairweather (1996) concluded that "early socialization has at best an indirect relationship to the commitment to the teaching role," suggesting that "either the experience itself is ineffectual, or it is outweighed by later factors such as faculty rewards and work allocation" (p. 86). Furthermore, the researcher suggested that "early interventions to influence new faculty member's expectations may be more influential in their future commitment to teaching than the biases which they bring with them to the job" (p. 87). In discussing their "Faculty at Work" survey, Blackburn and Lawrence (1995) suggested that "socialization is a recurring, if not continuous phenomenon. The further one travels along the career path, the weaker the original effects become (unless, perhaps one stays in the same institutional type)" (p. 286).

Career Development

The career development of the faculty member has been the focus of several research projects and the findings help to explain changes in faculty members' beliefs and values. Light, Mardsen, and Corl (1973) developed an academic career framework which consisted of three "analytically distinguished strands; the elements of each contribute in different ways at different times to the potential for success" (p. 8). The disciplinary career, the institutional career, and the external career are interwoven and "although the events and sequences described for each strand are generally and logically expected, considerable variation can be anticipated among individuals, disciplines, and institutions" (p. 8).

The disciplinary career begins with the selection of a specialization. Intertwined with the disciplinary career is the institutional career which begins with a full-time job at a college or university. Beginning later in the career, external activities conducted outside of the institution, such as consulting, become a part of the faculty member's agenda. Although a successful institutional and external career is dependent on the disciplinary career, conflict may arise "between the professional importance of achievement in the discipline and the predominance of teaching duties" (p. 14).

Baldwin (1990) discussed a "sequential model of the academic career" that consisted of four stages: novice professor, early academic career, mid-career, and late career. During the novice professor stage, competence is established, courses are designed, and knowledge of the institution is obtained. The stage can last from one term to several years. The early academic career is "the period between career entry and full membership into the ranks" (Baldwin, 1990, p. 33). At this stage, faculty seek to gain mastery of faculty roles, to publish or obtain a major grant, courses are redesigned, and there is an increase in institutional service. "The long period after one

feels established but before the career disengagement process begins" (Baldwin, 1990, p. 34) is referred to as the mid-career. During this stage, faculty seek full professor status and, in the early stages, are very productive. During the late career stage, faculty disengage from work and prepare for retirement. However, faculty members in this stage express satisfaction with their careers and tend to be respected at their institution.

The attitudes of faculty at various career stages has been the subject of several studies. The findings indicated that political attitudes of faculty vary among age (Blackburn, 1972; Ladd & Lipset, 1975) and academic rankings (Blackburn, 1972). Researchers also have found that faculty workload and productivity varies with age (Blackburn, 1972; Parsons & Platt, 1968). Fulton and Trow (1974) found that, with age, the role preferences of faculty moved from research toward teaching. Also with age, interest in research decreased and male faculty members' need for affiliation increased (Baldwin & Blackburn, 1981). However, Blackburn, Bieber, Lawrence, and Trautvetter (1991) found that neither academic rank nor career age could be used to predict the percent of time devoted to teaching.

In a study involving 106 male faculty from twelve liberal arts colleges, Baldwin and Blackburn (1981) found that some faculty characteristics develop over time, some remain stable, and some fluctuate. Characteristics which tended to develop over time were an "understanding of and effective service to one's college" (p. 604). In the early career, these characteristics tended to develop rapidly and continued to increase throughout the career, although not as quickly. Additionally, as the career progressed, faculty members tended to become more comfortable with the teaching process, yet the satisfaction derived from teaching tended to decrease.

Faculty characteristics which remained stable over time included: the importance of teaching and student interaction, the time allotted to teaching, and the perception that teaching was a major professional strength. However, the perception that rapport with students and colleagues was a primary objective, the involvement in professional development activities, and the comfortableness with non-teaching interaction with students all tended to fluctuate throughout a faculty member's career.

In Reynolds' (1992) year-long study involving 19 junior faculty members from a research-oriented institution, the researcher found that changes in junior faculty were due in part to "the view of social interdependence with which the newcomer enters [the profession] and the interaction of that view with the newcomer's perception of the view held by members of his or her department" (p. 648). The researcher also concluded that although gender may be a factor in the junior faculty's experiences, it was not a dominant influence.

In summary, previous research has shown that the organizational structure of an institution can influence faculty belief and values. These influences range from the mission of the institution, to the "units of association" within the institution, to the work environment (which includes the quality of the facilities and students). Additionally, some research has indicated that socialization has a strong influence on the beliefs of faculty. Lastly, the research relating to the career development of faculty has shown that faculty beliefs and values change over time, with both age and academic rank.

Explanation for Differences Across Types of Institutions

Prior research has indicated that faculty teaching practices are influenced by the institutional context (Bloom & Freedman, 1973; Mauksch, 1986; Peterson, et al., 1986). In a national survey, researchers found that institutions can influence the percent of effort faculty give to teaching. Changes are possible if the institution makes "these desired new levels (higher or lower) explicitly known to the faculty ... [and] if interest in teaching could also be altered" (Blackburn, et al., 1991, p. 378). Additionally, the researchers reported that "either faculty selection, or institutional selection, or faculty adjustment to an institution has resulted in general compatibility" (p. 378).

Ladd and Lipset (1975) reported that "faculty at the elite, cosmopolitan, research-oriented schools were significantly more liberal-left than were their colleagues at lesser institutions" (p. 91). They concluded that the academic subcultures at universities help to "pull their faculty members," in this case, to the liberal-left sector.

In his study which examined faculty members' concern for individual students across 225 institutions (55 universities, 148 four-year colleges, and 22 junior/community colleges), Bayer (1975) concluded that institutional size was a strong predictor of the institutional environment. "Faculty influences are mediated primarily through institutional size and control (public, private, nonsectarian, Roman Catholic, Protestant), and, to a lesser extent, through level (two-year, four-year, university) and type (technological, liberal arts, teachers)" (p. 562).

In their study of more than 500 faculty members from a variety of institutions, Bloom and Freedman (1973) reported faculty members had "diverse educational outlooks and goals" (p. 52). They found faculty members at a mid-sized, mid-western university sought to provide students opportunities to increase their socio-economic status. At a private liberal arts college, the faculty members were more interested in student development. Providing a competitive and challenging academic program was the major focus of faculty members at a large, prestigious research university.

In summary, the previous research has indicated that faculty across types of institutions differ in the educational goals, time devoted to teaching, and political attitudes. The size, location, sponsorship, and mission of the institution may influence faculty values and beliefs.

Disciplinary Characteristics and Faculty Beliefs and Values

Several researchers examined the disciplinary characteristics within and across institutions. In their review of the American professorate, Bowen and Schuster (1986) discussed American faculty members' attitudes and values. Although faculty in America "in many ways [are] a homogeneous professional group with shared interests and values" many different disciplines and subcultures also exist (Bowen & Schuster, 1986, p. 49). Within the various disciplines and departments, a variety of personal and educational experiences, political views, values, and attitudes is present. "Each discipline attracts individuals of particular talents and interests, and the experience working in each field places its mark on their personality" (Bowen & Schuster, 1986, p. 49).

In their study of faculty political views, Ladd and Lipset (1975) found that faculty members in the liberal arts and sciences held significantly more liberal views that faculty members in applied fields. They concluded that intellectuality and contacts outside academe help to explain these differences. Additionally, the researchers found that faculty members in the social sciences were significantly more liberal than faculty members in the natural sciences. The researchers concluded that the recruitment processes within these disciplines and the fact that faculty members in the social sciences study society's political beliefs help contribute to the political practices of faculty members in these disciplines.

Lodahl and Gordon (1973) examined the differences in the organizational structure, reputation, and research funding between graduate departments in the physical and social sciences. They utilized 20 university graduate departments from each of four disciplines (physics, chemistry, sociology, and political science). Additionally, the departments were stratified based upon the "published quality levels: distinguished, strong, good and adequate plus" of their faculty (p. 192). They reported differences in the autonomy, reputation, and funding between physical science and social science departments.

The researchers found that faculty members in the physical sciences were "relatively autonomous" whereas faculty members in the social sciences were "less autonomous from their central administration, but granted more autonomy to their members" (Lodahl & Gordon, 1973, p. 211). Additionally, the researchers found that the college's reputation tended to influence the departmental structure. The "collegial structure is maintained within departments" (p. 211) when an institution's reputation is high; however, in departments where the reputation is low, "there is a tendency for bureaucratization of departmental structure, with more influence being exercised by hierarchical levels above the faculty" (p. 211). Lastly, researchers found that the amount of funding a department received was dependent on its quality and reputation.

A consistency-inconsistency classification system was utilized to study the teaching goals and research output of 2,560 full-time faculty at research and doctoral universities (Leverenz & Lewis; 1981; Lewis & Leverenz, 1979). The researchers found that faculty who are consistent (faculty whose educational background and professional activities are in the same department as their teaching appointment) were primarily concerned with discipline-oriented goals. Conversely, faculty classified as inconsistent (faculty whose educational background and professional activities are in a different field from their teaching assignment) were primarily concerned with preparing students for life situations. The researchers concluded the "concept of consistency ... [did] appear to have potential for isolating certain characteristics of faculty in selected disciplines" (Leverenz & Lewis, 1981, p. 14). However, they strongly recommended additional research be conducted to link this concept with established theories.

In his research to determine whether subject matter was related to the organizational structure, Biglan (1973a; 1973b) developed a classification scheme for academic disciplines, categorizing the disciplines in three dimensions: hard-soft ("existence of a single paradigm"), pure-applied ("concern with practical application"), and life-nonlife ("concern with life systems"). Biglan describes "paradigm" as "a body of theory that is subscribed to by all members of a field [that] provides a consistent account of most of the phenomena of interest in the areas and, at the same time defines problems which require further study" (Biglan, 1973b, p. 210).

In one study, Biglan (1973b) studied the structure and scholarly output of 47 departments at a large, state-supported institution which placed emphasis on research and graduate education. The researcher concluded that paradigmatic disciplines, when compared with nonparadigmatic disciplines, were more socially connected on research activities, more committed to research and less committed to teaching, and published more journal articles than monographs. Additionally, applied disciplines, when compared with the pure disciplines, were more committed to service, more dependent on peer evaluations, and published a higher percentage of technical reports. Faculty in the life systems "function as a group in training their graduate students and evidence a generally smaller commitment to teaching activities" when compared with those in the nonlife systems (Biglan, 1973b, p. 213).

Research into the validity of the Biglan classification was examined by Stoecker (1993). Utilizing the 1984 Carnegie Faculty Survey, the researcher examined 1,188 faculty members from research and doctoral-granting institutions. The four variables used in the study were: faculty use of time, format of scholarly output, source of research funding, and faculty attitudes. The findings from this research resulted in the same classification scheme as was developed by Biglan. Furthermore, two additional disciplines (nursing and dentistry), previously unclassified, were added to the classification system.

Several other studies have used the Biglan classification system to examine differences between academic disciplines. Through their research of departmental goal orientations, as stated by the department chairperson, Smart and Elton (1975) found that the Biglan classifications helped explain differences in chairpersons' goal orientations. Research, graduate education, and faculty and student development were emphasized more in the hard disciplines when compared to the soft disciplines. Applied departments focused more on student development, graduate programs, and providing direct service when compared to those departments in the pure category. When compared to nonlife systems, life systems were more interested in direct service and placed more emphasis on research and administrative efficiency.

Other researchers utilizing the Biglan classifications have reported differences in academic disciplines among their reward structures (Muffo & Langston, 1981; Smart & McLaughlin, 1978), faculty staffing and instructional work-load patterns (Muffo & Langston, 1981), published works and sources of faculty funding (Creswell & Bean, 1981), standards for faculty evaluations (Roskens, 1983), perceived influence of the department chair (Hayward, 1986), and faculty attitudes (Smart & Elton, 1982).

From a review of the literature, the evidence suggests that differences exist across types of academic disciplines. Biglan's classification scheme has been shown to assist in explaining the differences across academic disciplines. Additionally, most researchers agree that disciplinary characteristics have a stronger influence on faculty than does their respective institution (Alpert, 1985; Bowen & Schuster, 1986; Ladd & Lipset, 1975; Light, et al., 1973).

Research Related to Faculty Teaching Goals

In a comparative study of faculty undergraduate teaching goals between 1968 and 1973, researchers found that, during these years, the importance of specific teaching goals to faculty "remained more constant than altered" (Platt, Parsons, & Kirshstein, 1976, p. 304). The fact that

faculty emphasized the intellectual development of students led the researchers to conclude that higher education institutions supported an undergraduate teaching orientation. Furthermore, they suggested that this "orientation [was] not a direct expression of the core values but rather [was] a compromise integrating value commitments with institutional obligations" (p. 305).

Wilson, Gaff, Dienst, Wood, and Bavry (1975) surveyed 1,000 faculty members regarding the centrality of teaching in their lives and their support for certain teaching practices. The six institutions used in their survey were: the University of California, Davis, California State College at Los Angeles, Chabot College (a community college in the San Francisco Bay area), Hofstra University, Bard College (a small liberal arts college in the Northeast), and the University of Puget Sound (a church-affiliated institution). In this study, 61% of the faculty participants ranked "providing a broad general education" as their first or second primary teaching goal, with the highest percentage coming from the social science faculty. With the "self-knowledge and personal identity" goal, 44% of faculty surveyed ranked this goal as important, with the highest percentage reported from the humanities department faculty. "Increasing the knowledge and skills related directly to a student's career" was ranked third overall, with 31% of faculty respondents ranking this as important. This goal was favored mostly in the natural and applied sciences.

Faculty from research, doctoral, comprehensive, liberal arts, and community college institutions reported their primary undergraduate teaching goal to be "transmission of the facts, principles, and theories of their disciplines" (Lawrence, et al., 1990, p. 16) -- a goal related to the student's intellectual development. The survey utilized a 5-point Likert scale and mean scores were calculated for the goals across the five institutional categories. There was only a small variation in the institutional mean scores for this goal (research institutions = 3.76; doctoral institutions = 3.74; comprehensive institutions = 3.73; liberal arts institutions = 3.75; community colleges = 3.70). However, the researchers found faculty beliefs relating to the student's personal development differed by institutional type. Research and doctoral university faculty were less interested than faculty in comprehensive and community colleges in the personal development goals. The authors cited possible explanations for these results, including different institutional mission statements, recruitment processes, and faculty socialization practices.

Liebert and Bayer (1975) examined faculty members' goals in teaching undergraduates. They found that the teaching goals of faculty from four-year colleges and universities centered more on the intellectual development of the student. Those goals which encompassed the personal and moral development of students were viewed as less important.

In a study conducted at Syracuse University, 690 faculty members were asked to rank the importance of 18 general education objectives (Pace, 1954; Pace & Troyer, 1949). The top ranked goal was "how to think clearly, meet a problem and follow it to a right conclusion without guidance." "Understanding other people" was the second ranked goal, while "discovering personal strengths and weaknesses, abilities, and limitations" received the third highest percentage of faculty ranking it as "very important." The two lowest ranked goals were: "developing an understanding and enjoyment of literature" and "developing an understanding and enjoyment of art and music."

Jervis and Congdon (1958), in a study involving 154 faculty members from the University of New Hampshire, found that "intellectual growth" was reported to be the highest ranked objective among faculty. Faculty in this study ranked "self-fulfillment" as the second highest

objective and "self-understanding" as the third highest objective. The lowest ranked objective was "social growth."

Researchers found that, at cooperative colleges (institutions with work-study programs), faculty members in the liberal arts, engineering, and business administration ranked "provide a basic general education and appreciation of ideas" as their top educational goal. The second and third ranked goals for liberal arts and business administration faculty members were: "help to develop one's moral capacities, ethical standards, and values" and "provide vocational training, develop skills and techniques directly applicable to one's career." However, engineering faculty member ranked these two goals in reverse order. The lowest ranked goal for all three fields was "prepare one for a happy marriage and family life" (Wilson & Lyons, 1961).

During Lewis' (1967) survey of faculty perceptions of the educational goals of the ideal public university, the researcher found that humanities, social science, science, and engineering faculty all ranked "provide a basic education and appreciation of ideas" as their top goal. "Provide deepening and broadening experiences" was the second ranked goal across all four fields. The two lowest ranked goals across all fields were: "develop moral capacities, ethical standards and values" and "provide knowledge and ideas about cultural heritage."

In one study, 396 faculty from six liberal arts colleges were asked to complete the Faculty Orientations Survey (Stark & Morstain, 1978). The faculty were classified into four categories: humanities, social sciences, natural sciences, and professional/applied fields. The findings of this research indicated that "liberal arts college faculty are not homogeneous in their views of educational purpose and process; in fact, their views are generally related to their disciplinary affiliations" (p. 433). Natural science and professional/applied faculty members placed more emphasis on "preparation for life and work" than did faculty members in the humanities and social sciences. Furthermore, faculty in the social sciences and professional/applied fields placed more emphasis on the "pursuit of ideas" than did faculty in the humanities and natural sciences.

Smart and McLaughlin (1974) analyzed departmental rankings of public, doctoral-granting universities, using Holland's vocational choice theory and eleven teaching goals grouped into five classifications. The study was based on the responses of 1,037 male department chairpersons. On two dimensions, Research-Graduate and Quality Education, significant differences were noted between the six groups (classified in accordance with Holland's categories). The researchers found:

> Research-Graduate scores differentiated Realistic and Investigative departments from Artistic, Social, and Conventional departments; Social departments from Artistic and Conventional departments; and Conventional from Enterprising departments. The addition of Quality Education to Research-Graduate maintained the differences described above and further differentiated Realistic departments from Investigative, and Artistic departments from Conventional. (p. 383)

The Research Graduate dimension included two goals, "produce new knowledge through research" and "develop and/or maintain an outstanding graduate program." "Graduate a well-versed student with a balanced education" and "educate the student for the future" were the two goals within the Quality Education dimension.

Smart (1982) examined sixteen undergraduate teaching goals using Holland's academic environment and Smart's (1978) institutional environment models. He found significant

differences among academic disciplines and across institutional environments, noting that the differences across disciplines are slightly stronger than the differences across types of institutions. Faculty in the Realistic, Conventional, and Enterprising categories placed greater emphasis on the vocational development of students when compared to faculty in the Artistic, Social, and Investigative environments. Additionally, the character and personal development of students was reported to be of greater importance to faculty members in the Social and Artistic environments, when compared to the Investigative and Realistic environment. The researcher suggested that due to these differences in undergraduate teaching goals, professional development programs and faculty evaluation policies should be more discipline-based rather than universal.

Using the Teaching Goals Inventory, Angelo and Cross (1993) examined the teaching goals of faculty at community and four-year colleges. Their studies involved 1,873 faculty members from fifteen community colleges and 951 faculty members from seventeen private four-year colleges. The institutions selected for their study were primarily teaching institutions, and the sample was therefore "biased in the direction of faculty who consider teaching their first priority" (Angelo & Cross, 1993, p. 365). The researchers conducted analyses for each institutional type as well as the nine disciplines selected for study (humanities, English, basic skills, social science, business, medicine, science, math, and arts).

The teaching goals reported to be "essential" by the respondents at both the community colleges and four-year colleges were similar (Appendix B and C). Additionally, both types of institutions rated "higher-order thinking skills" and "discipline-specific knowledge" as the top goal clusters. The researchers also found that "faculty teaching priorities [were] related more to academic disciplines than to any other factor" (Angelo & Cross, 1993, p. 366). They concluded that:

> teachers of a given discipline--whether male or female, full-time or part-time, experienced or inexperienced, teaching in a public community college or a private four-year college--share a value system with respect to teaching goals that is distinctively discipline-related and significantly different from that of colleagues in other disciplines. (p. 366)

The following is a summary of the researchers findings when comparing the top-rated goals across disciplines; the numbers in parenthesis correspond to the item on the Teaching Goals Inventory. Angelo and Cross (1993) found that the three top rated goals for math faculty were: math skills (17), problem solving (3), and analytical skills (2). Faculty in the humanities rated think for self (51), value of subject (21), and openness to ideas (27) as the three top goals. English faculty rated writing skills (15), think for self (51), and analytical skills (2) as the three top goals. In the social sciences, the top rated goals were: apply principles (1), value of subject (21), and think for self (51). Concepts and theories (19), apply principles (1), and terms and facts (18) were the top goals for science faculty. Business faculty rated apply principles (1), terms and facts (18), and problem solving (3) as the top goals. Think for self (51), self-esteem (45), and apply principles (1) were the top rated goals for faculty teaching basic skills. Lastly, faculty in the medical fields rated apply principles (1), wise decisions, (52), and responsible for self (44) as their top teaching goals.

Additionally, the researchers found significant differences in the reported primary teaching role across disciplines (Angelo & Cross, 1993). Faculty in humanities, English, and social

sciences rated their primary teaching goal as "higher-order thinking skills." Teaching "facts and principles" was rated the primary teaching role among faculty in science and math. Business and medicine faculty rated their primary teaching role as "preparing students for job/career." Faculty in the arts were primarily focused on "student development."

In summary, the research indicates that faculty teaching goals differ across both type of institutional and academic discipline. In most of the studies, the primary objective/goal of faculty is the intellectual development of students. This has remained a top priority over the last several decades. However, differences in the emphasis faculty members place on the personal and moral development of students varies across types of institutions and disciplines.

Need for Further Investigation of Teaching Goals

From the review of previous research, areas that warrant further investigation were identified. Angelo and Cross (1993) suggested individual faculty members, as well as departments and institutions, compare their scores on the Teaching Goals Inventory with peer institutions. However, data utilizing this inventory have not yet been obtained for research institutions. Furthermore, Levinson-Rose and Menges (1981) recommended that subsequent research on faculty teaching be built on previous research, utilizing the same instrument and methodology to strengthen the research base.

After a review of the literature on factors which influence faculty beliefs and values and the research that examined faculty teaching goals, the author determined the need for further investigation of faculty teaching goals at research universities. To build on previous research, the researcher decided to expand the research conducted by Angelo and Cross (1993).

Summary

This chapter provided an overview of literature related factors which influence faculty beliefs, values, and attitudes. Also included was a more detailed summary of the current literature related to faculty teaching goals within academic disciplines and types of institutions. Researchers reported faculty teaching goals differed across types of institutions; however, stronger differences were noted in faculty teaching goals across academic disciplines. Some researchers suggested that the goals and values held within academic disciplines are very strong due to interaction and interest within a specific discipline.

