

379
N81d
NO. 3863

ATTITUDES TOWARD TEACHING AND RESEARCH
AMONG BIOLOGY FACULTY IN TEXAS
INSTITUTIONS OF HIGHER EDUCATION

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

by

Faiz Salehi, B.S., M.Ed.

Denton, Texas

December, 1993

379
N81d
NO. 3863

ATTITUDES TOWARD TEACHING AND RESEARCH
AMONG BIOLOGY FACULTY IN TEXAS
INSTITUTIONS OF HIGHER EDUCATION

DISSERTATION

Presented to the Graduate Council of the
University of North Texas in Partial
Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

by

Faiz Salehi, B.S., M.Ed.

Denton, Texas

December, 1993

Salehi, Faiz Attitudes Toward Teaching and Research Among Biology Faculty in Texas Institutions of Higher Education. Doctor of Philosophy (College Teaching), December, 1993, 189 pp., 8 illustrations, 62 tables, references, 93 titles.

This study investigated the attitudes toward teaching and research among biology faculty in Texas institutions of higher learning. The purposes of the study were to: 1) determine what the attitudes of Texas biology faculty were toward teaching; 2) to determine the attitudes of Texas biology faculty toward research; 3) to determine if biology faculty attitudes toward teaching vary according to faculty rank; 4) to determine if biology faculty attitudes toward research vary according to faculty rank; 5) to determine if attitudes of biology faculty in Texas toward teaching vary according to institutional type; and 6) to determine if attitudes of biology faculty in Texas toward research vary according to institutional type.

Instruments were developed to assess the attitudes toward teaching and research among biology faculty in Texas institutions of higher education. Seven-hundred-and-forty biology faculty from all Texas institutions of higher learning participated in the study.

Major findings of this study were:

1. Over three-fourths of the biology faculty in Texas institutions of higher learning showed positive attitudes toward teaching.
2. More than half of the biology faculty of all ranks in Texas reported that outstanding teaching is not rewarded at their institutions.
3. Over 70 percent of the biology faculty from all institutions in Texas reported that teaching offers few opportunities for advancement.
4. More than half of the biology faculty in Texas institutions of higher learning showed positive attitudes toward research.
5. Approximately 40 percent of the biology faculty of all ranks in Texas reported that publications used for tenure and promotion at their institutions are counted, but not qualitatively evaluated.
6. More than 56 percent of the biology faculty of all ranks in Texas institutions believed that it is difficult in their departments to achieve tenure if one does not publish.

Copyright by

Faiz Salehi

1993

ACKNOWLEDGEMENTS

During the years in which my graduate education has occurred, many people have contributed to my thinking and growth. I am deeply indebted to the many individuals both inside and outside of academe, who offered me their counsel, encouragement, and wisdom. I wish to express gratitude to the following scholars, Drs. Olivia M. White, William A. Miller, and Don W. Smith. Special thanks are extended to Dr. D. Barry Lumsden for his patience, understanding, and encouragement, all of which assisted the author in the preparation of this dissertation. Also, I offer appreciative thanks to Martha A. Vest, Ann H. Weatherall, and Dr. Bryan Stewart.

The most significant acknowledgements are to my parents. I will never be able to adequately express my appreciation to them for their love and sacrifices. Without their understanding and support this study would not have been possible.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iv
LIST OF TABLES	vii
LIST OF ILLUSTRATIONS	xii
Chapter	
I. INTRODUCTION	1
Problem of the study	
Purposes of the Study	
Significance of the Study	
Research Questions	
II. REVIEW OF RELATED LITERATURE	11
Reasons for Conducting Research	
Reasons for Teaching	
III. PROCEDURES FOR DATA COLLECTION	30
Introduction	
Population	
Sampling Error	
Delimitations	
Limitations	
Development of Questionnaire Procedures	
Construction of Instrument Items	
Collection of Data	
Justification for the Mailed Questionnaire	
Disadvantages of the Mailed Questionnaire	
Reliability of the Questionnaire Developed	

	Page
Validity of the Questionnaire	
Questionnaire Distribution Procedures	
Data Analysis	
IV. PRESENTATION AND ANALYSIS OF DATA	43
Population Demographics	
V. SUMMARY OF FINDINGS, DISCUSSION, CONCLUSIONS, RECOMMENDATIONS	110
Summary of Findings	
Discussion of Findings	
Conclusions	
Recommendations	
APPENDICES	157
A: Texas Institutions of Higher Education Stratified According to the Carnegie Foundation's Classification	157
B: Carnegie Classification System for Texas Institutions of Higher Learning	164
C: Instruments	170
D: Outline of Questionnaire Distribution Procedures	174
E: Cover Letter	177
F: Permission for Use of Subjects	179
REFERENCES	181

LIST OF TABLES

Table		Page
1.	Attitudes Toward Teaching Among Biology Faculty in Texas Institutions of Higher Education.	48
2.	Teaching As a Career Is Not Worth the Sacrifice of Going to College, the Long Hours of Work, and Low Pay	49
3.	Teaching Provides As Many Opportunities for Self-expression As Does Research.	50
4.	Teaching Requires Only Mediocre Ability	51
5.	I Believe That Teaching Tends to Get One into a Rut	52
6.	Teaching Is Dull and Uneventful	53
7.	Teaching Is a Lazy Person's Job	54
8.	Teaching Requires More Than Mere Knowledge	55
9.	Outstanding Teaching Is Not Rewarded at My Institution . . .	56
10.	Teaching Offers Few Opportunities for Advancement	57
11.	Teaching Becomes Boring in a Short Time	58
12.	Teaching Stifles Ambition	59
13.	Teaching Gives Me a Great Deal of Pleasure	60

Table	Page
14. Only Unambitious Faculty Are Satisfied with Teaching	61
15. Teaching Used to Be Enjoyable for Me but Not Anymore	62
16. I Do Not Specially Like or Dislike Teaching	63
17. Teaching As a Career Is Not Worth the Sacrifice of Going to College, the Long Hours of Work, and Low Pay	64
18. Teaching Provides as Many Opportunities for Self-Expression as Does Research	65
19. Teaching Requires Only Mediocre Ability	66
20. I Believe That Teaching Tends to Get One into a Rut	67
21. Teaching Is Dull and Uneventful	68
22. Teaching Is a Lazy Person's Job	69
23. Teaching Requires More Than Mere Knowledge	70
24. Outstanding Teaching Is Not Rewarded at My Institution ..	71
25. Teaching Offers Few Opportunities for Advancement	72
26. Teaching Becomes Boring in a Short Time	73
27. Teaching Stifles Ambition	74
28. Teaching Gives Me a Great Deal of Pleasure	75

Table	Page
29. Only Unambitious Faculty Are Satisfied with Teaching	76
30. Teaching Used to Be Enjoyable for Me But Not Any More	77
31. I Do Not Specially Like or Dislike Teaching	78
32. Attitudes Toward Research Among Biology Faculty in Texas Institutions of Higher Education.	79
33. I Enjoy Conducting Research More Than I Do Teaching	80
34. I Enjoy Doing Research Too Much to Give It Up	81
35. I Do Not Specially Like or Dislike Research	82
36. Faculty Research Is a Waste of Time and Money	83
37. Research Should Be Practiced by All College and University Faculty	84
38. I Am Not Interested in Conducting Research	85
39. Faculty Research Benefits Too Few People	86
40. Research Is Frowned upon by Faculty on My Campus	87
41. Research Is Frowned upon by Administrators on My Campus	88
42. Faculty Who Engage in Research Are Generally Poor Teachers	89

Table	Page
43. Research Is Vitally Necessary For the Welfare of the Country	90
44. Research Can Advance Civilization to Higher Levels	91
45. At My Institution Publications Used for Tenure and Promotion Are Just Counted Not Qualitatively Measured	92
46. The Pressure to Publish Reduces the Quality of Teaching in My Department	93
47. In My Opinion It Is Difficult for a Person in My Department to Achieve Tenure If He or She Does Not Publish	94
48. I Enjoy Conducting Research More Than I Do Teaching	95
49. I Enjoy Doing Research Too Much to Give It Up	96
50. I Do Not Specially Like or Dislike Research	97
51. Faculty Research Is a Waste of Time and Money	98
52. Research Should Be Practiced By All College and University Faculty	99
53. I Am Not Interested In Conducting Research	100
54. Faculty Research Benefits Too Few People	101
55. Research Is Frowned Upon by Faculty on My Campus	102
56. Research Is Frowned Upon by Administrators on My Campus	103

Table	Page
57. Faculty Who Engage In Research Are Generally Poor Teachers	104
58. Research Is Vitally Necessary for the Welfare of the Country	105
59. Research Can Advance Civilization to Higher Levels	106
60. At My Institution Publications Used for Tenure and Promotion Are Just Counted Not Qualitatively Measured	107
61. The Pressure to Publish Reduces the Quality of Teaching in My Department	108
62. In My Opinion It Is Difficult for a Person in My Department to Achieve Tenure If He or She Does Not Publish	109

LIST OF ILLUSTRATIONS

Figure		Page
1.	Demographic data for biology faculty classified by ranks	44
2.	Demographic data for institutional classification	45
3.	Demographic data for faculty classified by age group	46
4.	Demographic data for faculty classified by gender	47
5.	Summary of responses from Texas biology faculty of all ranks indicating beliefs and attitudes toward teaching	112
6.	Summary of responses from Texas biology faculty of all ranks indicating beliefs and attitudes toward research	113
7.	Summary of responses from Texas biology faculty from all institutions indicating beliefs and attitudes toward teaching	115
8.	Summary of responses from Texas biology faculty from all institutions indicating beliefs and attitudes toward research	116

CHAPTER I

INTRODUCTION

College and university faculty, according to Boyer (1990), Buzza (1990), and Weaver (1986), to name a few, are vocalizing their frustrations with efforts to be good teachers, conduct research, publish, and provide services to students and communities, all at the same time. These researchers report that faculties in American institutions of higher learning recognize the conflict caused by a system that provides recognition and monetary compensation for limited tasks such as research and publication, while academic responsibilities to serve on college committees and to serve in the community that go beyond requirements are largely unrewarded. Increasingly, faculties are having spirited debates about academic priorities (Boyer, 1990).

The academic community, government, media, and general public have joined in heated discussions concerning the relative importance of teaching versus research. Linsky & Murray (1975) state that academics and nonacademics argue over, "the relationship between a professor's classroom performance and his involvement in research" (p. 90).

For years, education theorists such as Bressler (1968) believed that research is necessary to improving professors' classroom teaching skills. However, more recent research studies by Friedrich and Michalak, (1983) and Boyer (1990) do not support this notion.

Merriam (1986) states that "It is time to bring the two major functions of universities back into some kind of reasonable balance. The benefits of research are apparent. The need for liberal education is also clear. Modern society cannot evolve and grow without the benefits of research, but research can become malignant when not controlled within the framework of a humanely educated society".

Hammond, Meyer, and Miller (1969) wrote: "The debate on teaching versus research has been kept alive in recent years by the availability of research funds, the heightened visibility of campus research institute, and reduced professional teaching loads".

Madsen (1980) has written: "Faculty members of small universities should be judged by their teaching ability, not by their publications".

To understand this dilemma better, one needs to examine the history of the teaching and research debate. Merriam (1986) reminds us that the prominent place of liberal arts in education dates from the Greeks of 450 B.C. The original purpose of the liberal arts was to instruct students in

language, cultural heritage, and logical thinking. God and community were to be respected and served.

In 1694, a significant change transpired in university philosophy (Merriam, 1986). The University of Halle, under Elector Frederick of Brandenburg, implemented studies based on a new theoretical foundation. The new approach turned to investigating the physical and cultural universe by adding knowledge focused on research to supplement the classical liberal arts education. This philosophy began influencing American universities around early 1800. Faculties were hired with the understanding that they would be educational mentors, both in the classroom and beyond. Research became important to professors and changes occurred in undergraduate teaching. Lectures became the primary mode of teaching and the time once spent with students was spent researching (Merriam, 1986).

This continued throughout the 19th century at a moderate pace until the second World War. At that time, science and technology became principal aspects of the nation's security, and there were high demands for commercial goals and markets. Large industrial and government grants provided compelling incentives for university research particularly for institutions unable to afford the expensive equipment, supplies, and travel expenses. Grants enhanced faculty salaries. The costs of the grants were

below industry's costs to conduct its own research. Money appealed to administrators, who improved space, utilities, and facilities, and who began to hire researchers who attracted megadollars. Researchers with specialized skills and research grants would hopefully attract graduate students. Greater rewards were given to grantsmanship and research than to teaching (Merriam, 1986).

Ernest L. Boyer, President of the Carnegie Foundation for the Advancement of Teaching, in his report of studies on the status of higher education, stated:

Clearly, the educational and social issues now confronting the academy have changed profoundly since the first college was planted on this continent more than 350 years ago. Challenges on the campus and in society have grown, and there is a deepening conviction that the role of higher education, as well as the priorities of the professoriate, must be redefined to reflect new realities (Boyer, 1990, p. 3).

The American Association of State Colleges and Universities (AASCU) has published a statement concerning institutional missions. According to the AASCU, for more than a hundred years American colleges and universities have believed that citizens should have the chance

for high quality postsecondary education within their desired field (American Association of State Colleges and Universities [AASCU], 1984). This belief is the rationale for their existence.

The AASCU states that this institutional mission is not fixed; therefore, changes transpire "in response to . . . demands for education and to . . . changing social, economic, and political" situations (AASCU, 1984, p. 4). These institutions should always monitor the factors that influence their goals and still maintain excellence as changes occur (AASCU, 1984).

Caplow & McGee (1977) have reported that many educators believe the pressure in the academic arena comes from being paid to teach, while being valued for research productivity and publications. Crimmel (1984) wrote: "Hired to teach, but paid to publish. It is a conflict that is both unfortunate and unnecessary."

William Arrowsmith (1967) maintains that colleges fail as teaching institutions because they are corrupted internally. Faculties are selected from leading graduate institutions, and they usually change the attitude and the role of the smaller, mainly liberal arts institutions. Arrowsmith states that teaching is commonly known to be worse in universities than in colleges. Arrowsmith describes the conditions at the universities as having large numbers of students and large classes; "distinguished research

professors" facing a strong rivalry for "Federal funds, . . . political and professional pressures" which all have contributed to "downgrade and even discredit teaching" (Arrowsmith, 1967, p. 68).

Boyer (1990) states that many of the nation's four-year institutions' aims have shifted from the student to the professoriate, from broad to specific education, and from being loyal to the institution, to being loyal to the profession (p. 13). Boyer believes the professoriate needs to define campus goals and associate the institution's work more toward the actualities of modern day life. To confront today's critical academic social demands, the institution's missions should be meticulously redefined and the essence of "scholarship creatively reconsidered" (Boyer, 1990, p. 13).

In *The Condition of the Professoriate* by the Carnegie Foundation for the Advancement of Teaching (1989), the Foundation reported the results of, and conclusions about, a study of professors' attitudes toward teaching and research. The Foundation reported that over 70 percent of professors responding believed that "their interest is primarily in or leaning toward teaching" (p. 41). The Foundation also reported that this response in favor of teaching was less than in 1969.

The Foundation also states in its report that the majority of respondents concurred with the idea that teaching effectiveness should be

the principal yardstick for determining worthiness for promotion, raises, and other advancements. Contrary to the sentiments expressed about the importance of teaching, the Foundation reported that professors experienced "increased pressure to publish" (Carnegie, 1989, p. 41). The Foundation further reported that:

Nearly two-thirds of faculty say that they are engaged in work that they expect to lead to a publication, exhibition, or recital. Fifty-four percent agree that it is difficult to receive tenure without publishing, a rise from 41 percent since 1969. At four-year institutions, the figure is even higher.

Scholarship is of vital importance to the academic enterprise. Faculty, however, wonder if quantity is now more important than quality in published research. Over half believe that the *number* of publications is very important or fairly important in tenure decisions (p. 41).

One may agree with the Carnegie Foundation's assessment of this situation as disturbing. Its report states that one-third of the professors believe that the result is a decrease in the quality of teaching at their respective institutions. Further unsettling information reported was that 44

percent asserted that instruction to undergraduates has deteriorated because of "faculty overspecialization" (Carnegie, 1989, p. 41).

The Foundation reported an ironic twist to this presumed conflict between teaching and research. The faculty reported that while demands on professors to do research have increased, funding for professors to do research has decreased (Carnegie, 1989, p. 41).

Problem of the study

The problem of this study involved an exploration of the attitudes toward teaching and research among biology faculty in Texas institutions of higher education.

Purposes of the Study

The purposes of this exploratory study were to: 1) determine what the attitudes of Texas biology faculty are toward teaching; 2) to determine the attitudes of Texas biology faculty toward research; 3) to determine if biology faculty attitudes toward teaching vary according to faculty rank; 4) to determine if biology faculty attitudes toward research vary according to faculty rank; 5) to determine if attitudes of biology faculty in Texas toward teaching vary according to institutional type; and 6) to determine if attitudes

of biology faculty in Texas toward research vary according to institutional type.

Significance of the Study

The significance of this study lies in the potential insight gained from a better understanding of biology teachers' attitudes toward teaching and research. The findings of the study may also provide useful information to present and future postsecondary biology educators and may be useful to administrators or directors of faculty development programs.

Research Questions

To achieve the purposes of the study, the following six research questions were formulated:

1. What are the attitudes of biology faculty in Texas toward teaching?
2. What are the attitudes of biology faculty in Texas toward research?
3. Do the attitudes of biology faculty in Texas toward teaching vary according to faculty rank?

4. Do the attitudes of biology faculty in Texas toward research vary according to faculty rank?
5. Do biology faculty attitudes toward teaching differ according to the nature of the employing institution?
6. Do biology faculty attitudes toward research differ according to the nature of the employing institution?

Educators at the institutions listed in Appendix A were surveyed for answers to these six research questions.

CHAPTER II

REVIEW OF RELATED LITERATURE

Bowen (1978) states that the chief functions of American higher education institutes are education, research, and public service. According to Bowen's definition, the scope of education, research, and public service and their influence on students results from activities directly related to classroom work and campus wide activities. By participating and observing these activities, students develop thinking patterns, personality traits, and social skills they will use for the rest of their lives. These activities include: sports, political groups, artistic performances, exhibits, lectures, courses, fraternities and professional organizations. According to Bowen, "The purpose of research is to preserve, acquire, disseminate, interpret, and apply knowledge, and to cultivate creative frontiers in arts and sciences" (pp. 7-8).

Since the 1960s, arguments about the ever increasing presence of research institutes on American campuses have continued with fervor. Hammond, Meyer, & Miller (1969) state that schools build newer, bigger research institutes, while at the same time professors teach fewer classes. One side of the argument claims the quality of teaching deteriorates as research increases. The other side of the argument claims that professors

involved in research make better teachers (Hammond, Meyer, & Miller, 1969).

According to Kenneth E. Eble (1972), students are extremely judgmental towards their undergraduate teachers and criticize them often. The environment of higher education produces obstacles and difficulties between students and professors. Eble says that typical faculties have an attitude of respect toward teaching, but they are not usually enthusiastic unless, during discussions among colleagues, topics of interest related to teaching arise. Many faculty members are not patient enough about teaching, many find ways to lessen the load, and only a few are antagonistic towards it. By far, the most common attitude is lack of interest (Eble, 1972).

Robert M. Hutchins (1953) believes what we need are well-educated people, not restricted to one sphere but able to move from one discipline to another in society. Community needs and interests are constantly changing; therefore, it requires one to know how to deal with these demands. One needs not to confuse information and knowledge. We must not be deceived that there is so much information that we can only learn a small portion of it. This causes people to specialize in one area. One needs an

understanding of the essential ideas and the capability to communicate with them (Hutchins, 1953).

Smaller, mainly liberal arts, colleges and faculties are limited by funding in the practicality of doing research. Community colleges, regional colleges and small liberal arts colleges do not have the curricula or facilities or geographical location to attract the funding necessary to establish major research centers. Faculties at these institutions despite these conditions and teaching loads are feeling the strain of the conflict over research (Weaver, 1986). Despite these difficulties, Buzza (1990) found that the traditional view that faculty must do research and publish results in scholarly journals no longer applies only to graduate-research faculty. Many teachers and professors at small institutions, whose stated mission is teaching, feel compelled to do research acceptable to professional journals (Buzza, 1990).

According to Pierre van den Berghe (1970), the faculty, on the side of more research, have a different attitude than teaching oriented faculty. Berghe said, "Teaching is a necessary evil and an annoying distraction from more profitable ventures" (p. 71).

Jack B. Bresler (1968) studied the relationship between research and teaching using data collected from Tufts University. Bresler's literature search produced the conclusion that, "virtually all comments in the popular

literature and most references in professional journals suggested that publication and receipt of support for research somehow detract from teaching performance in the classroom" (p. 167). Bresler's statistical analysis of data collected at Tufts resulted in the position that research supports good teaching. Bresler reported, "students rated as their best instructors those faculty members who had received or were receiving government support for research" (p. 167).

Friedrich and Michalak (1983) also studied the relationship between research and teaching. Their results contrasted with Bresler's. They were on the faculty of a small liberal arts college, Franklin and Marshall. According to the data gathered at the college, only by being better organized did faculty involved in research have any advantage. They did not find any statistically significant relationship between research and teaching. As an additional contrast to Bresler, Friedrich and Michalak reported that students believe that faculty not involved in research know more about their subjects than researchers, and students study harder for nonresearchers. Friedrich and Michalak concluded that research does not make teaching better.

Joseph Tussman, in 1969, wrote,

The university is the academic community organized for the pursuit of knowledge The liberal arts college is a different enterprise. It does not assault or extend the frontiers of knowledge. It has a different mission. It cultivates human understanding. The mind of the person, not the body of knowledge, is its central concern (pp. xiii-xiv).

According to Patricia E. Higginbotham (1982), faculty will be turned down for promotion when presenting documentation supporting effectiveness in the form of positive evaluations from peers, chair, and students, but no research published in journals. Faculty members are then understandably discouraged.

Turned down on the basis of one aspect of his job, he concludes that it is self-defeating to continue to work so hard It appears that the system is forcing good teachers (ones who want to teach and advise young people) to seek employment elsewhere (p. 75).

Earl J. McGrath (1959) sees the reasons for the weakened state of liberal arts institutions to be complicated and diverse. McGrath concludes that the liberal arts institutions have lost their understanding of their special mission (McGrath, 1959).

Mervyn L. Cadwallader (1982) called for an "academic counterrevolution" and control so that liberal arts colleges can reclaim their institutional independence. In support of his call, Cadwallader quoted Alexander Meiklejohn's 1957 address at Saint John's College:

The combining of university and the college into a university college has torn into fragments the community of learning which the older college intended to be. How shall the damage be repaired? First of all, it must be separated from the university, must become a distinct and independent institution, aware of its own purpose, which is radically different from that of the university, and resolute in the pursuit of that purpose (Meiklejohn, 1957, cited in Cadwallader 1982, p. 417).

John Madsen (1980) wrote:

Faculty members of small universities should be judged by their teaching ability, not by their publications I took the trouble to look at some of the articles in the *Faculty Directory of Publications*, and nearly all of them are nonsense. There was no reason to publish them 90 percent of the publications in this country should never see print. They appear so that faculty members may publish and not perish (pp. 512-513).

According to Daniel Bell (1966), secondary schools focus on basic skills and facts while graduate or professional institutions' main interest is "specialization and technique" (p. 8). At the college level the concern "is to deal with the grounds of knowledge," not the information one learns but in what way one learns (Bell, 1986, p. 8). "The college can be the unique place where students acquire self-consciousness, historical consciousness, and methodological consciousness" (Bell, 1966 p. 8).

As members of professional groups, university professors are placed in the no win situation of deciding, "between two different and competing demands: to teach for the university, and to publish for the profession" (Martin & Berry, 1969, p. 692). Martin and Berry state that the roles are in conflict because the scholarly role of published research has increased in importance, while at the same time, the role of teacher has decreased in importance.

Kenneth E. Eble (1972) has written:

Teaching places an extraordinary demand on being believed in

A professor teaching classes while his major interests are somewhere else is, in this moralistic view, dishonest. A scholar writing books he does not quite believe in for purposes he cannot really defend is also dishonest. A faculty member taking money for research work that

serves questionable ends is dishonest. A lecturer faking a class off the top of his head is dishonest. The list is easy to add to and hard to keep within reasonable limits. Honesty may be easier for the teacher if one begins to practice self-restraint early in his career. A teacher in some sense always gives some part of himself to help develop the self of another (p. 51).