Chapter 3

METHODOLOGY

This chapter describes the population and sample, data collection instrument, data collection procedures, and methods of analysis used in this study.

Population and Sample

A total of 640 faculty from senior research universities were chosen to participate in this study. Ten institutions were randomly selected from a list of senior research universities, as classified by the Carnegie Foundation for the Advancement of Teaching (1987). Since institutions, through the Carnegie system, were already stratified based upon the programs offered, the number of degrees awarded, and for research universities, the amount of federal funding, ten senior research universities were selected through a random drawing. The names of all 70 senior research universities were placed on individual index cards, then placed in a box. Ten index cards were randomly selected, providing the ten institutions for participation in this study.

The disciplines were randomly selected from each strata of Biglan's hard-soft and pure-applied classifications. To select disciplines within the hard-pure category, the names of all the disciplines classified within this area were written on individual index cards. The cards were placed in a box and two cards randomly selected. The same process was followed for the hard-applied, soft-pure, and soft-applied classifications as well. Through the random selection, the following disciplines emerged: chemistry and mathematics from the hard-pure category; psychology and English from the soft-pure category; computer science and mechanical engineering from the hard-applied category; and economics and accounting/finance from the soft-applied category (Table 2). The life-nonlife classification was eliminated because it was under-represented at several institutions and has been shown to have the weakest evidence of validity of the three dimensions, as was done in previous studies (Daly & Townsend, 1992; Kolb, 1981).

From the selected institutions, eight faculty from each of the eight disciplines were selected for participation. Utilizing university Web pages or college catalogs, a departmental listing of faculty names was identified. (This researcher assumed that the Web page listing would be more current than the college catalog and used this source when available. However, some departments did not have departmental listings on a Web page, therefore, the most recent college catalog was used.) After identifying a list of faculty names, by department, the total number of faculty within each department was divided by eight (the number of faculty needed from each discipline). Following this procedure, every nth faculty name was selected for participation. For example, if a department had 48 faculty names listed, every 6th name was selected for participating in this study.

Table 2
Academic Disciplines Used for Study, by Biglan Category

	Hard	Soft
Pure	Chemistry Mathematics	Psychology English
Applied	Computer Science Mechanical Engineering	Economics Accounting

Data Collection Instrument

The data collection instrument (Appendix A) for this study was the Teaching Goals Inventory (Angelo & Cross, 1993) which asks faculty members to identify their teaching goals and the primary teaching role. Four questions were added to collect data on the level of course selected and the academic rank, tenure, and gender of respondents. These were used as predictor variables and are discussed further in the regression summary.

Purpose

The purpose of the Teaching Goals Inventory (TGI) is to "help individual teachers clarify what they want students in their classroom to learn ... and to help institutions discover teaching priorities among departments and across the institution as a whole" (Cross & Fielder, 1988, p. 275). Assessment of student learning can occur once goals are identified and prioritized (Angelo & Cross, 1993). Although the authors indicated that the Teaching Goals Inventory was "constructed to apply to the classrooms of any institution of higher education, from community colleges to research universities" (Cross & Fielder, 1988, p. 278), at the time of this study, no research on the use of the inventory in research universities was found in the literature. Additionally, the inventory was developed and refined using community colleges and four-year colleges.

Description

The Teaching Goals Inventory enables faculty to rate the relative importance of 52 teaching goals and to select their primary teaching role from six choices (Angelo & Cross, 1993). Respondents are asked to select one course they are currently teaching and to respond with that course in mind. The respondent is asked to rate the relative importance of each goal on a five point scale: essential (5), very important (4), important (3), unimportant (2), and not applicable (1).

From previous studies using this inventory, Angelo and Cross (1993) grouped the 52 teaching goals into six goal clusters. These are: Higher-order Thinking Skills (8 teaching goals), Basic Academic Success (9 teaching goals), Discipline-specific Knowledge and Skills (8 teaching goals), Liberal Arts and Academic Values (10 teaching goals), Work and Career Preparation (8 teaching goals), and Personal Development (9 teaching goals).

Respondents were also asked to select their primary teaching role from a list of six. The primary teaching roles are: teaching students facts and principles of the subject matter, providing a role model for students, helping students develop higher-order thinking skills, preparing students for jobs/careers, fostering student development and personal growth, and helping students develop basic skills learning. The primary teaching roles were developed to correspond with the goal clusters. Five of the six primary teaching roles appear to have direct ties to their respective goal cluster. However, it is unclear as to how "provide a role model for students" corresponds to the cluster "Liberal Arts and Academic Values." Angelo and Cross (1993) suggested faculty

"gauge the fit between [their] teaching goals -- as represented by [the] relative ranking of the goal clusters -- and the primary teaching role [they] selected in response" (p. 19).

Development

The development of the Teaching Goals Inventory, which began in 1986, spanned four years and involved "a literature search, several cycles of data collection and analysis, review and critique by expert judges, and field tests with hundreds of classroom teachers" (Angelo & Cross, 1993, p. 14). The list of 52 teaching goals resulted from three separate studies and revisions which utilized almost 5,000 college teachers.

To arrange the goals into clusters, Angelo and Cross (1993) used three procedures. First, items were constructed to relate "to the broad-based goals found in the literature" (Angelo & Cross, 1993, p. 15). Angelo and Cross (1993) cited the following publications as sources consulted in developing the Teaching Goals Inventory:

- Bayer (1975) - national survey of teaching goals
- Bowen (1977) - educational outcomes
- Bloom (1956) - intended educational outcomes
- Feldman and Newcomb (1969) - effect of college on students
- Chickering (1969) - student development vectors
- Astin (1977) and Astin and Panos (1969) - college outcomes research
- Center for Faculty Evaluation and Development in Higher Education (1975); Kulik (1976) - students' reactions to instruction
- Association of American Colleges (1985); College Board, 1983 - competencies expected of college-educated persons

Secondly, it was reported that cluster analysis was used to group intercorrelated items and identify "a common dimension that runs through all the items in that cluster" (Angelo & Cross, 1993, p. 15); further information, such as the statistical procedure, was not available.

Thirdly, to further refine the goal clusters, Q-sorting was conducted using faculty development specialists from across the nation. Although the method used to select these specialists was not provided, Angelo and Cross (1993) indicated that the specialists "had wide experience working with faculty on matters related to teaching and learning" (p. 16). Eighty-five specialists were sent the Teaching Goals Inventory and asked to follow these guidelines (Angelo & Cross, 1993):

1. Create no fewer than five and no more than eight clusters.
2. Create clusters that include more or less equal numbers of goals.
3. Include each of the forty-eight goals in one and only one cluster.
4. Give each cluster a short descriptive title.
5. List any goals that should be dropped.
6. Identify any additional goals that should be included. (p. 16)

Sixty-one percent (52) of the specialists returned the inventory. After this procedure, the researchers "dropped fourteen goals from the original forty-eight, added eighteen new items, and

rephrased all goals to make their wording parallel and as clear as possible" (Angelo & Cross, 1993, p. 17). This revised version of the Teaching Goals Inventory was used in the present study.

Validity

To provide evidence related to the instrument's content validity, teaching goals from previous research examining faculty undergraduate teaching goals (reviewed in Chapter 2) and the works referenced by Angelo and Cross (1993) were examined. Thirty-nine (75%) of the 52 teaching goals were found in the reviewed literature (Table 3). The sources of the remaining goals are unclear.

In the present study, it was noted that for five of the items for which support was not found in the literature, more than 50% of the respondents indicated the goal was "nonapplicable" or "unimportant." Another eight goals, referenced in the literature received the "nonapplicable" or "unimportant" rating by more than 50% of the respondents. One explanation for these results could be the fact that the studies consulted during the development of the inventory were completed using undergraduate populations only. The institutions used to develop and test the inventory were strictly undergraduate colleges (community and four-year). Additionally, the researchers reported that their sample for the final administration of the Teaching Goals Inventory in 1990 was "frankly biased in the direction of faculty who consider teaching their first priority. All the colleges in [the] sample were, first and foremost, teaching institutions" (Angelo & Cross, 1993, p. 365).

These findings question the instrument's validity for use in senior research universities. The fact that the instrument was not developed or tested with senior research university faculty can help explain the large percentage (25%) of items that were marked as "not applicable" or "unimportant" by more than half of the respondents; however, three-quarters of the items do seem to be relevant for certain populations at senior research universities. In future studies of senior research universities, researchers may want to omit the items marked "nonapplicable" or "unimportant" by the majority of respondents in this study.

Further Evidence Related to the Validity of the Teaching Goals Inventory : Factor Analysis

A factor analysis was performed to provide evidence related to the instrument's construct validity. The teaching goals were factor analyzed using principal-axis factoring, "the most widely used method of factor extraction" (Pedhazur & Pedhazur-Schmelkin, 1991, p. 594). In principal-axis factoring, also referred to as common factors method (Kerlinger, 1986) and factor analysis (*FA*) (Pedhazur & Pedhazur-Schmelkin, 1991), "the diagonals of the correlation matrix are replaced by estimates of the communalities" (Norusis, 1993, p. 60), thus helping to explain the common variance. This method was selected because "the primary objective [was] to identify the latent dimensions or constructs represented in the original variables" (Hair, Anderson, Tatham, & Grablowsky, 1984, p. 224).

Table 3

Evidence Related to the Content Validity of the Teaching Goals Inventory: Sources of Teaching Goals

Teaching Goal	Bayer (1973)	Chickering (1969)	Astin (1977)	Bloom (1971)	Pace (1954); Pace & Troyer (1949)	Lewis (1967)	Platt, et al. (1976)	Lawrence, et al., (1990)	Wilson & Lyons (1961); Lewis (1967)
1. Develop ability to apply principles and generalizations already learned to new problems and situations				X			X		
2. Develop analytic skills	X	X		X			X		
3. Develop problem-solving skills	X	X		X	X		X	X	
4. Develop ability to draw reasonable inferences from observations	X			X				X	
5. Develop ability to synthesize and integrate information and ideas	X	X		X		X			
6. Develop ability to think holistically: to see the whole as well as the parts	X			X					
7. Develop ability to think creatively	X								
8. Develop ability to distinguish between fact and opinion									
9. Improve skill at paying attention									
10. Develop ability to concentrate	X								
11. Improve memory skills									
12. Improve listening skills									
13. Improve speaking skills					X				
14. Improve reading skills									
15. Improve writing skills					X			X	
16. Develop appropriate study skills, strategies, and habits									
17. Improve mathematical skills									

Table 3 *(continued)*

Teaching Goal	Bayer (1973)	Chickering (1969)	Astin (1977)	Bloom (1971)	Pace (1954); Pace & Troyer (1949)	Lewis (1967)	Platt, et al. (1976)	Lawrence, et al., (1990)	Wilson & Lyons (1961); Lewis (1967)
18. Learn terms and facts of this subject	X	X		X		X	X		
19. Learn concepts and theories in this subject	X	X		X		X	X		
20. Develop skill in using materials, tools, and/or technology central to this subject	X								
21. Learn to understand perspectives and values of this subject									
22. Prepare for transfer or graduate study							X		
23. Learn techniques and methods used to gain new knowledge in this subject	X								
24. Learn to evaluate methods and materials in this subject									
25. Learn to appreciate important contributions to this subject							X		
26. Develop an appreciation of the liberal arts and sciences	X			X	X				X
27. Develop an openness to new ideas		X							
28. Develop an informed concern about contemporary social issues				X	X	X		X	X
29. Develop a commitment to exercise the rights and responsibilities of citizenship									
30. Develop a lifelong love of learning			X						
31. Develop aesthetic appreciations		X	X	X	X				

.

Table 3 *(continued)*

Teaching Goal	Bayer (1973)	Chickering (1969)	Astin (1977)	Bloom (1971)	Pace (1954); Pace & Troyer (1949)	Lewis (1967)	Platt, et al. (1976)	Lawrence, et al., (1990)	Wilson & Lyons (1961); Lewis (1967)
32. Develop an informed historical perspective									
33. Develop an informed understanding of the role of science and technology					X				
34. Develop an informed appreciation of other cultures	X	X	X	X	X	X		X	
35. Develop capacity to make informed ethical choices	X	X	X			X			X
36. Develop ability to work productively with others	X	X	X				X		
37. Develop management skills									
38. Develop leadership skills			X						
39. Develop a commitment to accurate work			X						
40. Improve ability to follow directions, instructions, and plans									
41. Improve ability to organize and use time effectively									
42. Develop a commitment to personal achievement			X	X	X			X	
43. Develop ability to perform skillfully							X		
44. Cultivate a sense of responsibility for one's own behavior		X		X					
45. Improve self-esteem/ self-confidence		X	X						

Table 3 *(continued)*

Teaching Goal	Bayer (1973)	Chickering (1969)	Astin (1977)	Bloom (1971)	Pace (1954); Pace & Troyer (1949)	Lewis (1967)	Platt, et al. (1976)	Lawrence, et al., (1990)	Wilson & Lyons (1961); Lewis (1967)
46. Develop a commitment to one's own values	X	X		X		X			
47. Develop respect for others	X	X	X			X	X	X	
48. Cultivate emotional health and well-being	X	X	X		X			X	
49. Cultivate physical health and well-being		X	X		X			X	
50. Cultivate an active commitment to honesty			X						
51. Develop capacity to think for oneself			X						
52. Develop capacity to make wise decisions			X						

A principal-axis analysis with a varimax rotation was performed to determine the number of factors (goal clusters) which accounted for the variance in the goals. Through examination of the scree plot, the eigenvalues, and the percentage of item variance, seven factors, accounting for 55.6% of the total item variance, were extracted (Table 4). Although some researchers recommend a factor loading of at least .50 to retain an item in a factor (Nunnally, 1967; Norusis, 1993), other researchers suggest that a factor loading of .30 is sufficient (Hair, et al., 1984). Goals which had a factor loading of a least .30 during the extraction process were retained in this study. These goals and their corresponding factor loadings are reported in Table 5. These seven factors formed the teaching goal clusters used in the analysis in this study. Four items in the inventory had factor loadings of less than .30 and were eliminated from further analyses. These are shown in Table 6.

Since this study attempted to replicate the research conducted by Angelo and Cross (1993), factors were named, when possible, in a similar fashion to their goal cluster titles. Factors three (Basic Skills), four (Discipline-specific Knowledge), and five (Higher-order Thinking Skills) were labeled with the same names as those of Angelo and Cross (1993) because the goals within the clusters were virtually the same, and the items were representative of the construct.

In naming factors one, two, six, and seven, the researcher also examined the clusters from Angelo and Cross (1993) and noted too many differences between the clustering to warrant use of the same names. The items loading on each of the factors were studied to determine a common construct. Factor one (Cultural and Societal Appreciation) contained all of the items found in Angelo and Cross' (1993) "Liberal Arts and Academic Values" cluster, plus four additional items. Five of the ten items in factor two (Personal and Professional Development) were clustered with the "Personal Development" cluster in the Angelo and Cross research (1993). The researcher added the "professional" construct since it seemed to address the additional items. Factor six was named "Work-related Skills" since the four items were associated with effective work (whether in the classroom or on the job). Lastly, factor seven was named "Self-improvement" since all three items were linked with improvement of life skills.

Because Angelo and Cross (1993) reported six goal clusters for the Teaching Goals Inventory, a principal-axis analysis with a varimax rotation forcing six factors was also run (Table 7). The six factors accounted for a cumulative variance of 52.60 percent (Table 8). Although some items loaded on factors that were similar to the goal clusters obtained in Angelo and Cross' (1993) research, none of the six factors were identical to the six clusters in the previous research. The items, sorted by the cluster and factor, are shown in Appendices H and I.

Reliability

Angelo and Cross (1993) administered their final version of the Teaching Goals Inventory to 2,824 faculty in 1990, and the internal consistency of the goal clusters was estimated with Cronbach's alpha. As seen in Table 9, alpha coefficients of .71 or higher were obtained in all goal clusters, an acceptable level according to Nunnally (1967).

Table 4

Explanatory Values of the Seven-Factor Principal Axis Analysis

	Eigenvalue	Variance	Cumulative Variance
Factor 1	13.61	26.20	26.20
Factor 2	4.31	8.30	34.50
Factor 3	3.19	6.20	40.60
Factor 4	2.70	5.20	45.80
Factor 5	1.89	3.60	49.40
Factor 6	1.65	3.20	52.60
Factor 7	1.56	3.00	55.60

Note: 1 - Cultural and Societal Appreciation
2 - Personal and Professional Development
3 - Basic Skills
4 - Discipline-specific Knowledge
5 - Higher-order Thinking Skills
6 - Work-related Skills
7 - Self-improvement

Table 5

Factor Analysis of .30 or More on the Teaching Goals Inventory: Seven Factor Solution After Rotation

	Teaching Goal	Factor						
		1	2	3	4	5	6	7
1	Develop ability to apply principles and generalizations already learned to new problems and situations					.54		
2	Develop analytic skills					.66		
3	Develop problem-solving skills					.67		
4	Develop ability to draw reasonable inferences from observations					.45		
5	Develop ability to synthesize and integrate information and ideas					.59		
6	Develop ability to think holistically: to see the whole as well as the parts					.42		
7	Develop ability to think creatively					.41		
8	Develop ability to distinguish between fact and opinion	.38						
9	Improve skill at paying attention			.78				
10	Develop ability to concentrate			.80				
11	Improve memory skills			.60				
12	Improve listening skills			.63				
13	Improve speaking skills							.51
14	Improve reading skills							.55
15	Improve writing skills							.56
16	Develop appropriate study skills, strategies, and habits			.41				
20	Develop skill in using materials, tools, and/or technology central to this subject						.32	
21	Learn to understand perspectives and values of this subject				.44			
22	Prepare for transfer or graduate study				.50			
23	Learn techniques and methods used to gain new knowledge in this subject				.66			
24	Learn to evaluate methods and materials in this subject				.76			
25	Learn to appreciate important contributions to this subject				.60			
26	Develop an appreciation of the liberal arts and sciences	.58						
27	Develop an openness to new ideas	.51						

Table 5 *(continued)*

	Teaching Goal	Factor						
		1	2	3	4	5	6	7
28	Develop an informed concern about contemporary social issues	.81						
29	Develop a commitment to exercise the rights and responsibilities of citizenship	.75						
30	Develop a lifelong love of learning	.47						
31	Develop aesthetic appreciations	.49						
33	Develop an informed historical perspective	.68						
34	Develop an informed appreciation of other cultures	.70						
35	Develop capacity to make informed ethical choices	.63						
36	Develop ability to work productively with others						.57	
37	Develop management skills						.77	
38	Develop leadership skills						.80	
39	Develop a commitment to accurate work		.59					
40	Improve ability to follow directions, instructions, and plans		.58					
41	Improve ability to organize and use time effectively		.63					
42	Develop a commitment to personal achievement		.71					
43	Develop ability to perform skillfully for one's own behavior		.56					
44	Cultivate a sense of responsibility for one's own behavior		.68					
45	Improve self-esteem/ self- confidence		.51					
46	Develop a commitment to one's own values	.56						
47	Develop respect for others	.63						
48	Cultivate emotional health and well-being	.54						
49	Cultivate physical health and well-being	.46						
50	Cultivate an active commitment to honesty		.64					
51	Develop capacity to think for oneself		.31					
52	Develop capacity to make wise decisions		.41					

Note: 1 - Cultural and Societal Appreciation
2 - Personal and Professional Development
3 - Basic Skills
4 - Discipline-specific Knowledge
5 - Higher-order Thinking Skills
6 - Work-related Skills
7 - Self-improvement

Table 6

Items with Factor Loadings of Less Than .30

Teaching Goal		Factor						
		1	2	3	4	5	6	7
17	Improve mathematical skills	-.25	.10	.04	-.08	.13	.08	-.06
18	Learn terms and facts of this subject	-.05	.13	.04	.11	.04	-.04	-.06
19	Learn concepts and theories in this subject	.01	.03	-.04	.11	.25	.03	.08
33	Develop an informed understanding of the role of science and technology	.13	.13	.05	.05	.01	.13	-.11

Table 7

Explanatory Values of the Six-Factor Principal Axis Analysis

	Eigenvalue	Variance	Cumulative Variance
Factor 1	13.61	26.20	26.20
Factor 2	4.31	8.30	34.50
Factor 3	3.19	6.20	40.60
Factor 4	2.70	5.20	45.80
Factor 5	1.89	3.60	49.40
Factor 6	1.65	3.20	52.60

Table 8

Factor Analysis of .30 or More on the Teaching Goals Inventory: Forced Six-Factor Solution After Rotation

	Teaching Goal	Factor					
		1	2	3	4	5	6
1	Develop ability to apply principles and generalizations already learned to new problems and situations				.50		
2	Develop analytic skills				.59		
3	Develop problem-solving skills				.67		
4	Develop ability to draw reasonable inferences from observations				.50		
5	Develop ability to synthesize and integrate information and ideas				.62		
6	Develop ability to think holistically: to see the whole as well as the parts				.46		
7	Develop ability to think creatively				.44		
8	Develop ability to distinguish between fact and opinion	.41					
9	Improve skill at paying attention			.64			
10	Develop ability to concentrate			.65			
11	Improve memory skills			.60			
12	Improve listening skills			.72			
13	Improve speaking skills			.50			
14	Improve reading skills			.67			
15	Improve writing skills			.55			
16	Develop appropriate study skills, strategies, and habits		.44				
17	Improve mathematical skills		.38				
18	Learn terms and facts of this subject					.36	
19	Learn concepts and theories in this subject					.36	
20	Develop skill in using materials, tools, and/or technology central to this subject					.42	
21	Learn to understand perspectives and values of this subject	.46					
22	Prepare for transfer or graduate study					.41	
23	Learn techniques and methods used to gain new knowledge in this subject					.59	
24	Learn to evaluate methods and materials in this subject					.68	

Table 8 (*continued*)

	Teaching Goal	Factor					
		1	2	3	4	5	6
25	Learn to appreciate important contributions to this subject					.59	
26	Develop an appreciation of the liberal arts and sciences	.56					
27	Develop an openness to new ideas	.55					
28	Develop an informed concern about contemporary social issues	.74					
29	Develop a commitment to exercise the rights and responsibilities of citizenship	.72					
30	Develop a lifelong love of learning	.50					
31	Develop aesthetic appreciations	.43					
32	Develop an informed historical perspective	.61					
33	Develop an informed understanding of the role of science and technology		.31				
34	Develop an informed appreciation of other cultures	.68					
35	Develop capacity to make informed ethical choices	.64					
36	Develop ability to work productively with others						.51
37	Develop management skills						.63
38	Develop leadership skills						.66
39	Develop a commitment to accurate work			.55			
40	Improve ability to follow directions, instructions, and plans			.65			
41	Improve ability to organize and use time effectively			.68			
42	Develop a commitment to personal achievement			.65			
43	Develop ability to perform skillfully for one's own behavior			.51			
44	Cultivate a sense of responsibility for one’s own behavior			.54			
45	Improve self-esteem/ self- confidence			.47			
46	Develop a commitment to one's own values	.68					
47	Develop respect for others	.71					
48	Cultivate emotional health and well-being	.68					

Table 8 *(continued)*

	Teaching Goal	Factor					
		1	2	3	4	5	6
49	Cultivate physical health and well-being	.54					
50	Cultivate an active commitment to honesty		.57				
51	Develop capacity to think for oneself				.31		
52	Develop capacity to make wise decisions		.34				

Note: 1 - Cultural and Societal Appreciation
2 - Personal and Professional Development
3 - Basic Skills
4 - Discipline-specific Knowledge
5 - Higher-order Thinking Skills
6 - Work-related Skills
7 - Self-improvement

Table 9

Coefficient Alpha Reliabilities for Teaching Goals Inventory Goal Clusters at Community Colleges and Four-Year Colleges in 1990

Cluster Number	Cluster Name	Alpha Coefficient
I	Higher-order Thinking Skills	.77
II	Basic Academic Success Skills	.79
III	Discipline-specific Knowledge and Skills	.71
IV	Liberal Arts and Academic Values	.84
V	Work and Career Preparation	.85
VI	Personal Development	.86

Note. From Classroom Assessment Techniques: A Handbook for College Teachers (p. 17), by T. A. Angelo and K. P. Cross, 1993, San Francisco: Jossey-Bass Publishers.