Robert N. McCauley (1982) has suggested that university administrations have become caught in a mode of stressing business-like qualities. McCauley accuses administrations of renouncing traditional academic and creative processes for the agenda of the marketplace. McCauley argues that "the 'business model' [is responsible for] the insidious [idea that] the university has a definite product, viz., knowledge" (p. 33).

According to Armando Rugarcia (1991), few can do both teaching and research well. Rugarcia suggests hiring as many professors who are both superior teachers and researchers as administrators can locate. Rugarcia recommends filling the remaining research positions with dedicated superb researchers, teaching positions with dedicated superb teachers and then giving identical honors and money to each specialty.

Rugarcia also suggested the following:

■ *Research has not been shown to improve education.*

- *Combining research and teaching ignores the educational needs of students.*
- *Research is not relevant to the professional development of most . . . students.*
- *Insisting that research be a part of every professor's activities leads to much pointless research.*
- *Research narrows perspectives; true education broadens them.*
- *Academic research diminishes the university's ability to fulfill its social mission.* (Rugarcia, 1991, pp. 21-22).

Euster and Weinbach (1986) in their study concluded that publishing can be an important criterion for rewards and promotions, but only one criterion. Other parts of professors' activities should include criteria requiring "community service, grant acquisition, and effective teaching" (p. 84).

James R. Killian, Jr., former chairman of the President's Science Advisory Committee under President Eisenhower, wrote in support of research helping teaching: "On Balance, I firmly believe that . . . the present emphasis on research in our universities has had the result in most places of improving the quality of teaching" (Killian, 1965, p. 53).

Gerson (1985) wrote an article about the Canadian Council of Universities' criticism of McGill University, and McGill's response. One of the Council's accusations was that McGill neglected teaching in favor of research. Gerson's report of McGill's statement related, "While it gives research a high priority, 'this does not mean that we neglect teaching,' It described research and teaching as 'inseparable' and said faculty research insured that teaching programs 'are of the highest quality'" (p. 25).

In the November 1965, *Journal of Higher Education*, Hans A. Schmitt quoted Benjamin Fine's essay in the *New Orleans States-Item*:

. . . Large numbers of . . . faculty members are switching from teaching to research financed by grants. There is more prestige in research. A good teacher is revered by his students He may even, on occasion, win the \$500 alumni award for best teacher of the year. On the other hand, the college researcher, with millions of dollars from the federal government, as well as private, rides high But his loyalty is to the laboratory, not the classroom. (Fine, 1965 cited in Schmitt, 1965, p. 419).

Stephen R. Turns has suggested some reasons for research and teaching as follows:

Reasons for Conducting Research:

- 1) Research activity is expected as an integral part of an academic position.
- 2) Academic-year salaries can be supplemented with support from grants and contracts.
- 3) Teaching loads can be controlled to a desired level.
- 4) Research provides an avenue for faculty development and greater knowledge of a subject.
- 5) Research is intellectually stimulating.
- 6) Certain research activities are satisfying to the ego.
- 7) Many research activities provide a sense of excitement, in and of themselves.
- 8) Some research has an easily identified benefit to society.

Reasons for Teaching:

- 1) Teaching is expected as an integral part of an academic position.
- 2) Research activity can be avoided by taking on heavy teaching loads.
- 3) Teaching is an excellent way to learn a subject.
- 4) Teaching allows the sharing of a much loved discipline.

- 5) Many teaching-related activities are intellectually stimulating.
- 6) Certain teaching activities are satisfying to the ego.
- 7) The actual act of teaching produces excitement.
- 8) Teaching provides a vehicle for helping others. (Turns, 1991, p. 24).

Wandel (1992) asked, "Why are we not teaching what we are learning in research?" (p. 7). Wandel responded to conservative opinions that claim teaching is knowledge dispersed and has no connection to research. Wandel recommended to educators at research universities a return to the Socratic method of teaching. Wandel described the Socratic method as a dialogue of questions, answers, and counter-questions between researchers and their students. "If teaching is not the 'dissemination' of knowledge, but its pursuit, . . . then teaching and research become two modes of inquiry. They become inseparable and interdependent" (p. 8).

Mooney (1991) reports that many academics agree that articles are written and published, not because of a genuine need to share valid and necessary results of research, but to justify tenure, promotions, and raises. According to Mooney, Donald Kennedy, president of Stanford University, advised restricting the quantity of publications submitted for consideration by university committees. "I strongly support the approach," says Peter E.

Wagner, Provost at the State University of New York at Binghamton. 'If Stanford's doing it, that might help'" (Mooney, 1991, p. A14).

Dennis E. Showalter (1978), in an article about the effects the publication push has had on liberal arts colleges, says:

Because of the declining job market, the increased number of job seekers, and the decreased professional mobility confronting today's higher education community, competition among professors for institutional rewards and recognition is growing From an impersonal but coldly practical viewpoint, it can be argued that this situation can only benefit the colleges changed circumstances pose significant long-term challenges to the administrations of liberal arts colleges A partial solution to the problem might be to establish more campus status symbols (pp. 166-168).

Richard Startup (1985) concluded from his study data that faculty believe they are obligated to conduct research and publish, are frustrated by the time and requirements, and are driven by the contest for jobs and advancement. Startup also concluded that science faculty, by the nature of their subject, have an advantage over other faculty in the amount and speed of output possible.

Schaefer (1990) states that faculty members of universities devoted to research are required to do research and publish, irrespective of the focus of their departments. Schaefer further states that faculties at non-research oriented four-year colleges must publish.

As a "profession" we humanists are continuing to stress the less important—dissemination in print—over the most important—dissemination in the classroom—and in so doing are forcing our undergraduate students to pay a terrible price. Indeed, we are cheating not only our students but the society that innocently supports us and that, or so I would argue, we have no other legitimate purpose than to serve (Schaefer, 1990, pp. 108-109).

Hartley and Knapper (1984) surveyed professors at the University of Keele, England and at the University of Waterloo, Canada. The answers to the survey questions between the English and the Canadians were similar. The differences came between scientists and non-scientists in their writing styles,

Arts writers go more for the argument from the 'top down' scientists write individual components from the 'bottom up' This may be connected with the greater need among

those in arts for intrinsic rewards compared with the greater need in scientists for extrinsic rewards (p. 161).

Robert A. Hicks (1974) studied 459 professors at San Jose State University and reported,

The mean teaching rating of 147 professors who had published was found to be significantly higher than the mean rating of 312 professors who had not published. While these data demonstrate the existence of a positive relationship between publishing and teaching effectiveness the relationship is thought to be slight and of little real value (p. 140).

Wilson and Wilson (1972) wrote,

To teach is to educate . . . to lead or draw outward, to foster within the student a love of knowledge and to provide skills to acquire that knowledge. Hence most teachers are *doctors* (teachers) of the love of knowledge (*philos-sophos*) A person may be a good researcher and a bad teacher. He may *not* be a good teacher unless he is also a competent and willing researcher. Teaching and research may be incompatible in the researcher; they are complementary in the teacher (p. 322).

Harry and Goldner (1972) surveyed attitudes about the effect of the professor's research on effectiveness in the classroom. The subjects were 230 faculty members and students in 324 classes at one university. From their analysis of the data, Harry and Goldner reported that, either no relationship exists between research and quality of teaching or research has a minimal positive influence on teaching quality.

The vast majority of what passes for research/publication serves only to get professors promotions, it may be appropriate to give some consideration to teaching. It can be said unequivocally that good teaching is far more complex, difficult, and demanding than mediocre research, which may explain why professors try so hard to avoid it If we were to agree that real education is virtually impossible in the huge modern universities in which some 75 percent of undergraduate students today receive their inferior educations, we would still be faced with the fact of bricks and mortar (Smith, 1990, pp. 297 & 299).

John C. Schweitzer (1989) surveyed 165 administrator members of the Association of Schools of Journalism and Mass Communication. Schweitzer's survey was intended to ascertain the journalism school administrator's viewpoint of the weight given to research in faculty

evaluations. Schweitzer reported, "the mean response was 3.33 on a 4.0 scale" (p. 990). Schweitzer also stated that administrators supported the following ideas (a) research for all faculty whatever the academic setting, (b) no separate evaluations for teachers and researchers, and (c) research does not interfere with teaching time. Schweitzer concluded that, "on average, the 'publish or perish' expectation is alive and well even in the typical undergraduate-only program (p. 991).

Virginia W. Voeks (1962) conducted a study using the University of Washington Registration Scale for measuring student-ratings. Voeks stated, "these ratings have extremely high reliability ($r=0.94$), are from unusually representative sample of each teacher's students, and are not influenced by the grades the teacher assigns" (p. 218). Voeks's opinion of publishing practices was that professors' expertise as researchers and writers of published articles have no bearing on the professors' mastery of teaching skills. Voeks declared, "effective teaching and extensive publishing are independent sets of variables" (p. 218).

Martin J. Finkelstein agrees with Voeks. Finkelstein (1984) wrote, "It would appear that research productivity and teaching effectiveness are, for the most part, rather independent traits" (p. 122).

John R. Hayes (1971) studied seventeen academic departments at Carnegie-Mellon University and tried to answer the following questions:

- (i) Are research activity and teaching ability related to each other?
- (ii) In what way do research activity and teaching ability influence classroom assignment?
- (iii) In what way do research activity and teaching ability influence promotion?

The answer to the first question is not wholly clear There was no evidence in the six relations measured that research activity and teaching ability are related.

Answers to the second and third questions appear quite clear: individuals with high research ability and high rank tend to be assigned to high-level classes Promotion is strongly related to measures of research activity but appears to be unrelated to teaching ability (p. 230).

Dent and Lewis (1976) examined student's evaluations of faculty and also several measures of research productivity for all faculty members in four social science departments at one university. They concluded that the results of their "study add to the literature available in that the lack of relationship between scholarship and teaching effectiveness is supported" (p. 10).

Hammond (1969) and colleagues said, American academic communities contain a number of structural features which promote inaccurate perceptions. Paradoxically, the ostensibly central functions of these communities—the teaching and research of faculty—are those which are misperceived, because, in general, though universities are called communities, they are not communities in fact. Their various sectors have only segmental contact with each other, thus rendering a campus-wide culture very unlikely Insofar as students, administrators, and faculty misperceive the relationship between teaching quality and research, therefore, we believe they do so for reasons specified above. On the one hand, there are factors which may cause them not to see; on the other hand, in the absence of accurate information, they may be led by other factors to assume an incorrect vision (p. 690).

CHAPTER III

PROCEDURES FOR DATA COLLECTION

Introduction

This chapter addresses the procedures and methodology for identifying and measuring attitudes among Texas biology faculty toward teaching and research. This research proposed to identify selected factors associated with attitudinal differences among college and university biology educators toward teaching and research in Texas institutions of higher education. The research was conducted by means of a survey addressing the perceptions of college and university biology educators regarding the relative importance and priority of teaching and research.

Population

Sampling means selecting a given number of subjects from a defined population as representatives of that population. One type of population is called the target population. By target population, also called universe, is meant all the members of a real or hypothetical set of people, events, or

objects to which researchers wish to generalize the results of their research (Borg & Gall, 1983).

The population for this study consisted of all biology teachers in Texas institutions of higher education. The Carnegie Foundation's classification system was used to stratify Texas colleges and universities according to categories (see Appendix A). The mission statements and educational functions of the institutions provided the basis for the system. Appendix B contains the classification system definitions (Carnegie Foundation, 1987).

Sampling Error

No sample is likely to produce results that are precisely the same as those for the entire population from which the sample is drawn (Alreck & Settle, 1985, pp. 66-67).

The degree of sampling error depends partly on the sample size. The smaller the entire population included in the sample, the greater the potential sampling error. Therefore, to control partly or reduce sampling error, the researcher needs to obtain larger samples (Alreck & Settle, 1985, p. 68).

The population for this study consisted of all biology faculty from all institutions of higher education in Texas (convenience sample). There were 1,277 biology faculty within all institutions listed in Appendix A. The discipline areas included basic biology, anatomy and physiology, microbiology, evolution, genetics, botany, zoology, and biology-miscellaneous.

Delimitations

There are 23,983 biology faculty in American institutions of higher learning (CMG, 1993). Due to resource restrictions, this study was confined to biology faculty in Texas colleges and universities.

Limitations

In this exploratory study, the attitudes toward teaching and research among biology faculty in Texas institutions of higher education were examined. One thousand, two hundred seventy-seven questionnaires were sent. Seven hundred fifty-two instruments were returned for a response rate of 58.89 percent. Only 740 questionnaires were accepted for data analysis purposes after reviewing and coding. This represented a revised rate of 57.95 percent. Furthermore, within an available population, those

who did not respond to the survey were assumed to have similar attitudes as those who did respond. Therefore, the results of this study may not be generalizable to other college faculties in disciplines or institutions that differ significantly from the disciplines or institutions represented in this research.

Development of Questionnaire Procedures

Having decided that the mailed questionnaire approach was best for the study, two questionnaires were developed with the assistance of doctoral advisory committee members. The resulting instruments were used to gather information from the population.

Construction of Instrument Items

Two instruments were used in the study. Because the literature yielded no instrument that was entirely appropriate, it became necessary to develop attitude scales that measured faculty attitudes toward research and teaching. To develop such instruments, the literature was examined for components and objectives of college biology teaching and research. Items were selected from the *Carnegie Foundation, The Condition of the*

Professoriate: Attitudes and Trends, (1989), *Purdue University Studies in Higher Education* (Remmers, H.), *Journal of Counseling Psychology* (Merwin & Di Vesta), *Journal of Abnormal and Social Psychology* (Di Vesta & Merwin), and *Journal of Clinical Psychology* (Hand, J.). Both instruments were combined into one questionnaire used in the study. Fifteen items on the instrument (odd numbered) pertained to teaching and the remaining fifteen (even numbered) pertained to research. Responses used a five-point Likert-type scale ranging from "disagree completely" to "agree completely" (see Appendix C).

Collection of Data

All 1,277 members of biology faculty within the population were mailed a cover letter, a survey instrument, and a return self-addressed, postage paid envelope. Current mailing lists of Texas biology faculty were obtained from the *College Marketing Group Information Services* (CMG, 1993) located in Wilmington, Massachusetts at a modest cost, a major advantage for this study.

According to CMG, for over two decades it has provided direct marketers with targeted lists of college and university faculty and administrators. The database of higher educational names is updated

continuously from the leading software manufacturer in direct marketing industry (CMG, 1993, p. 3).

Survey instruments were color-coded for category identification purposes, i.e., blue for research universities, green for doctorate-granting colleges and universities, yellow for comprehensive colleges and universities, gold for liberal arts colleges, white for two-year, community, junior, and technical colleges, and pink for specialized institutions.

Justification for the Mailed Questionnaire

Data which researchers gather directly are primary data. Observing, experimenting, and surveying are means for gathering primary data. Surveys may take the form of either interviews (telephone or personal) or questionnaires (Nikkhah-Azad, 1988).

In this study a mailed questionnaire was used for the following reasons. By using the United States postal system, questionnaires reach many subjects all over a large state like Texas at a relatively low cost. Subjects have more time and privacy to formulate well thought out answers on the questionnaires than over the telephone or in person. Finally, interviewer bias and recording errors do not prejudice the information (Clover & Howard, 1984, p. 125).

Because college and university biology educators are located in various geographical regions of Texas, and because funding for this study was limited, this method was determined to be the most appropriate way to collect data for the research.

Disadvantages of the Mailed Questionnaire

The major disadvantage of the mailed questionnaire is the problem of nonresponse. In addition to the problem of nonresponse, three other problems are sometimes associated with the mailed questionnaire.

1. Certain questions may be omitted or may be incorrectly answered because they are misunderstood.
2. Mailed questionnaires are usually sent only to persons who can read and write.
3. An up-to-date mailing list for the desired population may be difficult or expensive to obtain (Clover, et al., 1984, p. 126).

The problem of omitted answers was addressed by requesting that respondents answer every question. Exact and clear wording of the questions decreased the incidence of misunderstanding.

Reliability of the Questionnaire Developed

The reliability of the survey instruments developed was another methodological issue. An instrument's reliability depends on the extent to which the results are reproducible. A reliable questionnaire yields essentially the same results from repeated measures of the same or comparable version(s).

Grove and Savich (1979) suggest that there are three aspects to reliability: consistent measurement results for all items or groups, consistent responses by subjects, and the discriminating facility of the instrument. The statistical method of split-half technique can test for internal consistency. The split-half technique divides sample answers into equivalent groups and correlates the answers. Another way to test for consistency is test-retest. Test-retest uses several questions or statements on the questionnaire that have different wording to seek answers to the same item/question over separate test administrations. Administrations with high correlations are reliable.

The response pattern of the answers to questions or responses to statements indicates the discrimination of the questionnaire. A question or statement lacks discrimination if there is a high degree of consensus.

A more generalized method of estimating internal consistency has

been developed by Cronbach and is called coefficient alpha (Salvia & Yesseldyke, 1978, p. 79).

In this study, the Cronbach's correlation coefficient alpha for teaching ($r = 0.55$) and research ($r = 0.76$) items were calculated to test for reliability. These findings suggested that items within each group of teaching and research instruments were positively correlated.

Validity of the Questionnaire

Validity is another major methodological issue in survey studies.

The *validity* of a measuring instrument may be defined as the extent to which differences in scores on it reflect true differences among individuals on the characteristics that we seek to measure, rather than constant or random errors (Sellitz, Wrightman & Cook, 1976, p. 169).

According to Bernard Philips (1971) a valid instrument "successfully measures the phenomenon" (p. 197). A valid instrument accurately assesses and evaluates the established criterion.

Face Validity Approach

One way to determine the validity of a measuring instrument is to have a panel of experts critique and judge the items on the instrument for

face validity. The instrument is then refined using input from the expert panel.

The items on the instruments in this research were validated by a panel of experts. This validation procedure contributed to the establishment of the validity of the final instrument.

Content validity was established by allowing the panelists to rate each of the items as relevant/irrelevant and clear/unclear for the study. Any item receiving irrelevant or unclear response from any of the panelists was eliminated or revised and resubmitted to the panel for subsequent critique. The panel also examined the items on the instrument for comprehensiveness by determining that there were enough items presented for each issue. Panelists were encouraged to suggest additional items and were asked to evaluate the items in terms of appropriateness and clarity. Each panelist was allowed at least a month to review the instruments.

As soon as the review process was completed, a personal interview was conducted with each panelist. Comments and concerns were discussed and instruments were collected for final refinement.

Questionnaire Distribution Procedures

One key to success for any survey is a high rate of response. Pamela

L. Alreck (1985, p. 193) wrote that, "the 'cosmetic' aspects of the mail survey are much more important." The procedure for administration of the questionnaire used in this study was designed to insure the highest possible response rate (see Appendix D, Outline of Questionnaire Distribution Procedure).

Official mailing lists for all members of the sample were obtained from the *College Marketing Group Information Services* in Wilmington, Massachusetts.

Permission for use of subjects was obtained from the Institutional Review Board, Office of Research Administration at the University of North Texas (see Appendix F).

Then, on February 15, 1993, 1,277 complete questionnaire packets were sent to . . . [qualified educators]. Packet contents included (a) a cover letter . . . [Appendix E], a letter from the . . . [University of North Texas] encouraging participation, (b) an instrument, and (c) a self-addressed postage paid return envelope. Questionnaires returned by April 15, 1993, were included in the study.

Data Analysis

The Statistical Packages for the Social Sciences (SPSS/PC+),

KwikStat, StatView 512+, and the University of North Texas Computing Center were used in the analysis of data. The analysis revealed how Texas biology educators perceive the importance of various factors associated with teaching and research. Seven hundred fifty-two instruments were returned from all participating schools, except for the specialized institutions. After reviewing and coding, only 740 questionnaires were acceptable for data analysis purposes. This represented a revised response rate of 57.95 percent. Data were analyzed in relationship to each individual research question in the study.

Non-parametric statistics (Chi-square) were used to examine the association between teaching and research attitudes of biology faculty in Texas institutions of higher education. All tests of significance were conducted at the 0.05 level of significance. Discrepancies among frequency numbers for some statements are due to non-responses to those items.

The statements were analyzed to determine if they were written with a positive or negative slant. Responses that disagreed with negative statements were reported as a positive attitude. Conversely, responses that disagreed with positive statements were reported as a negative attitude. Statements 3, 13, and 23 were determined to have a positive attitude toward teaching. The remaining teaching (odd numbered) statements were

determined to have a negative slant. Statements 2, 4, 10, 22, and 24 were determined to have a positive attitude toward research. The remaining research (even numbered) statements were determined to have negative slant.

CHAPTER IV

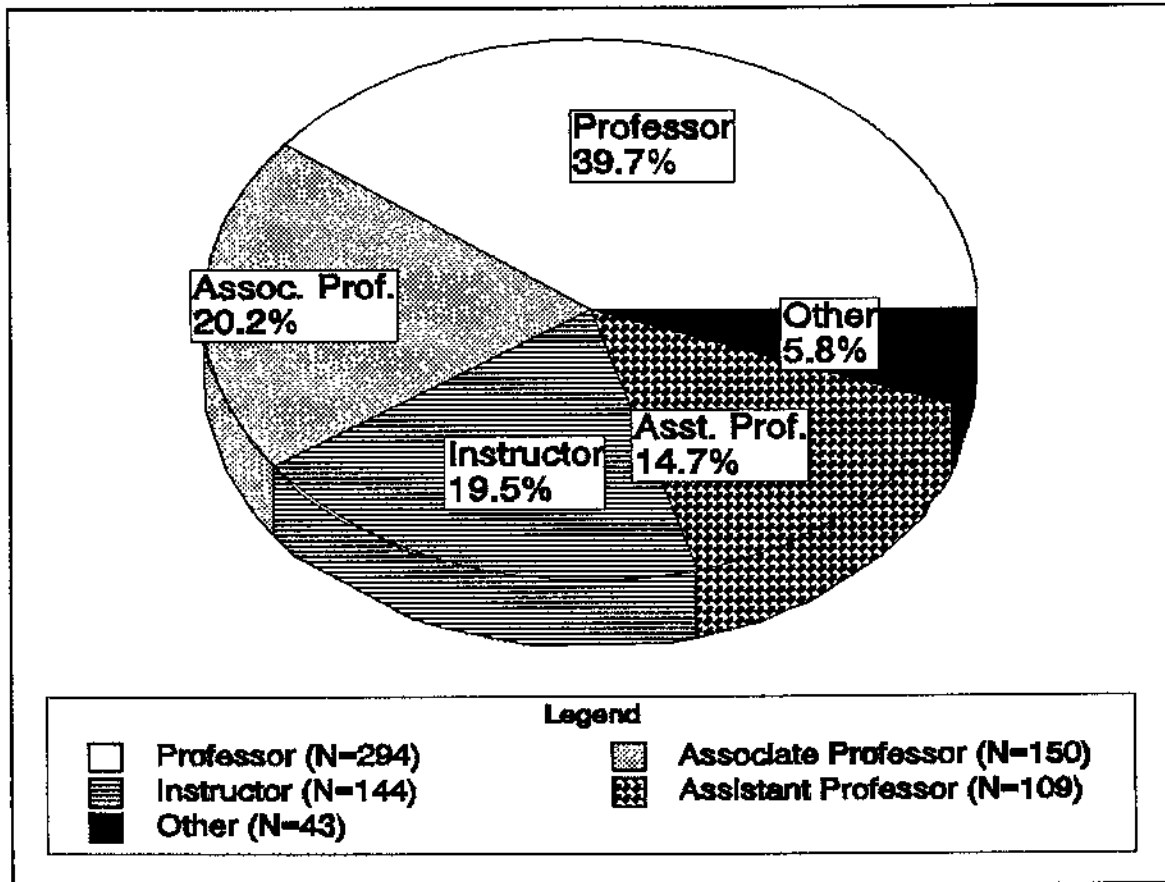
PRESENTATION AND ANALYSIS OF DATA

This study explored the attitudes of Texas postsecondary biology faculty toward teaching and research. The results of the investigation regarding attitudes of Texas biology faculty are presented in this chapter. The data are presented in four figures followed by sixty-two different tables and in three sections: (a) general attitudes of biology faculty in Texas institutions of higher education toward teaching (Table 1) and research (Table 32); (b) attitudes toward teaching of biology faculty in Texas institutions of higher education according to faculty ranks and institution type (Tables 2 through 31); and (c) attitudes toward research of biology faculty in Texas institutions of higher education according to faculty ranks and the nature of the employing institution (Tables 33 through 62).

Population Demographics

Demographic data for biology faculty in Texas institutions of higher learning are presented in pie charts (Figures 1 through 4).

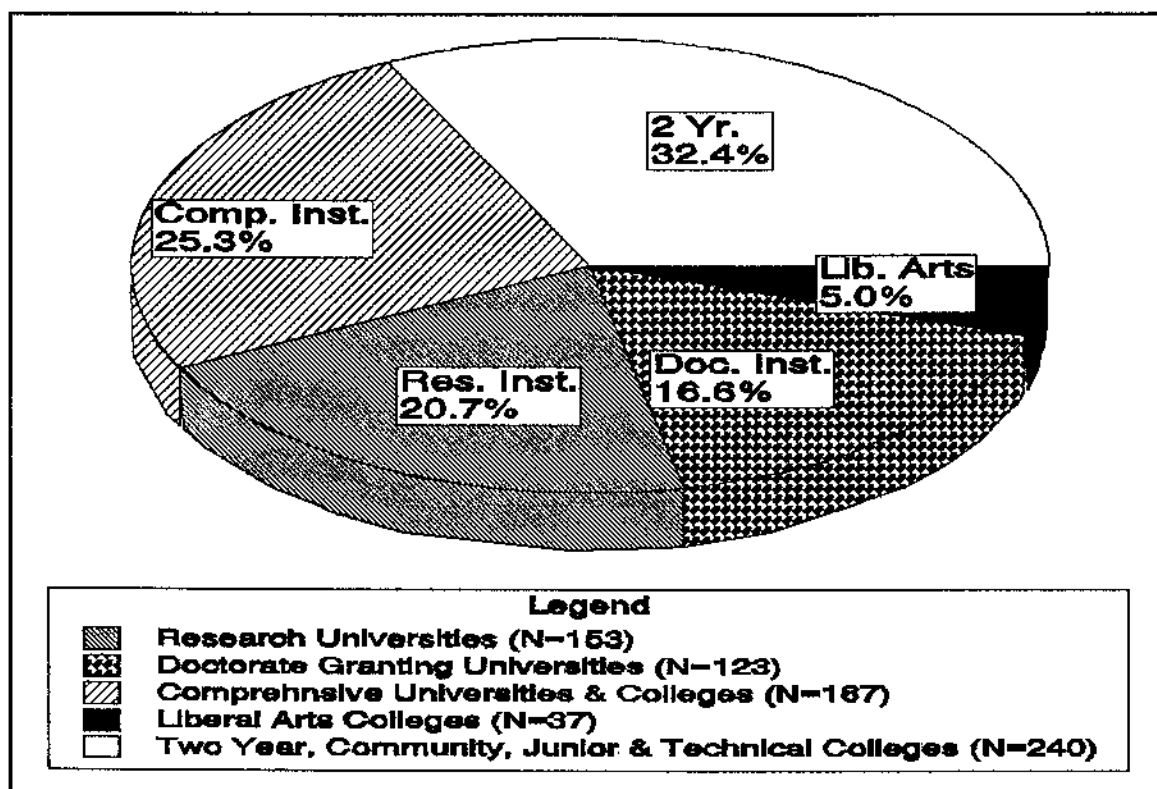
Figure 1. Demographic data for biology faculty classified by ranks (N=740).



An examination of Figure 1 reveals that approximately 40 percent of the biology faculty (39.73%) in Texas institutions of higher education who participated in the study were professors. Associate professors accounted for 20.27 percent, assistant professors for 14.73 percent, instructors for

19.46 percent, and all others (adjuncts, lecturers, no ranks, and those who did not specify) for 5.81 percent.

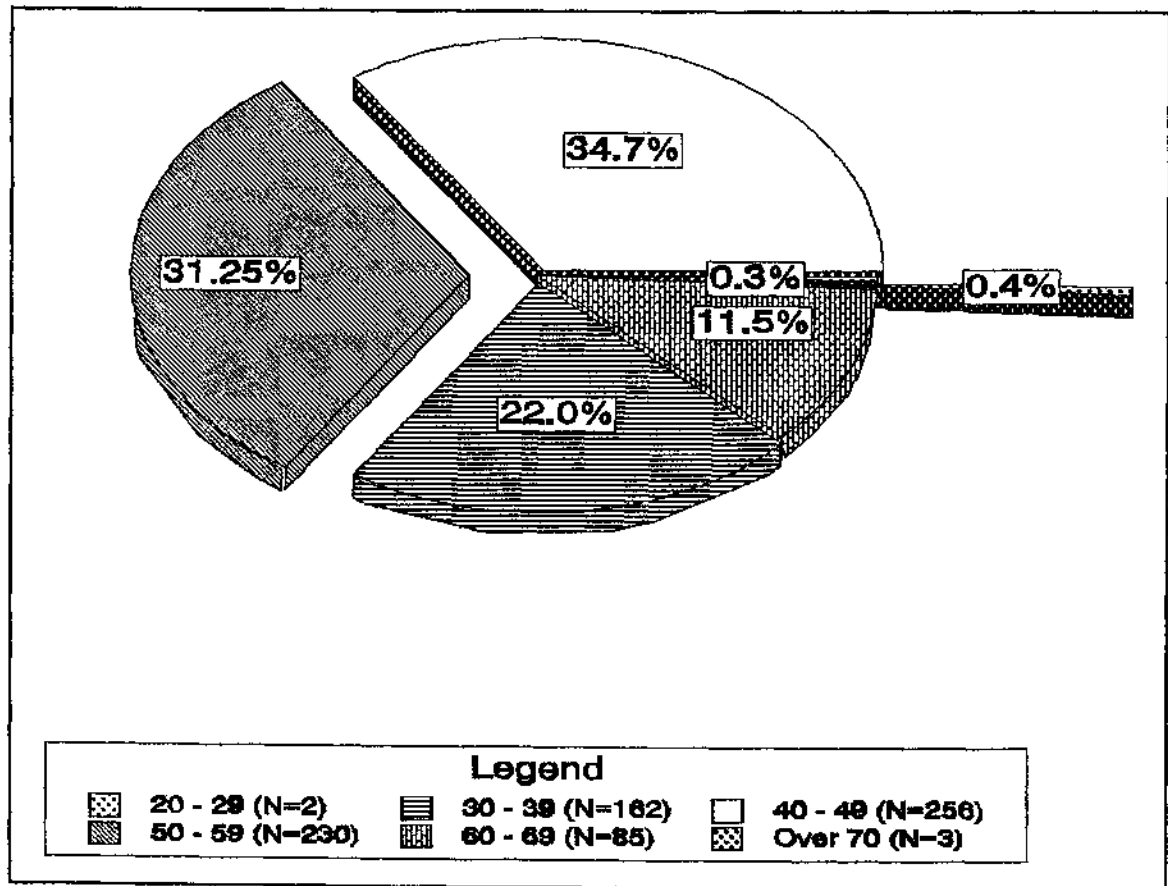
Figure 2. Demographic data for institutional classification (Total responses = 740).



According to the data presented in Figure 2, 20.68 percent of returned responses were from faculty at research universities. Faculty from doctorate-granting colleges and universities made up 16.62 percent of the surveyed population, while 25.27 percent were from comprehensive colleges

and universities, 5 percent were from liberal arts colleges, and two-year community, junior, and technical colleges in Texas, accounted for 32.43 percent of all responses.

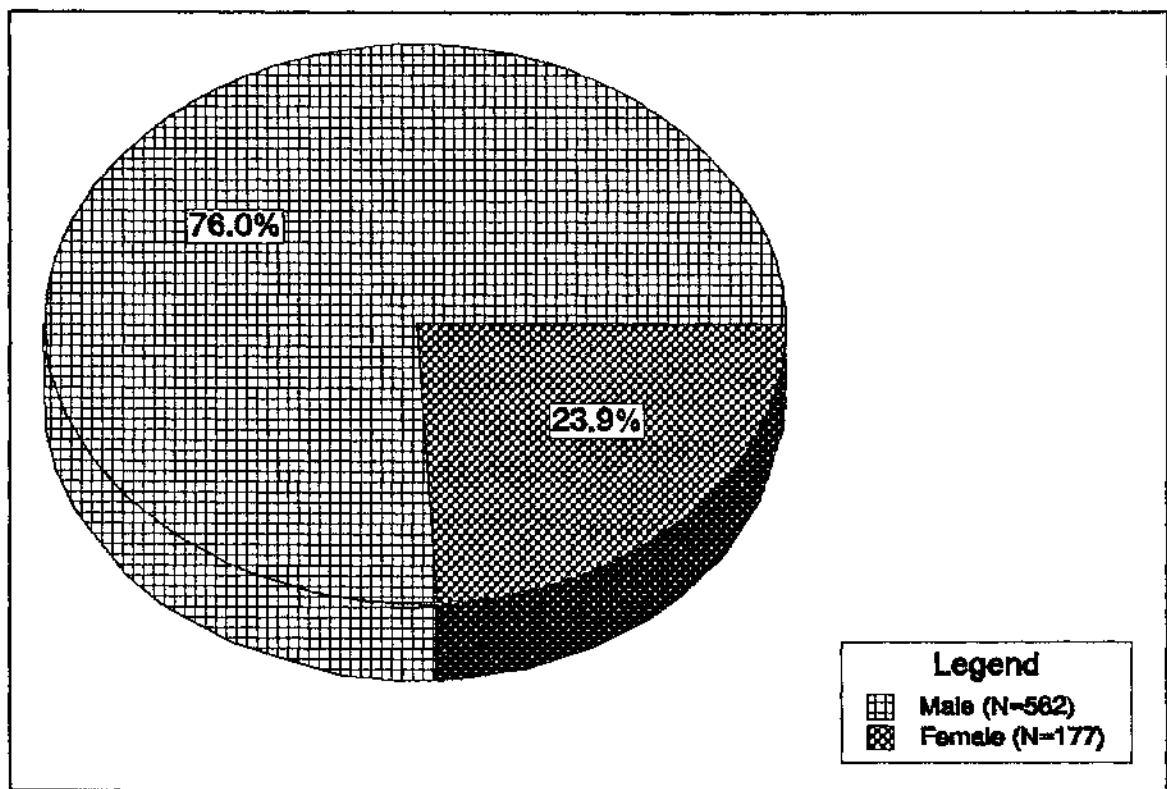
Figure 3. Demographic data for faculty classified by age group (N = 738).



As presented in Figure 3, over one-third of all faculty (34.69%) in the study were between the ages of 40 and 49. The faculty in the 50 and 59 age group made up 31.17 percent of the surveyed population. The remaining

age groups indicated by the faculty were 21.96 percent between 30 and 39, 11.52 percent between 60 and 69, 0.27 percent between 20 and 29, and 0.41 percent were over 70 years of age.

Figure 4. Demographic data for faculty classified by gender (N = 739).



An examination of Figure 4 indicates that over three-fourths of all biology faculty in Texas institutions of higher education who participated in the study were males (76.05%) and females who participated accounted for less than one-fourth (23.95%).

Table 1

Attitudes Toward Teaching Among Biology Faculty in Texas Institutions of Higher Education.

Statement Number	Indicated Positive Attitude		Indicated Negative Attitude		Indicated Neutral Attitude		Indicated Not Applicable		Total	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
1	544	73.71	139	18.83	55	7.47	0	0.00	738	100.00
3	524	71.00	139	18.83	73	9.89	2	0.27	738	100.00
5	680	91.89	29	3.92	31	4.20	0	0.00	740	100.00
7	477	64.55	223	30.18	39	5.28	0	0.00	739	100.00
9	696	94.05	22	2.97	22	2.97	0	0.00	740	100.00
11	722	97.57	8	1.08	10	1.35	0	0.00	740	100.00
13	710	95.95	25	3.38	5	0.68	0	0.00	740	100.00
15	290	39.19	402	54.32	48	6.49	0	0.00	740	100.00
17	164	22.16	522	70.54	53	7.16	1	0.14	740	100.00
19	620	83.78	74	10.00	46	6.22	0	0.00	740	100.00
21	597	80.78	63	8.53	78	10.55	1	0.14	739	100.00
23	674	91.08	47	6.35	19	2.56	0	0.00	740	100.00
25	593	80.24	87	11.77	59	7.98	0	0.00	739	100.00
27	583	78.78	87	11.76	70	9.46	0	0.00	740	100.00
29	543	74.18	44	6.01	142	19.40	3	0.41	732	100.00
TOTAL	8,417	75.93	1,911	17.24	750	6.77	7	0.06	11,085	100.00

$\chi^2 = 9248.85$ with 28 d.f.; significant at $p = 0.05$

According to the data in Table 1, there were significant differences between the attitudes of biology faculty in Texas institutions of higher education towards teaching. An examination of these data reveals that over

three-fourths (75.93%) of biology faculty showed positive attitudes toward teaching. On the other hand, 17.24% did not.

Table 2

Statement 1: Teaching As a Career Is Not Worth the Sacrifice of Going to College, the Long Hours of Work, and Low Pay (N=736).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	171	58.97	51	17.59	25	8.62	30	10.34	13	4.48	0	0.00	290	100.00
Associate Professor	82	54.30	17	11.26	12	7.95	33	21.85	7	4.64	0	0.00	151	100.00
Assistant Professor	45	41.28	28	25.69	12	11.01	19	17.43	5	4.59	0	0.00	109	100.00
Instructor	81	56.64	34	23.78	4	2.80	22	15.38	2	1.40	0	0.00	143	100.00
Others	25	58.14	9	20.93	1	2.33	6	13.95	2	4.65	0	0.00	43	100.00
TOTAL	404	54.89	139	18.89	54	7.34	110	14.95	29	3.94	0	0.00	736	100.00

$\chi^2 = 34.78$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 2, there was a significant association between faculty rank and responses to the statement: Teaching as a career is not worth the sacrifice of going to college, the long hours of work, and low pay. Almost three-fourths of the faculty (73.78%) of all ranks

disagreed (either completely or somewhat) with the statement, while 18.89% agreed (completely or somewhat).

Table 3

Statement 3: Teaching Provides As Many Opportunities for Self-expression As Does Research (N=737).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	20	6.90	32	11.03	26	8.97	74	25.52	138	47.59	0	0.00	290	100.00
Associate Professor	9	5.96	23	15.23	14	9.27	46	30.46	59	39.07	0	0.00	151	100.00
Assistant Professor	11	10.09	20	18.35	11	10.09	35	32.11	32	29.36	0	0.00	109	100.00
Instructor	8	5.56	12	8.33	15	10.42	35	24.31	72	50.00	2	1.39	144	100.00
Others	0	0.00	4	9.30	7	16.28	7	16.28	25	58.14	0	0.00	43	100.00
TOTAL	48	6.51	91	12.35	73	9.91	197	26.73	326	44.23	2	0.27	737	100.00

$\chi^2 = 28.42$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 3, there was a significant association between faculty rank and responses to the statement: Teaching provides as many opportunities for self-expression as does research. This table also reveals that 70.96% of the faculty of all ranks agreed (completely or

somewhat) with the statement, while 18.86% disagreed (completely or somewhat).

Table 4

Statement 5: Teaching Requires Only Mediocre Ability (N=739).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	239	81.84	27	9.25	9	3.08	12	4.11	5	1.71	0	0.00	292	100.00
Associate Professor	124	82.12	14	9.27	9	5.96	4	2.65	0	0.00	0	0.00	151	100.00
Assistant Professor	78	71.56	21	19.27	7	6.42	3	2.75	0	0.00	0	0.00	109	100.00
Instructor	128	88.89	8	5.56	4	2.78	4	2.78	0	0.00	0	0.00	144	100.00
Others	37	86.05	3	6.98	2	4.65	0	0.00	1	2.33	0	0.00	43	100.00
TOTAL	606	82.00	73	9.88	31	4.19	23	3.11	6	0.81	0	0.00	739	100.00

$\chi^2 = 29.22$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 4, there was a significant association between faculty rank and responses to the statement: Teaching requires only mediocre ability. This table reveals that 91.88% of the faculty of all ranks disagreed (completely or somewhat) with the statement, while 3.94% agreed (completely or somewhat).

Table 5

Statement 7: I Believe That Teaching Tends to Get One into a Rut(N=738).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	119	40.89	69	23.71	17	5.84	74	25.43	12	4.12	0	0.00	291	100.00
Associate Professor	61	40.40	32	21.19	12	7.95	43	28.48	3	1.99	0	0.00	151	100.00
Assistant Professor	27	24.77	34	31.19	6	5.50	37	33.94	5	4.59	0	0.00	109	100.00
Instructor	71	49.31	31	21.53	6	4.17	35	61.40	1	0.69	0	0.00	144	100.00
Others	15	34.88	14	32.56	1	2.33	10	23.26	3	6.98	0	0.00	43	100.00
TOTAL	291	39.70	180	24.40	42	5.69	199	26.96	24	3.25	0	0.00	738	100.00

$\chi^2 = 26.77$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 5, there was a significant association between faculty rank and responses to the statement: I believe that teaching tends to get one into a rut. Most faculty (64.10%) of all ranks indicated that they disagreed either completely or somewhat with the statement, while about one-third (30.21%) indicated that they agreed (somewhat or completely).

Table 6

Statement 9: Teaching Is Dull and Uneventful (N=736).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	243	83.79	32	11.03	9	31.03	6	2.07	0	0.00	0	0.00	290	100.00
Associate Professor	122	81.33	18	12.00	7	4.67	3	2.00	0	0.00	0	0.00	150	100.00
Assistant Professor	73	66.97	25	22.94	5	4.59	5	4.59	1	0.92	0	0.00	109	100.00
Instructor	131	90.97	10	6.94	1	0.69	2	1.39	0	0.00	0	0.00	144	100.00
Others	35	81.40	6	13.95	0	0.00	2	4.65	0	0.00	0	0.00	43	100.00
TOTAL	604	82.07	91	12.36	22	2.99	18	2.45	1	0.14	0	0.00	736	100.00

$\chi^2 = 34.11$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 6, there was a significant association between faculty rank and responses to the statement: Teaching is dull and uneventful. Almost all faculty (94.43%) members of all ranks disagreed (completely 82.07%, somewhat 12.36%) with the statement, while only 2.59% agreed.

Table 7

Statement 11: Teaching Is a Lazy Persons Job (N=739).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	268	91.78	21	7.19	2	0.68	0	0.00	1	0.34	0	0.00	292	100.00
Associate Professor	140	92.72	7	4.64	1	0.66	2	1.32	1	0.66	0	0.00	151	100.00
Assistant Professor	96	88.07	8	7.34	4	3.67	1	0.92	0	0.00	0	0.00	109	100.00
Instructor	137	95.14	3	2.08	2	1.39	1	0.69	1	0.69	0	0.00	144	100.00
Others	40	93.02	1	2.33	1	2.33	1	2.33	0	0.00	0	0.00	43	100.00
TOTAL	681	92.15	40	5.41	10	1.35	5	0.68	3	0.41	0	0.00	739	100.00

$\chi^2 = 18.72$ with 16 d.f.; not significant at $p = 0.05$

According to the data in Table 7, there was not a significant association between faculty rank and responses to the statement: Teaching is a lazy person's job. Almost all faculty members (97.56%) of all ranks disagreed (completely or somewhat) with the statement, while only 1.09% agreed (completely or somewhat).

Table 8

Statement 13: Teaching Requires More Than Mere Knowledge (N=739).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	7	2.40	1	0.34	2	0.68	26	8.90	256	87.67	0	0.00	292	100.00
Associate Professor	5	3.31	2	1.32	1	0.66	9	5.96	134	88.74	0	0.00	151	100.00
Assistant Professor	2	1.83	1	0.92	0	0.00	15	13.76	91	83.49	0	0.00	109	100.00
Instructor	4	2.78	3	2.08	1	0.69	6	4.17	130	90.28	0	0.00	144	100.00
Others	0	0.00	0	0.00	1	2.33	4	9.30	38	88.37	0	0.00	43	100.00
TOTAL	18	2.44	7	0.95	5	0.68	60	8.12	649	87.82	0	0.00	739	100.00

$\chi^2 = 16.50$ with 16 d.f.; not significant at $p = 0.05$

According to the data in Table 8, there was not a significant association between faculty rank and responses to the statement: Teaching requires more than mere knowledge. Almost all faculty members (95.94%) of all ranks agreed (completely or somewhat) with the statement, while only 3.39% disagreed (completely or somewhat).

Table 9

Statement 15: Outstanding Teaching Is Not Rewarded at My Institution

(N=740).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	63	21.50	67	22.87	14	4.78	85	29.01	64	21.84	0	0.00	293	100.00
Associate Professor	31	20.53	29	19.21	6	3.97	46	30.46	39	25.83	0	0.00	151	100.00
Assistant Professor	12	11.01	23	21.10	15	13.76	36	33.03	23	21.10	0	0.00	109	100.00
Instructor	24	16.67	24	16.67	13	9.03	54	37.50	29	20.14	0	0.00	144	100.00
Others	6	13.95	12	27.91	0	0.00	16	37.21	9	20.93	0	0.00	43	100.00
TOTAL	136	18.38	155	20.95	48	6.49	237	32.03	164	22.16	0	0.00	740	100.00

 $\chi^2 = 28.71$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 9, there was a significant association between faculty rank and responses to the statement: Outstanding teaching is not rewarded at my institution. Over half of the faculty (54.19%) of all ranks agreed with the statement (completely or somewhat), while 39.33% disagreed (completely or somewhat).

Table 10

Statement 17: Teaching Offers Few Opportunities for Advancement(N=737).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	32	11.03	41	14.14	22	7.59	142	48.97	53	18.28	0	0.00	290	100.00
Associate Professor	14	9.27	20	13.25	10	6.62	68	45.03	39	25.83	0	0.00	151	100.00
Assistant Professor	6	5.50	19	17.43	7	6.42	50	45.87	27	24.77	0	0.00	109	100.00
Instructor	12	8.33	17	11.80	9	6.25	71	49.31	34	23.61	1	0.69	144	100.00
Others	2	4.65	1	2.33	5	11.63	23	53.49	12	27.91	0	0.00	43	100.00
TOTAL	66	8.96	98	13.30	53	7.19	354	48.03	165	22.39	1	0.14	737	100.00

$\chi^2 = 15.76$ with 16 d.f.; not significant at $p = 0.05$

According to the data in Table 10, there was not a significant association between faculty rank and responses to the statement: Teaching offers few opportunities for advancement. The majority (70.42%) of the faculty agreed either completely or somewhat with the statement. A minority (22.26%) disagreed completely or somewhat.

Table 11

Statement 19: Teaching Becomes Boring in a Short Time (N=739).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	203	69.52	48	16.44	17	5.82	17	5.82	7	2.40	0	0.00	292	100.00
Associate Professor	97	64.24	30	19.87	6	3.97	13	8.61	5	3.31	0	0.00	151	100.00
Assistant Professor	50	45.87	26	23.85	14	12.84	16	14.68	3	2.75	0	0.00	109	100.00
Instructor	98	68.06	32	22.22	6	4.17	8	5.56	0	0.00	0	0.00	144	100.00
Others	26	60.47	9	20.93	3	6.98	4	9.30	1	2.33	0	0.00	43	100.00
TOTAL	474	64.14	145	19.62	46	6.22	58	7.85	16	2.17	0	0.00	739	100.00

$\chi^2 = 33.95$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 11, there was a significant association between faculty rank and responses to the statement: Teaching becomes boring in a short time. Among all faculty ranks, 83.76% disagreed (completely or somewhat) with the statement, while 10.02% agreed (completely or somewhat).

Table 12

Statement 21: Teaching Stifles Ambition (N=738).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	198	67.81	50	17.12	22	7.53	20	6.84	2	0.68	0	0.00	292	100.00
Associate Professor	104	68.42	23	15.13	13	8.55	11	7.24	1	0.68	0	0.00	152	100.00
Assistant Professor	45	41.67	23	21.30	25	23.15	15	13.89	0	0.00	0	0.00	108	100.00
Instructor	97	67.83	28	19.58	10	6.99	7	4.90	0	0.00	1	0.70	143	100.00
Others	24	55.81	7	16.30	7	16.30	5	11.63	0	0.00	0	0.00	43	100.00
TOTAL	468	63.41	131	17.75	77	10.43	58	7.86	3	0.41	1	0.14	738	100.00

$\chi^2 = 29.73$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 12, there was a significant association between faculty rank and responses to the statement: Teaching stifles ambition. This table reveals that 81.16% of faculty members of all ranks disagreed (completely or somewhat) with the statement, while 8.27% agreed (completely or somewhat).