Table 10

Coefficient Alpha Reliabilities for Teaching Goals Inventory Factors at Senior Research Universities (N = 352)

Factor Number	Factor Name	Alpha Coefficient
I	Cultural and Societal Appreciation	.91
II	Personal and Professional Development	.88
III	Basic Skills	.86
IV	Discipline-specific Knowledge	.78
V	Higher-order Thinking Skills	.77
VI	Work-related Skills	.70
VII	Self-improvement	.76

The internal consistency of the seven factors was estimated in the present study with Cronbach's alpha (Table 10). Three of the seven factors had an alpha coefficient above .80, and the remaining four factors a value of .70 or higher. These high coefficients suggest the items are intercorrelated, and, thus, possess a good degree of homogeneity.

Scoring

In their Self-Scoring Worksheet, Angelo and Cross (1993) instruct faculty to compute the cluster (factor) scores by summing the ratings given to each goal in the cluster and dividing by the number of goals in each cluster. In other words, faculty calculate the cluster mean. Since no further directions were provided, it was assumed they scored the inventory by including any times marked "not applicable" (a value of one) in the calculation of the mean for goal clusters. In the present study, however, the researcher eliminated "nonapplicable" responses from the factor analysis, factor mean and standard deviation calculations, and multiple regression analysis since "not applicable" does not constitute the "relative importance" of the goal. It simply implies the goal does not pertain to the respondent's selected course. Although "essential" is the top category in the scale and is scored as part of the scale, the percentage of respondents rating each goal as "essential" is also calculated.

Data Collection Procedures

Before data collection began, a crosswalk document, a "detailed analysis plan," was prepared (Jaegar, 1984, p. 11) that ties research questions with analytical methods. Table shells were constructed, and statistical methods were selected prior to data collection.

A cover letter was prepared stating the purpose of the study, the amount of time required to complete the inventory, and how the results would be utilized (Appendix D). Additionally, each instrument was coded with an identification number to assist in future contacts with non-respondents. Participant confidentiality was guaranteed in the cover letter.

In the fall of 1996, the Teaching Goals Inventory was mailed to the 640 randomly selected senior research university faculty. Ten days after the initial mailing, a follow-up postcard was sent to all non-respondents requesting they complete and return the survey (Appendix E). To solicit a high return rate, another letter of request and questionnaire were mailed to all non-respondents three weeks after the initial mailing (Appendix F).

Inventory Returns

From the three mailings, 384 (60%) surveys were returned. Of the returned surveys, 352 (91.7%) were completed and 32 (8.3%) were noneligible (Appendix G). Therefore, the response rate for this survey was 55%.

Methods of Analysis

How do the teaching goals of faculty differ across types of institutions?

The mean and standard deviation for each goal was calculated for all respondents so comparisons could be made with the data collected by Angelo and Cross (1993). The percentage of faculty rating each goal as "essential" was also computed for the senior research universities and compared to the data for community colleges and four-year colleges gathered by Angelo and Cross (1993).

How does the primary teaching role of faculty differ across types of institutions?

The percentage of faculty selecting each primary teaching role was calculated for all respondents from the senior research universities so comparisons could be made with data from community colleges and four-year colleges collected by Angelo and Cross (1993). To determine the presence of significant differences across types of institutions, a test of significance of the difference between two independent proportions (Ferguson, 1971) was used.

How do the teaching goals of faculty at senior research universities differ across academic disciplines?

Means and standard deviations, and the percentage of faculty rating each factor as "essential" were calculated for the seven goal factors so comparisons could be made among academic disciplines and across Biglan classifications for senior research universities. One-way analysis of variance (ANOVA) was used to test for significant differences in factor means among the eight academic disciplines.

How does the primary teaching role of faculty at senior research universities differ across academic disciplines?

The percentage of faculty selecting each primary teaching role was calculated so comparisons could be made across disciplines and the four Biglan classifications (pure-hard, pure-soft, applied-hard, and applied soft) used in this study. To determine the presence of significant differences across academic disciplines and Biglan classifications, a test of significance of the difference between two independent proportions (Ferguson, 1971) was used.

What variables account for these differences?

A separate forward regression analysis was performed for each of the factors. The Biglan classifications were treated as four independent variables and were dummy coded (0 = no; 1 = yes). The variables, tenure (0 = no; 1 = yes) and gender (1 = male; 2 = female), were also dummy coded. The level of course selected and academic rank were numbered in a order of level or rank, with 1 being the lowest level and 4 being the highest. Level of course was numbered as follows: 1 = freshman/sophomore; 2 = junior/senior; and 3 = graduate. Academic rank was

numbered: 1 = lecturer; 2 = assistant professor; 3 = associate professor; and 4 = professor. The probability for a variable to enter into the equation was set at .05.

One-way analyses of variance were performed to explore further relationships between the factor mean scores and the control variables (gender, academic rank, tenure, and course level) due to the possibility of multicollinearity. Multicollinearity, sometimes referred to as "the existence of any correlations among the independent variables [is also referred to as] a situation in which the independent variables [in this study] are highly correlated" (Pedhazur, 1982, p. 23). Multicollinearity is detected through examination of the correlation matrix of the independent variables (Pedhazur & Pedhazur-Schmelkin, 1991).

Summary

The five research questions and population and sample for this study were presented in this chapter. Additionally, the return rate also was discussed. The data collection instrument--its development, reliability, and validity--and the research related to its usage were discussed in this chapter. It appears that some items on the inventory may not be appropriate for use in senior research universities. Therefore, the inventory's content validity, with respect to teaching goals at senior research universities, is questionable due to the methods used to develop and validate the inventory. The factor analysis yielded seven factors which were shown to have high internal consistency. Lastly, the data collection procedures and methods of analysis were discussed.

Chapter 4

FINDINGS

This chapter contains the findings of the statistical analyses. SPSS (Statistical Procedures for Social Sciences), Advanced Statistics 6.1, was used for statistical analyses. Findings are reported by research question.

How do the teaching goals of faculty differ across types of institutions?

The data on community colleges (Appendix B) and four-year colleges (Appendix C) collected by Angelo and Cross (1993) were compared with the data from senior research universities obtained in this study (Appendix J). As seen in Table 11, more than 50% of faculty from three types of institutions rated seven goals as "essential." The major theme of these seven goals was increasing knowledge and developing higher-level cognitive abilities.

It should be noted that only one goal, "develop ability to apply principles and generalizations already learned to new problems and situations" was rated "essential" by more than 50% of faculty members across all three types of institutions. The community college faculty had the greatest number of goals (5) rated as "essential" by more than 50% of the faculty. More than 50% of faculty at both senior research universities and four-year colleges rated four goals as "essential."

Because the factor analysis performed in this study resulted in factors which differed from the goal clusters in previous research conducted in community colleges and four-year colleges, comparisons by goal clusters across types of institutions could not be made.

How does the primary teaching role of faculty differ across types of institutions?

The percentage of faculty selecting their primary teaching role was calculated for the senior research universities and compared to the data for community colleges and four-year colleges previously gathered by Angelo and Cross (1993). As seen in Table 12, "teaching students facts and principles of the subject matter" and "helping students develop higher order thinking skills" were the top two selected roles across all three types of institutions. "Providing a role model for students" and "helping students develop basic learning skills" had the lowest percentage of faculty from all three types of institutions selecting this as their primary teaching role. Almost twice as many community college faculty (21.0 %) selected "preparing students for jobs/careers" than did faculty from four-year colleges (11.2%) and senior research universities (10.5%). The percentage of senior research university faculty (5.1%) selecting "fostering student development and personal growth" was much lower than the percentage of faculty from community colleges (15.4%) or four-year colleges (18.3%).

Table 11

Teaching Goals Receiving an "Essential" Rating by More than 50% of Faculty in Senior Research Universities, Four-Year Colleges, and Community Colleges.

	Teaching Goal	Senior Research Universities (N = 352)	Four-Year Colleges (N = 951)	Community Colleges (N = 1,873)
1	Develop ability to apply principles and generalizations already learned to new problems and situations	X	X	X
2	Develop analytic skills	X		X
3	Develop problem-solving skills	X		X
4	Develop ability to draw reasonable inferences from observations			
5	Develop ability to synthesize and integrate information and ideas	X		
6	Develop ability to think holistically: to see the whole as well as the parts			
7	Develop ability to think creatively			
8	Develop ability to distinguish between fact and opinion			
9	Improve skill at paying attention			
10	Develop ability to concentrate			
11	Improve memory skills			
12	Improve listening skills			
13	Improve speaking skills			
14	Improve reading skills			
15	Improve writing skills			
16	Develop appropriate study skills, strategies, and habits			
17	Improve mathematical skills			
18	Learn terms and facts of this subject		X	X
19	Learn concepts and theories in this subject	X	X	
20	Develop skill in using materials, tools, and/or technology central to this subject			
21	Learn to understand perspectives and values of this subject			
22	Prepare for transfer or graduate study			
23	Learn techniques and methods used to gain new knowledge in this subject			
24	Learn to evaluate methods and materials in this subject			

Table 11 *(continued)*

	Teaching Goal	Senior Research Universities (N = 352)	Four-Year Colleges (N = 951)	Community Colleges (N = 1,873)
25	Learn to appreciate important contributions to this subject			
26	Develop an appreciation of the liberal arts and sciences			
27	Develop an openness to new ideas			
28	Develop an informed concern about contemporary social issues			
29	Develop a commitment to exercise the rights and responsibilities of citizenship			
30	Develop a lifelong love of learning			
31	Develop aesthetic appreciations			
32	Develop an informed historical perspective			
33	Develop an informed understanding of the role of science and technology			
34	Develop an informed appreciation of other cultures			
35	Develop capacity to make informed ethical choices			
36	Develop ability to work productively with others			
37	Develop management skills			
38	Develop leadership skills			
39	Develop a commitment to accurate work			
40	Improve ability to follow directions, instructions, and plans			
41	Improve ability to organize and use time effectively			
42	Develop a commitment to personal achievement			
43	Develop ability to perform skillfully for one's own behavior			
44	Cultivate a sense of responsibility for one’s own behavior			
45	Improve self-esteem/ self- confidence			
46	Develop a commitment to one's own values			
47	Develop respect for others			
48	Cultivate emotional health and well-being			
49	Cultivate physical health and well-being			
50	Cultivate an active commitment to honesty			
51	Develop capacity to think for oneself		X	X
52	Develop capacity to make wise decisions			

Table 12

Percentage and Rank Order of Faculty in Senior Research Universities, Four-Year Colleges, and Community Colleges Selecting Their Primary Teaching Role

Primary Teaching Role	Senior Research Universities (N = 352)		Four-Year Colleges (N = 951)		Community Colleges (N = 1,873)	
Helping students develop higher order thinking skills	45.20	(1)	31.80	(1)	26.30	(2)
Teaching students facts and principles of the subject matter	26.40	(2)	29.00	(2)	27.10	(1)
Preparing students for jobs/career	10.50	(3)	11.20	(4)	21.00	(3)
Fostering student development and growth	5.10	(4)	18.30	(3)	15.40	(4)
Providing a role model for students	2.30	(5)	6.40	(5)	1.90	(6)
Helping students develop basic learning skills	2.30	(6)	3.40	(6)	8.30	(5)
Invalid Response	8.20					

Note: The data for community colleges and four-year colleges are from Classroom Assessment Techniques: A Handbook for College Teachers (pp. 399-406), by T. A. Angelo and K. P. Cross, 1993, San Francisco: Jossey-Bass Publishers.

A test of significance of the difference between two independent proportions (Ferguson, 1971) was used to determine significant differences across types of institutions. The findings are outlined in Tables 13 - 18. No significant differences were found across types of institutions for the primary teaching role "teaching students facts and principles" (Table 13). However, the percentage of faculty selecting two roles, "helping students develop higher-order thinking skills" (Table 15) and "fostering students development and growth," (Table 17) were significantly different across all three types of institutions. The greatest number of significant differences were seen in comparison of community college data with that of the other two types of institutions.

How do the teaching goals of faculty at senior research universities differ across academic disciplines and Biglan categories?

Discussion of Comparisons Across Academic Disciplines.

COMPARISON 1: GOALS RATED AS "ESSENTIAL" BY MORE THAN 50%

The percentage of faculty rating each of the 52 teaching goals as "essential" was calculated for the eight academic disciplines (Appendix K). Fourteen of the 52 teaching goals were rated "essential" by more than 50% of the faculty in at least one discipline (Table 19). Faculty in English departments had the greatest number of goals rated as "essential" (9); computer sciences was second with six goals rated as "essential" by more than 50% of the faculty while accounting was the third highest with five. The least number of goals rated as "essential" by 50% or more faculty was in psychology (1).

None of the 52 teaching goals received an "essential" rating by more than 50% of the faculty from all eight disciplines. The goal "develop ability to apply principles and generalizations already learned to new problems and situations" received an "essential" rating by more than 50% of the faculty from six disciplines, the greatest number of the 52 goals. Only one discipline was represented in nine of the fourteen teaching goals receiving an "essential" rating by more than 50% of the faculty.

COMPARISON 2: DIFFERENCES IN FACTOR MEAN SCORES

The factor means and standard deviations were calculated for each of the eight academic disciplines (Table 20). It should be noted that the number of respondents varies by factor due to the calculation of the factor mean score. As was discussed in Chapter 2, "not applicable" responses were eliminated from this analysis.

To determine statistical differences in the importance of the goals across academic disciplines by factor, seven separate one-way ANOVAs were used. The results indicated significant differences ($p < .001$) across academic disciplines on each of the seven factor mean scores (Table 21). To identify the disciplines which accounted for these differences, a multiple comparison procedure was used (Tables 22 - 28). Specifically, the Bonferroni test, a procedure

Table 13

Significant Differences Between Primary Teaching Role Proportions: Teaching Students Facts and Principles of the Subject Matter

Type of Institution	% Faculty	Type of Institution		
		Senior Research University	Four-Year College	Community College
Senior Research University	26.40		--	--
Four-Year College	29.00	--		--
Community College	27.10	--	--	

**$p > .05$.

Table 14

Significant Differences Between Primary Teaching Role Proportions: Providing A Role Model for Students

Type of Institution	% Faculty	Type of Institution		
		Senior Research University	Four-Year College	Community College
Senior Research University	2.30		*	--
Four-Year College	6.40	*		*
Community College	1.90	--	*	

*$p > .05$.

Table 15

Significant Differences Between Primary Teaching Role Proportions: Helping Students Develop Higher-order Thinking Skills

Type of Institution	% Faculty	Type of Institution		
		Senior Research University	Four-Year College	Community College
Senior Research University	45.20		*	*
Four-Year College	31.80	*		*
Community College	26.30	*	*	

*$p > .05$.

Table 16

Significant Differences Between Primary Teaching Role Proportions: Preparing Students for Job/Careers

Type of Institution	% Faculty	Type of Institution		
		Senior Research University	Four-Year College	Community College
Senior Research University	10.50		--	*
Four-Year College	11.20	--		*
Community College	21.00	*	*	

*$p > .05$.

Table 17

Significant Differences Between Primary Teaching Role Proportions: Fostering Student Development and Personal Growth

Type of Institution	% Faculty	Type of Institution		
		Senior Research University	Four-Year College	Community College
Senior Research University	5.10		*	*
Four-Year College	18.30	*		*
Community College	15.40	*	*	

*$p > .05$.

Table 18

Significant Differences Between Primary Teaching Role Proportions: Helping Students Develop Basic Learning Skills

Type of Institution	% Faculty	Type of Institution		
		Senior Research University	Four-Year College	Community College
Senior Research University	2.30		--	*
Four-Year College	3.40	--		*
Community College	8.30	*	*	

*$p > .05$.

Table 19

Teaching Goals Receiving an "Essential" Rating by More than 50% of Faculty in Senior Research Universities, by Academic Discipline

	Teaching Goal	Academic Discipline							
		Acct (n=46)	Chem (n=43)	Comp Sci (n=47)	Econ (n=35)	Engl (n=49)	Math (n=43)	Mech Eng (n=50)	Psych (n=39)
1	Develop ability to apply principles and generalizations already learned to new problems and situations	X	X	X	X		X	X	
2	Develop analytic skills	X	X	X	X	X			
3	Develop problem-solving skills	X	X	X	X			X	
4	Develop ability to draw reasonable inferences from observations					X			
5	Develop ability to synthesize and integrate information and ideas	X		X		X		X	
6	Develop ability to think holistically: to see the whole as well as the parts					X			
7	Develop ability to think creatively			X					
8	Develop ability to distinguish between fact and opinion								
9	Improve skill at paying attention								
10	Develop ability to concentrate								
11	Improve memory skills								
12	Improve listening skills								
13	Improve speaking skills								
14	Improve reading skills					X			
15	Improve writing skills					X			
16	Develop appropriate study skills, strategies, and habits								
17	Improve mathematical skills						X		
18	Learn terms and facts of this subject								
19	Learn concepts and theories in this subject	X	X	X	X			X	X
20	Develop skill in using materials, tools, and/or technology central to this subject								
21	Learn to understand perspectives and values of this subject					X			
22	Prepare for transfer or graduate study								
23	Learn techniques and methods used to gain new knowledge in this subject								

Table 19 *(continued)*

Teaching Goal	Academic Discipline							
	Acct (n=46)	Chem (n=43)	Comp Sci (n=47)	Econ (n=35)	Engl (n=49)	Math (n=43)	Mech Eng (n=50)	Psych (n=39)
24 Learn to evaluate methods and materials in this subject								
25 Learn to appreciate important contributions to this subject								
26 Develop an appreciation of the liberal arts and sciences								
27 Develop an openness to new ideas					X			
28 Develop an informed concern about contemporary social issues								
29 Develop a commitment to exercise the rights and responsibilities of citizenship								
30 Develop a lifelong love of learning								
31 Develop aesthetic appreciations								
32 Develop an informed historical perspective								
33 Develop an informed understanding of the role of science and technology								
34 Develop an informed appreciation of other cultures								
35 Develop capacity to make informed ethical choices								
36 Develop ability to work productively with others								
37 Develop management skills								
38 Develop leadership skills								
39 Develop a commitment to accurate work								
40 Improve ability to follow directions, instructions, and plans								
41 Improve ability to organize and use time effectively								
42 Develop a commitment to personal achievement								
43 Develop ability to perform skillfully for one's own behavior								
44 Cultivate a sense of responsibility for one’s own behavior								
45 Improve self-esteem/ self- confidence								

Table 19 *(continued)*

Teaching Goal	Academic Discipline							
	Acct (n=46)	Chem (n=43)	Comp Sci (n=47)	Econ (n=35)	Engl (n=49)	Math (n=43)	Mech Eng (n=50)	Psych (n=39)
46 Develop a commitment to one's own values								
47 Develop respect for others								
48 Cultivate emotional health and well-being								
49 Cultivate physical health and well-being								
50 Cultivate an active commitment to honesty								
51 Develop capacity to think for oneself					X			
52 Develop capacity to make wise decisions								

Table 20

Factor Means and Standard Deviations for Importance of Teaching Goals by Academic Disciplines at Senior Research Universities

Factor	Academic Discipline																							
	Acct			Chem			Comp Sci			Econ			Engl			Math			Mech Eng			Psyc		
	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N	M	SD	N
I	3.10	.60	46	2.90	.54	43	2.96	.53	39	3.31	.67	35	3.88	.60	50	3.01	.70	41	3.06	.51	49	3.11	.47	47
II	3.68	.53	46	3.32	.54	43	3.51	.68	39	3.43	.55	35	3.75	.59	50	3.42	.53	43	3.61	.58	49	3.20	.50	47
III	3.07	.69	46	3.08	.68	43	2.87	.64	38	2.86	.65	34	3.64	.62	49	2.90	.56	42	2.81	.64	47	2.78	.56	45
IV	3.39	.72	46	3.27	.63	43	3.64	.61	39	3.46	.71	35	3.74	.69	50	3.08	.60	40	3.46	.64	49	3.82	.53	47
V	4.36	.49	46	4.13	.58	43	4.33	.52	39	4.21	.55	35	4.44	.46	50	3.97	.58	43	4.38	.45	49	3.93	.53	47
VI	3.81	.63	46	3.14	.66	42	3.58	.71	39	3.23	.88	33	3.29	.85	42	3.07	.76	42	3.52	.79	49	3.00	.85	45
VII	3.41	.75	35	2.62	.74	22	2.55	.66	24	2.63	.92	24	3.41	.86	39	2.52	.57	21	2.63	.64	36	2.46	.56	42

Note: 1 - Cultural and Societal Appreciation
2 - Personal and Professional Development
3 - Basic Skills
4 - Discipline-specific Knowledge
5 - Higher-order Thinking Skills
6 - Work-related Skills
7 - Self-improvement

Table 21

ANOVA Summary Tables for Differences in Importance of Teaching Goals Among Academic Disciplines at Senior Research Universities (N = 352)

Source	SS	*df*	MS	F	
Cultural & Societal Appreciation					
Between Disciplines	33.20	7	4.74	14.21	***
Within Disciplines	114.15	343	.33		
Total	147.35	350			
Personal and Professional Development					
Between Disciplines	11.07	7	1.58	4.98	***
Within Disciplines	109.13	345	.32		
Total	120.20	352			
Basic Skills					
Between Disciplines	26.05	7	3.72	9.67	***
Within Disciplines	129.28	337	.38		
Total	155.33	344			
Discipline-specific Knowledge					
Between Disciplines	18.71	7	2.67	6.13	***
Within Disciplines	148.78	342	.44		
Total	167.49	349			
Higher-order Thinking Skills					
Between Disciplines	12.25	7	1.75	6.53	***
Within Disciplines	92.08	345	.26		
Total	104.33	352			
Work-related Skills					
Between Disciplines	24.20	7	3.45	5.87	***
Within Disciplines	194.46	331	.58		
Total	218.66	338			
Self-improvement					
Between Disciplines	23.90	7	3.41	6.59	***
Within Disciplines	121.70	236	.51		
Total	145.60	243			

***$p < .001$.

Table 22

Significant Differences in Factor Mean Scores Within Disciplines: Cultural and Societal Appreciation

Academic Discipline	Factor Mean Score	Academic Discipline							
		Acct	Chem	Comp Sci	Econ	Engl	Math	Mech Eng	Psych
Accounting	3.10		--	--	--	*	--	--	--
Chemistry	2.90	--		--	*	*	--	--	--
Comp Sci	2.96	--	--		--	*	--	--	--
Economics	3.31	--	*	--		*	--	--	--
English	3.88	*	*	*	*		*	*	*
Math	3.01	--	--	--	--	*		--	--
Mech Eng	3.06	--	--	--	--	*	--		--
Psychology	3.11	--	--	--	--	*	--	--	

*$p < .05$.