Table 13

Statement 23: Teaching Gives Me a Great Deal of Pleasure (N=739).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	9	3.08	8	2.74	5	1.71	66	22.60	204	69.86	0	0.00	292	100.00
Associate Professor	6	3.97	5	3.31	6	3.97	42	27.81	92	60.93	0	0.00	151	100.00
Assistant Professor	3	2.75	9	8.26	7	6.42	33	30.28	57	52.29	0	0.00	109	100.00
Instructor	4	2.78	1	0.69	1	0.69	21	14.58	117	81.25	0	0.00	144	100.00
Others	2	4.88	0	0.00	0	0.00	9	20.93	32	74.42	0	0.00	43	100.00
TOTAL	24	3.25	23	3.11	19	2.57	171	23.14	502	67.93	0	0.00	739	100.00

$\chi^2 = 43.24$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 13, there was a significant association between faculty rank and responses to the statement: Teaching gives me a great deal of pleasure. This table reveals that 91.07% of the faculty of all ranks agreed with the statement (completely or somewhat), while only 6.36% disagreed (completely or somewhat).

Table 14

Statement 25: Only Unambitious Faculty Are Satisfied with Teaching(N=739).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	176	60.27	46	15.75	33	11.30	26	8.90	11	3.77	0	0.00	292	100.00
Associate Professor	98	64.90	24	15.89	10	6.62	15	9.93	4	2.65	0	0.00	151	100.00
Assistant Professor	65	59.63	18	16.51	7	6.42	16	14.68	3	2.75	0	0.00	109	100.00
Instructor	115	79.86	16	11.11	6	4.17	4	2.78	3	2.08	0	0.00	144	100.00
Others	35	81.40	2	4.65	3	6.98	2	4.65	1	2.32	0	0.00	43	100.00
TOTAL	489	66.17	106	14.34	59	7.98	63	8.53	22	2.98	0	0.00	739	100.00

$\chi^2 = 32.85$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 14, there was a significant association between faculty rank and responses to the statement: Only unambitious faculty are satisfied with teaching. This table reveals that 80.51% of faculty of all ranks disagreed (completely or somewhat) with the statement, while 11.51% agreed (completely or somewhat).

Table 15

Statement 27: Teaching Used to Be Enjoyable for Me but Not Anymore
(N=739).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	174	59.59	62	21.23	22	7.53	31	10.62	3	1.03	0	0.00	292	100.00
Associate Professor	93	61.58	22	14.57	13	8.61	21	13.91	2	1.32	0	0.00	151	100.00
Assistant Professor	52	47.71	19	17.43	22	20.18	13	11.93	3	2.75	0	0.00	109	100.00
Instructor	108	75.00	18	12.50	9	6.25	8	5.56	1	0.69	0	0.00	144	100.00
Others	27	62.79	7	16.28	4	9.30	3	6.98	2	4.65	0	0.00	43	100.00
TOTAL	454	61.43	128	17.32	70	9.47	76	10.28	11	1.49	0	0.00	739	100.00

$\chi^2 = 40.04$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 15, there was a significant association between faculty rank and responses to the statement: Teaching used to be enjoyable for me, but not any more. Over three-fourths of faculty (78.75%) of all ranks disagreed (completely or somewhat) with the statement, while 11.77% agreed (completely or somewhat).

Table 16

Statement 29: I Do Not Specially Like or Dislike Teaching (N=731).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	174	60.00	46	15.86	53	18.28	13	4.48	3	1.03	1	0.34	290	100.00
Associate Professor	90	60.40	23	15.44	26	17.45	5	3.36	3	2.01	2	1.34	149	100.00
Assistant Professor	52	48.60	17	15.89	30	28.04	5	4.67	3	2.80	0	0.00	107	100.00
Instructor	90	62.94	20	13.97	25	17.48	2	1.40	6	4.20	0	0.00	143	100.00
Others	26	61.90	4	9.52	8	19.05	3	7.14	1	2.38	0	0.00	42	100.00
TOTAL	432	59.10	110	15.05	142	19.43	28	3.83	16	2.19	3	0.41	731	100.00

$\chi^2 = 17.06$ with 16 d.f.; not significant at $p = 0.05$

According to the data in Table 16, there was not a significant association between faculty rank and responses to the statement: I do not specially like or dislike teaching. Almost three-fourths of the faculty (74.15%) of all ranks disagreed (completely or somewhat) with the statement, while 6.02% agreed (completely or somewhat) and 19.43% neither agreed nor disagreed.

Table 17

Statement 1: Teaching As a Career Is Not Worth the Sacrifice of Going to College, the Long Hours of Work, and Low Pay (N=738).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	81	52.94	26	16.94	15	9.80	25	16.34	6	3.92	0	0.00	153	100.00
Doctorate Granting Universities	61	49.59	14	11.38	15	12.20	23	18.70	10	8.13	0	0.00	123	100.00
Comprehensive Universities & Colleges	98	52.69	43	23.12	14	7.56	26	13.98	5	2.69	0	0.00	186	100.00
Liberal Arts Colleges	21	56.76	8	21.62	0	0.00	7	18.92	1	2.70	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	144	60.25	48	20.08	11	4.60	29	12.13	7	2.93	0	0.00	239	100.00
TOTAL	405	54.88	139	18.83	55	7.45	110	14.90	29	3.93	0	0.00	738	100.00

$\chi^2 = 28.59$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 17, there was a significant association between type of institution and responses to the statement: Teaching as a career is not worth the sacrifice of going to college, the long hours of work, and low pay. About three-fourths of the faculty (73.71%) from all institutions disagreed (completely or somewhat) with the statement, while 18.83% agreed (completely or somewhat).

Table 18

Statement 3: Teaching Provides as Many Opportunities for Self-Expression as Does Research (N=738).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	7	4.61	27	17.76	18	11.84	42	27.63	58	38.16	0	0.00	152	100.00
Doctorate Granting Universities	7	5.69	19	15.45	14	11.38	35	28.46	48	39.02	0	0.00	123	100.00
Comprehensive Universities & Colleges	17	9.14	15	8.06	20	10.75	59	31.72	75	40.32	0	0.00	186	100.00
Liberal Arts Colleges	1	2.70	4	10.81	0	0.00	14	37.84	18	48.65	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	16	6.67	26	10.83	21	8.75	46	19.17	129	53.75	2	0.83	240	100.00
TOTAL	48	6.50	91	12.33	73	9.89	196	26.56	328	44.44	2	0.27	738	100.00

$$\chi^2 = 33.11 \text{ with } 16 \text{ d.f.; significant at } p = 0.05$$

According to the data in Table 18, there was a significant association between type of institution and responses to the statement: Teaching provides as many opportunities for self-expression as does research. This table reveals that 71% of the faculty from all institutions agreed (completely or somewhat) with the statement, while 18.83% disagreed (completely or somewhat).

Table 19

Statement 5: Teaching Requires Only Mediocre Ability (N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	116	75.82	16	10.46	11	7.19	8	5.23	2	1.31	0	0.00	153	100.00
Doctorate Granting Universities	91	73.98	19	15.45	9	7.32	3	2.44	1	0.81	0	0.00	123	100.00
Comprehensive Universities & Colleges	157	83.96	18	9.63	5	2.67	6	3.21	1	0.53	0	0.00	187	100.00
Liberal Arts Colleges	32	86.49	4	10.81	0	0.00	1	2.70	0	0.00	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	211	87.92	16	6.67	6	2.50	5	2.08	2	0.83	0	0.00	240	100.00
TOTAL	607	82.03	73	9.86	31	4.20	23	3.11	6	0.81	0	0.00	740	100.00

$\chi^2 = 23.89$ with 16 d.f.; not significant at $p = 0.05$

According to the data in Table 19, there was not a significant association between type of institution and responses to the statement: Teaching requires only mediocre ability. Almost all faculty (91.89%) from all institutions disagreed with the statement either completely or somewhat, while only 3.92% agreed (completely or somewhat).

Table 20

Statement 7: I Believe That Teaching Tends to Get One into a Rut(N=739).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	60	39.22	30	19.61	18	11.76	38	24.84	7	4.58	0	0.00	153	100.00
Doctorate Granting Universities	46	37.40	40	32.52	3	2.44	31	25.20	3	2.44	0	0.00	123	100.00
Comprehensive Universities & Colleges	67	36.02	45	24.19	9	4.84	56	30.11	9	4.84	0	0.00	186	100.00
Liberal Arts Colleges	12	32.43	11	29.73	3	8.11	11	29.73	0	0.00	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	109	45.42	57	23.75	6	2.50	63	26.25	5	2.08	0	0.00	240	100.00
TOTAL	294	39.78	183	24.76	39	5.28	199	26.93	24	3.25	0	0.00	739	100.00

$\chi^2 = 32.57$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 20, there was a significant association between type of institution and responses to the statement: I believe that teaching tends to get one into a rut. Most faculty (64.54%) from all institutions disagreed (completely or somewhat) with the statement. On the other hand, about one-third (30.18%) agreed (completely or somewhat).

Table 21

Statement 9: Teaching Is Dull and Uneventful (N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	118	77.12	23	15.03	6	3.92	6	3.92	0	0.00	0	0.00	153	100.00
Doctorate Granting Universities	90	73.17	25	20.33	6	4.88	2	1.63	0	0.00	0	0.00	123	100.00
Comprehensive Universities & Colleges	159	85.03	16	8.56	6	3.21	5	2.67	1	0.53	0	0.00	187	100.00
Liberal Arts Colleges	29	78.38	5	13.51	0	0.00	1	2.70	2	5.41	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	209	87.08	22	9.17	4	1.67	5	2.08	0	0.00	0	0.00	240	100.00
TOTAL	605	81.76	91	12.30	22	2.97	19	2.57	3	0.41	0	0.00	740	100.00

$\chi^2 = 45.31$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 21, there was a significant association between type of institution and responses to the statement: Teaching is dull and uneventful. Almost all of the faculty (94.06%) from all institutions disagreed (completely or somewhat) with the statement, while only 2.98% agreed (completely or somewhat).

Table 22

Statement 11: Teaching Is a Lazy Persons Job (N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	140	91.50	10	6.54	3	1.96	0	0.00	0	0.00	0	0.00	153	100.00
Doctorate Granting Universities	108	87.80	13	10.57	1	0.81	1	0.81	0	0.00	0	0.00	123	100.00
Comprehensive Universities & Colleges	172	91.98	11	5.88	3	1.60	1	0.53	0	0.00	0	0.00	187	100.00
Liberal Arts Colleges	35	94.59	0	0.00	0	0.00	0	0.00	2	5.41	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	227	94.58	6	2.50	3	1.25	3	1.25	1	0.42	0	0.00	240	100.00
TOTAL	682	92.16	40	5.41	10	1.35	5	0.68	3	0.41	0	0.00	740	100.00

$\chi^2 = 41.22$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 22, there was a significant association between type of institution and responses to the statement: Teaching is a lazy person's job. Almost all of the faculty (97.57%) from all institutions disagreed with the statement (completely or somewhat), while only 1.09% agreed (completely or somewhat).

Table 23

Statement 13: Teaching Requires More Than Mere Knowledge (N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	0	0.00	1	0.65	4	2.61	15	9.80	133	86.93	0	0.00	153	100.00
Doctorate Granting Universities	6	4.88	1	0.81	0	0.00	20	16.26	96	78.05	0	0.00	123	100.00
Comprehensive Universities & Colleges	4	2.14	3	1.60	0	0.00	15	8.02	165	88.24	0	0.00	187	100.00
Liberal Arts Colleges	1	2.70	0	0.00	0	0.00	3	8.11	33	89.19	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	7	2.92	2	0.83	1	0.42	7	2.92	223	92.92	0	0.00	240	100.00
TOTAL	18	2.43	7	0.95	5	0.68	60	8.11	650	87.84	0	0.00	740	100.00

$\chi^2 = 40.22$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 23, there was a significant association between type of institution and responses to the statement: Teaching requires more than mere knowledge. This reveals that 95.95% of the faculty from all institutions agreed with the statement (completely or somewhat), while only 3.38% disagreed (completely or somewhat).

Table 24

Statement 15: Outstanding Teaching Is Not Rewarded at My Institution(N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	22	14.38	33	21.57	13	8.50	49	32.03	36	23.53	0	0.00	153	100.00
Doctorate Granting Universities	17	13.82	34	27.64	7	5.69	40	32.52	25	20.33	0	0.00	123	100.00
Comprehensive Universities & Colleges	44	23.53	41	21.93	12	6.42	54	28.88	36	19.25	0	0.00	187	100.00
Liberal Arts Colleges	7	18.92	7	18.92	2	5.41	14	37.84	7	18.92	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	46	19.17	39	16.25	14	5.83	80	33.33	61	25.42	0	0.00	240	100.00
TOTAL	136	18.38	154	20.81	48	6.49	237	32.03	165	22.30	0	0.00	740	100.00

$\chi^2 = 15.62$ with 16 d.f.; not significant at $p = 0.05$

According to the data in Table 24, there was not a significant association between type of institution and responses to the statement: Outstanding teaching is not rewarded at my institution. Over half of the faculty (54.33%) from all institutions agreed (completely or somewhat) with the statement, while 39.19% disagreed (completely or somewhat).

Table 25

Statement 17: Teaching Offers Few Opportunities for Advancement(N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	8	5.23	17	11.11	10	6.54	73	47.71	45	29.41	0	0.00	153	100.00
Doctorate Granting Universities	9	7.32	14	11.38	6	4.88	61	49.59	33	26.83	0	0.00	123	100.00
Comprehensive Universities & Colleges	21	11.23	23	12.30	18	9.63	96	51.34	29	15.51	0	0.00	187	100.00
Liberal Arts Colleges	2	5.41	11	29.73	1	2.70	18	48.65	5	13.51	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	26	10.83	33	13.75	18	7.50	107	44.58	55	22.92	1	0.42	240	100.00
TOTAL	66	8.92	98	13.24	53	7.16	355	47.97	167	22.57	1	0.14	740	100.00

$\chi^2 = 28.26$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 25, there was a significant association between type of institution and responses to the statement: Teaching offers few opportunities for advancement. This table reveals that 70.54% of the faculty from all institutions agreed (completely or somewhat) with the statement, while 22.16% disagreed (completely or somewhat).

Table 26

Statement 19: Teaching Becomes Boring in a Short Time (N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	88	57.52	29	18.95	14	9.15	19	12.42	3	1.96	0	0.00	153	100.00
Doctorate Granting Universities	71	57.72	35	28.46	7	5.69	8	6.50	2	1.63	0	0.00	123	100.00
Comprehensive Universities & Colleges	122	65.24	31	16.58	10	5.35	19	10.16	5	2.67	0	0.00	187	100.00
Liberal Arts Colleges	24	64.86	7	18.92	1	2.70	2	5.41	3	8.11	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	170	70.83	43	17.92	14	5.83	10	4.17	3	1.25	0	0.00	240	100.00
TOTAL	475	64.19	145	19.59	46	6.22	58	7.84	16	2.16	0	0.00	740	100.00

$$\chi^2 = 30.38 \text{ with } 16 \text{ d.f.; significant at } p = 0.05$$

According to the data in Table 26, there was a significant association between type of institution and responses to the statement: Teaching becomes boring in a short time. This table reveals that 83.78% of the faculty from all institutions disagreed (completely or somewhat) with the statement, while 10% agreed (completely or somewhat).

Table 27

Statement 21: Teaching Stifles Ambition (N=739).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Research Universities	94	61.44	26	16.99	24	15.59	9	5.88	0	0.00	0	0.00	153	100.00
Doctorate Granting Universities	77	62.60	25	20.33	7	5.69	12	9.76	2	1.63	0	0.00	123	100.00
Comprehensive Universities & Colleges	118	63.44	36	19.35	17	9.14	14	7.53	1	0.54	0	0.00	186	100.00
Liberal Arts Colleges	22	59.46	7	18.92	5	13.51	3	8.11	0	0.00	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	158	65.83	35	14.58	25	10.42	20	8.33	1	0.42	1	0.42	240	100.00
TOTAL	469	63.46	129	17.46	78	10.55	58	7.85	4	0.54	1	0.14	739	100.00

$\chi^2 = 20.09$ with 16 d.f.; not significant at $p = 0.05$

According to the data in Table 27, there was not a significant association between type of institution and responses to the statement: Teaching stifles ambition. This table reveals that 80.92% of the faculty from all institutions disagreed with the statement (completely or somewhat), while 8.36% agreed (completely or somewhat).

Table 28

Statement 23: Teaching Gives Me a Great Deal of Pleasure (N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	1	0.65	8	5.23	5	3.27	54	35.29	85	55.56	0	0.00	153	100.00
Doctorate Granting Universities	4	3.25	8	6.50	9	7.32	32	26.02	70	56.91	0	0.00	123	100.00
Comprehensive Universities & Colleges	5	2.67	4	2.14	4	2.14	44	23.53	130	69.52	0	0.00	189	100.00
Liberal Arts Colleges	2	5.41	0	0.00	1	2.70	8	21.62	26	70.27	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	12	5.00	3	1.25	0	0.00	33	13.75	192	80.00	0	0.00	240	100.00
TOTAL	24	3.24	23	3.11	19	2.57	171	23.11	503	67.97	0	0.00	740	100.00

$\chi^2 = 65.04$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 28, there was a significant association between type of institution and responses to the statement: Teaching gives me a great deal of pleasure. This table reveals that 91.08% of the faculty from all institutions agreed (completely or somewhat) with the statement, while 6.35% disagreed (completely or somewhat).

Table 29

Statement 25: Only Unambitious Faculty Are Satisfied with Teaching(N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	82	53.59	26	16.99	18	11.76	21	13.73	6	3.92	0	0.00	153	100.00
Doctorate Granting Universities	63	51.22	24	19.51	10	18.13	20	16.26	6	4.88	0	0.00	123	100.00
Comprehensive Universities & Colleges	122	65.24	30	16.04	18	9.63	13	6.95	4	2.14	0	0.00	187	100.00
Liberal Arts Colleges	27	72.97	5	13.51	1	2.70	2	5.41	2	5.41	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	196	81.67	21	8.75	12	5.00	7	2.92	4	1.67	0	0.00	240	100.00
TOTAL	490	66.22	106	14.32	59	7.97	63	8.51	22	2.97	0	0.00	740	100.00

$\chi^2 = 60.68$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 29, there was a significant association between type of institution and responses to the statement: Only unambitious faculty are satisfied with teaching. This table reveals that 80.54% of the faculty from all institutions disagreed (completely or somewhat) with the statement, while 11.48% agreed (completely or somewhat).

Table 30

Statement 27: Teaching Used to Be Enjoyable for Me But Not Any More
(N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	79	51.63	29	18.95	25	16.34	15	9.80	5	3.27	0	0.00	153	100.00
Doctorate Granting Universities	60	48.78	33	26.83	12	9.76	18	14.63	0	0.00	0	0.00	123	100.00
Comprehensive Universities & Colleges	115	61.50	34	18.18	15	8.02	22	11.76	1	0.53	0	0.00	187	100.00
Liberal Arts Colleges	25	67.57	7	18.92	2	5.41	2	5.41	1	2.70	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	176	73.33	25	10.42	16	6.67	19	7.92	4	1.67	0	0.00	240	100.00
TOTAL	455	61.49	128	17.30	70	9.46	76	10.27	11	1.49	0	0.00	740	100.00

$\chi^2 = 46.98$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 30, there was a significant association between type of institution and responses to the statement: Teaching used to be enjoyable for me, but not any more. Over three-fourths of the faculty (78.79%) from all institutions disagreed (completely or somewhat) with the statement, while 11.76 agreed (completely or somewhat).

Table 31

Statement 29: I Do Not Specially Like or Dislike Teaching (N=730).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
Research Universities	69	46.62	24	16.22	38	25.68	10	6.76	6	4.05	1	0.68	148	100.00
Doctorate Granting Universities	64	52.46	28	22.95	21	17.21	6	4.92	3	2.46	0	0.00	122	100.00
Comprehensive Universities & Colleges	113	60.75	31	16.67	37	19.89	3	1.61	2	1.08	0	0.00	186	100.00
Liberal Arts Colleges	24	66.67	4	11.11	6	16.67	2	5.56	0	0.00	0	0.00	36	100.00
Two-Year, Community, Junior & Technical Colleges	163	68.49	23	9.66	40	16.81	7	2.94	5	2.10	0	0.00	238	100.00
TOTAL	433	59.32	110	15.07	142	19.45	28	3.84	16	2.19	1	0.14	730	100.00

$\chi^2 = 34.60$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 31, there was a significant association between type of institution and responses to the statement: I do not specially like or dislike teaching. Almost three-fourths of the faculty (74.39%) from all institutions disagreed with the statement (completely or somewhat), while 6.03% agreed (completely or somewhat) and 19.45% neither agreed nor disagreed.

According to the data in Table 32, there were significant differences between the attitudes of biology faculty in Texas institutions of higher

Table 32

Attitudes Toward Research Among Biology Faculty in Texas Institutions of Higher Education.

Statement Number	Indicated Positive Attitude		Indicated Negative Attitude		Indicated Neutral Attitude		Indicated Not Applicable		Total	
	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%
2	209	28.32	356	48.24	167	22.36	6	0.81	738	100.00
4	365	49.53	259	35.14	103	13.98	10	1.36	737	100.00
6	408	55.73	139	18.99	178	24.32	7	0.96	732	100.00
8	657	88.78	40	5.41	41	5.54	2	0.27	740	100.00
10	307	41.49	374	50.54	59	7.97	0	0.00	740	100.00
12	558	75.41	127	17.16	54	7.30	1	0.14	740	100.00
14	504	68.11	149	20.14	86	11.62	1	0.14	740	100.00
16	510	69.01	111	15.02	113	15.29	5	0.68	739	100.00
18	516	69.73	111	15.00	107	14.46	6	0.81	740	100.00
20	484	65.41	130	17.57	125	16.89	1	0.14	740	100.00
22	678	91.62	36	4.86	26	3.51	0	0.00	740	100.00
24	642	86.87	33	4.47	64	8.66	0	0.00	739	100.00
26	172	23.53	291	39.80	251	34.34	17	2.33	731	100.00
28	337	45.73	231	31.34	152	20.62	17	2.31	737	100.00
30	206	28.03	415	56.46	99	13.47	15	2.04	735	100.00
TOTAL	6,553	59.21	2,802	25.32	1,625	14.68	88	0.80	11,068	100.00

$\chi^2 = 3619.36$ with 28 d.f.; significant at $p = 0.05$

education towards research. An examination of these data revealed that most of the biology faculty (59.21%) showed positive attitudes toward research. On the other hand, over one-fourth (25.32%) did not.

Table 33

Statement 2: I Enjoy Conducting Research More Than I Do Teaching(N=739).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	58	19.93	74	25.43	70	24.05	58	19.93	31	10.65	0	0.00	291	100.00
Associate Professor	32	21.19	33	21.85	31	20.53	38	25.17	17	11.26	0	0.00	151	100.00
Assistant Professor	21	19.09	19	17.26	26	23.64	21	19.09	22	20.00	1	0.91	110	100.00
Instructor	56	38.89	41	28.47	30	20.83	9	6.25	6	4.17	2	1.39	144	100.00
Others	17	39.53	5	11.63	11	25.58	6	13.95	1	2.33	3	6.98	43	100.00
TOTAL	184	24.90	172	23.27	168	22.73	132	17.86	77	10.72	6	0.81	739	100.00

$\chi^2 = 62.76$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 33, there was a significant association between faculty rank and responses to the statement: I enjoy conducting research more than I do teaching. Almost half of the faculty (48.17%) of all ranks disagreed (completely or somewhat) with the statement, while 28.58% agreed (completely or somewhat) and 22.73% neither agreed nor disagreed.

Table 34

Statement 4: I Enjoy Doing Research Too Much to Give It Up (N=737).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	48	16.44	39	13.36	30	10.27	50	17.12	121	41.44	4	1.37	292	100.00
Associate Professor	20	13.25	26	17.22	20	13.25	28	18.54	57	37.75	0	0.00	151	100.00
Assistant Professor	15	13.76	12	11.01	9	8.26	17	15.60	55	50.46	1	0.92	109	100.00
Instructor	51	35.92	24	16.90	35	24.65	17	11.97	13	9.15	2	1.41	142	100.00
Others	15	34.88	8	18.60	9	20.93	2	4.65	6	13.95	3	6.98	43	100.00
TOTAL	149	20.22	109	14.79	103	13.98	114	15.47	252	34.19	10	1.36	737	100.00

$\chi^2 = 102.36$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 34, there was a significant association between faculty rank and responses to the statement: I enjoy doing research too much to give up. Almost half of the faculty (49.66%) of all ranks agreed with the statement (completely or somewhat), while over one-third (35.01%) disagreed (completely or somewhat) and 13.98% neither agreed nor disagreed.

Table 35

Statement 6: I Do Not Specially Like or Dislike Research (N=737).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	144	48.98	37	12.59	66	22.45	35	11.90	11	3.74	1	0.34	294	100.00
Associate Professor	72	48.00	23	15.33	30	20.00	14	9.33	9	6.00	2	1.33	150	100.00
Assistant Professor	55	51.40	21	19.63	17	15.89	6	5.61	8	7.48	0	0.00	107	100.00
Instructor	31	21.68	18	12.59	50	34.97	27	18.88	15	10.49	2	1.40	143	100.00
Others	7	16.31	5	11.63	15	34.88	9	20.93	5	11.63	2	4.65	43	100.00
TOTAL	309	41.93	104	14.11	178	24.15	91	12.35	48	6.51	7	0.95	737	100.00

$\chi^2 = 66.52$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 35, there was a significant association between faculty rank and responses to the statement: I do not specially like or dislike research. Most faculty members (56.04%) of all ranks disagreed (completely or somewhat) with the statement, while 18.86% agreed (completely or somewhat) and 24.15% neither agreed nor disagreed.

Table 36

Statement 8: Faculty Research Is a Waste of Time and Money (N=739).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	229	78.42	33	11.30	12	4.11	15	5.14	3	1.03	0	0.00	292	100.00
Associate Professor	119	78.81	22	14.57	4	2.65	6	3.97	0	0.00	0	0.00	151	100.00
Assistant Professor	82	75.23	18	16.51	5	4.59	4	3.67	0	0.00	0	0.00	109	100.00
Instructor	73	50.70	42	29.17	16	11.11	11	7.64	1	0.69	1	0.69	144	100.00
Others	29	67.44	9	20.93	4	9.30	0	0.00	0	0.00	1	2.33	43	100.00
TOTAL	532	71.99	124	16.78	41	5.55	36	4.87	4	0.54	2	0.27	739	100.00

$\chi^2 = 52.08$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 36, there was a significant association between faculty rank and responses to the statement: Faculty research is a waste of time and money. This table reveals that 88.77% of the faculty of all ranks disagreed (completely or somewhat) with the statement, while 5.41% agreed (completely or somewhat).

Table 37

Statement 10: Research Should Be Practiced by All College and University Faculty (N=739).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	67	22.95	53	18.15	16	5.48	75	25.68	81	27.74	0	0.00	292	100.00
Associate Professor	50	33.11	28	18.54	10	6.62	40	26.49	23	15.23	0	0.00	151	100.00
Assistant Professor	36	33.03	22	20.18	9	8.26	22	20.18	20	18.35	0	0.00	109	100.00
Instructor	53	36.81	34	23.61	19	13.19	28	19.44	10	6.94	0	0.00	144	100.00
Others	18	41.86	12	27.91	5	11.63	4	9.30	4	9.30	0	0.00	43	100.00
TOTAL	224	30.31	149	20.16	59	7.98	169	22.87	138	18.67	0	0.00	739	100.00

$\chi^2 = 53.83$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 37, there was a significant association between faculty rank and responses to the statement: Research should be practiced by all college and university faculty. This table reveals that 50.47% of the faculty of all ranks disagreed (completely or somewhat) with the statement, on the other hand, 41.54% agreed (completely or somewhat).

Table 38

Statement 12: I Am Not Interested in Conducting Research (N=739).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	195	66.78	34	11.64	20	6.85	24	8.22	18	6.16	1	0.34	292	100.00
Associate Professor	111	73.51	18	11.92	5	3.31	9	5.96	8	5.30	0	0.00	151	100.00
Assistant Professor	76	69.72	21	19.27	4	3.67	3	2.75	5	4.59	0	0.00	109	100.00
Instructor	47	32.64	30	20.83	21	14.58	25	17.36	21	14.58	0	0.00	144	100.00
Others	16	37.21	9	20.93	4	9.30	12	27.91	2	4.65	0	0.00	43	100.00
TOTAL	445	60.22	112	15.16	54	7.31	73	9.88	54	7.31	1	0.14	739	100.00

$\chi^2 = 99.06$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 38, there was a significant association between faculty rank and responses to the statement: I am not interested in conducting research. Over three-fourths of the faculty (75.38%) of all ranks disagreed (completely or somewhat) with the statement, while 17.19% agreed (completely or somewhat).

Table 39

Statement 14: Faculty Research Benefits Too Few People (N=737).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	150	51.37	51	17.47	32	10.96	44	15.07	15	5.14	0	0.00	292	100.00
Associate Professor	83	54.97	27	17.88	12	7.95	23	15.23	6	3.97	0	0.00	151	100.00
Assistant Professor	58	53.21	24	22.02	6	5.50	14	12.84	7	6.42	0	0.00	109	100.00
Instructor	49	34.51	29	20.42	29	20.42	31	21.83	3	2.11	1	0.70	142	100.00
Others	20	46.51	11	25.58	7	16.28	5	11.63	0	0.00	0	0.00	43	100.00
TOTAL	360	48.85	142	19.27	86	11.67	117	15.88	31	4.21	1	0.14	737	100.00

$\chi^2 = 35.35$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 39, there was a significant association between faculty rank and responses to the statement: Faculty research benefits too few people. This table reveals that 68.12% of the faculty of all ranks disagreed (completely or somewhat) with the statement, while 20.09% agreed (completely or somewhat) and 11.67% neither agreed nor disagreed.

Table 40

Statement 16: Research Is Frowned upon by Faculty on My Campus(N=738).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	154	52.74	59	20.21	36	12.33	34	11.64	8	2.74	1	0.34	292	100.00
Associate Professor	108	72.00	19	16.67	5	3.33	13	8.67	5	3.33	0	0.00	150	100.00
Assistant Professor	60	55.04	18	16.51	10	9.17	17	15.60	3	2.75	1	0.92	109	100.00
Instructor	41	28.47	26	18.06	51	35.42	18	12.50	6	4.17	2	1.39	144	100.00
Others	20	46.51	4	9.30	11	25.58	6	13.95	1	2.37	1	2.37	43	100.00
TOTAL	383	51.90	126	17.07	113	15.31	88	11.92	23	3.12	5	0.68	738	100.00

$\chi^2 = 95.63$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 40, there was a significant association between faculty rank and responses to the statement: Research is frowned upon by faculty on my campus. This table reveals that 68.97% of the faculty of all ranks disagreed with the statement either completely or somewhat, while 15.04% agreed (completely or somewhat) and 15.31% neither agreed nor disagreed.

Table 41

Statement 18: Research Is Frowned upon by Administrators on My Campus (N=739).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	175	59.93	45	15.41	30	10.27	33	11.30	8	2.74	1	0.34	292	100.00
Associate Professor	108	71.52	24	15.89	6	3.97	9	5.96	4	2.65	0	0.00	151	100.00
Assistant Professor	59	54.13	17	15.60	11	10.09	16	14.68	5	4.59	1	0.92	109	100.00
Instructor	36	25.00	27	18.75	49	34.03	18	12.50	11	7.64	3	2.08	144	100.00
Others	16	37.21	8	18.60	11	25.58	4	9.30	3	6.98	1	2.33	43	100.00
TOTAL	394	53.32	121	16.37	107	14.48	80	10.83	31	4.19	6	0.81	739	100.00

$$\chi^2 = 107.81 \text{ with } 16 \text{ d.f.}; \text{ significant at } p = 0.05$$

According to the data in Table 41, there was a significant association between faculty rank and responses to the statement: Research is frowned upon by administrators on my campus. This table reveals that 69.69% of the faculty of all ranks disagreed (completely or somewhat) with the statement, while 15.02% agreed (completely or somewhat) and 14.48% neither agreed nor disagreed.

Table 42

Statement 20: Faculty Who Engage in Research Are Generally Poor Teachers (N=740).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	151	51.71	55	18.84	48	16.44	31	10.62	7	2.40	0	0.00	292	100.00
Associate Professor	81	53.64	30	19.87	16	10.60	20	13.25	4	2.65	0	0.00	151	100.00
Assistant Professor	52	47.71	22	20.18	16	14.68	18	16.51	1	0.92	0	0.00	109	100.00
Instructor	45	31.03	28	19.31	31	21.38	38	26.21	2	1.38	1	0.69	145	100.00
Others	9	20.93	12	27.91	14	32.56	8	18.60	0	0.00	0	0.00	43	100.00
TOTAL	338	45.68	147	19.86	125	16.89	115	15.54	14	1.89	1	0.14	740	100.00

$\chi^2 = 49.04$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 42, there was a significant association between faculty rank and responses to the statement: Faculty who engage in research are generally poor teachers. Most faculty members (65.54%) of all ranks disagreed with the statement (completely or somewhat), while 17.43% agreed (completely or somewhat) and 16.89% neither agreed nor disagreed.

Table 43

Statement 22: Research Is Vitally Necessary For the Welfare of the Country (N=740).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	4	1.37	3	1.03	13	4.45	51	17.47	221	75.68	0	0.00	292	100.00
Associate Professor	5	3.29	8	5.26	3	1.97	27	17.76	109	71.71	0	0.00	152	100.00
Assistant Professor	1	0.92	1	0.92	4	3.67	22	20.18	81	74.31	0	0.00	109	100.00
Instructor	4	2.78	7	4.86	6	4.17	33	22.92	94	65.28	0	0.00	144	100.00
Others	0	0.00	3	6.98	0	0.00	10	23.26	30	69.77	0	0.00	43	100.00
TOTAL	14	1.89	22	2.97	26	3.51	143	19.32	535	72.30	0	0.00	740	100.00

$\chi^2 = 23.01$ with 16 d.f.; not significant at $p = 0.05$

According to the data in Table 43, there was not a significant association between faculty rank and responses to the statement: Research is vitally necessary for the welfare of the country. Almost all the faculty (91.62%) of all ranks agreed (completely or somewhat) with the statement, while only 4.86% disagreed (completely or somewhat).

Table 44

Statement 24: Research Can Advance Civilization to Higher Levels(N=737).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	4	1.37	9	3.07	21	7.17	57	19.45	202	68.94	0	0.00	293	100.00
Associate Professor	3	1.99	4	2.65	10	6.62	34	22.52	100	66.23	0	0.00	151	100.00
Assistant Professor	2	1.85	2	1.85	16	14.81	27	25.00	61	56.48	0	0.00	108	100.00
Instructor	1	0.70	5	3.52	12	8.45	49	34.51	75	52.82	0	0.00	142	100.00
Others	0	0.00	1	2.33	5	11.63	10	23.26	27	62.79	0	0.00	43	100.00
TOTAL	10	1.36	21	2.85	64	8.68	177	24.02	465	63.09	0	0.00	737	100.00

$\chi^2 = 23.2$ with 16 d.f.; not significant at $p = 0.05$

According to the data in Table 44, there was not a significant association between faculty rank and responses to the statement: Research can advance civilization to higher levels. This table reveals that 87.11% of the faculty of all ranks disagreed (completely or somewhat) with the statement, while only 4.21% agreed (completely or somewhat).

Table 45

Statement 26: At My Institution Publications Used for Tenure and Promotion Are Just Counted Not Qualitatively Measured (N=734).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	45	15.40	41	14.04	69	23.63	87	29.79	46	15.75	4	1.37	292	100.00
Associate Professor	16	10.53	27	17.76	34	22.37	44	28.93	31	20.39	0	0.00	152	100.00
Assistant Professor	8	7.41	14	12.96	33	30.56	34	31.48	18	16.67	1	0.93	108	100.00
Instructor	13	9.29	4	2.86	94	67.14	15	10.71	5	3.57	9	6.43	140	100.00
Others	1	2.38	7	16.67	20	47.62	9	21.43	2	4.76	3	7.14	42	100.00
TOTAL	83	11.31	93	12.67	250	34.06	189	25.75	102	13.90	17	2.32	734	100.00

$\chi^2 = 125.66$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 45, there was a significant association between faculty rank and responses to the statement: At my institution publications used for tenure and promotion are just counted, not qualitatively measured. This table reveals that 39.65% of the faculty of all ranks agreed with the statement (completely or somewhat), while 23.98% disagreed (completely or somewhat). Over one-third (34.06%) neither agreed nor disagreed.

Table 46

Statement 28: The Pressure to Publish Reduces the Quality of Teaching in My Department (N=736).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	107	36.64	39	13.36	46	15.75	66	22.60	29	9.93	5	1.71	292	100.00
Associate Professor	43	28.47	17	11.25	23	15.23	41	27.15	27	17.88	0	0.00	151	100.00
Assistant Professor	30	27.52	20	18.35	18	16.51	27	24.77	13	11.93	1	0.92	109	100.00
Instructor	50	35.21	14	9.86	49	34.51	16	11.27	5	3.52	8	5.63	142	100.00
Others	14	33.33	3	7.14	16	38.10	2	4.76	4	9.52	3	7.14	42	100.00
TOTAL	244	33.15	93	12.64	152	20.65	152	20.65	78	10.60	17	2.31	736	100.00

$\chi^2 = 65.26$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 46, there was a significant association between faculty rank and responses to the statement: The pressure to publish reduces the quality of teaching in my department. This table reveals that 45.79% of the faculty of all ranks disagreed (completely or somewhat) with the statement, while 31.25% agreed (completely or somewhat) and 20.65% neither agreed nor disagreed.

Table 47

Statement 30: In My Opinion It Is Difficult for a Person in My Department to Achieve Tenure If He or She Does Not Publish (N=734).

Faculty Rank	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Professor	60	20.62	17	5.84	14	4.81	27	9.28	170	58.42	3	1.03	291	100.00
Associate Professor	31	20.53	6	3.97	15	9.93	17	11.26	82	54.30	0	0.00	151	100.00
Assistant Professor	15	13.76	12	11.01	9	8.26	11	10.09	61	55.96	1	0.92	109	100.00
Instructor	42	30.00	10	7.14	50	35.71	4	2.86	26	18.57	8	5.71	140	100.00
Others	13	30.23	0	0.00	11	25.58	1	2.32	15	34.88	3	6.98	43	100.00
TOTAL	161	21.93	45	6.13	99	13.49	60	8.17	354	48.23	15	2.04	734	100.00

$\chi^2 = 141.58$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 47, there was a significant association between rank and responses to the statement: In my opinion it is difficult for a person in my department to achieve tenure if he or she does not publish. Most faculty members (56.40%) of all ranks agreed with the statement (completely or somewhat), while 28.06% disagreed (completely or somewhat), and 13.49% neither agreed nor disagreed.

Table 48

Statement 2: I Enjoy Conducting Research More Than I Do Teaching(N=739).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	12	7.84	28	18.30	33	21.57	55	35.95	25	16.34	0	0.00	153	100.00
Doctorate Granting Universities	11	8.94	24	19.51	30	24.39	32	26.02	26	21.14	0	0.00	123	100.00
Comprehensive Universities & Colleges	42	22.70	53	28.65	43	23.24	30	16.22	17	9.19	0	0.00	186	100.00
Liberal Arts Colleges	8	21.62	14	37.84	14	37.84	1	2.70	0	0.00	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	111	46.25	53	22.80	47	19.58	14	5.83	9	3.75	6	2.50	240	100.00
TOTAL	184	24.93	172	23.31	167	22.63	132	17.89	77	10.43	6	0.81	739	100.00

$\chi^2 = 178.41$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 48, there was a significant association between type of institution and responses to the statement: I enjoy conducting research more than I do teaching. About half of the faculty (48.24%) from all institutions disagreed with the statement (completely or somewhat), while 28.32% agreed (completely or somewhat). Over one-fifth (22.63%) neither agreed nor disagreed.

Table 49

Statement 4: I Enjoy Doing Research Too Much to Give It Up (N=738).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	7	4.58	14	9.15	9	5.88	29	18.95	93	60.78	1	0.65	154	100.00
Doctorate Granting Universities	9	7.32	10	8.13	13	10.57	24	19.51	67	54.47	0	0.00	123	100.00
Comprehensive Universities & Colleges	35	18.92	33	17.84	14	7.57	36	19.46	67	36.22	0	0.00	185	100.00
Liberal Arts Colleges	10	27.03	8	21.62	8	21.62	7	18.92	4	10.81	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	89	37.24	44	18.41	59	24.69	18	7.53	20	8.37	9	3.77	239	100.00
TOTAL	150	20.35	109	14.79	103	13.95	114	15.47	251	34.06	10	1.36	738	100.00

$\chi^2 = 225.14$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 49, there was a significant association between type of institution and responses to the statement: I enjoy doing research too much to give it up. About half of the faculty (49.53%) from all institutions disagreed (completely or somewhat) with the statement, while over one-third (35.14%) disagreed (completely or somewhat), and 13.95% neither agreed nor disagreed.

Table 50

Statement 6: I Do Not Specially Like or Dislike Research (N=732).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	95	64.19	17	11.49	23	15.54	8	5.41	4	2.70	1	0.68	150	100.00
Doctorate Granting Universities	84	68.85	18	14.75	11	9.02	5	4.10	4	3.28	0	0.00	122	100.00
Comprehensive Universities & Colleges	74	39.78	24	12.90	43	23.12	31	16.67	14	7.53	0	0.00	186	100.00
Liberal Arts Colleges	10	27.78	11	30.56	8	22.22	4	11.11	3	8.33	0	0.00	36	100.00
Two-Year, Community, Junior & Technical Colleges	46	19.33	29	12.18	93	39.08	43	18.07	23	9.66	4	1.68	238	100.00
TOTAL	309	42.21	99	13.52	178	24.32	91	12.43	48	6.56	5	0.96	732	100.00

$\chi^2 = 146.21$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 50, there was a significant association between type of institution and responses to the statement: I do not specially like or dislike research. Over half of the faculty (55.73%) from all institutions disagreed with the statement either completely or somewhat, while 18.99% agreed (completely or somewhat). About one-fourth (24.32%) neither agreed nor disagreed.

Table 51

Statement 8: Faculty Research Is a Waste of Time and Money (N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	137	89.54	12	7.84	2	1.31	1	0.65	1	0.65	0	0.00	153	100.00
Doctorate Granting Universities	109	88.62	10	8.13	2	1.63	2	1.63	0	0.00	0	0.00	123	100.00
Comprehensive Universities & Colleges	150	80.21	24	12.83	6	3.21	7	3.74	0	0.00	0	0.00	187	100.00
Liberal Arts Colleges	19	51.35	11	29.73	5	13.51	1	2.70	1	2.70	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	118	49.17	67	27.92	26	10.83	25	10.42	2	0.83	2	0.83	240	100.00
TOTAL	533	72.03	124	16.76	41	5.54	36	4.86	4	0.54	2	0.27	740	100.00

$\chi^2 = 124.87$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 51, there was a significant association between type of institution and responses to the statement: Faculty research is a waste of time and money. This table reveals that 88.79% of the faculty from all institutions disagreed (completely or somewhat) with the statement, while only 5.40% agreed (completely or somewhat).

Table 52

Statement 10: Research Should Be Practiced By All College and University Faculty (N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	32	20.92	32	20.92	17	11.11	33	21.57	39	25.49	0	0.00	153	100.00
Doctorate Granting Universities	35	28.46	23	18.70	8	6.50	32	26.02	25	20.33	0	0.00	123	100.00
Comprehensive Universities & Colleges	35	18.72	36	19.25	10	5.35	56	29.95	50	26.74	0	0.00	187	100.00
Liberal Arts Colleges	10	27.03	9	24.32	2	5.41	9	24.32	7	18.92	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	113	47.08	49	20.42	22	9.17	39	16.25	17	7.08	0	0.00	240	100.00
TOTAL	225	30.41	149	20.14	59	7.97	169	22.84	138	18.65	0	0.00	740	100.00

$\chi^2 = 77.52$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 52, there was a significant association between type of institution and responses to the statement: Research should be practiced by all college and university faculty. Slightly over half of the faculty (50.55%) from all institutions disagreed (completely or somewhat) with the statement, while 41.49% agreed (completely or somewhat).

Table 53

Statement 12: I Am Not Interested In Conducting Research (N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	137	89.54	8	5.23	3	1.96	3	1.96	1	0.65	1	0.65	153	100.00
Doctorate Granting Universities	110	89.43	9	7.32	1	0.81	0	0.00	3	2.44	0	0.00	123	100.00
Comprehensive Universities & Colleges	116	62.03	34	18.18	12	6.42	17	9.09	8	4.28	0	0.00	187	100.00
Liberal Arts Colleges	17	45.95	12	32.43	2	5.41	5	13.51	1	2.70	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	66	27.50	49	20.42	36	15.00	48	20.00	41	17.08	0	0.00	240	100.00
TOTAL	446	60.27	112	15.14	54	7.30	73	9.86	54	7.30	1	0.14	740	100.00

$\chi^2 = 239.55$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 53, there was a significant association between type of institution and responses to the statement: I am not interested in conducting research. Over three-fourths of the faculty (75.41%) from all institutions disagreed (completely or somewhat) with the statement, while 17.16% agreed (completely or somewhat).

Table 54

Statement 14: Faculty Research Benefits Too Few People (N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	112	73.20	19	12.42	8	5.23	9	5.88	5	3.27	0	0.00	153	100.00
Doctorate Granting Universities	80	65.04	21	17.07	6	4.88	13	10.57	3	2.44	0	0.00	123	100.00
Comprehensive Universities & Colleges	65	45.45	37	19.79	19	10.16	39	20.86	7	3.74	0	0.00	187	100.00
Liberal Arts Colleges	10	27.03	8	21.62	4	10.81	10	27.03	5	13.51	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	73	30.42	59	24.58	49	24.42	47	19.58	11	4.58	1	0.42	240	100.00
TOTAL	360	48.65	144	19.46	86	11.62	118	15.95	31	4.19	1	0.14	740	100.00

$\chi^2 = 108.92$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 54, there was a significant association between type of institution and responses to the statement: Faculty research benefits too few people. This table reveals that 68.11% of the faculty from all institutions disagreed (completely or somewhat) with the statement, while 20.14% agreed (completely or somewhat) and 11.62% neither agreed nor disagreed.

Table 55

Statement 16: Research Is Frowned Upon by Faculty on My Campus(N=739).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	137	89.54	11	7.19	2	1.31	3	1.96	0	0.00	0	0.00	153	100.00
Doctorate Granting Universities	83	67.48	26	21.14	5	4.07	9	7.32	0	0.00	0	0.00	123	100.00
Comprehensive Universities & Colleges	91	48.66	46	24.60	14	7.49	33	17.65	3	1.60	0	0.00	187	100.00
Liberal Arts Colleges	15	40.54	7	18.92	7	18.92	6	16.22	2	5.41	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	58	24.27	37	15.48	84	35.15	37	15.48	18	7.53	5	2.09	239	100.00
TOTAL	384	51.96	127	17.19	112	15.16	88	11.91	23	3.11	5	0.68	739	100.00

$$\chi^2 = 249.80 \text{ with } 16 \text{ d.f.; significant at } p = 0.05$$

According to the data in Table 55, there was a significant association between type of institution and responses to the statement: Research is frowned upon by faculty on my campus. This table reveals that 69.15% of the faculty from all institutions disagreed with the statement (completely or somewhat), while 15.02% agreed (completely or somewhat) and 15.16% neither agreed nor disagreed.

Table 56

Statement 18: Research Is Frowned Upon by Administrators on My Campus (N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	138	90.20	9	5.88	3	1.96	3	1.96	0	0.00	0	0.00	153	100.00
Doctorate Granting Universities	96	78.05	12	9.76	3	2.44	11	8.94	1	0.81	0	0.00	123	100.00
Comprehensive Universities & Colleges	100	53.48	45	24.06	15	8.02	21	11.23	6	3.21	0	0.00	187	100.00
Liberal Arts Colleges	11	29.73	6	16.22	9	24.32	9	24.32	2	5.41	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	50	20.83	49	20.42	77	32.08	36	15.00	22	9.17	6	2.50	240	100.00
TOTAL	395	53.38	121	16.35	107	14.46	80	10.81	31	4.19	6	0.81	740	100.00

$\chi^2 = 262.35$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 56, there was a significant association between type of institution and responses to the statement: Research is frowned upon by administrators on my campus. This table reveals that 69.73% of the faculty from all institutions disagreed (completely or somewhat) with the statement, while 15% agreed (completely or somewhat) and 14.46% neither agreed nor disagreed.