Table 23

Significant Differences in Factor Mean Scores Within Disciplines: Personal and Professional Development

Academic Discipline	Factor Mean Score	Academic Discipline							
		Acct	Chem	Comp Sci	Econ	Engl	Math	Mech Eng	Psych
Accounting	3.68		--	--	--	--	--	--	*
Chemistry	3.32	--		--	--	*	--	--	--
Comp Sci	3.51	--	--		--	--	--	--	--
Economics	3.43	--	--	--		--	--	--	--
English	3.75	--	*	--	--		--	--	*
Math	3.42	--	--	--	--	--		--	--
Mech Eng	3.61	--	--	--	--	--	--		*
Psychology	3.20	*	--	--	--	*	--	*	

*$p < .05$.

Table 24

Significant Differences in Factor Mean Scores Within Disciplines: Basic Skills

Academic Discipline	Factor Mean Score	Academic Discipline							
		Acct	Chem	Comp Sci	Econ	Engl	Math	Mech Eng	Psych
Accounting	3.07		--	--	--	*	--	--	--
Chemistry	3.08	--		--	--	*	--	--	--
Comp Sci	2.87	--	--		--	*	--	--	--
Economics	2.86	--	--	--	--	*		--	--
English	3.64	*	*	*	*		*	*	*
Math	2.90	--	--	--	--	*	--	--	--
Mech Eng	2.81	--	--	--	--	*	--	--	--
Psychology	2.78	--	--	--	--	*	--	--	--

*$p < .05$.

Table 25

Significant Differences in Factor Mean Scores Within Disciplines: Discipline-specific Knowledge

Academic Discipline	Factor Mean Score	Academic Discipline							
		Acct	Chem	Comp Sci	Econ	Engl	Math	Mech Eng	Psych
Accounting	3.39		--	--	--	--	--	--	--
Chemistry	3.27	--		--	--	*	--	--	*
Comp Sci	3.64	--	--		--	--	*	--	--
Economics	3.46	--	--	--		--	--	--	*
English	3.74	--	*	--	--		*	--	--
Math	3.08	--	--	*	--	*		--	*
Mech Eng	3.46	--	--	--	--	--	--		--
Psychology	3.82	--	*	--	*	--	*	--	

*$p < .05$.

Table 26

Significant Differences in Factor Mean Scores Within Disciplines: Higher-order Thinking Skills

Academic Discipline	Factor Mean Score	Academic Discipline							
		Acct	Chem	Comp Sci	Econ	Engl	Math	Mech Eng	Psych
Accounting	4.36		--	--	--	--	--	--	--
Chemistry	4.13	--		--	--	--	--	--	--
Comp Sci	4.33	--	--		--	--	--	--	*
Economics	4.21	--	--	--		--	*	--	*
English	4.44	--	--	--	--		*	--	*
Math	3.97	--	--	--	*	*		*	--
Mech Eng	4.38	--	--	--	--	--	*		*
Psychology	3.93	--	--	*	*	*	--	*	

*$p < .05$.

Table 27

Significant Differences in Factor Mean Scores Within Disciplines: Work-related Skills

Academic Discipline	Factor Mean Score	Academic Discipline							
		Acct	Chem	Comp Sci	Econ	Engl	Math	Mech Eng	Psych
Accounting	3.81		*	--	*	*	*	---	*
Chemistry	3.14	*		--	--	--	--	--	
Comp Sci	3.58	--	--		--	--	--	--	*
Economics	3.23	*	--	--		--	--	--	--
English	3.29	*	--	--	--		--	--	--
Math	3.07	*	--	--	--	--		--	--
Mech Eng	3.52	--	--	--	--	--	--		*
Psychology	3.00	*	--	*	--	--	--	*	

*$p < .05$.

Table 28

Significant Differences in Factor Mean Scores Within Disciplines: Self-improvement

Academic Discipline	Factor Mean Score	Academic Discipline							
		Acct	Chem	Comp Sci	Econ	Engl	Math	Mech Eng	Psych
Accounting	2.59		--	--	--	*	--	--	--
Chemistry	2.62	--		--	--	*	--	--	--
Comp Sci	2.55	--	--		--	*	--	--	--
Economics	2.63	--	--	--		*	--	--	--
English	3.41	*	*	*	*		*	*	*
Math	2.52	--	--	--	--	*		--	--
Mech Eng	2.63	--	--	--	--	*	--		--
Psychology	2.46	--	--	--	--	*	--	--	

*$p < .05$.

which "adjusts the observed significance level based on the number of comparisons" (Norusis, 1993, p. 273), was utilized. "By adjusting for the number of comparisons [the researcher makes], multiple comparison procedures that protect [the researcher] from calling too many differences significant" (Norusis, 1993, p. 273).

As seen in Table 22, English faculty factor mean scores were significantly different from all other seven disciplines in the Cultural and Societal Appreciation factor, the Basic Skills factor (Table 24), and the Self-improvement factor (Table 28). In factor two, Personal and Professional Development (Table 23), significant differences in the factor mean scores were detected between psychology faculty and faculty in English, accounting, and mechanical engineering, and between chemistry and English faculty. Accounting and mechanical engineering faculty were the only two groups with no significant differences between the factor mean score for the Discipline-specific Knowledge factor (Table 25). As seen in Table 26, accounting and chemistry faculty were the two groups with no significant differences in the factor mean scores for the Higher-order thinking skills factor. In this factor, psychology had the greatest number of significant differences (4). The factor mean scores for accounting faculty differed significantly from five of the other disciplines on factor six, Work-related Skills.

Discussion of Comparisons Across Biglan Categories

COMPARISON 1: GOALS RATED "ESSENTIAL" BY MORE THAN 50%

The percentage of faculty rating each of the 52 teaching goals as "essential" was calculated for each of the four Biglan categories (Appendix L). As seen in Table 29, eight teaching goals were rated "essential" by more than 50% of the faculty from at least one of the four Biglan categories. Teaching goals 1, 2, and 3, goals associated with higher-level cognitive tasks, were rated as "essential" by more than 50% of faculty in three of the Biglan categories, the exception being the pure-soft category. The remaining five goals were rated "essential" by more than 50% of faculty in only one category; four of these goals were found in the pure-soft category.

COMPARISON 2: DIFFERENCES IN FACTOR MEAN SCORES

The factor means and standard deviations were calculated for each Biglan category (Table 30). As was noted in the comparison of the disciplines, the number of respondents varies by factor due to the calculation of the factor mean score. As was discussed in Chapter 2, "not applicable" responses were eliminated from this analysis. Four separate one-way ANOVAs were used to determine statistical differences in the importance of the goals across Biglan categories by factor. The results indicated significant differences ($p < .05$) across the four Biglan categories on six factor mean scores (Table 31). No significant differences were indicated across the four Biglan categories for factor two, Personal and Professional Development at the .05 level. To determine which categories accounted for these differences, a multiple comparison procedure was used (Tables 32 - 38).

Table 29

Teaching Goals Receiving an "Essential" Rating by More than 50% of Faculty in Senior Research Universities by Biglan Classification

	Teaching Goal	Biglan Classification			
		Hard-Pure (n = 86)	Soft-Pure (n = 97)	Hard-Applied (n = 88)	Soft-Applied (n = 81)
1	Develop ability to apply principles and generalizations already learned to new problems and situations	X		X	X
2	Develop analytic skills			X	X
3	Develop problem-solving skills	X		X	X
4	Develop ability to draw reasonable inferences from observations		X		
5	Develop ability to synthesize and integrate information and ideas		X		
6	Develop ability to think holistically: to see the whole as well as the parts				
7	Develop ability to think creatively				
8	Develop ability to distinguish between fact and opinion				
9	Improve skill at paying attention				
10	Develop ability to concentrate				
11	Improve memory skills				
12	Improve listening skills				
13	Improve speaking skills				
14	Improve reading skills				
15	Improve writing skills		X		
16	Develop appropriate study skills, strategies, and habits				
17	Improve mathematical skills				
18	Learn terms and facts of this subject				
19	Learn concepts and theories in this subject	X			
20	Develop skill in using materials, tools, and/or technology central to this subject				
21	Learn to understand perspectives and values of this subject				
22	Prepare for transfer or graduate study				
23	Learn techniques and methods used to gain new knowledge in this subject				
24	Learn to evaluate methods and materials in this subject				
25	Learn to appreciate important contributions to this subject				
26	Develop an appreciation of the liberal arts and sciences				
27	Develop an openness to new ideas				
28	Develop an informed concern about contemporary social issues				
29	Develop a commitment to exercise the rights and responsibilities of citizenship				

Table 29 *(continued)*

	Teaching Goal	Biglan Classification			
		Hard-Pure (n = 86)	Soft-Pure (n = 97)	Hard-Applied (n = 88)	Soft-Applied (n = 81)
30	Develop a lifelong love of learning				
31	Develop aesthetic appreciations				
32	Develop an informed historical perspective				
33	Develop an informed understanding of the role of science and technology				
34	Develop an informed appreciation of other cultures				
35	Develop capacity to make informed ethical choices				
36	Develop ability to work productively with others				
37	Develop management skills				
38	Develop leadership skills				
39	Develop a commitment to accurate work				
40	Improve ability to follow directions, instructions, and plans				
41	Improve ability to organize and use time effectively				
42	Develop a commitment to personal achievement				
43	Develop ability to perform skillfully for one's own behavior				
44	Cultivate a sense of responsibility for one's own behavior				
45	Improve self-esteem/ self- confidence				
46	Develop a commitment to one's own values				
47	Develop respect for others				
48	Cultivate emotional health and well-being				
49	Cultivate physical health and well-being				
50	Cultivate an active commitment to honesty				
51	Develop capacity to think for oneself		X		
52	Develop capacity to make wise decisions				

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 30

Factor Means and Standard Deviations for Importance of Teaching Goals by Biglan Classification at Senior Research Universities (N = 352)

Factor	Biglan Classification											
	Pure-Hard			Pure-Soft			Applied-Hard			Applied-Soft		
	M	SD	N	M	SD	N	M	SD	N	M	SD	N
Cultural & Societal Appreciation	2.95	.62	84	3.51	.66	97	3.01	.52	88	3.19	.64	81
Personal & Professional Development	3.37	.53	86	3.48	.61	97	3.57	.62	88	3.57	.55	81
Basic Skills	2.99	.63	85	3.22	.74	96	2.84	.58	86	2.98	.67	77
Discipline-specific Knowledge	3.18	.62	83	3.78	.68	97	3.54	.63	88	3.42	.71	81
Higher-order Thinking Skills	4.05	.58	86	4.19	.56	97	4.36	.48	88	4.30	.52	81
Work-related Skills	3.11	.71	84	3.14	.86	87	3.54	.75	88	3.57	.79	79
Self-improvement	2.57	.66	43	2.92	.86	81	2.60	.64	60	2.60	.82	59

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 31

ANOVA Summary Tables for Differences in Importance of Teaching Goals Among Biglan Classifications at Senior Research Universities (N = 352)

Source	SS	*df*	MS	F	
Cultural & Societal Appreciation					
Between Classifications	17.28	3	5.76	15.32	***
Within Classifications	130.06	347	.37		
Total	147.34	350			
Personal and Professional Development					
Between Classifications	2.31	3	.77	2.27	--
Within Classifications	117.89	349	.33		
Total	120.20	352			
Basic Skills					
Between Classifications	6.79	3	2.26	5.18	***
Within Classifications	148.53	341	.43		
Total	155.32	344			
Discipline-specific Knowledge					
Between Classifications	17.00	3	5.66	12.99	***
Within Classifications	150.49	346	.43		
Total	167.49	349			
Higher-order Thinking Skills					
Between Classifications	4.79	3	1.59	5.58	**
Within Classifications	99.54	349	.28		
Total	104.33	352			
Work-related Skills					
Between Classifications	15.91	3	5.30	8.73	***
Within Classifications	202.74	345	.60		
Total	218.65	338			
Self-improvement	5.73	3	1.91	3.26	*
Between Classifications	139.86	240	.58		
Within Classifications	145.59	243			
Total					

*$p < .05$. **$p < .01$. ***$p < .001$.

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 32

Significant Differences in Factor Mean Scores Within Biglan Classifications: Cultural and Societal Appreciation

Biglan Classification	Factor Mean Score	Biglan Classification			
		Pure-Hard	Pure-Soft	Applied-Hard	Applied-Soft
Pure-Hard	2.95		*	--	--
Pure-Soft	3.51	*		*	*
Applied-Hard	3.01	--	*		--
Applied-Soft	3.19	--	*	--	

*$p < .05$.

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 33

Significant Differences in Factor Mean Scores Within Biglan Classifications: Personal and Professional Development

Biglan Classification	Factor Mean Score	Biglan Classification			
		Pure-Hard	Pure-Soft	Applied-Hard	Applied-Soft
Pure-Hard	3.37		--	--	--
Pure-Soft	3.48	--		--	--
Applied-Hard	3.57	--	--		--
Applied-Soft	3.57	--	--	--	

*$p < .05$.

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 34

Significant Differences in Factor Mean Scores Within Biglan Classifications: Basic Skills

Biglan Classification	Factor Mean Score	Biglan Classification			
		Pure-Hard	Pure-Soft	Applied-Hard	Applied-Soft
Pure-Hard			--	--	--
Pure-Soft		--		*	--
Applied-Hard		--	*		--
Applied-Soft		--	--	--	

*$p < .05$.

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 35

Significant Differences in Factor Mean Scores Within Biglan Classifications: Discipline-specific Knowledge

Biglan Classification	Factor Mean Score	Biglan Classification			
		Pure-Hard	Pure-Soft	Applied-Hard	Applied-Soft
Pure-Hard	3.18		*	*	--
Pure-Soft	3.78	*		--	*
Applied-Hard	3.54	*	--		--
Applied-Soft	3.42	--	*	--	

*$p < .05$.

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 36

Significant Differences in Factor Mean Scores Within Biglan Classifications: Higher-order Thinking Skills

Biglan Classification	Factor Mean Score	Biglan Classification			
		Pure-Hard	Pure-Soft	Applied-Hard	Applied-Soft
Pure-Hard	4.05		--	*	*
Pure-Soft	4.19	--		--	--
Applied-Hard	4.36	*	--		--
Applied-Soft	4.30	*	--	--	

*$p < .05$

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 37

Significant Differences in Factor Mean Scores Within Biglan Classifications: Work-related Skills

Biglan Classification	Factor Mean Score	Biglan Classification			
		Pure-Hard	Pure-Soft	Applied-Hard	Applied-Soft
Pure-Hard	3.11		--	*	*
Pure-Soft	3.14	--		*	*
Applied-Hard	3.54	*	*		--
Applied-Soft	3.57	*	*	--	

*$p < .05$.

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 38

Significant Differences in Factor Mean Scores Within Biglan Classifications: Self-improvement

Biglan Classification	Factor Mean Score	Biglan Classification			
		Pure-Hard	Pure-Soft	Applied-Hard	Applied-Soft
Pure-Hard	2.57		--	--	--
Pure-Soft	2.92	--		--	--
Applied-Hard	2.60	--	--		--
Applied-Soft	2.60	--	--	--	

*$p < .05$.

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Factor mean scores for faculty in the pure-soft category differed significantly from faculty in the other three categories across the Cultural and Societal Appreciation factor (Table 32). Only one significant difference was noted in the Basic Skills factor; this was between the applied-hard factor mean scores and the pure-soft factor mean scores (Table 34). Significant differences in the factor mean scores were noted across all Biglan categories in the Discipline-specific Knowledge factor with the exception of applied-hard and pure-soft categories comparison (Table 35). Factor mean scores for faculty in the pure-hard category differed significantly when compared to factor mean scores for faculty in the applied-hard and applied-soft categories for the Higher-order Thinking Skills factor (Table 36). Significant differences were also noted between the pure factor mean scores and the applied factor mean scores for the Work-related Skills factor (Table 37).

How does the primary teaching role of faculty at senior research universities differ across academic disciplines and Biglan categories?

Discussion of Comparisons Across Academic Disciplines

The percentage of faculty selecting each primary teaching role was calculated for each academic discipline (Table 39). "Helping students develop higher order thinking skills" and "teaching students facts and principles of the subject matter" were the top two selected roles across seven of the eight academic disciplines. A much greater percentage of accounting faculty (30.4%) selected "preparing students for jobs and careers" than did the faculty from the remaining seven disciplines.

Five disciplines had no faculty (0%) select primary teaching roles in four areas (role model, preparation for job, student development, and basic skills). "Providing a role model for students" and "helping students develop basic learning skills" had the lowest percentage of faculty from all eight academic disciplines selecting this as their primary teaching role. The percentage of English faculty (10.0%) selecting "fostering student development and personal growth" was much higher than the percentage of faculty from the other seven disciplines (4.3% - 6.4%).

A test of significance of the difference between two independent proportions (Ferguson, 1971) was used to determine significant differences across types of institutions. The findings are outlined in Tables 40 - 46. The percentage of accounting faculty selecting "teaching students facts and principles of the subject matter" was significantly different from the percentage of faculty in five other disciplines (Table 40). No significant differences were detected when comparing the percentage of economics faculty selecting this as their primary teaching role across the other seven disciplines. As seen in Table 41, significant differences were noted across all eight disciplines when comparing the percentage of faculty selecting : "providing a role model for students" as their primary teaching role.

The greatest number of significant differences for the role "helping students develop higher-order thinking skills" was seen in the comparison of the percentage of economics faculty selecting this role compared to the other seven disciplines (Table 42). The percentage of accounting and math faculty selecting "preparing students for jobs/careers" as their primary

.

Table 39

Percentage and Rank Order of Faculty Selecting Their Primary Teaching Role at Senior Research Universities by Academic Discipline (N = 352)

Primary Teaching Role	Academic Discipline													
	Acct (n = 46)		Chem (n = 43)		Comp Sci (n = 39)		Econ (n = 35)		Engl (n = 50)		Math (n = 43)		Mech Eng (n = 49)		Psych (n = 47)	
Helping students develop higher order thinking skills	37.0	(1)	27.9	(2)	53.8	(1)	62.8	(1)	58.0	(1)	39.5	(2)	40.8	(1)	44.7	(1)
Teaching students facts and principles of the subject matter	10.9	(3)	39.5	(1)	28.2	(2)	22.9	(2)	12.0	(2)	41.9	(1)	26.5	(2)	31.9	(2)
Preparing students for jobs/career	30.4	(2)	7.0	(4)	5.1	(4)	8.6	(3)	6.0	(5)	0.0	(7)	16.3	(3)	8.5	(3.5)
Fostering student development and growth	4.3	(6)	4.7	(5)	5.1	(4)	0.0	(6)	10.0	(3.5)	4.7	(4)	4.1	(5.5)	6.4	(5)
Providing a role model for students	6.5	(5)	0.0	(7)	2.6	(6)	0.0	(6)	2.0	(6.5)	2.3	5.5)	4.1	(5.5)	0.0	(6.5)
Helping students develop basic learning skills	2.2	(7)	2.3	(6)	0.0	(7)	0.0	(6)	2.0	(6.5)	2.3	(5.5)	8.2	(4)	0.0	(6.5)
Invalid Response	8.7	(4)	18.6	(3)	5.1	(4)	5.7	(4)	10.0	(3.5)	9.3	(3)	0.0	(7)	8.5	(3.5)

Note: Columns may not total 100% because of rounding.
Rank shown in parenthesis.

Table 40

Significant Differences Between Primary Teaching Role Proportions: Teaching Students Facts and Principles of the Subject Matter

Academic Discipline	% Faculty	Academic Discipline							
		Acct	Chem	Comp Sci	Econ	Engl	Math	Mech Eng	Psych
Accounting	10.9		*	*	--	--	*	*	*
Chemistry	39.5	*		*	--	*	--	--	--
Computer Science	28.2	*	*		--	--	--	--	--
Economics	22.9	--	--	--		--	--	--	--
English	12.0	--	*	--	--		*	--	*
Math	41.9	*	--	--	--	*		*	--
Mechanical Engineering	26.5	*	--	--	--	--	*		--
Psychology	31.9	*	--	--	--	*	--	--	

*$p > .05$.