Table 57

Statement 20: Faculty Who Engage In Research Are Generally Poor Teachers (N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	89	58.17	33	21.57	24	15.69	7	4.58	0	0.00	0	0.00	153	100.00
Doctorate Granting Universities	83	67.48	20	16.26	6	4.88	13	10.57	1	0.81	0	0.00	123	100.00
Comprehensive Universities & Colleges	91	48.66	39	20.86	31	16.58	22	11.76	4	2.14	0	0.00	187	100.00
Liberal Arts Colleges	10	27.03	12	32.43	7	18.92	7	18.92	1	2.70	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	65	27.08	42	17.50	57	23.75	67	27.92	8	3.33	1	0.42	240	100.00
TOTAL	338	45.68	146	19.73	125	16.89	116	15.68	14	1.89	1	0.14	740	100.00

$\chi^2 = 106.89$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 57, there was a significant association between type of institution and responses to the statement: Faculty who engage in research are generally poor teachers. This table reveals that 65.41% of the faculty from all institutions disagreed (completely or somewhat) with the statement, while 17.57% agreed (completely or somewhat) and 16.89% neither agreed nor disagreed.

Table 58

Statement 22: Research Is Vitally Necessary for the Welfare of the Country (N=740).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	0	0.00	1	0.65	2	1.31	14	9.15	136	88.89	0	0.00	153	100.00
Doctorate Granting Universities	5	4.07	2	1.63	2	1.63	21	17.07	93	75.61	0	0.00	123	100.00
Comprehensive Universities & Colleges	5	2.67	7	3.74	5	2.67	43	22.99	127	67.91	0	0.00	187	100.00
Liberal Arts Colleges	0	0.00	0	0.00	5	13.51	12	32.43	20	54.05	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	4	1.67	12	5.00	12	5.00	54	22.50	158	65.83	0	0.00	240	100.00
TOTAL	14	1.89	22	2.97	26	3.51	144	19.46	534	72.16	0	0.00	740	100.00

$\chi^2 = 55.30$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 58, there was a significant association between type of institution and responses to the statement: Research is vitally necessary for the welfare of the country. Almost all of the faculty members (91.62%) from all institutions agreed with the statement, while only 4.86% disagreed.

Table 59

Statement 24: Research Can Advance Civilization to Higher Levels(N=738).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	2	1.31	1	0.65	13	8.50	24	15.69	113	73.86	0	0.00	153	100.00
Doctorate Granting Universities	4	3.25	2	1.63	4	3.25	23	18.70	90	73.17	0	0.00	123	100.00
Comprehensive Universities & Colleges	1	0.54	7	3.76	17	9.14	55	29.57	106	56.99	0	0.00	186	100.00
Liberal Arts Colleges	2	5.56	2	5.56	6	16.67	13	36.11	13	36.11	0	0.00	36	100.00
Two-Year, Community, Junior & Technical Colleges	3	1.25	9	3.75	24	10.00	69	28.75	135	56.25	0	0.00	240	100.00
TOTAL	12	1.63	21	2.85	64	8.67	184	24.93	457	61.92	0	0.00	738	100.00

$\chi^2 = 43.69$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 59, there was a significant association between type of institution and responses to the statement: Research can advance civilization to higher levels. This table reveals that 86.85% of the faculty from all institutions agreed (completely or somewhat) with the statement, while only 4.48% disagreed (completely or somewhat).

Table 60

Statement 26: At My Institution Publications Used for Tenure and Promotion Are Just Counted Not Qualitatively Measured (N=731).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	18	11.84	30	19.74	23	15.13	46	30.26	35	23.03	0	0.00	152	100.00
Doctorate Granting Universities	15	12.40	28	23.14	20	16.53	45	37.19	13	10.74	0	0.00	121	100.00
Comprehensive Universities & Colleges	20	10.81	16	8.65	43	23.24	69	37.30	37	20.00	0	0.00	185	100.00
Liberal Arts Colleges	9	24.32	5	13.51	11	29.73	7	18.92	4	10.81	1	2.70	37	100.00
Two-Year, Community, Junior & Technical Colleges	21	8.90	10	4.24	154	65.25	22	9.32	13	5.51	16	6.78	236	100.00
TOTAL	83	11.35	89	12.18	251	34.34	189	25.85	102	13.95	17	2.33	731	100.00

$\chi^2 = 212.25$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 60, there was a significant association between type of institution and responses to the statement: At my institution publications used for tenure and promotion are just counted, not qualitatively measured. This table reveals that 39.80% of the faculty from all institutions agreed (completely or somewhat) with the statement either (completely or somewhat), while 23.53% disagreed (completely or somewhat). Over one-third (34.34%) neither agreed nor disagreed.

Table 61

Statement 28: The Pressure to Publish Reduces the Quality of Teaching in My Department (N=738).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	27	17.65	19	12.42	14	9.15	52	33.99	41	26.80	0	0.00	153	100.00
Doctorate Granting Universities	30	24.39	18	14.63	19	15.45	42	34.15	14	11.38	0	0.00	123	100.00
Comprehensive Universities & Colleges	79	42.47	36	19.35	24	12.90	34	18.28	12	6.45	1	0.54	186	100.00
Liberal Arts Colleges	21	56.76	4	10.81	8	21.62	4	10.81	0	0.00	0	0.00	37	100.00
Two-Year, Community, Junior & Technical Colleges	87	36.55	16	6.72	87	36.55	20	8.40	12	5.04	16	6.72	238	100.00
TOTAL	244	33.11	93	12.62	152	20.62	152	20.62	79	10.72	17	2.31	737	100.00

$\chi^2 = 180.05$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 61, there was a significant association between type of institution and responses to the statement: The pressure to publish reduces the quality of teaching in my department. This table reveals that 45.73% of the faculty from all institutions disagreed with the statement (completely or somewhat), while 31.34% agreed (completely or somewhat). Over one-fifth (20.62%) neither agreed nor disagreed.

Table 62

Statement 30: In My Opinion It Is Difficult for a Person in My Department to Achieve Tenure If He or She Does Not Publish (N=735).

Carnegie Classification System	Disagree Completely		Disagree Somewhat		Neither Agree Nor Disagree		Agree Somewhat		Agree Completely		Not Applicable		Total	
	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Research Universities	1	0.65	2	1.31	0	0.00	7	4.58	143	93.46	0	0.00	153	100.00
Doctorate Granting Universities	5	4.07	4	3.25	5	4.07	10	8.13	99	80.49	0	0.00	123	100.00
Comprehensive Universities & Colleges	24	12.90	22	11.83	13	6.99	32	17.20	95	51.08	0	0.00	186	100.00
Liberal Arts Colleges	20	54.05	3	8.11	7	18.92	4	10.81	2	5.41	1	2.70	37	100.00
Two-Year, Community, Junior & Technical Colleges	111	47.03	14	5.93	74	31.36	7	2.97	16	6.78	14	5.93	236	100.00
TOTAL	161	21.90	45	6.12	99	13.47	60	8.16	355	48.30	15	2.04	735	100.00

$\chi^2 = 473.62$ with 16 d.f.; significant at $p = 0.05$

According to the data in Table 62, there was a significant association between type of institution and responses to the statement: In my opinion it is difficult for a person in my department to achieve tenure if he or she does not publish. Most of the faculty (56.46%) from all institutions agreed (completely or somewhat) with the statement, while 28.02% disagreed (completely or somewhat) and 13.47% neither agreed nor disagreed.

CHAPTER V

SUMMARY OF FINDINGS, DISCUSSION, CONCLUSIONS, RECOMMENDATIONS

This chapter includes a summary of the findings, followed by a discussion. Conclusions of the study based on the findings and recommendations for future research are also presented.

Summary of Findings

To achieve the purposes of this study, six research questions (listed in chapter one, pages 9-10) were formulated. Data for this study were collected using two instruments designed to measure faculty attitudes toward teaching and research. Fifteen items on the questionnaire (odd numbers) pertained to teaching; the remaining fifteen items (even numbered) pertained to research. These instruments were evaluated by experts in the fields of biological sciences and higher education. The survey instruments were mailed to all 1,277 biology faculty in Texas institutions of higher learning. A response rate of 58.89 percent (N = 752) was attained from all participating schools, except for the specialized institutions. After

reviewing and coding, only 740 questionnaires were acceptable for data analysis purposes. This represented a revised response rate of 57.95 percent.

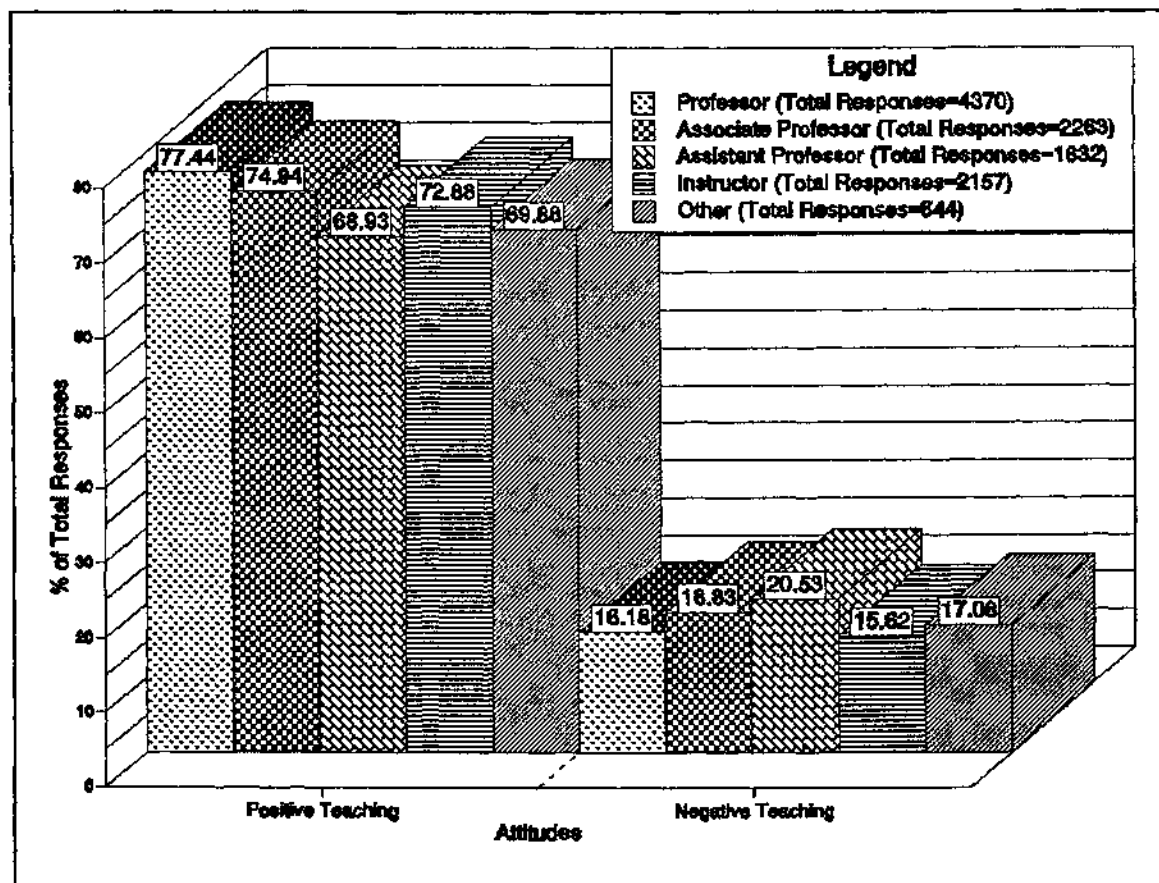
Discrepancies among frequency numbers for some statements are due to non-responses to those items. Data were analyzed in relation to each research question in the study.

Research Question 1: Results indicate that over three-fourths of biology faculty (75.93%) in Texas institutions of higher education had positive attitudes toward teaching. On the other hand, 17.24 percent of the faculty had negative attitudes toward teaching (Table 1).

Research Question 2: Results indicate that the majority of biology faculty (59.21%) in Texas institutions of higher education had positive attitudes toward research. Slightly more than one-fourth (25.32%) of the faculty had negative attitudes toward research (Table 32).

Research Question 3: Analysis of the data shows that there were significant differences among faculty ranks and responses to all teaching statements except for item numbers 11 (Teaching is a lazy person's job - Table 7), 13 (Teaching requires more than mere knowledge - Table 8), 17 (Teaching offers few opportunities for advancement - Table 10), and 29 (I do not specially like or dislike teaching - Table 16). Figure 5 shows the

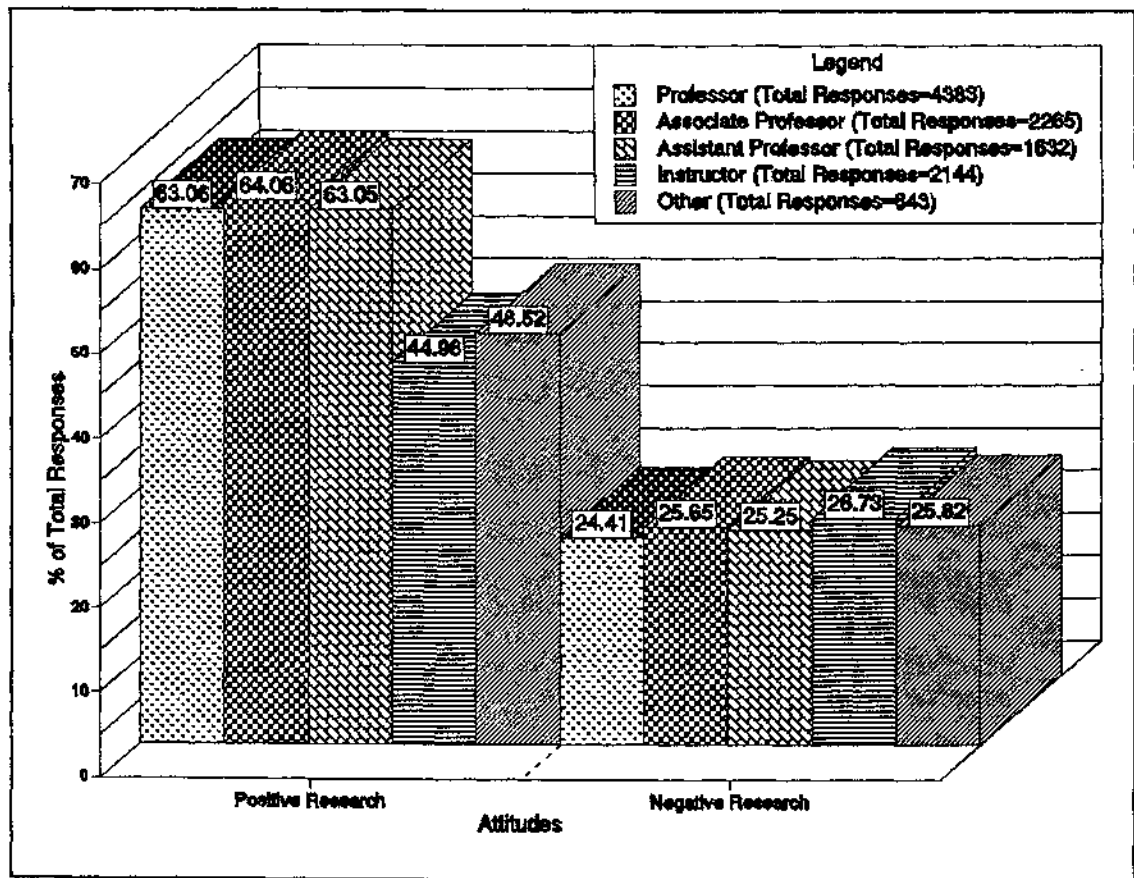
Figure 5. Summary of responses from Texas biology faculty of all ranks indicating beliefs and attitudes toward teaching.



summation of the attitudes toward teaching expressed by biology faculty of all ranks. The calculation of the percentages demonstrated that all faculty ranks have a positive attitude towards teaching. Professors' attitudes were the most positive in responding to all teaching statements. They responded

favorably 77.44 percent of the time. Assistant professors had the most negative response with 20.53 percent.

Figure 6. Summary of responses from Texas biology faculty of all ranks indicating beliefs and attitudes toward research.

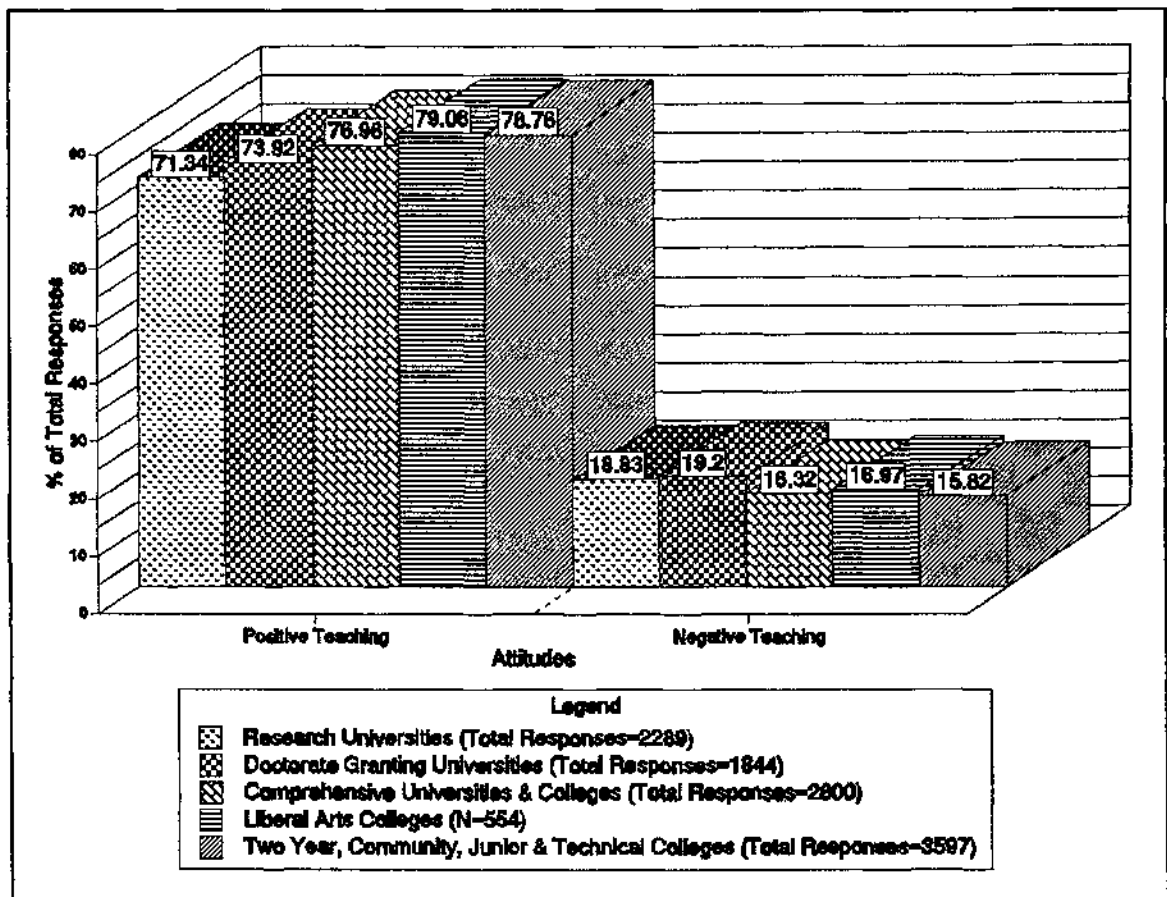


Research Question 4: Analysis of the data shows that there were significant differences among faculty ranks and responses to all research statements except for item numbers 22 (Research is vitally necessary for the

welfare of the country - Table 43) and 24 (Research can advance civilization to higher levels - Table 44). Figure 6 shows the summation of the attitudes toward research expressed by biology faculty of all ranks. The calculation of the percentages demonstrated that all faculty ranks have a positive attitude towards research. Associate professors' attitudes were the most positive in responding to all research statements. They responded favorably 64.06 percent of the time. Professors had the most negative response with 24.41 percent.

Research Question 5: Analysis of the data shows that there were significant differences between type of institution and responses to all teaching statements except for item numbers 5 (Teaching requires only mediocre ability - Table 19), 15 (Outstanding teaching is not rewarded at my institution - Table 24), and 21 (Teaching stifles ambition - Table 27). Figure 7 shows the summation of the attitudes toward teaching expressed by faculty at different types of institutions. The calculation of the percentages demonstrated that faculty from all institutions have a positive attitude towards teaching. Faculty from liberal arts colleges' attitudes were the most positive in responding to all teaching statements. They responded favorably 79.06 percent of the time. Faculty from the doctorate granting universities had the most negative response with 19.20 percent.

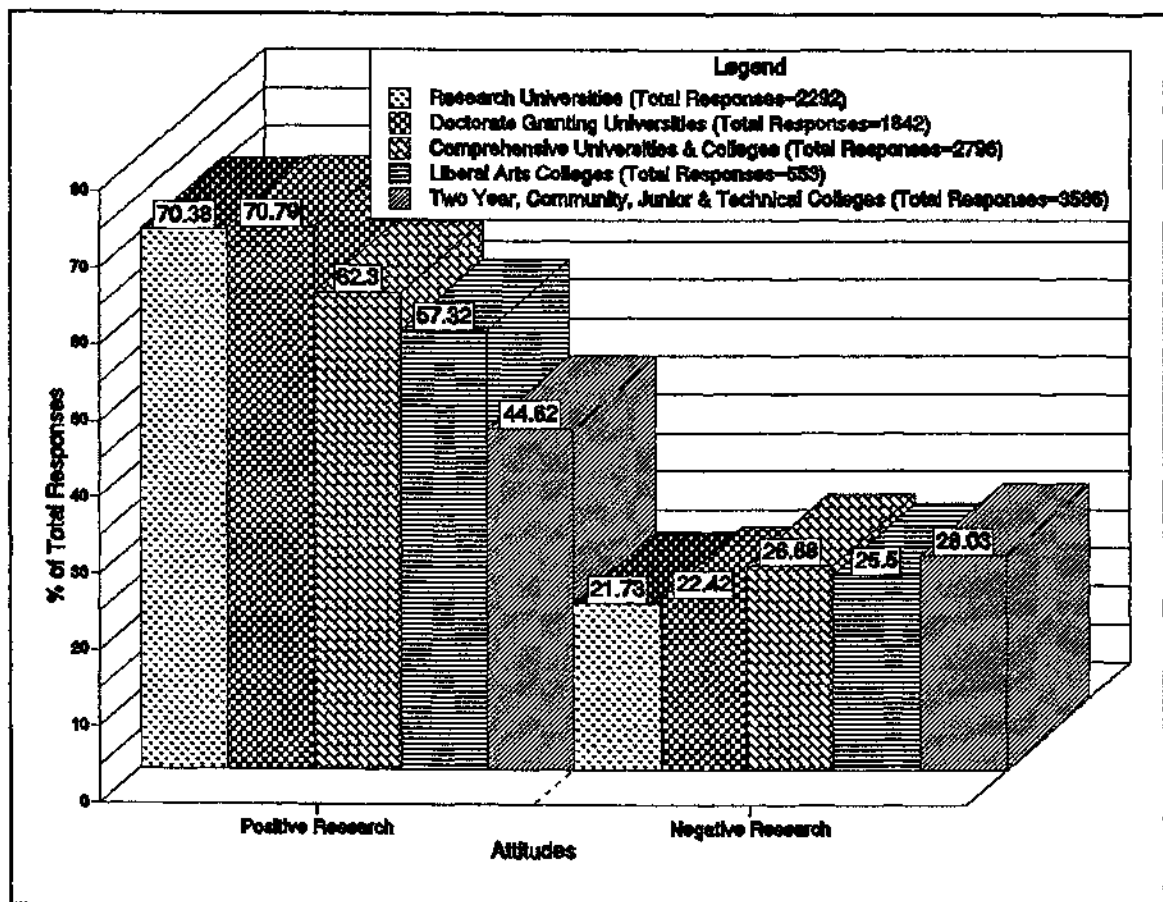
Figure 7. Summary of responses from Texas biology faculty from all institutions indicating beliefs and attitudes toward teaching.



Research Question 6: Analysis of the data shows that there were significant differences between type of institution and responses to all research statements. Figure 8 shows the summation of the attitudes toward research expressed by faculty at different types of institutions. The calculation of the percentages demonstrated that faculty from all institutions have a positive attitude towards research. Faculty from

doctorate granting universities attitudes' were the most positive in

Figure 8. Summary of responses from Texas biology faculty from all institutions indicating beliefs and attitudes toward research.



responding to all research statements. They responded favorably 70.79 percent of the time. Faculty from the research universities almost tied the doctorate granting universities with 70.38 percent. The faculty group that

responded from the two year, community, junior and technical colleges had the most negative response with 28.03 percent.

Discussion of Findings

The findings of this study are classified under three broad sections: (a) general attitudes of biology faculty in Texas institutions of higher education toward teaching (Table 1) and research (Table 32); (b) attitudes toward teaching of biology faculty in Texas institutions of higher education according to faculty ranks and type of institution (Tables 2 through 31); and (c) attitudes toward research of biology faculty in Texas institutions of higher education according to faculty ranks and the nature of the employing institution (Tables 33 through 62).

Table 1 shows the combined responses to the teaching statements. This table reveals that over three-fourths (75.93%) of all biology faculty members in Texas had positive attitudes toward teaching. On the other hand, 17.24 percent of the faculty reported negative attitudes. Only 6.77 percent of the faculty indicated neutral attitudes and less than one percent (0.06%) responded not applicable. The chi-square value of 9248.85, based upon 28 degrees of freedom, was highly significant at the 0.05 level.

Despite faculty support for teaching, over 54 percent of the biology faculty

members in Texas contend that outstanding teaching is not rewarded at their institutions (Statement 15). Over 70 percent of the biology faculty members from all institutions in Texas reported that teaching offers few opportunities for advancement (Statement 17). This is contradictory with the statement: I feel trapped in a profession with limited opportunities for advancement, from the 1989 Carnegie Foundation study. The Carnegie report revealed that 70 percent of all faculty from several different departments disagreed with the above statement.

In Table 2, almost three-fourth (73.78%) of the biology faculty of all ranks disagreed with the statement: Teaching as a career is not worth the sacrifice of going to college, the long hours of work, and low pay. About one-fifth (18.89%) of the faculty accounted for those who agreed and 7.34 percent neither agreed nor disagreed. The chi-square value of 34.78, based upon 16 degrees of freedom, was significant at the 0.05 level of significance. Among all faculty ranks, instructors accounted for the highest percentage (80.42%) of those who disagreed with the statement. Assistant professors accounted for the lowest percentage (66.97%) of those who disagreed. This may indicate that assistant professors are under more pressure and that publishing is a more important criterion for rewards and promotion than teaching. Data in Table 17 reveal that about three-fourths of the faculty

members (73.71%) from all institutions disagreed with the above statement. Only 18.83 percent of the faculty agreed and 7.45 percent neither agreed nor disagreed. The chi-square value of 28.59, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty members from all institutions, two-year, community, junior, and technical colleges accounted for the highest percentage (80.33%) of respondents who disagreed with the statement. Faculty from doctorate granting universities accounted for the lowest percentage (60.97%) of those who disagreed. This may indicate that because since many of doctorate granting universities are competing with research institutions for grant contracts, professors are experiencing increased pressure to publish.

Data in Table 3 reveal that 70.96 percent of the faculty of all ranks agreed with the statement: Teaching provides as many opportunities for self-expression as does research. Only 18.86 percent of the faculty accounted for those who agreed, 9.91 percent neither agreed nor disagreed, and only two faculty members (0.27%) responded not applicable. The chi-square value of 28.42, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, instructors accounted for the highest percentage (74.31%) of those who agreed with the statement. Assistant professors accounted for the lowest percentage (61.47%) of those

who agreed. This suggests that many assistant professors are familiar with the administrator's viewpoint of the weight given to research publications in faculty evaluations. Table 18 shows that 71 percent of the faculty from all institutions agreed with the above statement. Only 18.83 percent of the faculty disagreed, 9.89 percent neither agreed nor disagreed, and only two faculty members (0.27%) reported not applicable. The chi-square value of 33.11, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty from all institutions, two-year, community, junior, and technical colleges accounted for the highest percentage (86.49%) of respondents who agreed with the statement. The faculty from research universities accounted for the lowest percentage (65.79%) of those who agreed. This is true because these institutions' primary concerns are focused on research.

Table 4 reveals that 91.88 percent of the faculty of all ranks disagreed with the statement: Teaching requires only mediocre ability. Only 3.94 percent of the faculty accounted for those who agreed and 4.19 percent neither agreed nor disagreed. The chi-square value of 29.22, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, instructors accounted for the highest percentage (94.45%) of those who disagreed with the statement. Assistant professors accounted for the

lowest percentage (90.83%) of those who disagreed. This may indicate that assistant professors are expected to publish if rewards or promotions are to be granted. In Table 19, almost all faculty members (91.89%) from all institutions disagreed with the above statement. Only 3.92 percent of the faculty agreed and 4.20 percent neither agreed nor disagreed. Although no statistically significant relationship was found between type of institution and the statement, faculty from liberal arts colleges accounted for the highest percentage (97.30%) of respondents who disagreed with the statement. This may be because these institutions have teaching as their primary mission and not research. The faculty from research universities accounted for the lowest percentage (86.28%) of those who disagreed.

Most faculty (64.10%) of all ranks indicated disagreement with the statement: I believe that teaching tends to get one into a rut (Table 5). Among the remaining responses, one-third (30.21%) of the faculty indicated agreement and 5.69 percent neither agreed nor disagreed. The chi-square value of 26.77, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, instructors accounted for the highest percentage (70.84%) of those who disagreed with the statement. Assistant professors accounted for the lowest percentage (55.96%) of those who disagreed. This may be due to the sense of increased pressure to publish by

assistant professors for tenure and promotion. According to the data presented in Table 20, most faculty (64.54%) from all institutions disagreed with the above statement. The faculty who agreed were about one-third (30.18%) of the respondents, while those that neither agreed nor disagreed included 5.28 percent of the respondents. The chi-square value of 32.57, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty from all institutions, doctorate granting universities accounted for the highest percentage (69.92%) of respondents who disagreed with the statement. This suggests that many of doctorate granting universities are competing with research institutions for grant contracts. The faculty from research universities accounted for the lowest percentage (58.83%) of those who disagreed.

According to the data presented in Table 6, almost all faculty members (94.43%) of all ranks disagreed with the statement: Teaching is dull and uneventful. Only 2.59 percent of the faculty agreed and 2.99 percent neither agreed nor disagreed. The chi-square value of 34.11, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, instructors accounted for the highest percentage (97.91%) of those who disagreed with the statement. Assistant professors accounted for the lowest percentage (89.91%) of those who disagreed. This may be due

to the sense of increased pressure to publish by assistant professors for tenure and promotion. An examination of Table 21 reveals that almost all the faculty members (94.06%) from all institutions disagreed with the above statement. Only 2.98 percent of faculty members agreed and 2.97 percent neither agreed nor disagreed. The chi-square value of 45.31, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty from all institutions, two-year, community, junior, and technical colleges accounted for the highest percentage (96.25%) of respondents who disagreed with the statement. The faculty from liberal arts colleges accounted for the lowest percentage (91.89%) of those who disagreed. This may be due to the declining job market, the increased number of job seekers, and the decreased professional mobility confronting today's higher education.

An examination of Table 7 reveals that almost all faculty members (97.56%) of all ranks disagreed with the statement: Teaching is a lazy person's job. Only 1.09 percent of the faculty agreed and 1.35 percent neither agreed nor disagreed. Although no statistically significant relationship was found between faculty ranks and the statement, professors accounted for the highest percentage (98.97%) of those who disagreed with the statement. This suggests the extra sensitivity of professors' reactions toward performance. Assistant professors accounted for the lowest

percentage (95.41%) of those who disagreed. Table 22 contains data showing that almost all the faculty members (97.57%) from all institutions disagreed with the above statement. Only 1.09 percent of the faculty agreed and 1.35 percent neither agreed nor disagreed. The chi-square value of 41.22, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty from all institutions, doctorate granting universities accounted for the highest percentage (98.37%) of respondents who disagreed with the statement. This may be due to a lack of interest in teaching as concluded by Eble (1972). The faculty from liberal arts colleges accounted for the lowest percentage (94.59%) of those who disagreed.

Table 8 contains data showing that almost all faculty members (95.94%) of all ranks agreed with the statement: Teaching requires more than mere knowledge. Only 3.39 percent of the faculty disagreed and less than one percent (0.68%) neither agreed nor disagreed. Although no statistically significant relationship was found between faculty ranks and the statement, assistant professors accounted for the highest percentage (97.25%) of those who agreed with the statement. Instructors accounted for the lowest percentage (95.41%) of those who agreed. Table 23 reveals that 95.95 percent of the faculty members from all institutions agreed with the above statement. Only 3.38 percent of the faculty disagreed and less

than one percent (0.68%) neither agreed nor disagreed. The chi-square value of 40.22, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty from all institutions, liberal arts colleges accounted for the highest percentage (97.30%) of respondents who agreed with the statement. This may indicate that most liberal arts institutions in Texas have sustained the perception of their primary mission. The faculty from doctorate granting universities accounted for the lowest percentage (94.31%) of those who agreed.

Table 9 reveals that over half of the faculty (54.19%) of all ranks agreed with the statement: Outstanding teaching is not rewarded at my institution. Approximately 40 percent (39.33%) of the faculty disagreed and 6.49 percent neither agreed nor disagreed. The chi-square value of 28.71, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, instructors accounted for the highest percentage (57.64%) of those who agreed with the statement. Professors accounted for the lowest percentage (50.85%) of those who agreed. This may indicate that professors are not rewarded based only on teaching evaluations. As presented in Table 24, over half the faculty members (54.33%), from all institutions, agreed with the above statement. On the other hand, 39.19 percent of the faculty disagreed and 6.49 percent neither agreed nor

disagreed. Although no statistically significant relationship was found between type of institution and the statement, two-year, community, junior, and technical colleges accounted for the highest percentage (58.75%) of respondents who agreed with the statement. The faculty from comprehensive colleges and universities accounted for the lowest percentage (48.13%) of those who agreed. This may suggest the best rewards for exceptional teaching are granted in comprehensive colleges and universities.

According to the data presented in Table 10, the majority (70.42%) of the faculty members of all ranks agreed with the statement: Teaching offers few opportunities for advancement. Over one-fifth (22.26%) of the faculty disagreed, 7.19 percent neither agreed nor disagreed, and only one faculty member (0.14%) responded not applicable. Although no statistically significant relationship was found between faculty ranks and the statement, instructors accounted for the highest percentage (72.92%) of those who agreed with the statement. Professors accounted for the lowest percentage (67.25%) of those who agreed. This suggests that there are more research opportunities available for professors to further their advancement. In Table 25 are data indicating that 70.54 percent of the faculty from all institutions agreed with the above statement. Only 22.16 percent of the faculty agreed, 7.16 percent neither agreed nor agreed, and only one faculty

member (0.14%) responded not applicable. The chi-square value of 28.26, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty from all institutions, research universities accounted for the highest percentage (77.12%) of respondents who agreed with the statement. The faculty from two-year, community, junior, and technical colleges accounted for the lowest percentage (62.16%) of those who agreed. This leads to the implication that teaching is the primary requirement for advancement in these institutions.

In Table 11 are data indicating that 83.76 percent of faculty members of all ranks disagreed with the statement: Teaching becomes boring in a short time. Only 10.02 percent of the faculty agreed and 6.22 percent neither agreed nor disagreed. The chi-square value of 33.95, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, instructors accounted for the highest percentage (90.28%) of those who disagreed with the statement. Professors accounted for the lowest percentage (69.72%) of those who disagreed. This suggests that most professors have, or had, opportunities for doing research, another alternative to teaching. Table 26 reveals that 83.78 percent of the faculty from all institutions disagreed with the above statement. Only 10 percent of the faculty agreed and 6.22 percent neither agreed nor disagreed. The chi-

square value of 30.38, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty members from all institutions, two-year, community, junior, and technical colleges accounted for the highest percentage (88.75%) of respondents who disagreed with the statement. The faculty from research universities accounted for the lowest percentage (76.47%) of those who disagreed. This suggests the faculty members in research universities have opportunities to participate in mandatory research activities to overcome teaching dullness.

Table 12 reveals that 81.16 percent of faculty members of all ranks disagreed with the statement: Teaching stifles ambition. Only 8.27 percent of the faculty agreed, 10.43 percent neither agreed nor disagreed, and only one (0.14%) instructor responded not applicable. The chi-square value of 29.73, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, instructors accounted for the highest percentage (87.41%) of those who disagreed with the statement. Assistant professors accounted for the lowest percentage (62.97%) of those who disagreed. This suggests that assistant professors experience increased pressure to publish for tenure and promotion. According to the data presented in Table 27, 80.92 percent of the faculty members from all institutions disagreed with the above statement. Only 8.36 percent of the faculty agreed, 10.55 percent

neither agreed nor disagreed, and only one faculty member (0.14%) responded not applicable. Although no statistically significant relationship was found between type of institution and the statement faculty from doctorate granting universities accounted for the highest percentage (82.93%) of respondents who disagreed with the statement. This may suggest the familiar lack of teaching interest among faculty in doctorate granting institutions. Faculty from liberal arts colleges accounted for the lowest percentage (78.38%) of those who disagreed. This suggests the pressure on biology faculty members to publish in many liberal arts colleges.

According to the data presented in Table 13, 91.07 percent of faculty members of all ranks agreed with the statement: Teaching gives me a great deal of pleasure. Faculty disagreeing with this statement accounted for only 6.36 percent, while 2.57 percent neither agreed nor disagreed. The chi-square value of 43.24, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, instructors accounted for the highest percentage (95.83%) of those who agreed with the statement. Assistant professors accounted for the lowest percentage (82.57%) of those who agreed. This may mean that teaching alone does not provide a great deal of pleasure for many assistant professors if not rewarded appropriately. Table 28 reveals that 91.08 percent of the faculty members from all

institutions agreed with the above statement. Only 6.35 percent of the faculty disagreed. The chi-square value of 65.04, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty from all institutions, two-year, community, junior, and technical colleges accounted for the highest percentage (93.75%) of respondents who agreed with the statement. The faculty from doctorate granting universities accounted for the lowest percentage (82.93%) of those who agreed. Lack of teaching interest and competition for grant contracts with research institutions may explain the lowest count responses.

In Table 14, 80.51 percent of the faculty from all ranks disagreed with the statement: Only unambitious faculty members are satisfied with teaching. Only 11.51 percent of the faculty agreed and 7.98 percent neither agreed nor disagreed. The chi-square value of 32.85, based upon 16 degrees of freedom, was significant at the 0.05 percent level. Among all faculty ranks, instructors accounted for the highest percentage (90.97%) of those who disagreed with the statement. Professors accounted for the lowest percentage (76.02%) of those who disagreed. This may indicate that professors believe that all faculty members should engage in other activities such as research and publishing rather than teaching alone. An examination of Table 29 reveals that 80.54 percent of the faculty members

from all institutions disagreed with the above statement. Only 11.48 percent of the faculty agreed and 8.51 percent neither agreed nor disagreed. The chi-square value of 60.68, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty from all institutions, two-year, community, junior, and technical colleges accounted for the highest percentage (90.42%) of respondents who disagreed with the statement. The faculty from research universities accounted for the lowest percentage (70.58%) of those who disagreed. This suggests that research institutions believe that every ambitious faculty member should engage in research activities.

An examination of Table 15 reveals that over three-fourths of the faculty (78.75%) of all ranks disagreed with the statement: Teaching used to be enjoyable for me but not any more. Only 11.77 percent of the faculty accounted for those who agreed and 9.47 percent neither agreed nor disagreed. The chi-square value of 40.04, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, instructors accounted for the highest percentage (87.50%) of those who disagreed with the statement. Assistant professors accounted for the lowest percentage (65.14%) of those who disagreed. This may suggest that the lack of teaching interest among assistant professors may be due to the

increased pressure to publish they receive from the administrators. Data in Table 30 reveal that over three-fourths of the faculty members (78.79%) from all institutions disagreed with the above statement. Only 11.76 percent of the faculty agreed and 9.46 percent neither agreed nor disagreed. The chi-square value of 46.98, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty from all institutions, liberal arts colleges accounted for the highest percentage (86.49%) of respondent who disagreed with the statement. The faculty from research universities accounted for the lowest percentage (70.58%) of those who disagreed. This may indicate excessive pressure on tenured faculty members to seek grant contracts for rewards and promotions, and subsequently loss of teaching enjoyment.

As presented in Table 16, a majority, approximately three-fourths of the faculty members (74.15%) of all ranks, disagreed with the statement: I do not specially like or dislike teaching. Only 6.02 percent of the faculty agreed, 19.43 percent neither agreed nor disagreed, and less than one percent (0.41%) responded not applicable. Although no statistically significant relationship was found between faculty ranks and the statements, instructors accounted for the highest percentage (76.91%) of those who disagreed with the statement. Assistant professors accounted for the lowest

percentage (64.49%) who disagreed. This may indicate that many faculty members, more specifically instructors, had special likes or dislikes about teaching. Table 31 indicates that almost three-fourths of the faculty members (74.39%) from all institutions disagreed with the above statement. The minority of the faculty agreed (6.03%), while 19.45 percent neither agreed nor disagreed, and only one faculty member (0.14%) responded "not applicable". The chi-square value of 34.60, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty from all institutions, two-year, community, junior, and technical colleges accounted for the highest percentage (78.15%) of respondents who disagreed with the statement. Faculty from research universities accounted for the lowest percentage (62.84%) of those who disagreed. This may mean that many faculty members from some institutions, more specifically those from two-year, community, junior, and technical colleges, had special likes or dislikes about teaching.

Table 32 shows the combined responses to the research statements. This table reveals that most of the biology faculty members (59.21%) in Texas had positive attitudes toward research. The faculty that reported negative attitudes were over one-fourth (25.32%) of the respondents. Some of the faculty indicated they had neutral attitudes (14.68%). Less than one

percent (0.80%) responded "not applicable". The chi-square value of 3619.36, based upon 28 degrees of freedom, was highly significant at the 0.05 level. Despite faculty support for research, approximately 40 percent of all biology faculty members in Texas institutions of higher learning reported that publications used for tenure and promotions at their institutions are just counted, not qualitatively evaluated (Statement 26). This is consistent with the Carnegie Foundation's report of 1989, which stated that 38 percent of all faculty from several different departments agreed with the same statement. Over 56 percent of the biology faculty members of all ranks in Texas institutions of higher learning believed that it is difficult in their departments to achieve tenure if one does not publish (Statement 30). The findings of this study are consistent with the Carnegie Foundation's report of 1989, which reported that 54 percent of all faculty from several different departments agreed with the same statement.

In Table 33 almost half of the biology faculty (48.17%) of all ranks disagreed with the statement: I enjoy conducting research more than I do teaching. The remaining faculty indicated they agreed (28.58%) or that they neither agreed nor disagreed (22.73%). Less than one percent (0.81%) indicated that the statement was not applicable. The chi-square value of 62.76, based upon 16 degrees of freedom, was significant at the 0.05 level.

Among all faculty ranks, instructors accounted for the highest percentage (67.36%) of those who disagreed with the statement. Assistant professors accounted for the lowest percentage (36.35%) of those who disagreed. This may indicate a lack of teaching interest among many assistant professors. An examination of Table 48 reveals that about half of the faculty members (48.24%) from all institutions disagreed with the above statement. Only 28.32 percent of the faculty agreed, over one-fifth (22.63%) neither agreed nor disagreed, and less than one percent (0.81%) responded not applicable. The chi-square value of 178.41, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty members from all institutions, research universities accounted for the highest percentage (52.29%) of respondents who agreed with the statement. This illustrates the primary mission of research universities. The faculty from liberal arts colleges accounted for the lowest percentage (2.70%) of those who agreed, which may reflect their primary missions.

According to the data presented in Table 34, almost half of the faculty (49.66%) of all ranks agreed with the statement: I enjoy doing research too much to give it up. Over one-third (35.01%) of the faculty disagreed, 13.98 percent neither agreed nor disagreed, and 1.36 percent responded not applicable. The chi-square value of 102.36, based upon 16

degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, assistant professors accounted for the highest percentage (66.06%) of those who agreed with the statement. Instructors accounted for the lowest percentage (21.12%) of those who agreed. Table 49 contains data showing that about half of the faculty (49.53%) from all institutions agreed with the above statement. Over one-third (35.14%) of the faculty disagreed, 13.95 percent neither agreed nor disagreed, and 1.36 percent responded not applicable. The chi-square value of 225.14, based upon 16 degrees of freedom, was significant at 0.05 level. Among faculty members from all institutions, research universities accounted for the highest percentage (79.73%) of respondents who agreed with the statement. This may reflect the primary mission of research universities. The faculty from two-year, community, junior, and technical colleges accounted for the lowest percentage (15.90%) of those who agreed.

An examination of Table 35 reveals that most faculty members (56.04%) of all ranks disagreed with the statement: I do not specially like or dislike research. The remaining faculty divided among 18.86 percent who responded agreed, slightly more, about one-fourth (24.15%) neither agreed nor disagreed, and less than one percent (0.95%) responded not applicable. The chi-square value of 66.52, based upon 16 degrees of

freedom, was significant at the 0.05 level. Among all faculty ranks, assistant professors accounted for the highest percentage (71.03%) of those who disagreed with the statement. This may indicate that many faculty members, more specifically assistant professors, had special likes or dislikes about research. Instructors accounted for the lowest percentage (34.27%) of those who disagreed. Table 50 reveals that over half of the faculty members (55.73%) from all institutions disagreed with the above statement. Only 18.99 percent of the faculty agreed, about one-fourth (24.32%) neither agreed nor disagreed, and less than one percent (0.96%) responded not applicable. The chi-square value of 146.21, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty members from all institutions, doctorate granting universities accounted for the highest percentage (83.60%) of respondents who disagreed with the statement. This may indicate that many faculty members, more specifically those from doctorate granting institutions, had special likes or dislikes about research. The faculty from two-year, community, junior, and technical colleges accounted for the lowest percentage (31.51%) of those who disagreed.

Table 36 contains data showing that 88.77 percent of the faculty members of all ranks disagreed with the statement: Faculty research is a waste of time and money. Only 5.41 percent of the faculty agreed, 5.55

percent neither agreed nor disagreed, and less than one percent (0.27%) responded not applicable. The chi-square value of 52.08, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, associate professors accounted for the highest percentage (93.38%) of those who disagreed with the statement. This response may infer that associate professors engaged in research because they enjoy the fruits of research, and continue their research to achieve tenure and promotion to a professorship. Instructors accounted for the lowest percentage (79.87%) of those who disagreed. According to the data presented in Table 51, 88.79 percent of the faculty members from all institutions disagreed with the above statement. Only 5.40 percent of the faculty agreed, 5.54 percent neither agreed nor disagreed, and less than one percent (0.27%) responded not applicable. The chi-square value of 124.87, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty members from all institutions, research universities accounted for the highest percentage (97.38%) of respondents who disagreed with the statement. This is consistent with the fact that research institutions are funded largely by grant money. The faculty from two-year, community, junior, and technical colleges accounted for the lowest percentage (77.09%) of those who disagreed.

Table 37 reveals that slightly over half of the faculty members (50.47%) of all ranks disagreed with the statement: Research should be practiced by all colleges and university faculty. On the other hand, 41.54 percent of the faculty agreed and 7.98 percent neither agreed nor disagreed. The chi-square value of 53.83, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, instructors accounted for the highest percentage (60.42%) of those who disagreed with the statement. Professors accounted for the lowest percentage (41.10%) of those who disagreed. This may be the case because many professors are well rewarded mainly for their grantsmanship capabilities. In Table 52 are data indicating that slightly over half of the faculty members (50.55%) from all institutions disagreed with the statement. Only 41.49 percent of the faculty agreed and 7.97 percent neither agreed nor disagreed. The chi-square value of 77.52, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty members from all institutions, two-year, community, junior, and technical colleges accounted for the highest percentage (67.50%) of respondents who disagreed with the statement. This may indicate the primary mission within such institutions. The faculty from comprehensive colleges and universities accounted for the lowest percentage (37.97%) of those who disagreed.

According to the data presented in Table 38, over three-fourths of the faculty members (75.38%) of all ranks disagreed with the statement: I am not interested in conducting research. Only 17.19 percent of the faculty agreed, 7.31 percent neither agreed nor disagreed, and only one professor (0.14%) responded not applicable. The chi-square value of 99.06, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, assistant professors accounted for the highest percentage (88.99%) of those who disagreed with the statement. This may indicate that assistant professors are expected to conduct research specially when they are evaluated for tenure and promotion. Sykes (1988) wrote: "The pressure to publish now is so great that few junior professors can afford to risk taking on a large or meaty problem or wait until their judgments are considered or mature" (p. 107). In this study, instructors accounted for the lowest percentage (53.47%) of those who disagreed. Table 53 reveals that over three-fourths of the faculty members (75.41%) from all institutions disagreed with the above statement. Only 17.16 percent of the faculty agreed, 7.30 percent neither agreed nor disagreed, and less than one percent (0.14%) responded not applicable. The chi-square value of 239.55, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty members from all institutions, doctorate granting universities

accounted for the highest percentage (96.75%) of respondents who disagreed with the statement. This may be because many of these institutions are competing for grants with research institutions. The faculty from two-year, community, junior, and technical colleges accounted for the lowest percentage (47.92%) of those who disagreed.