Table 41

Significant Differences Between Primary Teaching Role Proportions: Providing a Role Model for Students

Academic Discipline	% Faculty	Academic Discipline							
		Acct	Chem	Comp Sci	Econ	Engl	Math	Mech Eng	Psych
Accounting	6.5		*	--	*	--	--	--	*
Chemistry	0.0	*		*	--	*	*	*	--
Computer Science	2.6	--	*		*	--	--	--	*
Economics	0.0	*	--	*		*	*	*	--
English	2.0	--	*	--	*		--	--	*
Math	2.3	--	*	--	*	--		--	*
Mechanical Engineering	4.1	--	*	--	*	--	--		*
Psychology	0.0	*	--	*	--	*	*	*	

*$p > .05$.

Table 42

Significant Differences Between Primary Teaching Role Proportions: Helping Students Develop Higher-order Thinking Skills

Academic Discipline	% Faculty	Academic Discipline							
		Acct	Chem	Comp Sci	Econ	Engl	Math	Mech Eng	Psych
Accounting	37.0		--	*	*	--	--	--	--
Chemistry	27.9	--		*	*	*	--	*	*
Computer Science	53.8	*	*		--	--	--	--	--
Economics	62.8	*	*	--		--	*	*	*
English	58.0	--	*	--	--		--	--	--
Math	39.5	--	--	--	*	--		--	--
Mechanical Engineering	40.8	--	*	--	*	--	--		--
Psychology	44.7	--	*	--	*	--	--	--	

*$p > .05$.

Table 43

Significant Differences Between Primary Teaching Role Proportions: Preparing Students for Job/Careers

Academic Discipline	% Faculty	Academic Discipline							
		Acct	Chem	Comp Sci	Econ	Engl	Math	Mech Eng	Psych
Accounting	30.4		*	*	*	*	*	*	*
Chemistry	7.0	*		--	--	--	*	*	--
Computer Science	5.1	*	--		--	--	*	--	--
Economics	8.6	*	--	--		--	*	--	--
English	6.0	*	--	--	--		*	--	--
Math	0.0	*	*	*	*	*		*	*
Mechanical Engineering	16.3	*	*	--	--	--	*		--
Psychology	8.5	*	--	--	--	--	*	--	

*$p > .05$.

Table 44

Significant Differences Between Primary Teaching Role Proportions: Fostering Student Development and Personal Growth

Academic Discipline	% Faculty	Academic Discipline							
		Acct	Chem	Comp Sci	Econ	Engl	Math	Mech Eng	Psych
Accounting	4.3		--	--	*	--	--	--	--
Chemistry	4.7	--		--	*	--	--	--	--
Computer Science	5.1	--	--		*	--	--	--	--
Economics	0.0	*	*	*		*	*	*	*
English	10.0	--	--	--	*		--	--	--
Math	4.7	--	--	--	*	--		--	--
Mechanical Engineering	4.1	--	--	--	*	--	--		--
Psychology	6.4	--	--	--	*	--	--	--	

*$p > .05$.

Table 45

Significant Differences Between Primary Teaching Role Proportions: Helping Students Develop Basic Learning Skills

Academic Discipline	% Faculty	Academic Discipline							
		Acct	Chem	Comp Sci	Econ	Engl	Math	Mech Eng	Psych
Accounting	2.2		--	*	--	--	--	--	*
Chemistry	2.3	--		*	*	--	--	--	--
Computer Science	0.0	*	*		--	*	*	*	--
Economics	0.0	--	*	--		*	*	*	--
English	2.0	--	--	*	*		--	--	*
Math	2.3	--	--	*	*	--		--	*
Mechanical Engineering	8.2	--	--	*	*	--	--		*
Psychology	0.0	*	--	--	--	*	*	*	

*$p > .05$.

teaching role differed significantly when compared to percentage from the remaining disciplines (Table 43). For the role "fostering student development and personal growth" the only significant differences were noted when comparing the percentages for economics faculty with those from the other disciplines; significant differences were detected across all seven disciplines (Table 44). As seen in Table 45, significant differences were also detected across all eight academic disciplines for the "helping students develop basic learning skills" role.

Discussion of Comparisons Across Biglan Classifications

The percentage of faculty selecting each primary teaching role was also calculated for each of the four Biglan categories (Table 46). "Helping students develop higher order thinking skills" and "teaching students facts and principles of the subject matter" were the top two selected roles across three of the four Biglan categories, the exception being applied-soft. A much greater percentage of applied-soft faculty (21.0%) selected "preparing students for jobs and careers" than did the faculty from the other three Biglan categories (3.5%- 11.4%). "Providing a role model for students" and "helping students develop basic learning skills" had the lowest percentage of faculty from all four Biglan categories selecting this as their primary teaching role. The percentage of pure-soft faculty (8.2%) selecting "fostering student development and personal growth" was much higher than the percentage of faculty from the other Biglan categories (2.5% - 4.7%). More than 65% of the responses were concentrated in the top two selected teaching roles in each of the four Biglan categories.

A test of significance of the difference between two independent proportions (Ferguson, 1971) was used to determine significant differences across types of institutions. The findings are outlined in Tables 47 - 52. Significant differences occurred in the percentage of faculty selecting "teaching students facts and principles of the subject matter" and "helping students develop higher-order thinking skills" as their primary teaching role across the four Biglan categories (Table 47 and Table 49). No significant differences between the percentage of faculty in the four Biglan categories were detected for three roles: providing a role model for students," "fostering student development and personal growth," and "helping students develop basic learning skills" (Tables 48, 51, and 52). The percentage of faculty in the applied-soft category selecting "preparing students for jobs/careers" was significantly different when compared to the other three Biglan categories (Table 50).

What variables account for these differences?

A forward regression procedure, using each of the four previously described Biglan classifications (applied-soft, applied-hard, pure-soft, pure-hard), as well as the four control variables (gender, course level, tenure, and academic rank) was performed. Table 53 contains the results of the forward regression analysis for each of the seven factors. The results are discussed, by factor, in the following sections.

Table 46

Percentage and Rank Order of Faculty Selecting Their Primary Teaching Role at Senior Research Universities by Biglan Classification (N = 352)

Primary Teaching Role	Biglan Classification							
	Hard-Pure		Soft-Pure		Hard-Applied		Soft-Applied	
Helping students develop higher order thinking skills	33.7	(1)	51.5	(1)	46.6	(1)	48.1	(1)
Teaching students facts and principles of the subject matter	40.7	(2)	21.6	(2)	27.3	(2)	16.0	(3)
Fostering student development and growth	4.7	(4)	8.2	(4)	4.5	(4.5)	2.5	(6)
Preparing students for jobs/career	3.5	(5)	7.2	(5)	11.4	(3)	21.0	(2)
Providing a role model for students	1.2	(7)	1.0	(6.5)	3.4	(6)	3.7	(5)
Helping students develop basic learning skills	2.3	(6)	1.0	(6.5)	4.5	(4.5)	1.2	(7)
Invalid Response	14.0	(3)	9.3	(3)	2.3	(7)	7.4	(4)

Note: Some columns may not total 100% because of rounding.

Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 47

Significant Differences Between Primary Teaching Role Proportions: Teaching Students Facts and Principles of the Subject Matter

Biglan Classification	% Faculty	Biglan Classification			
		Pure-Soft	Pure-Hard	Applied-Soft	Applied-Hard
Pure-Soft	21.6		*	--	--
Pure-Hard	40.7	*		*	--
Applied-Soft	16.0	--	--		*
Applied-Hard	27.3	*	--	*	

*$p > .05$.

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 48

Significant Differences Between Primary Teaching Role Proportions: Providing A Role Model for Students

Biglan Classification	% Faculty	Biglan Classification			
		Pure-Soft	Pure-Hard	Applied-Soft	Applied-Hard
Pure-Soft	1.0		--	--	--
Pure-Hard	1.2	--		--	--
Applied-Soft	1.2	--	--		--
Applied-Hard	4.5	--	--	--	

*$p > .05$.

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 49

Significant Differences Between Primary Teaching Role Proportions: Helping Students Develop Higher-order Thinking Skills

Biglan Classification	% Faculty	Biglan Classification			
		Pure-Soft	Pure-Hard	Applied-Soft	Applied-Hard
Pure-Soft	51.5		*	--	--
Pure-Hard	33.7	*		*	--
Applied-Soft	48.1	--	*		--
Applied-Hard	46.6	--	--	--	

*$p > .05$.

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 50

Significant Differences Between Primary Teaching Role Proportions: Preparing Students for Jobs/Careers

Biglan Classification	% Faculty	Biglan Classification			
		Pure-Soft	Pure-Hard	Applied-Soft	Applied-Hard
Pure-Soft	7.2		--	*	--
Pure-Hard	3.5	--		*	--
Applied-Soft	21.0	*	*		*
Applied-Hard	11.4	--	--	*	

*$p > .05$.

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 51

Significant Differences Between Primary Teaching Role Proportions: Fostering Student Development and Personal Growth

Biglan Classification	% Faculty	Biglan Classification			
		Pure-Soft	Pure-Hard	Applied-Soft	Applied-Hard
Pure-Soft	8.2		--	--	--
Pure-Hard	4.7	--		--	--
Applied-Soft	2.5	--	--		--
Applied-Hard	4.5	--	--	--	

*$p > .05$.

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 52

Significant Differences Between Primary Teaching Role Proportions: Helping Students Develop Basic Learning Skills

Biglan Classification	% Faculty	Biglan Classification			
		Pure-Soft	Pure-Hard	Applied-Soft	Applied-Hard
Pure-Soft	1.0		--	--	--
Pure-Hard	2.3	--		--	--
Applied-Soft	1.2	--	--		--
Applied-Hard	4.5	--	--	--	

*$p > .05$.

Note: Pure-Soft: Psychology, English
Pure-Hard: Chemistry, Mathematics
Applied-Hard: Computer Science, Mechanical Engineering
Applied-Soft: Economics, Accounting

Table 53

Statistical Results of the Forward Regression of the Seven Factor Mean Scores on the Biglan Classifications, Gender, Course Level, Tenure, and Academic Rank (N = 352)

Variable	Multiple R	R^2	% of Variance	b	SE b
Cultural & Societal Appreciation	.34	.115			
Pure-Soft			9.90	.52	.07
Applied-Soft			1.60	.20	.08
(Constant)				2.98	.05
Personal & Professional Development	.12	.015	1.50	-.16	.07
Pure-Hard				3.54	.03
(Constant)					
Basic Skills	.19	.035	3.50	.28	.08
Pure-Soft				2.94	.04
(Constant)					
Discipline-specific Knowledge	.35	.127			
Pure-Soft			6.60	.32	.08
Course Level			4.80	.19	.05
Pure-Hard			1.30	-.20	.09
(Constant)				3.07	.12
Higher-order Thinking Skills	.24	.060			
Course Level			4.40	.14	.04
Pure-Hard			1.60	-.17	.06
(Constant)				3.98	.09
Work-related Skills	.29	.087			
Pure-Hard			2.60	-.44	.10
Pure-Soft			4.40	-.48	.10
Gender			1.70	.25	.09
(Constant)				3.26	.13
Self-improvement	.17	.30			
Pure-Soft			3.00	.25	.07
(Constant)				2.63	.04

Factor One: Cultural and Societal Respect

Two of the eight independent variables entered into the regression equation. The applied-soft and the pure-soft Biglan categories accounted for 11.5% of the total variation in factor one. However, the pure-soft category was a much stronger predictor, accounting for 9.9% of the total variance, whereas the applied-soft category accounted for 1.6% of the total variance. This suggested that psychology, English, accounting, and economics faculty would have higher predicted mean scores than faculty in chemistry, mathematics, computer science, and mechanical engineering for this factor.

For example, an English instructor would have a predicted mean score of 3.50 ($Y = 2.98 + .52(1)$), and an economics instructor would have a predicted mean score of 3.18 ($Y = 2.98 + .20(1)$) on the Cultural and Societal Respect factor. However, the predicted mean score for a chemistry or mechanical engineering instructor would be 2.98 for this same factor.

Factor Two: Personal and Professional Development

As seen in Table 53 , the pure-hard variable was significant at the .05 level and entered into the regression equation. However, the 1.5% total variance was a modest contribution to the explanatory power of the regression model. The negative regression coefficient indicates that psychology, English, computer science, mechanical engineering, economics, and accounting faculty would have a higher predicted mean score than faculty in chemistry and mathematics.

Using the regression equation, $Y = 3.54 - .16(1)$, the predicted mean score for the Personal and Professional Development factor of a chemistry faculty member would be 3.38. Conversely, an economics faculty member would have a predicted mean score of 3.54 for the Personal and Professional Development factor ($Y = 3.54 - .16(0)$).

Factor Three: Basic Skills

Only one independent variable, pure-soft category, entered into the regression equation for the Basic Skills factor. These results suggest that psychology and English faculty would have a predicted mean score .28 points higher than faculty in the other Biglan categories.

For example, an English faculty member would have a predicted mean score of 3.22 ($Y = 2.94 + .28(1)$) for the Basic Skills factor. However, a mathematics faculty member would have a predicted mean score of 2.94 ($Y = 2.94 + .28(0)$) for this same factor.

Factor Four: Discipline-specific Knowledge

In the forward regression, three variables entered into the prediction equation for the Discipline-specific Knowledge factor: course level, pure-hard category, and pure-soft category. In this equation, the pure-soft category accounted for a large proportion of the total variance (6.6%), while the remaining two variables accounted for less (pure-hard at 1.3% and course level at 4.8%). Note, however, that the change in score for the pure-hard (chemistry and math)

category was predicted to be -.20 and the change in score for the pure-soft category (English and psychology) was .32.

As an example, a math professor teaching a senior-level course would have a predicted mean score of 3.08 (Y = 3.07 + .19(2) -.20(1) + .32(0)) for the Discipline-specific Knowledge. However, the predicted mean score for a psychology professor teaching a junior-level course would be 3.77 (Y = 3.07+ .19(2) -.20(0) + .32(1)) for this same factor.

Factor Five: Higher-order Thinking Skills

For factor five, two of the independent variables entered into the prediction equation. The pure-hard category accounted for 1.6% of the explanatory variance, while course level accounted for 4.4% of the variance. This suggested that the higher the course level, the higher the predicted mean score. However, chemistry and mathematics faculty would have a lower predicted mean score than the other disciplines examined in this study.

Using the regression equation, the predicted mean score for a chemistry professor teaching a graduate level course would be a predicted mean score of 4.23 (Y = 3.98 -.17(1) + .14(3)) for the Higher-order Thinking Skills factor. The predicted mean score for an accounting professor teaching a graduate-level course would be almost one-half point lower at 4.40 (Y = 3.98 -.17(0) + .14(3)) for the same factor.

Factor Six: Work-related Skills

Three variables, applied-hard, applied-soft, and gender entered into the regression equation for the Work-related Skills factor. The negative b values (-.48 and -.44), suggests that English, psychology, chemistry, and mathematics faculty members will have lower predicted mean scores when compared to computer science, mechanical engineering, economics, and accounting faculty members. Additionally, this also suggests that female faculty members will have a higher predicted mean score for this factor, regardless of the Biglan category.

For example, a female accounting faculty member would have a predicted mean score of 3.76 for this factor (Y = 3.26 - .48(0) - .44(0) + .25(2)), while a male accounting faculty member would have a predicted mean score of 3.51 for the same factor (Y = 3.26 - .48(0) - .44(0) + .25(1)). Conversely, a female English professor would have a predicted mean score of 3.28 for the Work-related Skills factor (Y = 3.26 - .48(1) - .44(0) + .25(2)), and the predicted mean score for a male English faculty member would be 3.03 (Y = 3.26 - .48(1) - .44(0) + .25(1)).

The predicted mean score for a female mathematics faculty member would be 3.32 (Y = 3.26 - .48(0) - .44(1) + .25(2)), whereas the predicted mean score for a male mathematics faculty member would be 3.07 (Y = 3.26 - .48(0) - .44(1) + .25(1)).

Factor Seven: Self-improvement

One independent variable entered the prediction equation for the Self-improvement factor. The pure-soft category accounted for 3% of the explanatory variance. These data suggested that English and psychology faculty would have a higher mean factor score than faculty in the other six disciplines examined in this study.

For example, a psychology professor would have a predicted mean score of 2.88 ($Y = 2.63 + .25(1)$) for the Self-improvement factor. However, a math professor would have a very low predicted mean factor score of 2.63 ($Y = 2.63 + .25(0)$).

Regression Summary

A summary of the regression analysis by independent variables is shown in Table 54. Within the regression analyses, it was noted that tenure and academic rank did not enter into any of the regression equations, and gender entered into only one of the regression equations. The researcher examined the correlation matrix to determine if high intercorrelations, multicollinearity, could exist (Table 55). Through this procedure, it was determined that gender was highly correlated with five of the six independent variables (rank, tenure, pure-hard, pure-soft, and applied-hard). Rank and tenure were also highly intercorrelated. Additionally, the level of course was highly correlated with three of the four Biglan classifications.

Summary

In this section, the findings from the statistical analyses were presented by research question. Differences in the importance of teaching goals was noted across the three types of institutions. Additionally, significant differences were also detected in the selection of the primary teaching role across the three types of institutions.

In a comparison of factor mean scores across the eight academic disciplines, significant differences were found. Factor mean scores also differed significantly among the four Biglan categories. Statistical analyses on the percentage of faculty selecting their primary teaching role indicated significant differences across the eight academic disciplines, and to a lesser extent across the four Biglan categories.

Lastly, the regression analyses provided evidence that the Biglan categories and level of course could help to predict factor mean scores. Gender was a predictor for only one of the seven factors, while academic rank and tenure did not enter into any of the regression equations. The presence of multicollinearity was discussed.

Table 54

Constants and Regression Coefficients for Significant Predictors

Factor	Constant	Variable							
		Course	Gender	Tenure	Rank	Pure-Hard	Pure-Soft	Applied-Hard	Applied-Soft
Cultural & Societal Appreciation	2.98						.52		.20
Personal & Professional Development	3.54					-.16			
Basic Skills	2.94						.28		
Discipline-specific Knowledge	3.07	.19				-.20	.32		
Higher-order Thinking Skills	3.98	.14				-.17			
Work-related Skills	3.26		.25			-.44	-.48		
Self-improvement	2.63						.25		

Table 55

Correlation Matrix: Independent Variables

Variable	Variable						
	Gender	Rank	Tenure	Pure-Hard	Pure-Soft	Applied-Hard	Applied-Soft
Course	--	--	--	-.28*	--	.14*	.13*
Gender		-.31*	-.33*	-.13*	.35*	-.20*	--
Rank			.77*	--	--	--	--
Tenure				--	--	--	--
Pure-Hard					-.35*	-.33*	-.31*
Pure-Soft						-.36*	-.34*
Applied-Hard							-.32*

*P > .05.

Note: Course: 5 = Essential; 4 = Very Important; 3 = Important; 2 = Unimportant
Gender: 1 = Male; 2 = Female
Rank: 1 = Instructor; 2 = Assistant Professor; 3 = Associate Professor; 4 = Professor
Tenure: 0 = No; 1 = Yes
Pure-Hard: 0 = No; 1 = Yes
Pure-Soft: 0 = No; 1 = Yes
Applied-Hard: 0 = No; 1 = Yes
Applied-Soft: 0 = No; 1 = Yes

Chapter 5

DISCUSSION AND CONCLUSIONS

This chapter contains the discussion and conclusions of the findings presented in the previous chapter. Additionally, the implications for future research are discussed.

Discussion

This section provides a discussion of the findings and their relationship with previous research. The use of the Teaching Goals Inventory in senior research universities is discussed. Also, a summary of the comparisons across types of institutions, academic disciplines, and Biglan categories is provided.

Teaching Goals Inventory

The findings of this research question the use of the Teaching Goals Inventory in senior research universities. The factor analysis yielded factors which differed from previous research (Angelo & Cross, 1993); however, the high alpha coefficients suggested the goals within the factors were highly intercorrelated providing evidence of the reliability of the factors.

The number of goals which entered into the factor analysis as well as the large number of goals which were rated as "essential" provide evidence related to the instrument's construct validity. Furthermore, the similarities between the goals rated as "essential" and the primary teaching role which was selected provides additional evidence of the Teaching Goals Inventory validity. For example, in English, more than 59% of the goals in the Higher-order Thinking Skills factor were rated "essential;" and, 58% of the English faculty rated their primary teaching role as "helping students develop higher-order thinking skills." The same findings are seen in four additional disciplines (psychology, computer science, mechanical engineering, and accounting).

However, there are additional data that should be considered. As seen in Appendix N, for thirteen of the items (25%), more than 25% of the respondents indicated these goals were "nonapplicable" (items 17, 28, 29, 31, 34, 35, 37, 38, 45, 46, 47, 48, 49) suggesting these goals may not be appropriate items to use with this population. Additionally, more than 15% of the respondents indicated another twelve items were "nonapplicable" (10, 11, 12, 13, 22, 32, 33, 36, 41, 42, 44, 50).

The number of goals that were considered to be "nonapplicable" or "unimportant" by the senior research university faculty could be due to the fact that the researchers developed and refined the Teaching Goals Inventory using faculty from community colleges and four-year colleges only. Although Angelo and Cross (1993) stated that this inventory may be used at all institutions, the results of this research suggest that many of the goals do not pertain to faculty at senior research universities. Furthermore, the findings also raise the question as to whether faculty at senior research universities possess teaching goals that are not included on the inventory.

Additionally, because the researchers, in their final administration of the inventory, used "colleges where faculty members had shown an interest in Classroom Assessment" (Angelo & Cross, 1993, p. 17), the community college and four-year college data are biased and are not generalizable across like institutions. In fact, the researchers stated that this sample was "diverse but not necessarily representative" (Angelo & Cross, 1993, p. 17). Therefore, comparisons in future representative studies may produce different results across types of institutions than were presented in this study.

Differences Across Institutions

Although detailed analyses across types of institutions were not possible due to the differences in goal clusters in previous studies and the factors in this study, the summary of the item responses indicates similar findings to those of previous researchers (Bloom & Freedman, 1973; Mauksch, 1986; Peterson, et al., 1986). This study adds additional evidence to support the hypothesis that faculty teaching goals differ across senior research universities, community colleges, and four-year colleges, particularly since the factor analysis in this study yielded different results than the previous research.

Although all three institutions rated the "facts and principles" and "higher-order thinking skills" roles as the primary teaching roles, a higher percentage was noted in senior research universities. As with previous research (Bayer, 1973; Bloom & Freedman, 1973; Lawrence, et al., 1990), more differences were noted between types of institutions in the personal development category than in the cognitive areas. This is seen in the comparison of the "student development," "jobs/careers," and "basic skills" roles.

Because the statistical and demographic data were not available from the Angelo and Cross (1993) research, explanations for the differences in the predictor variables are difficult to formulate. The fact that institutions have distinct missions can help explain the differences in the goal clusters. Because more advanced degrees, and presumably more advanced courses are offered at senior research universities when compared to community colleges and four-year colleges, differences in the overall teaching goals are expected. For example, in this study, almost 20% of the respondents selected a graduate course (Appendixes N and O) to respond to the inventory. Additionally, the level of course selected entered as a significant factor in two of the seven factors (Table 54) and was shown to be highly correlated with three of the four Biglan categories (Table 55). This suggests that course level is a significant factor in predicting faculty teaching goals.

Class size may have an effect on the findings. Although this study did not examine the size of the class, five respondents indicated, through comments, that the class size (in this case, their large class size) did impact their goal orientations. The differences in class size at a community college and a senior research university could be a significant factor in faculty teaching goals.

Differences Across Academic Disciplines

The results of this study support the findings of previous researchers who suggested that teaching goals differ across academic disciplines (Angelo & Cross, 1993; Cross, 1991; Ladd & Lipset, 1975; Smart, 1982). Furthermore, it also appears that the Biglan categories help to explain these differences.

In this study, higher-order thinking skills was the primary theme in senior research universities, both in the factors and primary teaching roles (Table 20 and Table 39). The high percentage (56.5%) of faculty selecting a junior/senior level course, as well as the additional 20% who selected a graduate course (Appendix O), may have influenced the findings. This is based on the assumption that higher-level courses require students to exhibit higher-level cognitive skills such as synthesizing.

Other differences among disciplines may be related to the specific values and expectations within the given field. For example, accounting faculty indicated "preparing students for job/careers" (30.4%) as a primary teaching role, and had a significantly higher (3.81) mean for the Work-related Skills factor (Tables 20 and 27). Similarly, it was not surprising to see English, a humanities field, with a significantly higher factor mean for Cultural and Societal Appreciation. Additionally, the much higher mean in the Basic Skills factor for English faculty can be partially attributed to item 14, improving reading skills.

There were some unexpected findings within this research. For example, almost 11% of accounting faculty rated "facts and principles" as their primary teaching role. This was surprising because a foundational course in this field is "Principles of Accounting." However, an examination of the academic ranks of the accounting respondents and the level of courses selected, helps explain this finding. In this discipline, more than 30% of the faculty were professors and only a little more than 6% of the selected courses were freshman/sophomore-level, thus indicating this introductory course was probably not a consideration.

Another unexpected finding was the low factor mean (3.08) for Discipline-specific Knowledge for math faculty and the low percentage of both math and chemistry faculty rating goals within this factor as "essential" (Table 20 and Appendix K). One explanation could be the level of course selected. In the regression equation, course level entered as a predictor in this factor, thus indicating a lower score for a lower level course. As shown in Appendix O, more than 50% of faculty from both disciplines selected freshman/sophomore level courses when responding to this inventory, which could explain the low factor mean.

In summary, the following differences in faculty teaching goals were noted across the eight academic disciplines in this study:

1. English faculty had significantly higher mean scores in three factors: Cultural and Societal Appreciation, Basic Skills, and Self-improvement when compared to the other seven disciplines.
2. Accounting faculty had a significantly higher factor mean score when compared across disciplines in the Work-related Skills factor.
3. The factor mean scores for psychology faculty were slightly lower across six of the seven factors when compared to the other disciplines, the exception being the Discipline- specific

Knowledge factor. However, when comparing psychology mean scores with those from the other disciplines, significant differences were detected across only three disciplines.

4. No significant differences were detected between any of the seven factor means across four disciplines: chemistry, math, computer science, and mechanical engineering (disciplines found in the hard Biglan category), suggesting the faculty teaching goals across these disciplines are very similar.

Teaching Goal Predictions

It appears that the Biglan categories can help explain differences between disciplines, which is consistent with previous research (Creswell & Bean, 1981; Hayward, 1986; Muffo & Langston, 1981; Roskens, 1983; Smart & Elton, 1982; Smart & McLaughlin, 1978; Stoecker, 1993). The Biglan categories had a slightly higher percentage of faculty rating the goals as "essential" in the "higher-order thinking skills" area than the academic disciplines alone. The large variation between the "facts and principles" role and "preparation for job/career" has direct links to disciplinary expectations. Accounting, as noted earlier, accounts for a large portion of the "job/career" role, while in chemistry and math it is essential to have a strong foundation of "facts and principles." These data, along with the data from the other goals, add further evidence to support the theory that differences, sometimes strong differences, exist among faculty teaching goals.

The pure-soft Biglan category is a predictor in five of the seven factors. The pure-hard classification is a significant predictor in four of the seven factors; however, the negative regression coefficients for each of the four factors results in lowered scores. The applied-soft category is a predictor for only one factor while the applied-hard category did not enter into any of the regression equations.

Multicollinearity appeared to be a factor within the control variables. Although gender entered into only one of the regression equations (work-related skills), it was highly correlated with three of the four Biglan categories and with tenure.

In the regression analysis, tenure and academic rank did not enter into any of the regression equations; however, the high correlation between rank and tenure probably resulted in these being eliminated during the regression equation. Course level is a strong predictor in two of the seven factors; however, as noted earlier, mulitocollinearity could have altered the results.

Conclusions

The findings of this study add further evidence to support the hypothesis that faculty teaching goals differ across academic disciplines and types of institutions. Additionally, the results of this study provide data which support the theory that Biglan's categories help explain teaching goal differences across academic disciplines at senior research institutions. Furthermore, the results, because of the random selection of institutions and the relatively high return rate for a survey, are generalizable across like disciplines and institutions.

Further research utilizing the Teaching Goals Inventory should be conducted. The following recommendations for practice and future research evolved from this research.

Recommendations for Future Research

1. These findings suggest that the Teaching Goals Inventory may not be valid instrument for use in senior research universities. Since this instrument was developed utilizing undergraduate faculty, and through this research, the level of course was shown to be a predictor, further examination of the inventory's use in senior research universities, and particularly with faculty teaching graduate courses, should be conducted.
2. A inventory should be developed that could more accurately measure the teaching goals of faculty at senior research universities. Rather than developing an entirely new inventory, another version of the Teaching Goals Inventory, using the same format and possibly some of the same goals, could be developed for use in senior research universities. Future research may indicate that separate instruments are necessary to examine faculty teaching goals in graduate and undergraduate courses at senior research universities as well as faculty at different types of institutions.
3. Future studies could examine the compatibility between the reported teaching goals and the teaching style.
4. Additionally, the research could expand to include an investigation of students' expectations for a particular course and the teaching goals of that professor.
5. Future research could examine the congruency between faculty teaching goals and the goals that member of the society believe faculty members should possess.
6. Since many institutions recognize "excellence in teaching," research could also focus on the teaching goals of faculty receiving this honor compared with faculty as a whole.
7. Previous research has examined faculty socialization; researchers could study, utilizing the same instrument, the teaching goals of graduate teaching assistants and compare these with faculty teaching goals.
8. The socialization process from instructor to professor could be studied, measuring the change in faculty members' teaching goals throughout their career.
9. Additionally, with the delivery of instruction changing due to more advanced communications and information technology, teaching goals of faculty using non-traditional methods of instruction could be examined.
10. Because the results of this study indicated that, in one factor, gender was a modest predictor of faculty teaching goals, and because more females are now entering the higher education teaching profession, additional research could re-examine gender as a predictor of faculty teaching goals.

Recommendations for Practice

1. Within a department or institution, a teaching goals instrument could be used as a self-diagnostic tool to help understand the differences among and within departments and institutions.
2. A teaching goals instrument could also be used to examine the congruency between an institution's statement of purpose and its faculty member's teaching goals.

3. Understanding the differences among faculty teaching goals helps to provide further understanding of the entire faculty role. This understanding can assist institutions and departments in developing performance indicators use during the promotion-tenure and performance evaluation process.
4. Institutions could a teaching goals instrument to help address the concerns related to faculty teaching, productivity, and evaluations, particularly in undergraduate courses.
5. A teaching goals instrument also could be used to develop faculty development programs across academic disciplines. Because the results of this study, as well as findings from previous research, suggested that faculty teaching goals vary across academic disciplines, faculty development programs could be tailored to meet the needs of a specific discipline.
6. Additionally, since comparisons across the Biglan categories indicated significant differences in faculty teaching goals, institutions could also consider grouping faculty development programs by Biglan category. Programs designed to address stated priorities of specific disciplines within the Biglan categories may improve participation in faculty development programs.
6. A teaching goals instrument could also be used in collaborative programs and initiatives. With the identification of faculty teaching goals, coordinators of programs, such as those in student affairs, academic enrichment, or excellence in teaching centers, could have a better understanding of specific needs and design programs centered around these goals. For faculty interested in collaborative projects, the inventory could be used to identify other faculty members with similar goals.

Summary

As internal and external pressures regarding faculty productivity and workload increase, institutions should seek ways to help address these concerns. Identifying, recognizing, and then acknowledging these differences will help to create a better understanding of faculty roles.

This study, as well as many others, has shown differences in teaching goals exist between academic disciplines and types of institutions. Further research should continue and help to refine the teaching process for the next millennium.

REFERENCES

Alpert, D. (1985). Performance and paralysis: The organizational context of the American research university. Journal of Higher Education, 56, 241-81.

Angelo, T. A., & Cross, K. P. (1993). Classroom assessment techniques: A handbook for college teachers (2nd ed.). San Francisco: Jossey-Bass.

Association of American Colleges. (1985). Integrity in the college curriculum: A report to the academic community. Washington, DC: Association of American Colleges.

Astin, A. W. (1977). Four critical years: Effects of college beliefs, attitudes, and knowledge. San Francisco: Jossey-Bass.

Astin, A. W., & Panos, R. (1969). The educational and vocational development of college students. Washington, DC: American Council on Education.

Baldwin, R. G. (1990). Faculty career stages and implications for professional development. In J. H. Schuster, D. W. Wheeler, and Associates (Eds.), Enhancing faculty careers: Strategies for development and renewal (pp. 20-40). San Francisco: Jossey-Bass.

Baldwin, R. G., & Blackburn, R. T. (1981). The academic career as a developmental process: Implications for higher education. Journal of Higher Education, 52, 598-614.

Bayer, A. E. (1973). Teaching faculty in academe: 1972-73. Washington, DC: American Council on Education.

Bayer, A. E. (1975). Faculty composition, institutional structure, and students' college environment. Journal of Higher Education, 46, 549-565.

Bess, J. L. (1978). Anticipatory socialization of graduate students. Research in Higher Education, 8, 289-317.

Biglan, A. (1973a). The characteristics of subject matter in different academic areas. Journal of Applied Psychology, 57, 195-203.

Biglan, A. (1973b). Relationship between subject matter characteristics and the structure and output of university departments. Journal of Applied Psychology, 57, 204-213.

Blackburn, R. T. (1972). Tenure: Aspects of job security on the changing campus. Research monograph 19. Atlanta: Southern Regional Education Board.

Blackburn, R. T., & Lawrence, J. H. (1995). Faculty at work: Motivation, expectation, satisfaction. Baltimore: Johns Hopkins University Press.

Blackburn, R. T., Bieber, J. P., Lawrence, J. H., & Trautvetter, L. C. (1991). Faculty at work: Focus on research, scholarship, and service. Research in Higher Education, 32, 385-413.

Bloom, B. S. (1956). Taxonomy of educational objectives. Vol. 1: Cognitive domain. New York: McKay.

Bloom, M., & Freedman, M. (1973). Personal history and professional career. In M. Freedman (Ed.), Facilitating faculty development (pp. 49-59). New Directions for Higher Education No. 1. San Francisco: Jossey-Bass.

Bowen, H. R. (1977). Investment in learning: The individual and social value of American higher education. San Francisco: Jossey-Bass.

Bowen, H. R., & Schuster, J. H. (1986). American professors: A national resource imperiled. New York: Oxford University Press.

Carnegie Foundation for the Advancement of Teaching. (1987). A classification of institutions of higher education (rev. ed.). Princeton: Carnegie Foundation for the Advancement of Teaching.

Center for Faculty Evaluation and Development in Higher Education. (1975). IDEA survey form: Students reactions to instruction and courses. Manhattan: Center for Faculty Evaluation and Development in Higher Education, Kansas State University.

Chickering, A. W. (1969). Education and identity. San Francisco: Jossey-Bass.

Clark, B. R. (1987). The academic life: Small worlds, different worlds. Princeton, NJ: Carnegie Foundation for the Advancement of Teaching.

Clark, S. M., & Corcoran, M. (1986). Perspectives on the professional socialization of women faculty. Journal of Higher Education, 57, (1), 20-43.

College Board. (1983). What students need to know and be able to do. New York: College Board.

Creswell, J. W., & Bean, J. P. (1981). Research output, socialization, and the Biglan model. Research in Higher Education, 15, 69-91.

Cross, K. P. (1991). College teaching: What do we know about it? Innovative Higher Education, 16, (1), 7-25.

Cross, K. P., & Fielder, E. F. (1988). Assessment in the classroom. Community/Junior College Quarterly, 12, 275-285.

Daly, F., & Townsend, B. K. (1992). Faculty perceptions of the department chair's role in facilitating tenure acquisition. Washington, DC: Office of Educational Research and Improvement. (ERIC Document Reproduction Service No. ED 352 912)

Eble, K. E. (1988). The craft of teaching (2nd ed.). San Francisco: Jossey-Bass.

Ellner, C. L., & Barnes, C. P. (1983). The context. In C. L.. Ellner and C. P. Barnes (Eds.), Studies of college teaching: Experimental results, theoretical interpretations, and new perspectives (pp. 1-12). Lexington, MA: Lexington Books.

Fairweather, J. S. (1996). Faculty work and public trust: Restoring the value of teaching and public service in American academic life. Boston: Allyn & Bacon.

Fairweather, J. S., & Rhoads, R .A. (1995). Teaching and the faculty role: Enhancing the commitment to instruction in American colleges and universities. Educational Evaluation and Policy Analysis, 17, (2), 179-194.

Feldman, K. A., & Newcomb, T. M. (1969). The impact of college on students. San Francisco: Jossey-Bass.

Ferguson, G. A. (1971). Statistical analysis in psychology and education (3rd ed.). New York: McGraw-Hill.

Finkelstein, M. J. (1984). The American academic profession: A synthesis of social scientific inquiry since World War II. Columbus, OH: Ohio State University Press.

Fulton, O., & Trow, M. (1974). Research activity in American higher education. Sociology of Education, 47, 29-73.

Getzels, J. W., Lipham, J. M., & Campbell, R. F. (1968). Educational administration as a social process: Theory, research, and practice. New York: Harper & Row.

Guralnki, D. B. (Ed.). (1980). Webster's new world dictionary (2nd ed.). Cleveland: William Collins Publishers.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Grablowsky, B. J. (1984). Multivariate data analysis with readings. New York: Macmillan.

Hayward, P. C. (1986). A discriminant analytic test of Biglan's theoretical distinction between Biology and English department chairpersons. Research in Higher Education, 25, 136-46.

Jaeger, R. L. (1984). Sampling in education and the social sciences. New York: Longman.

Jervis, F. M., & Cogdon, R. G. (1958). Student and faculty perceptions of educational values. American Psychologist, 13, 464-66.

Katz, D., & Kahn, R. L. (1978). The social psychology of organizations (2nd ed). New York: Wiley.

Kerlinger, F. N. (1986). Foundations of behavioral research (3rd ed.). New York: Holt, Rinehart, and Winston.

Kerr, C. (1966). The uses of the university. Cambridge: Harvard University Press.

Kolb, D. A. (1981). Learning styles and disciplinary differences. In A. W. Chickering (Ed.), The modern American college (pp. 232-255). San Francisco: Jossey-Bass.

Kulik, J. (1976). Students reactions to instruction: Memo to the faculty. Ann Arbor: University of Michigan.

Ladd, E. C., & Lipset, S. M. (1975). Survey of the American professorate (Tech. Rep.). Storrs, CT: University of Connecticut, The Social Science Data Center.

Lawrence, J. H., Hart, K. A., Mackie, C., Muniz, D., & Dickmann, E. (1990). A comparison of the teaching goals, assumptions, and practices of faculty in eight liberal arts disciplines. Paper presented at the Annual Meeting of the Association for the Study of Higher Education, Portland, OR. (ERIC Document Reproduction Service No. ED 326 115)

Leverenz, T. R., & Lewis, B. R. (1981). An analysis of faculty consistency in the academic professions. (ERIC Document Reproduction Service No. ED 201 254)

Levinson-Rose, J., & Menges, R. J. (1981). Improving college teaching: A critical review of research. Review of Educational Research, 51, 403-434.

Lewis, B. R., & Leverenz, T. R. (1979). Paradigm revisited: Another look at the physical and social sciences. Research in Higher Education, 10, 85-92.

Lewis, L. S. (1967). Two cultures: Some empirical findings. Educational Record, 260-267.

Liebert, R. J., & Bayer, A. E. (1975). Goals in teaching undergraduates: Professional reproductions and client-centeredness. The American Sociologist, 10, 195-205.

Light, D. W., Jr., Mardsen, L. R., & Corl, T. C. (1973). The impact of the academic revolution on faculty careers. Washington, DC: American Association for Higher Education.

Lodahl, J. L., & Gordon, G. (1973). Differences between physical and social sciences in university graduate departments. Research in Higher Education, 1, 191-213.

Mauksch, H. O. (1986). Teaching within institutional values and structures. Teaching Sociology, 14, 40-49.

Merton, R. K. (1957). Social theory and social structure. Glencoe, IL: The Free Press.

Muffo, J. A., & Langston, I. W. (1981). Biglan's dimensions: Are the perceptions empirically based? Research in Higher Education, 15, 141-159.

Norusis, M. J. (1993). SPSS for windows professional statistics: 6.1. Chicago: SPSS.

Nunnally, J. C. (1967). Psychometric theory, New York: McGraw-Hill.

Pace, C. R. (1954). University-wide studies in evaluation of general education at Syracuse University. In P. L. Dressel (Ed.), Evaluation in general education, (pp. 1-27). Dubuque: Brown.

Pace, C. R., & Troyer, M. E. (Eds.). (1949). Report to the faculty: University self-study. Syracuse: Syracuse University.

Parsons, T., & Platt, G. M. (1968). The American academic profession: A pilot study. Cambridge: Harvard University Press.

Pedhazur, E. J. (1982). Multiple regression in behavioral research: Explanation and prediction (2nd ed.). New York: Holt, Rinehart, and Winston.

Pedhazur, E. J., & Pedhazur-Schmelkin, L. (1991). Measurement, design, and analysis: An integrated approach. Hillsdale: Lawrence Erlbaum Associates.

Peterson, M., Cameron, K., Mets, L., Jones, P., & Ettington, D. (1986). The organizational context for teaching and learning: A review of the research literature. Ann Arbor: University of Michigan, National Center for Research to Improve Postsecondary Teaching and Learning.

Platt, G. M., Parsons, T., & Kirshstein, R. (1976). Faculty teaching goals, 1968-1973. Social Problems, 24, 298-307.

Reynolds, A. (1992). Charting the changes in junior faculty: Relationships among socialization, acculturation, and gender. Journal of Higher Education, 63, 637-652.

Roskens, R. W. (1983). Implications of Biglan model research for the process of faculty advancement. Research in Higher Education, 18, 285-297.

Schuster, J. H. (1990). The need for fresh approaches to faculty renewal. In J. H. Schuster and D. W. Wheeler (Eds.), Enhancing faculty careers: Strategies for development and renewal (pp. 3-19). San Francisco: Jossey-Bass.

Smart, J. C. (1978). Diversity of academic organizations. Journal of Higher Education, 49, 403-419.

Smart, J. C. (1982). Faculty teaching goals: A test of Holland's theory. Journal of Educational Psychology, 74 (2), 180-188.

Smart, J. C., & Elton, C. F. (1975). Goal orientations of academic departments: A test of Biglan's theory. Journal of Applied Psychology, 60, 580-588.

Smart, J. C., & Elton, C. F. (1982). Validation of the Biglan model. Research in Higher Education, 3, 213-229.

Smart, J. C., & McLaughlin, G. W. (1974). Variations in goal priorities of academic departments: A test of Holland's theory. Research in Higher Education, 2, 377-390.

Smart, J. C., & McLaughlin, G. W. (1978). Reward structures of academic disciplines. Research in Higher Education, 8, 39-55.

Stark, J. S., Lowther, M. A., Bentley, R. J., & Martens, G. G. (1990). Disciplinary differences in course planning. Review of Higher Education, 13, 141-165.

Stark, J. S., & Morstain, B. R. (1978). Educational orientations of faculty in liberal arts colleges: An analysis of disciplinary differences. Journal of Higher Education, 49, 420 - 437.

Stoecker, J. L. (1993). The Biglan classification revisited. Research in Higher Education, 34, 451-464.

Tierney, W. G., & Rhoads, R. A. (1993). Enhancing promotion, tenure and beyond: Faculty socialization as a cultural process. (ASHE-ERIC Higher Education Research Report No. 6). Washington, DC: Association for the Study of Higher Education.

Van Maanen, J. (1983). Doing new things in old ways: The chains of socialization. In J. L. Bess (Ed.), College and university organization: Insights from the behavioral sciences (pp. 211-247). New York: New York University.

Wilson, J. W., & Lyons, E. H. (1961). Work-study college programs: Appraisal and report of the Study of Cooperative Education. New York: Harper.

Wilson, R. C., Gaff, J. G., Dienst, E. R., Wood, L., & Bavry, J. L. (1975). College professors and their impact on students. New York: Wiley.

Appendix A

Teaching Goals Inventory

As you complete this survey, please think of a specific course you have taught within the last year. Rate the importance of each goal as it applies to that course. Assess each goal's importance to what you deliberately aim to have your students accomplish in that course, rather than the goal's general worthiness or overall importance to your institution's mission. There are no "right" or "wrong" answers.

In relation to the course you selected, indicate whether each goal is:

(5) Essential — a goal you always/nearly always try to achieve
(4) Very Important — a goal you often try to achieve
(3) Important — a goal you sometime try to achieve
(2) Unimportant — a goal you rarely try to achieve
(1) Not applicable — a goal you never try to achieve

		Essential	Very Important	Important	Unimportant	Not Applicable
1.	Develop ability to apply principles and generalizations already learned to new problems and situations.	5	4	3	2	1
2.	Develop analytic skills.	5	4	3	2	1
3.	Develop problem-solving skills.	5	4	3	2	1
4.	Develop ability to draw reasonable inferences from observations.	5	4	3	2	1
5.	Develop ability to synthesize and integrate information and ideas.	5	4	3	2	1
6.	Develop ability to think holistically: to see the whole as well as the parts.	5	4	3	2	1
7.	Develop ability to think creatively.	5	4	3	2	1
8.	Develop ability to distinguish between fact and opinion.	5	4	3	2	1
9.	Improve skill at paying attention.	5	4	3	2	1
10.	Develop ability to concentrate.	5	4	3	2	1
11.	Improve memory skills.	5	4	3	2	1
12.	Improve listening skills.	5	4	3	2	1
13.	Improve speaking skills.	5	4	3	2	1
14.	Improve reading skills.	5	4	3	2	1
15.	Improve writing skills.	5	4	3	2	1
16.	Develop appropriate study skills, strategies, and habits.	5	4	3	2	1
17.	Improve mathematical skills.	5	4	3	2	1
18.	Learn terms and facts of this subject.	5	4	3	2	1
19.	Learn concepts and theories in this subject.	5	4	3	2	1
20.	Develop skill in using materials, tools, and/or technology central to this subject.	5	4	3	2	1
21.	Learn to understand perspectives and values of this subject.	5	4	3	2	1

Appendix A *(continued)*

22.	Prepare for transfer or graduate study.	5	4	3	2	1
23.	Learn techniques and methods used to gain new knowledge in this subject.	5	4	3	2	1
24.	Learn to evaluate methods and materials in this subject.	5	4	3	2	1
25.	Learn to appreciate important contributions to this subject.	5	4	3	2	1
26.	Develop an appreciation of the liberal arts and sciences.	5	4	3	2	1
27.	Develop an openness to new ideas.	5	4	3	2	1
28.	Develop an informed concern about contemporary social issues.	5	4	3	2	1
29.	Develop a commitment to exercise the rights and responsibilities of citizenship.	5	4	3	2	1
30.	Develop a lifelong love of learning.	5	4	3	2	1
31.	Develop aesthetic appreciations.	5	4	3	2	1
32.	Develop an informed historical perspective.	5	4	3	2	1
33.	Develop an informed understanding of the role of science and technology.	5	4	3	2	1
34.	Develop an informed appreciation of other cultures.	5	4	3	2	1
35.	Develop capacity to make informed ethical choices.	5	4	3	2	1
36.	Develop ability to work productively with others.	5	4	3	2	1
37.	Develop management skills.	5	4	3	2	1
38.	Develop leadership skills.	5	4	3	2	1
39.	Develop a commitment to accurate work.	5	4	3	2	1
40.	Improve ability to follow directions, instructions, and plans.	5	4	3	2	1
41.	Improve ability to organize and use time effectively.	5	4	3	2	1
42.	Develop a commitment to personal achievement.	5	4	3	2	1
43.	Develop ability to perform skillfully.	5	4	3	2	1
44.	Cultivate a sense of responsibility for one's own behavior.	5	4	3	2	1
45.	Improve self-esteem/self-confidence.	5	4	3	2	1
46.	Develop a commitment to one's own values.	5	4	3	2	1
47.	Develop respect for others.	5	4	3	2	1
48.	Cultivate emotional health and well-being.	5	4	3	2	1
49.	Cultivate physical health and well-being.	5	4	3	2	1
50.	Cultivate an active commitment to honesty.	5	4	3	2	1
51.	Develop capacity to think for oneself.	5	4	3	2	1
52.	Develop capacity to make wise decisions.	5	4	3	2	1

Appendix A *(continued)*

For the following questions, please check only one response.

1. In general, how do you see your primary role as a teacher?
   _____ Teaching students facts and principles of the subject matter
   _____ Providing a role model for students
   _____ Helping students develop higher-order thinking skills
   _____ Preparing students for job/careers
   _____ Fostering student development and personal growth
   _____ Helping students develop basic learning skills

2. What level of course did you select when answering this survey?
   _____ Freshman/Sophomore _____ Graduate
   _____ Junior/Senior

3. What is your academic rank?
   _____ Lecturer _____ Associate Professor
   _____ Assistant Professor _____ Professor

4. Have you received tenure?
   _____ Yes _____ No

5. What is your gender?
   _____ Male _____ Female

Source: Angelo, T., & Cross, K. P. (1993). Classroom Assessment Techniques: A Handbook for College Teachers. San Francisco: Jossey Bass. Permission to reproduce.

Appendix B

Item Means, Standard Deviations, and Percentage Rating Each Goal as "Essential" by Faculty at Community Colleges (N = 1873)

	Teaching Goal	M	SD	%
1	Develop ability to apply principles and generalizations already learned to new problems and situations	3.49	0.75	62
2	Develop analytic skills	3.32	0.84	54
3	Develop problem-solving skills	3.19	1.03	51
4	Develop ability to draw reasonable inferences from observations	3.06	1.00	44
5	Develop ability to synthesize and integrate information and ideas	3.18	0.89	44
6	Develop ability to think holistically: to see the whole as well as the parts	3.16	0.93	45
7	Develop ability to think creatively	2.93	1.03	35
8	Develop ability to distinguish between fact and opinion	2.39	1.37	27
9	Improve skill at paying attention	2.71	1.06	27
10	Develop ability to concentrate	2.67	1.08	27
11	Improve memory skills	2.26	1.13	15
12	Improve listening skills	2.74	1.03	27
13	Improve speaking skills	1.58	1.29	12
14	Improve reading skills	2.30	1.26	21
15	Improve writing skills	2.21	1.35	24
16	Develop appropriate study skills, strategies, and habits	2.72	1.05	27
17	Improve mathematical skills	1.45	1.52	18
18	Learn terms and facts of this subject	3.32	0.85	54
19	Learn concepts and theories in this subject	3.21	0.93	48
20	Develop skill in using materials, tools, and/or technology central to this subject	2.85	1.34	45
21	Learn to understand perspectives and values of this subject	2.94	0.98	33
22	Prepare for transfer or graduate study	2.06	1.33	18
23	Learn techniques and methods used to gain new knowledge in this subject	3.06	0.98	40
24	Learn to evaluate methods and materials in this subject	2.74	1.03	30
25	Learn to appreciate important contributions to this subject	2.46	1.06	18
26	Develop an appreciation of the liberal arts and sciences	1.93	1.31	14

Appendix B *(continued)*

	Teaching Goal	M	SD	%
27	Develop an openness to new ideas	2.89	1.09	36
28	Develop an informed concern about contemporary social issues	1.95	1.32	16
29	Develop a commitment to exercise the rights and responsibilities of citizenship	1.50	1.35	10
30	Develop a lifelong love of learning	2.73	1.10	30
31	Develop aesthetic appreciations	1.80	1.32	14
32	Develop an informed historical perspective	1.77	1.26	11
33	Develop an informed understanding of the role of science and technology	1.89	1.35	14
34	Develop an informed appreciation of other cultures	1.68	1.41	14
35	Develop capacity to make informed ethical choices	2.03	1.40	18
36	Develop ability to work productively with others	2.57	1.23	22
37	Develop management skills	1.53	1.29	9
38	Develop leadership skills	1.52	1.23	7
39	Develop a commitment to accurate work	3.06	1.00	42
40	Improve ability to follow directions, instructions, and plans	2.92	1.01	36
41	Improve ability to organize and use time effectively	2.59	1.11	24
42	Develop a commitment to personal achievement	2.77	1.03	29
43	Develop ability to perform skillfully	3.01	1.10	42
44	Cultivate a sense of responsibility for one's own behavior	2.76	1.22	36
45	Improve self-esteem/self-confidence	2.77	1.07	31
46	Develop a commitment to one's own values	2.03	1.36	17
47	Develop respect for others	2.39	1.28	25
48	Cultivate emotional health and well-being	1.60	1.35	11
49	Cultivate physical health and well-being	1.14	1.35	9
50	Cultivate an active commitment to honesty	2.54	1.29	30
51	Develop capacity to think for oneself	3.39	0.81	56
52	Develop capacity to make wise decisions	3.03	1.01	40

Note. From Classroom Assessment Techniques: A Handbook for College Teachers (pp. 303 - 402), by T. A. Angelo and K. P. Cross, 1993, San Francisco: Jossey-Bass Publishers. Copyright 1993 by Jossey-Bass Inc. Reprinted with permission.

Appendix C

Item Means, Standard Deviations, and Percentage Rating Each Goal as "Essential" by Faculty at Four-Year Colleges (N = 951)

Teaching Goal	M	SD	%
1. Develop ability to apply principles and generalizations already learned to new problems and situations	3.37	0.88	59
2. Develop analytic skills	3.20	1.01	49
3. Develop problem-solving skills	2.89	1.19	40
4. Develop ability to draw reasonable inferences from observations	3.10	0.98	41
5. Develop ability to synthesize and integrate information and ideas	3.26	0.87	49
6. Develop ability to think holistically: to see the whole as well as the parts	3.19	0.93	47
7. Develop ability to think creatively	2.88	1.05	34
8. Develop ability to distinguish between fact and opinion	2.51	1.26	26
9. Improve skill at paying attention	2.41	1.20	21
10. Develop ability to concentrate	2.44	1.20	23
11. Improve memory skills	2.01	1.20	13
12. Improve listening skills	2.52	1.15	22
13. Improve speaking skills	1.80	1.32	12
14. Improve reading skills	2.17	1.27	18
15. Improve writing skills	2.32	1.24	20
16. Develop appropriate study skills, strategies, and habits	2.41	1.15	19
17. Improve mathematical skills	0.99	1.34	10
18. Learn terms and facts of this subject	3.30	0.83	50
19. Learn concepts and theories in this subject	3.30	0.89	53
20. Develop skill in using materials, tools, and/or technology central to this subject	2.74	1.35	41
21. Learn to understand perspectives and values of this subject	3.15	0.88	41
22. Prepare for transfer or graduate study	1.85	1.34	14
23. Learn techniques and methods used to gain new knowledge in this subject	2.98	0.99	37
24. Learn to evaluate methods and materials in this subject	2.82	1.11	33
25. Learn to appreciate important contributions to this subject	2.75	1.01	26

Appendix C *(continued)*

Teaching Goal	M	SD	%
26. Develop an appreciation of the liberal arts and sciences	2.33	1.26	22
27. Develop an openness to new ideas	3.01	1.04	40
28. Develop an informed concern about contemporary social issues	2.18	1.33	21
29. Develop a commitment to exercise the rights and responsibilities of citizenship	1.48	1.37	10
30. Develop a lifelong love of learning	2.80	1.10	33
31. Develop aesthetic appreciations	1.87	1.44	19
32. Develop an informed historical perspective	2.20	1.29	19
33. Develop an informed understanding of the role of science and technology	1.73	1.37	13
34. Develop an informed appreciation of other cultures	1.80	1.46	18
35. Develop capacity to make informed ethical choices	2.18	1.36	19
36. Develop ability to work productively with others	2.18	1.26	17
37. Develop management skills	1.51	1.40	12
38. Develop leadership skills	1.70	1.31	12
39. Develop a commitment to accurate work	2.85	1.04	32
40. Improve ability to follow directions, instructions, and plans	2.48	1.16	23
41. Improve ability to organize and use time effectively	2.34	1.21	19
42. Develop a commitment to personal achievement	2.46	1.18	22
43. Develop ability to perform skillfully	2.63	1.30	32
44. Cultivate a sense of responsibility for one's own behavior	2.57	1.26	29
45. Improve self-esteem/self-confidence	2.44	1.22	23
46. Develop a commitment to one's own values	2.13	1.34	18
47. Develop respect for others	2.32	1.33	24
48. Cultivate emotional health and well-being	1.43	1.35	9
49. Cultivate physical health and well-being	0.96	1.29	7
50. Cultivate an active commitment to honesty	2.48	1.28	27
51. Develop capacity to think for oneself	3.33	0.82	52
52. Develop capacity to make wise decisions	2.87	1.11	36

Note. From Classroom Assessment Techniques: A Handbook for College Teachers (p. 403 - 406), by T. A. Angelo and K. P. Cross, 1993, San Francisco: Jossey-Bass Publishers.

Appendix D

First Correspondence to Participants

August 30, 1996

Dear Dr. :

Today, research universities are under pressure to improve their teaching and service activities. Many critics believe that quality teaching is not a priority among research institutions or their faculty. Renewed interest in faculty teaching practices, due in part to resource constraints and faculty productivity issues, has led to a call for revisions in the promotion/tenure process as well as a call for new methods to measure faculty productivity. Many of these initiatives center around faculty teaching roles, practices, and beliefs.

The purpose of this study is to identify the teaching goals of senior research institution faculty across eight academic disciplines. This research project, Faculty Teaching Goals at Senior Research Universities, examines faculty teaching goals and primary teaching roles utilizing the Teaching Goals Inventory developed by Thomas Angelo and K. Patricia Cross.

We realize that this is a very busy time of the year and constraints on your time are great. We are asking that you please take 15 minutes to complete the enclosed survey. A good return rate will allow Lisa to complete her dissertation and degree requirements for a Ph. D. in higher education administration.

Ten senior research institutions, eight academic disciplines, and eight faculty from each discipline have been invited to participate. Results will be reported for the entire sample and for academic disciplines. Participant confidentiality is guaranteed. The survey is coded for follow-up purposes only.

We ask that you please complete and return the enclosed inventory by September 16, 1996. Thank you in advance for your participation. It is greatly appreciated.

Sincerely,

Lisa Johnson
Doctoral Candidate
Higher Education Administration

Appendix E

Follow-up Postcard to Participants

September 12, 1996

Dear Professor:

A few days ago, you should have received the Teaching Goals Inventory, the tool I selected for use in my research. As you can imagine, I am eager to proceed with my data analysis and dissertation. If you have already returned the inventory, I extend my most sincere appreciation. If you have not completed the inventory, I request that you please do so within the next few days. Your response is crucial to my data analysis and future research. The inventory will take no more than 15 minutes to complete. If you need another inventory, please contact me by e-mail at lijohns3@vt.edu, or by phone at (540) 231-5706.

Thank you for your participation.

Sincerely,

Lisa Dawn Johnson
Doctoral Candidate
Virginia Tech

Appendix F

Third Correspondence with Participants

September 19, 1996

Dear Dr. :

Three weeks ago we mailed you the Teaching Goals Inventory and asked that you participate in our current study regarding teaching goals of faculty across eight academic disciplines in senior research institutions. The data obtained from this instrument will be utilized in Lisa's dissertation, Faculty Teaching Goals at Senior Research Universities.

This study extends the research of K. Patricia Cross and Thomas Angelo, who developed the inventory. Previous studies have examined faculty teaching goals at community and four-year colleges. This study will add a third group, senior research institutions. With the increasing pressure of faculty to improve their teaching and service activities, as well as to increase research productivity, it is important that differences among disciplines and institutions be understood. These differences could then be utilized when establishing policies involving faculty roles, workloads, and responsibilities.

At the time of this mailing, we had not yet received your response. If you have already returned your inventory, we thank you for taking the time to respond. If you have not yet returned the inventory, we ask that you please take 15 minutes to do so. It is important to have each discipline well-represented. Let us emphasize that the results will be reported for the entire sample and for academic disciplines only. Participant confidentiality is guaranteed. The survey is coded for follow-up purposes only.

We have enclosed another copy of the inventory and ask that you please return it by September 30, 1996. Thank you in advance for your participation. It is greatly appreciation.

Sincerely,

Lisa Johnson
Doctoral Candidate
Higher Education Administration

Appendix G

Teaching Goals Inventory Return Rate

Discipline	Distributed	Responded				
		Total		Eligible		Noneligible[1]	
	N	N	%	N	%	N	%
Chemistry	80	47	58.75	43	91.48	4	8.50
Mathematics	80	47	58.75	43	91.48	4	8.50
Mechanical Engineering	80	54	67.50	49	90.74	5	9.25
Computer Science	80	43	53.75	39	90.69	4	9.06
English	80	54	67.50	50	92.59	4	9.30
Psychology	80	54	67.50	47	87.03	7	12.95
Economics	80	38	47.50	35	92.11	3	7.89
Accounting	80	47	58.75	46	97.87	1	2.12
TOTAL	640	384	60.00	352	91.66	32	8.34

[1] Reasons for Noneligible Inventories:

Retired	6
On Leave/Sabbatical	8
Administrator	5
Did Not Have Time	5
Nonreachable	2
Incomplete	1
Refused to Complete	5
TOTAL	32

Note: Columns may not total 100% due to rounding.

Appendix H

Teaching Goals Inventory: Items Sorted by Goal Cluster (Angelo & Cross, 1993)

Cluster Number	Cluster Name	Teaching Goal
I	Higher-order Thinking Skills	
		1. Develop ability to apply principles and generalizations already learned to new problems and situations
		2. Develop analytic skills
		3. Develop problem-solving skills
		4. Develop ability to draw reasonable inferences from observations
		5. Develop ability to synthesize and integrate information and ideas
		6. Develop ability to think holistically: to see the whole as well as the parts
		7. Develop ability to think creatively
		8. Develop ability to distinguish between fact and opinion
II	Basic Academic Success Skills	
		9. Improve skill at paying attention
		10. Develop ability to concentrate
		11. Improve memory skills
		12. Improve listening skills
		13. Improve speaking skills
		14. Improve reading skills
		15. Improve writing skills
		16. Develop appropriate study skills , strategies, and habits
		17. Improve mathematical skills
III	Discipline-specific Knowledge and Skills	
		18. Learn terms and facts of this subject
		19. Learn concepts and theories in this subject
		20. Develop skill in using materials, tools, and/or technology central to this subject
		21. Learn to understand perspectives and values of this subject
		22. Prepare for transfer or graduate study
		23. Learn techniques and methods used to gain new knowledge in this subject
		24. Learn to evaluate methods and materials in this subject
		25. Learn to appreciate important contributions to this subject

Appendix H *(continued)*

Cluster Number	Cluster Name	Teaching Goal
IV	Liberal Arts and Academic Values	
		26. Develop an appreciation of the liberal arts and sciences
		27. Develop an openness to new ideas
		28. Develop an informed concern about contemporary social issues
		29. Develop a commitment to exercise the rights and responsibilities of citizenship
		30. Develop a lifelong love of learning
		31. Develop aesthetic appreciations
		32. Develop and informed historical perspective
		33. Develop an informed understanding of the role of science and technology
		34. Develop an informed appreciation of other cultures
		35. Develop capacity to make informed ethical choices
V	Work and Career Preparation	
		36. Develop ability to work productively with others
		37. Develop management skills
		38. Develop leadership skills
		39. Develop a commitment to accurate work
		40. Improve ability to follow directions, instructions, and plans
		41. Improve ability to organize and use time effectively
		42. Develop a commitment to personal achievement
		43. Develop ability to perform skillfully
VI	Personal Development	
		44. Cultivate a sense of responsibility for one's own values
		45. Improve self-esteem/self-confidence
		46. Develop a commitment to one's own values
		47. Develop respect for others
		48. Cultivate emotional health and well-being
		49. Cultivate physical health and well-being
		50. Cultivate an active commitment to honesty
		51. Develop capacity to think for oneself
		52. Develop capacity to make wise decisions

Appendix I

Teaching Goals Inventory: Items Sorted by Seven Factors

Factor Number	Factor Name	Teaching Goal
V	Higher-Order Thinking Skills	
		1. Develop ability to apply principles and generalizations already learned to new problems and situations.
		2. Develop analytic skills.
		3. Develop problem-solving skills.
		4. Develop ability to draw reasonable inferences from observations.
		5. Develop ability to synthesize and integrate information and ideas.
		6. Develop ability to think holistically: to see the whole as well as the parts.
		7. Develop ability to think creatively.
III	Basic Skills	
		9. Improve skill at paying attention.
		10. Develop ability to concentrate.
		11. Improve memory skills.
		12. Improve listening skills.
		16. Develop appropriate study skills, strategies, and habits.
VI	Discipline-Specific Knowledge	
		21. Learn to understand perspectives and values of this subject.
		22. Prepare for transfer or graduate study.
		23. Learn techniques and methods used to gain new knowledge in this subject.
		24. Learn to evaluate methods and materials in this subject.
		25. Learn to appreciate important contributions to this subject.
VI	Work-Related Skills	
		20. Develop skill in using materials, tools, and/or technology central to this subject.
		36. Develop ability to work productively with others.
		37. Develop management skills.
		38. Develop leadership skills.

Appendix I *(continued)*

Factor Number	Factor Name	Teaching Goal
I	Cultural & Societal Appreciation	
		8. Develop ability to distinguish between fact and opinion.
		26. Develop an appreciation of the liberal arts and sciences.
		27. Develop an openness to new ideas.
		28. Develop an informed concern about contemporary social issues.
		29. Develop a commitment to exercise the rights and responsibilities of citizenship.
		30. Develop a lifelong love of learning.
		31. Develop aesthetic appreciations.
		32. Develop an informed historical perspective.
		34. Develop an informed appreciation of other cultures.
		35. Develop capacity to make informed ethical choices.
		46. Develop a commitment to one's own values.
		47. Develop respect for others.
		48. Cultivate emotional health and well-being.
		49. Cultivate physical health and well-being.
II	Personal and Professional Development	
		39. Develop a commitment to accurate work.
		40. Improve ability to follow directions, instructions, and plans.
		41. Improve ability to organize and use time effectively.
		42. Develop a commitment to personal achievement.
		43. Develop ability to perform skillfully.
		44. Cultivate a sense of responsibility for one's own behavior.
		45. Improve self-esteem/self-confidence.
		50. Cultivate an active commitment to honesty.
		51. Develop capacity to think for oneself.
		52. Develop capacity to make wise decisions.
VII	Self-improvement	
		13. Improve speaking skills.
		14. Improve reading skills.
		15. Improve writing skills.

Appendix J

Item Means, Standard Deviations, and Percentage Rating Each Goal as "Essential" by Faculty at Senior Research Universities (N = 352)

Teaching Goal	M	SD	%
1. Develop ability to apply principles and generalizations already learned to new problems and situations	4.45	0.79	60.20
2. Develop analytic skills	4.44	0.73	56.30
3. Develop problem-solving skills	4.32	0.89	52.60
4. Develop ability to draw reasonable inferences from observations	4.10	1.02	43.50
5. Develop ability to synthesize and integrate information and ideas	4.28	0.91	51.40
6. Develop ability to think holistically: to see the whole as well as the parts	3.39	1.47	30.70
7. Develop ability to think creatively	3.78	1.07	31.50
8. Develop ability to distinguish between fact and opinion	3.38	1.57	29.50
9. Improve skill at paying attention	2.60	1.34	7.40
10. Develop ability to concentrate	2.45	1.38	5.10
11. Improve memory skills	2.06	1.19	1.40
12. Improve listening skills	2.44	1.33	5.40
13. Improve speaking skills	2.45	1.48	7.40
14. Improve reading skills	2.89	1.43	15.30
15. Improve writing skills	3.48	1.40	27.80
16. Develop appropriate study skills, strategies, and habits	3.00	1.27	9.90
17. Improve mathematical skills	2.79	1.80	23.30
18. Learn terms and facts of this subject	3.76	0.94	26.10
19. Learn concepts and theories in this subject	4.41	0.77	54.50
20. Develop skill in using materials, tools, and/or technology central to this subject	3.61	1.43	31.50
21. Learn to understand perspectives and values of this subject	3.60	1.28	25.00
22. Prepare for transfer or graduate study	2.49	1.47	8.20
23. Learn techniques and methods used to gain new knowledge in this subject	3.47	1.16	18.20
24. Learn to evaluate methods and materials in this subject	3.31	1.26	16.20
25. Learn to appreciate important contributions to this subject	3.37	1.16	16.50
26. Develop an appreciation of the liberal arts and sciences	2.36	1.44	7.40

Appendix J *(continued)*

Teaching Goal	M	SD	%
27. Develop an openness to new ideas	3.35	1.29	20.20
28. Develop an informed concern about contemporary social issues	2.15	1.65	7.10
29. Develop a commitment to exercise the rights and responsibilities of citizenship	1.72	1.53	3.70
30. Develop a lifelong love of learning	3.09	1.35	15.60
31. Develop aesthetic appreciations	1.85	1.62	6.30
32. Develop an informed historical perspective	2.54	1.49	8.20
33. Develop an informed understanding of the role of science and technology	2.74	1.55	11.40
34. Develop an informed appreciation of other cultures	1.84	1.59	4.80
35. Develop capacity to make informed ethical choices	2.32	1.74	11.90
36. Develop ability to work productively with others	2.78	1.52	12.80
37. Develop management skills	1.73	1.55	4.30
38. Develop leadership skills	1.74	1.55	4.30
39. Develop a commitment to accurate work	3.79	1.15	29.30
40. Improve ability to follow directions, instructions, and plans	2.82	1.42	9.10
41. Improve ability to organize and use time effectively	2.62	1.14	6.50
42. Develop a commitment to personal achievement	2.57	1.46	6.80
43. Develop ability to perform skillfully	3.02	1.25	8.80
44. Cultivate a sense of responsibility for one's own behavior	2.79	1.61	14.20
45. Improve self-esteem/self-confidence	2.24	1.48	5.10
46. Develop a commitment to one's own values	1.88	1.53	4.80
47. Develop respect for others	2.45	1.67	11.10
48. Cultivate emotional health and well-being	1.54	1.48	2.80
49. Cultivate physical health and well-being	1.08	1.23	0.60
50. Cultivate an active commitment to honesty	2.93	1.65	20.20
51. Develop capacity to think for oneself	4.25	0.91	47.70
52. Develop capacity to make wise decisions	3.39	1.47	24.40

Appendix K

Percentage of Respondents Rating Each Goal as "Essential" at Senior Research Universities by Academic Discipline (N= 352)

Teaching Goal	Academic Discipline							
	Acct (n = 46)	Chem (n = 43)	Comp Sci (n = 39)	Econ (n = 35)	Engl (n =50)	Math (n =43)	Mech Eng (n =49)	Psyc (n =47)
1. Develop ability to apply principles and generalizations already learned to new problems and situations	65.20	62.80	71.80	65.70	48.00	53.50	71.40	46.80
2. Develop analytic skills	73.90	46.50	61.50	74.30	72.00	48.80	49.00	27.70
3. Develop problem-solving skills	69.60	55.80	64.10	60.00	44.00	48.80	61.20	19.10
4. Develop ability to draw reasonable inferences from observations	45.70	34.90	38.50	48.60	62.00	23.30	49.00	40.40
5. Develop ability to synthesize and integrate information and ideas	58.70	44.20	51.30	40.00	80.00	27.90	63.30	38.30
6. Develop ability to think holistically: to see the whole as well as the parts	41.30	18.60	33.30	14.30	60.00	11.60	40.80	17.00
7. Develop ability to think creatively	26.10	16.30	51.30	31.40	48.00	20.90	44.90	10.60
8. Develop ability to distinguish between fact and opinion	30.40	23.30	12.80	42.90	44.00	14.00	22.40	44.70
9. Improve skill at paying attention	6.50	2.30	5.10	2.90	24.00	4.70	6.10	4.30
10. Develop ability to concentrate	2.20	2.30	5.10	2.90	12.00	7.00	6.10	2.10
11. Improve memory skills	2.20	4.70	2.60	.00	2.00	7.00	.00	2.10
12. Improve listening skills	8.70	7.00	2.60	2.90	16.00	7.00	.00	4.30
13. Improve speaking skills	15.20	7.00	7.70	2.90	14.00	.00	6.10	4.30
14. Improve reading skills	6.50	14.00	2.60	8.60	68.00	2.30	4.10	8.50
15. Improve writing skills	18.30	14.00	17.90	17.10	82.00	7.00	22.40	23.40
16. Develop appropriate study skills, strategies, and habits	4.30	16.30	12.80	34.30	18.00	9.30	4.10	10.60
17. Improve mathematical skills	4.30	16.30	43.60	34.30	.00	69.80	20.40	8.50
18. Learn terms and facts of this subject	30.40	39.50	28.20	22.90	18.00	14.00	32.70	21.30
19. Learn concepts and theories in this subject	56.50	69.80	55.30	60.00	46.00	32.60	65.30	53.20

Appendix K *(continued)*

Teaching Goal	Academic Discipline							
	Acct (n = 46)	Chem (n = 43)	Comp Sci (n = 39)	Econ (n = 35)	Engl (n =50)	Math (n =43)	Mech Eng (n =49)	Psyc (n =47)
20. Develop skill in using materials, tools, and/or technology central to this subject	45.70	23.30	43.60	40.00	18.00	25.60	36.70	21.30
21. Learn to understand perspectives and values of this subject	32.60	11.60	25.60	25.70	52.00	34.90	16.30	29.80
22. Prepare for transfer or graduate study	2.20	4.70	5.10	8.60	6.00	2.30	14.30	21.30
23. Learn techniques and methods used to gain new knowledge in this subject	8.70	14.00	28.20	11.40	23.00	7.00	20.40	27.70
24. Learn to evaluate methods and materials in this subject	15.20	7.00	12.80	14.30	24.00	2.30	6.10	42.60
25. Learn to appreciate important contributions to this subject	19.60	18.60	17.90	14.30	22.00	2.30	14.30	19.10
26. Develop an appreciation of the liberal arts and sciences	2.20	4.70	2.60	2.90	32.00	2.30	4.10	4.30
27. Develop an openness to new ideas	10.90	14.00	17.90	20.00	54.00	9.30	16.30	14.90
28. Develop an informed concern about contemporary social issues	2.20	7.00	.00	20.00	22.00	2.30	.00	4.30
29. Develop a commitment to exercise the rights and responsibilities of citizenship	2.20	4.70	.00	2.90	14.00	2.30	2.00	.00
30. Develop a lifelong love of learning	17.40	7.00	10.30	22.90	30.00	9.30	22.40	4.30
31. Develop aesthetic appreciations	.00	7.00	2.60	5.70	32.00	2.30	4.10	12.80
32. Develop an informed historical perspective	2.20	.00	5.10	14.30	36.00	.00	4.10	2.10
33. Develop an informed understanding of the role of science and technology	4.30	18.60	15.40	8.60	6.00	9.30	4.10	25.50
34. Develop an informed appreciation of other cultures	8.70	.00	.00	5.70	20.00	.00	.00	2.10
35. Develop capacity to make informed ethical choices	26.10	2.30	10.30	11.40	22.00	2.30	10.20	8.50

Appendix K *(continued)*

Teaching Goal	Academic Discipline							
	Acct (n = 46)	Chem (n = 43)	Comp Sci (n = 39)	Econ (n = 35)	Engl (n =50)	Math (n =43)	Mech Eng (n =49)	Psyc (n =47)
36. Develop ability to work productively with others	30.40	4.70	17.90	2.90	16.00	20.90	26.50	.00
37. Develop management skills	15.20	2.30	2.60	5.70	2.00	.00	6.10	2.10
38. Develop leadership skills	13.00	2.30	2.60	2.90	6.00	.00	6.10	2.10
39. Develop a commitment to accurate work	39.10	14.00	33.30	14.30	34.00	37.20	49.00	8.50
40. Improve ability to follow directions, instructions, and plans	17.40	34.90	15.40	5.70	10.00	2.30	14.30	4.30
41. Improve ability to organize and use time effectively	8.70	2.30	12.80	5.70	6.00	.00	10.20	4.30
42. Develop a commitment to personal achievement	6.50	2.30	10.30	8.60	12.00	2.30	10.20	2.10
43. Develop ability to perform skillfully for one's own behavior	10.90	4.70	15.40	8.60	18.00	4.70	6.10	.00
44. Cultivate a sense of responsibility for one’s own behavior	23.90	4.70	23.10	11.40	30.00	4.70	12.20	2.10
45. Improve self-esteem/ self- confidence	2.20	4.70	7.70	8.60	16.00	4.70	2.00	8.50
46. Develop a commitment to one's own values	2.20	2.30	7.70	8.60	14.00	2.30	2.00	.00
47. Develop respect for others	13.00	2.30	7.70	8.60	38.00	18.60	12.20	2.10
48. Cultivate emotional health and well-being	.00	2.30	.00	2.90	12.00	.00	2.00	2.10
49. Cultivate physical health and well-being	.00	.00	.00	2.90	2.00	.00	.00	.00
50. Cultivate an active commitment to honesty	23.90	18.60	28.20	17.10	24.00	23.30	18.40	6.40
51. Develop capacity to think for oneself	50.00	34.90	50.00	37.10	70.00	44.20	57.10	38.30
52. Develop capacity to make wise decisions	47.80	4.70	17.90	20.00	38.00	11.60	34.70	14.90

Appendix L

Percentage of Senior Research University Faculty Rating Each Goal as "Essential" by Biglan Classification (N = 352)

Teaching Goal	Pure-Hard	Pure-Soft	Applied-Hard	Applied-Soft
1. Develop ability to apply principles and generalizations already learned to new problems and situations	58.15	47.40	71.60	65.45
2. Develop analytic skills	47.65	39.85	55.25	74.10
3. Develop problem-solving skills	52.30	31.55	62.65	64.80
4. Develop ability to draw reasonable inferences from observations	29.10	51.20	43.75	47.15
5. Develop ability to synthesize and integrate information and ideas	36.05	71.65	45.65	49.35
6. Develop ability to think holistically: to see the whole as well as the parts	15.10	38.50	37.05	27.80
7. Develop ability to think creatively	18.60	29.30	48.10	28.90
8. Develop ability to distinguish between fact and opinion	18.65	44.35	17.60	36.65
9. Improve skill at paying attention	3.50	15.05	5.60	4.70
10. Develop ability to concentrate	4.65	7.05	5.60	2.55
11. Improve memory skills	5.85	2.05	1.30	1.10
12. Improve listening skills	7.00	10.15	1.30	5.80
13. Improve speaking skills	3.50	9.15	5.30	9.05
14. Improve reading skills	8.15	38.25	3.35	7.55
15. Improve writing skills	10.50	52.70	20.15	17.70
16. Develop appropriate study skills, strategies, and habits	12.80	14.30	8.45	19.30
17. Improve mathematical skills	43.05	10.20	32.00	19.30
18. Learn terms and facts of this subject	26.75	19.65	30.45	26.65
19. Learn concepts and theories in this subject	51.20	49.60	60.30	58.25
20. Develop skill in using materials, tools, and/or technology central to this subject	24.45	19.65	40.15	42.85
21. Learn to understand perspectives and values of this subject	23.25	40.90	20.95	29.15
22. Prepare for transfer or graduate study	3.50	13.65	9.70	5.40
23. Learn techniques and methods used to gain new knowledge in this subject	10.50	26.85	24.30	10.05
24. Learn to evaluate methods and materials in this subject	4.65	33.30	9.45	14.75
25. Learn to appreciate important contributions to this subject	10.45	20.55	16.10	16.95

Appendix L *(continued)*

Teaching Goal	Pure-Hard	Pure-Soft	Applied-Hard	Applied-Soft
26. Develop an appreciation of the liberal arts and sciences	2.33	18.15	3.35	2.55
27. Develop an openness to new ideas	11.65	34.45	17.10	15.10
28. Develop an informed concern about contemporary social issues	4.65	13.15	.00	11.10
29. Develop a commitment to exercise the rights and responsibilities of citizenship	3.50	7.00	1.00	2.55
30. Develop a lifelong love of learning	8.15	17.15	16.35	20.15
31. Develop aesthetic appreciations	4.65	19.05	3.35	2.85
32. Develop an informed historical perspective	.00	26.03	4.60	8.25
33. Develop an informed understanding of the role of science and technology	13.95	15.75	9.75	6.45
34. Develop an informed appreciation of other cultures	.00	11.05	.00	7.20
35. Develop capacity to make informed ethical choices	2.30	15.25	10.25	18.75
36. Develop ability to work productively with others	12.80	8.00	22.20	16.65
37. Develop management skills	1.15	2.05	4.35	10.45
38. Develop leadership skills	1.15	4.05	4.35	7.95
39. Develop a commitment to accurate work	25.60	21.25	41.15	26.70
40. Improve ability to follow directions, instructions, and plans	18.60	7.15	14.85	11.55
41. Improve ability to organize and use time effectively	1.15	5.15	11.50	7.20
42. Develop a commitment to personal achievement	2.30	5.15	11.50	7.55
43. Develop ability to perform skillfully for one's own behavior	4.70	9.00	10.75	9.75
44. Cultivate a sense of responsibility for one’s own behavior	4.70	16.05	17.65	17.65
45. Improve self-esteem/ self- confidence	4.70	12.25	4.85	17.65
46. Develop a commitment to one's own values	2.30	7.00	4.85	5.40
47. Develop respect for others	10.45	20.05	9.95	10.80
48. Cultivate emotional health and well-being	1.15	7.05	1.00	1.45
49. Cultivate physical health and well-being	.00	1.00	1.00	1.45

Appendix L *(continued)*

Teaching Goal	Pure-Hard	Pure-Soft	Applied-Hard	Applied-Soft
50. Cultivate an active commitment to honesty	20.95	26.45	23.30	20.50
51. Develop capacity to think for oneself	39.55	54.15	49.05	43.55
52. Develop capacity to make wise decisions	8.15	26.45	26.30	33.90

Appendix M

Percentage of Senior Research University Faculty Rating Each Goal as "Not Applicable" (N = 352).

	Teaching Goal	% Responding Not Applicable
1	Develop ability to apply principles and generalizations already learned to new problems and situations	.60
2	Develop analytic skills	.30
3	Develop problem-solving skills	.90
4	Develop ability to draw reasonable inferences from observations	1.70
5	Develop ability to synthesize and integrate information and ideas	1.10
6	Develop ability to think holistically: to see the whole as well as the parts	3.10
7	Develop ability to think creatively	1.40
8	Develop ability to distinguish between fact and opinion	12.20
9	Improve skill at paying attention	13.40
10	Develop ability to concentrate	17.00
11	Improve memory skills	19.30
12	Improve listening skills	15.60
13	Improve speaking skills	19.30
14	Improve reading skills	11.40
15	Improve writing skills	7.40
16	Develop appropriate study skills, strategies, and habits	8.80
17	Improve mathematical skills	22.70
18	Learn terms and facts of this subject	.90
19	Learn concepts and theories in this subject	.60
20	Develop skill in using materials, tools, and/or technology central to this subject	8.50
21	Learn to understand perspectives and values of this subject	.60
22	Prepare for transfer or graduate study	18.50
23	Learn techniques and methods used to gain new knowledge in this subject	3.70
24	Learn to evaluate methods and materials in this subject	6.50
25	Learn to appreciate important contributions to this subject	4.30
26	Develop an appreciation of the liberal arts and sciences	19.30
27	Develop an openness to new ideas	6.50
28	Develop an informed concern about contemporary social issues	30.70
29	Develop a commitment to exercise the rights and responsibilities of citizenship	39.20

Appendix M *(continued)*

	Teaching Goal	% Responding Not Applicable
30	Develop a lifelong love of learning	8.80
31	Develop aesthetic appreciations	36.90
32	Develop an informed historical perspective	19.00
33	Develop an informed understanding of the role of science and technology	17.90
34	Develop an informed appreciation of other cultures	36.40
35	Develop capacity to make informed ethical choices	29.80
36	Develop ability to work productively with others	16.20
37	Develop management skills	38.40
38	Develop leadership skills	38.40
39	Develop a commitment to accurate work	3.70
40	Improve ability to follow directions, instructions, and plans	14.50
41	Improve ability to organize and use time effectively	16.20
42	Develop a commitment to personal achievement	18.50
43	Develop ability to perform skillfully for one's own behavior	9.10
44	Cultivate a sense of responsibility for one’s own behavior	18.80
45	Improve self-esteem/ self- confidence	24.40
46	Develop a commitment to one's own values	34.10
47	Develop respect for others	25.30
48	Cultivate emotional health and well-being	42.60
49	Cultivate physical health and well-being	53.40
50	Cultivate an active commitment to honesty	17.90
51	Develop capacity to think for oneself	1.40
52	Develop capacity to make wise decisions	10.50

Appendix N

Frequency and Percentage of Respondents at Senior Research Universities by Independent Variable (N = 352)

Variable	Frequency	Percent
Gender		
Male	259	73.6
Female	93	26.4
Academic Rank		
Lecturer	13	3.7
Assistant Professor	76	21.6
Associate Professor	130	36.9
Professor	133	37.8
Course Level		
Freshmen/Sophomore	83	23.6
Junior/Senior	199	56.5
Graduate	70	19.9
Tenure		
Yes	263	74.7
No	89	25.3
Biglan Classification		
Applied-Hard	88	25.0
Applied-Soft	81	23.0
Pure-Hard	86	24.4
Pure-Soft	97	27.6

Appendix O

Percentage of Respondents at Senior Research Universities by Variable and Academic Discipline (N = 352)

Variable	Academic Discipline							
	Acct (n=46)	Chem (n=43)	Comp Sci (n=39)	Econ (n=35)	Engl (n=50)	Math (n=43)	Mech Eng (n=49)	Psyc (n=47)
Gender								
Male	73.9	79.1	82.1	77.1	46.0	88.4	95.9	51.1
Female	26.1	20.9	17.9	22.9	54.0	11.6	4.1	48.9
Academic Rank								
Lecturer	2.2	11.6	5.1	2.9	6.0	2.3	0.0	0.0
Assistant Professor	26.1	30.2	30.8	20.0	18.0	16.3	10.2	23.4
Associate Professor	41.3	27.9	30.8	20.0	40.0	44.2	42.9	42.6
Professor	30.4	30.2	33.3	57.1	36.0	37.2	46.9	34.0
Course Level								
Freshmen/Sophomore	6.5	51.2	17.9	17.1	12.0	60.5	10.2	17.0
Junior/Senior	67.4	25.6	41.0	60.0	78.0	25.6	75.5	70.2
Graduate	26.1	23.2	41.0	22.9	10.0	14.0	14.3	12.8
Tenure								
Yes	69.6	60.5	35.9	77.1	76.0	86.0	87.8	74.5
No	30.4	39.5	64.1	22.9	24.0	14.0	12.2	25.5

VITA

Lisa Dawn Johnson

826 Maryland Avenue
Salem, Virginia 24153
(540) 389-0753

Education

Ph. D., Educational Administration, August 1997
Program Area: Higher Education Administration
Virginia Polytechnic Institute and State University, Blacksburg, Virginia

M.S., Music Education, August 1988
Radford University, Radford, Virginia

B.M., Music Education, May 1987
Radford University, Radford, Virginia

Experience

Assistant to the Executive Vice President
Virginia Polytechnic Institute and State University
Office of the Executive Vice President
Blacksburg, Virginia
April 1997 - present

Intern, Virginia Polytechnic Institute and State University
Office of the Executive Vice President
Blacksburg, Virginia
April 1996 - March 1997

Graduate Assistant, Virginia Polytechnic Institute and State University
College of Education, Educational Leadership & Policy Studies
Blacksburg, Virginia
Fall 1995 - Spring 1996

Intern, Virginia Polytechnic Institute and State University
Office of the Associate Vice-President for Personnel & Administrative Services
Blacksburg, Virginia
August 1995 - April 1996

Vocal Music Instructor, Roanoke City Public Schools
Roanoke,Virginia
August 1988 - June 1995

Adjunct Music Instructor, Southern Virginia College for Women
Buena Vista,Virginia
Fall 1993

Adjunct Music Instructor, New River Community College
Dublin, Virginia
September 1987 - May 1988

Additional Work Experience

Music Director, Virginia Baptist Children's Home
Salem,Virginia
January 1989 - May 1992

Music Director, Roanoke Valley Junior League Children's Production
Roanoke,Virginia
1992, 1991

Camp Music Director, Peace Child Tour
Roanoke, Virginia
Summer 1990