In Table 39 are data indicating that 68.12 percent of the faculty members of all ranks disagreed with the statement: Faculty research benefits too few people. Only 20.09 percent of the faculty agreed, 11.67 percent neither agreed nor disagreed, and only one instructor (0.14%) responded not applicable. The chi-square value of 35.35, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, assistant professors accounted for the highest percentage (75.23%) of those who disagreed with the statement. This may demonstrate that assistant professors are expected to conduct research, perhaps the most important criteria for scholarship and promotion from an administrative point of view. Instructors accounted for the lowest percentage (54.93%) of those who disagreed. According to the data presented in Table 54, 68.11 percent of the faculty members from all institutions disagreed with the above statement. Only 20.14 percent of the faculty agreed, 11.62 percent neither agreed nor disagreed, and only 0.14 percent responded not

applicable. The chi-square value of 108.92, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty members from all institutions, research universities accounted for the highest percentage (85.62%) of respondents who disagreed with the statement. This may be true because the primary mission and source of funding for these institutions are based on continuous research. The faculty from two-year, community, junior, and technical colleges accounted for the lowest percentage (55.00%) of those who disagreed.

Table 40, reveals that 68.97 percent of the faculty members of all ranks disagreed with the statement: Research is frowned upon by faculty on my campus. The remainder of the faculty responded with 15.04 percent indicated they agreed, 15.31 percent neither agreed nor disagreed, and 5 percent responded not applicable. The chi-square value of 95.63, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, associate professors accounted for the highest percentage (88.67%) of those who disagreed with the statement. Instructors accounted for the lowest percentage (46.53%) of those who disagreed. In Table 55, data reveal that 69.16 percent of the faculty members from all institutions disagreed with the statement. Only 15.02 percent of the faculty agreed, 15.16 percent neither agreed nor disagreed, and 0.68 percent responded not

applicable. The chi-square value of 249.80, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty members from all institutions, research universities accounted for the highest percentage (96.73%) of respondents who disagreed with the statement. Their response may be because at such institutions are largely dependent upon grant money for support and continuous research. The faculty from two-year, community, junior, and technical colleges accounted for the lowest percentage (39.75%) of those who disagreed.

According to the data presented in Table 41, 69.69 percent of the faculty members of all ranks disagreed with the statement: Research is frowned upon by administrators on my campus. Only 15.02 percent of the faculty agreed, 14.48 percent neither agreed nor disagreed, and less than one percent (0.81%) responded not applicable. The chi-square value of 107.81, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, associate professors accounted for the highest percentage (87.41%) of those who disagreed with the statement. This may illustrate the point of view that associate professors engage in research from enjoyment. They make look forward to the fruits of research, to continue their research, and to tenure and promotion to professorship. Instructors accounted for the lowest percentage (43.75%) of those who disagreed. An

examination of Table 56 reveals that 69.73 percent of the faculty members from all institutions disagreed with the above statement. Only 15 percent of the faculty agreed, 14.46 percent neither agreed nor disagreed, and only 0.81 percent selected not applicable. The chi-square value of 262.35, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty from all institutions, research universities accounted for the highest percentage (96.08%) of respondents who disagreed with the statement. This may confirm that the primary sources of funding for these institutions are based on continuous research. The faculty from two-year, community, junior, and technical colleges accounted for the lowest percentage (41.25%) of those who disagreed.

In Table 42, most faculty members (65.54%) of all ranks disagreed with the statement: Faculty who engage in research are generally poor teachers. The minority divided among 17.43 percent of the faculty that agreed, 16.89 percent that neither agreed nor disagreed, and one instructor that responded not applicable. The chi-square value of 49.04, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, associate professors accounted for the highest percentage (73.51%) of those who disagreed with the statement. This may indicate the associate professors' sensitivity to performance. Instructors accounted for the lowest

percentage (48.84%) of those who disagreed. Data in Table 57 reveal that 65.41 percent of the faculty members from all institutions disagreed with the above statement. The rest of the faculty responded that 17.57 percent agreed, 16.89 percent neither agreed nor disagreed, and only 0.14 percent responded not applicable. The chi-square value of 106.89, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty members from all institutions, doctorate granting universities accounted for the highest percentage (83.74%) of respondents who disagreed with the statement. This may portray that doctorate granting institutions are competing with research institutions for grant contracts. The faculty from two-year, community, junior, and technical colleges accounted for the lowest percentage (44.58%) of those who disagreed.

An examination of Table 43 reveals that almost all faculty members (91.62%) of all ranks agreed with the statement: Research is vitally necessary for the welfare of the country. A few of the faculty disagreed (4.86%) and 3.51 percent neither agreed nor disagreed. Although no statistically significant relationship was found between faculty ranks and the statement, among all faculty ranks, assistant professors accounted for the highest percentage (94.49%) of those who agreed with the statement. This may indicate that many of the assistant professors are expected to conduct

research. Instructors accounted for the lowest percentage (88.20%) of those who agreed. In Table 58, almost all the faculty members (91.62%) from all institutions agreed with the above statement. Only 4.86 percent disagreed and 3.51 percent neither agreed nor disagreed. The chi-square value of 55.30, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty members from all institutions, research universities accounted for the highest percentage (98.04%) of respondents who agreed with the statement. The faculty from liberal arts colleges accounted for the lowest percentage (86.48%) of those who agreed. This may illustrate that liberal arts colleges' primary mission is teaching.

Data in Table 44 reveal that 87.11 percent of the faculty of all ranks agreed with the statement: Research can advance civilization to higher levels. The faculty that disagreed made up 4.21 percent and those that neither agreed nor disagreed made up 8.68 percent of the respondents. Although no statistically significant relationship was found between faculty ranks and the statement, but among all faculty ranks, associate professors accounted for the highest percentage (88.75%) of those who agreed with the statement. This may illustrate that associate professors engaged in research enjoy the fruits of research and look forward to tenure and a professorship. Assistant professors accounted for the lowest percentage

(81.48%) of those who agreed. According to the data presented in Table 59, 86.85 percent of the faculty members from all institutions agreed with the above statement. Only 4.48 percent of the faculty disagreed and 8.67 percent neither agreed nor disagreed. The chi-square value of 43.69, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty members from all institutions, doctorate granting universities accounted for the highest percentage (91.87%) of those respondents who agreed with the statement. This may explain that doctorate granting institutions are competing with research institutions for grant contracts. The faculty from liberal arts colleges accounted for the lowest percentage (72.22%) of those who agreed.

Table 45 indicates that 39.65 percent of the faculty members of all ranks agreed with the statement: At my institution publications used for tenure and promotion are just counted not qualitatively measured. This is consistent with the 1989 Carnegie Foundation findings. The Carnegie study showed that 38 percent of all faculty members from several different departments agreed with the same statement. Over one-third (34.06%) neither agreed nor disagreed, while 23.98 percent disagreed, and 2.32 percent responded not applicable. The chi-square value of 125.66, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all

faculty ranks, associate professors accounted for the highest percentage (49.32%) of those who agreed with the statement. Instructors accounted for the lowest percentage (14.28%) of those who agreed. Table 60 contains data showing that 39.80 percent of the faculty members from all institutions agreed with the above statement. Only 23.53 percent of the faculty disagreed, over one-third (34.34%) neither agreed nor disagreed, and 2.33 percent responded not applicable. The chi-square value of 212.25, based upon 16 degrees of freedom, was significant at the 0.05 level. In this study, faculty members from comprehensive colleges and universities accounted for the highest percentage (57.30%) of respondents who agreed with the statement. This is slightly higher than those findings of the 1989 Carnegie Foundation report, which indicated that 54 percent of all faculty members from several different departments agreed with the same statement. The faculty from two-year, community, junior, and technical colleges accounted for the lowest percentage (14.83%) of those who agreed.

Table 46 reveals that 45.79 percent of the faculty members of all ranks disagreed with the statement: The pressure to publish reduces the quality of teaching in my department. On the other hand, 31.25 percent of faculty agreed, 20.65 percent neither agreed nor disagreed, and 2.31 percent responded not applicable. The chi-square value of 65.26, based upon 16

degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, professors accounted for the highest percentage (50.00%) of those who disagreed with the statement. This may suggest that professors are most committed to the idea of publishing. Associate professors accounted for the lowest percentage (39.72%) of those who disagreed. In Table 61 are data indicating that 45.73 percent of the faculty members from all institutions disagreed with the above statement. Almost one-third (31.34%) of the faculty agreed, while 20.62 percent neither agreed nor disagreed, and 2.31 percent responded not applicable. The chi-square value of 180.05, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty members from all institutions, research universities accounted for the highest percentage (60.79%) of respondents who agreed with the statement. Findings of this study were much higher and inconsistent with the statement: The pressure to publish reduces the quality of teaching at my university, from the 1989 Carnegie Foundation report. In the 1989 Carnegie Foundation report 52 percent of all faculty members from research universities of several different departments agreed with the Carnegie's statement. The faculty from liberal arts colleges in this study accounted for the lowest percentage (10.81%) of those who agreed.

According to the data presented in Table 47, most faculty members (56.40%) of all ranks agreed with the statement: In my opinion it is difficult for a person in my department to achieve tenure if he or she does not publish. Only 28.06 percent of the faculty disagreed, 13.49 percent neither agreed nor disagreed, and 2.04 percent reported not applicable. The chi-square value of 141.58, based upon 16 degrees of freedom, was significant at the 0.05 level. Among all faculty ranks, professors accounted for the highest percentage (67.70%) of those who agreed with the statement. This may illustrate that professors have experienced the most pressure to publish for tenure and promotions. Instructors accounted for the lowest percentage (21.43%) of those who agreed. An examination of Table 62 reveals that most of the faculty members (56.46%) from all institutions agreed with the above statement. Only 28.02 percent of the faculty disagreed, 13.47 percent neither agreed nor disagreed, and 2.04 percent responded not applicable. The chi-square value of 473.62, based upon 16 degrees of freedom, was significant at the 0.05 level. Among faculty members from all institutions, research universities accounted for the highest percentage (98.04%) of respondents who agreed with the statement. This is much higher than those findings of the 1989 Carnegie Foundation study that reported that 94 percent of all faculty members from research

universities of several different departments agreed with the same statement. The faculty from two-year, community, junior, and technical colleges accounted for the lowest percentage (9.75%) of those who agreed.

Conclusions

Major issues explored in this study were attitudes toward teaching and research among biology faculty in Texas institutions of higher education according to faculty rank and institutional type.

Biology faculty in Texas institutions of higher education show great concern for both teaching and research. This study revealed that over three-fourths of all biology faculty (75.93%) in Texas have positive attitudes toward teaching (Table 1).

Despite support for teaching, over 54 percent of the faculty of all ranks assert that outstanding teaching is not rewarded at their institutions (Table 9).

Professor X (1973) wrote: ". . . the sad part is that there often is no visible connection between pay and merit" (p. 19).

Over 70 percent of the biology faculty from all institutions in Texas report that teaching offers few opportunities for advancement (Table 10).

This study also showed that over 59 percent of all biology faculty in Texas institutions of higher learning have positive attitudes toward research (Table 32). Approximately 40 percent of all biology faculty in Texas report that publications used for tenure and promotion at their institutions are just counted, not qualitatively evaluated (Table 45).

Huer (1991) wrote: "Academic tenure for American professors is an extraordinarily self-contradictory phenomenon Tenure is a privilege, and all privileges eventually corrupt The tenure privilege in American universities is an aberration This privilege is gained neither by merit nor by heredity. It is acquired chiefly by luck (being in the right place at the right time), by connivance (expanding one's vita, not one's scholarship), or by demonstrating an infinite capacity for humility (sometimes called collegiality). These qualities may be necessary and valuable for survival in a highly competitive economic society" (pp. 3-4).

Finally, over 56 percent of the biology faculty of all ranks in Texas institutions of higher learning believed that it is difficult in their departments to achieve tenure if one does not publish (Table 62).

Smith (1990) has written: "The vast majority of what passes for research/publication in the major universities of America is mediocre, expensive, and unnecessary, does not push back the frontiers of knowledge

in any appreciable degree, and serves only to get professors promotions, it may be appropriate to give some consideration to teaching" (p. 199).

It seems reasonable to infer that a relevant balance between teaching and research has yet to be attained at many institutions of higher education in Texas.

Recommendations

Based on the findings and conclusions of this study, the following recommendations for further research and use of these instruments are made.

1. It is recommended to reevaluate the existing pressure in the academic arena, which comes from being hired to teach, while being valued for research productivity and publications. Crimmel (1984) wrote: "A conflict that is both unfortunate and unnecessary."

2. It is recommended that the smaller, largely liberal arts colleges should not recruit faculties from the leading research institutions. This recruitment results in a change from the original teaching mission to a research mission. Teaching effectiveness should be the principle yardstick for determining worthiness for promotion, raises, and other advancements among these institutions.

3. Since scholarship is of vital importance to the academic enterprise, it is recommended that research productivity should be measured qualitatively, not quantitatively.

Further Research

1. Additional research is recommended with a larger number of institutions to investigate more thoroughly and clarify the factors affecting the institutional missions.

2. A great diversity of opinions seems to exist for what it means to be a scholar. It is recommended that an investigation be made of the various difficult situations now as an opportunity to rethink what it means to be an educator.

3. It is recommended that research be conducted with science faculty members at institutions of higher learning to determine what incentives will encourage them to take more active roles in the pursuit of scientific knowledge.

4. Additional studies are recommended to explore and examine faculty obligation to their institutions of higher learning. Studies should also be conducted to assess other potential determinants of faculty commitment toward teaching and research.

It is recommended that institutions of higher education use these instruments to examine the current state of biology instruction, research, and understanding of faculty and staff within their departments. The faculty of such departments can then develop appropriate programs for adequate faculty tenure and promotion evaluation.

Deutsch (1975) suggested modification of criteria for appointment, promotion, and tenure. Wachtel (1980) said, limit the number of works submitted for hiring, tenure, and promotion evaluation to an applicant's three best works.

Faculty should be encouraged to produce a scholarly product but not be threatened to the point of publishing or perishing. Faculty scholarship is essential for maintaining the high quality teaching which has become the hallmark of this nation's community colleges (Bowyer, 1992).

Newton (1982) wrote: Performance-based evaluation in education has been noted more for its misapplication than for its success in generating more effective and productive educational institutions. Currently, it deserves serious reexamination. If performance-based evaluation is to achieve a place in education, it must develop a form suited to the distinctive needs of the teaching profession. Only with such adaptation will performance-based evaluation succeed and demonstrate to educators and to

the public the power of performance rating system to monitor and improve teaching.

Overall, the findings of this study may be of value to postsecondary biology faculty and administrators or directors of faculty development programs. Knowledge of the factors that appear to affect teaching-research conflict should be of value to these groups in planning future faculty tenure and promotion evaluation programs.

Further research is recommended in a large number of institutions to test the findings of this investigation. Broadening the research base to include faculty other than those from biology departments is also encouraged.

APPENDIX A
TEXAS INSTITUTIONS OF HIGHER EDUCATION STRATIFIED
ACCORDING TO THE CARNEGIE FOUNDATION'S
CLASSIFICATION

TEXAS INSTITUTIONS OF HIGHER EDUCATION STRATIFIED
ACCORDING TO THE CARNEGIE FOUNDATION'S
CLASSIFICATION

RESEARCH UNIVERSITIES I

Texas A&M University, Main Campus
University of Texas at Austin

RESEARCH UNIVERSITIES II

None at this time

DOCTORATE-GRANTING COLLEGES AND UNIVERSITIES I

University of North Texas
Texas Tech University, Main Campus
Texas Woman's University
University of Houston at University Park
Rice University

DOCTORATE -GRANTING COLLEGES AND UNIVERSITIES II

East Texas State University
University of Texas at Arlington
University of Texas at Dallas
Baylor University
Southern Methodist University
Texas Christian University

COMPREHENSIVE COLLEGES AND UNIVERSITIES I

Angelo State University
Corpus Christi State University
Lamar University
Midwestern State University

University of Texas-Pan American
Prairie View A&M University
Sam Houston State University
Southwest Texas State University
Stephen F. Austin State University
Tarleton State University
Texas A&I University
Texas Southern University
University of Houston at Clear Lake
University of Houston, Downtown
University of Texas at El Paso
University of Texas at San Antonio
University of Texas at Tyler
West Texas State University
Abilene Christian University
Houston Baptist University
Saint Mary's University of San Antonio
Trinity University

COMPREHENSIVE COLLEGES AND UNIVERSITIES II

Sul Ross State University
University of Texas of the Permian Basin
Hardin-Simmons University
Our Lady of the Lake University of San Antonio
St. Edward's University
Texas Wesleyan College
University of St. Thomas
Wayland Baptist University

LIBERAL ARTS COLLEGES I

Austin College
University of Dallas

LIBERAL ARTS COLLEGE II

East Texas State University at Texarkana
Laredo State University
Texas A&M University at Galveston
University of Houston at Victoria
Amber University
American Technological University
Concordia Lutheran College
Dallas Baptist University
East Texas Baptist University
Howard Payne University
Huston-Tillotson College
Incarnate Word College
Jarvis Christian College
Le Tourneau College
Lubbock Christian University
McMurry University
Paul Quinn College
Schreiner College
Southwestern Adventist College
Southwestern University
Texas College
Texas Lutheran College
University of Mary Hardin-Baylor
Wiely College

TWO-YEAR COMMUNITY, JUNIOR, AND TECHNICAL COLLEGES

Alvin Community College
Amarillo College
Angelina College
Austin Community College
Bee County College
Blinn College
Brazosport College
Brookhaven College
Cedar Valley College
Central Texas College

Cisco Junior College
Clarendon College
College of the Mainland
Cooke County College
Del Mar College
Eastfield College
El Centro College
El Paso County Community College District
Frank Phillips College
Galveston College
Grayson County College
Hill College of the Hill Junior College District
Houston Community College
Howard County College District
Kilgore College
Laredo Junior College
Lee College
McLennan Community College
Midland College
Mountain View College
Navarro College
North Harris County College District
North Lake College
Odessa College
Panola College
Paris Junior College
Ranger Junior College
Richland College
San Antonio College
San Jacinto College, Central Campus
San Jacinto College, North Campus
South Plains College
Southwest Texas Junior College
St. Philip's College
Tarrant County Junior College
Temple Junior College
Texarkana College
Texas Southmost College
Texas State Technical Institute, Amarillo Campus
Texas State Technical Institute, Rio Grande Campus

Texas State Technical Institute, Sweetwater Campus
Texas State Technical Institute, Waco Campus
Trinity Valley Community College
Tyler Junior College
Vernon Regional Junior College
Victoria College
Weatherford College
Western Texas College
Wharton County Junior College
Art Institute of Houston
Bauder Fashion College
Jacksonville College
Lon Morris College
Miss Wades Fashion Merchandising College
Southwestern Christian College

SPECIALIZED INSTITUTIONS: RELIGION AND THEOLOGY

Arlington Baptist College
Austin Presbyterian Theological Seminary
Criswel College
Dallas Christian College
Dallas Theological Seminary
Episcopal Theological Seminary of the Southwest
Gulf Coast Bible College
Oblate School of Theology
Southern Bible College
Southwestern Assemblies of God College
Southwestern Baptist Theological Seminary

SPECIALIZED INSTITUTIONS: MEDICAL SCHOOLS

Texas College of Osteopathic Medicine
Texas Tech University Health Sciences Center
University of Texas Health Science Center at Dallas
University of Texas Health Science Center at Houston
University of Texas Health Science Center at San Antonio
University of Texas Medical Branch at Galveston

Baylor College of Medicine

SPECIALIZED INSTITUTIONS: OTHER HEALTH PROFESSIONS

Baylor College of Dentistry
Parker College of Chiropractic
Texas Chiropractic College

SPECIALIZED INSTITUTIONS: LAW SCHOOLS

South Texas College of Law

SPECIALIZED INSTITUTIONS: CORPORATE COLLEGES

DeVry Institute of Technology

APPENDIX B

CARNEGIE CLASSIFICATION SYSTEM FOR

TEXAS INSTITUTIONS OF HIGHER LEARNING

CARNEGIE CLASSIFICATION SYSTEM FOR INSTITUTIONS OF HIGHER LEARNING

The 1987 Carnegie Classification includes all colleges and universities in the United States listed in the 1985-86 *Higher Education General Information Survey Institutional Characteristics*. It groups institutions into categories on the basis of the level of degree offered, ranging from prebaccalaureate to the doctorate and the comprehensiveness of their missions. The categories are as follows:

Research Universities I: These institutions 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.

Research Universities II: These institutions offer a full range of baccalaureate programs, are committed to graduate education through the doctorate degree, and give priority to research. They receive annually between \$12.5 million and \$33.5 million in federal support for research and development and award at least 50 Ph.D. degrees each year.

Doctorate-Granting Universities I: In addition to offering a full range of baccalaureate programs, the mission of these institutions includes a commitment to graduate education through the doctorate degree. They award at least 40 Ph.D. degrees annually in five or more academic disciplines.

Doctorate-Granting Universities II: In addition to offering full range of baccalaureate programs, the mission of these institutions includes a commitment to graduate education through the doctorate degree.

They award annually 20 or more Ph.D. degrees in at least one discipline or 10 or more Ph.D. degrees in three or more disciplines.

Comprehensive Universities and Colleges I: These institutions offer baccalaureate programs and, with few exceptions, graduate education through the masters degree. More than half of their baccalaureate degrees are awarded in two or more occupational or professional disciplines such as engineering or business administration. All of the institutions in this group enroll at least 2,500 students.

Comprehensive Universities and Colleges II: These institutions award more than half of their baccalaureate degrees in two or more occupational or professional disciplines, such as engineering or business administration, and many also offer graduate education

through the masters degree. All of the colleges and universities in this group enroll between 1,500 and 2,500 students.

Liberal Arts Colleges I: These highly selective institutions are primarily undergraduate colleges that award more than half of their baccalaureate degrees in arts and science fields.

Liberal Arts Colleges II: These institutions are primarily undergraduate colleges that are less selective and award more than half of their degrees in liberal arts fields. This category also includes a group of colleges that award less than half of their degrees in liberal arts fields but, with fewer than 1,500 students, are too small to be considered comprehensive.

Two-Year Community, Junior and Technical Colleges: These institutions offer certificate or degree programs through the Associate of Arts level and, with few exceptions, offer no baccalaureate degree (1985-86 Institutional Characteristics).

Professional Schools and Other Specialized Institutions: These institutions offer degrees ranging from the bachelor's to the doctorate. At least fifty percent of the degrees awarded by these institutions are in a single specialized field. Specialized institutions include:

Theological seminaries, Bible colleges and other institutions

offering degrees in religion: This category includes institutions at which the purpose is to offer religious instruction or train members of the clergy.

Medical schools and medical centers: These institutions award most of their professional degrees in medicine. In some instances, their programs include other health professional schools, such as dentistry, pharmacy, or nursing.

Other separate health profession schools: Institutions in this category award most of their degree in such fields as chiropractic, pharmacy, or podiatry.

Schools of law: The schools included in this category award most of their degrees in law. The list includes only institutions that are listed as separate campuses in the Higher Education General Information Survey.

Schools of engineering and technology: The institutions in this category award at least a bachelor's degree in programs limited almost exclusively to technical fields of study.

Schools of business and management: The schools in this category award most of their bachelor's or graduate degrees in business or business-related programs.

Schools of art, music, and design: Institutions in this category award most of their bachelor's or graduate degrees in art, music, design, architecture or some combination of such fields.

Teacher colleges: Institutions in this category award most of their bachelor's or graduate degrees in education or education-related fields.

Other specialized institutions: Institutions in this category include graduate centers, maritime academies, military institutions without liberal arts programs, and institutions that do not fit any other classification category.

Corporate sponsored institutions: These institutions are accredited, degree-granting colleges and universities established by profit-making corporations (Eurich, 1985).

APPENDIX C
INSTRUMENTS

INSTRUMENT

Instruction: Please mark the selected number to the left of each statement which indicates the extent of your agreement/disagreement with the statement.

CODE

1 - Disagree Completely

2 - Disagree Somewhat

3 - Neither Agree Nor Disagree

4 - Agree Somewhat

5 - Agree Completely

- ___ 1. Teaching, as a career, is not worth the sacrifice of going to college, the long hours of work, and low pay.
- ___ 2. I enjoy conducting research more than I do teaching.
- ___ 3. Teaching provides as many opportunities for self-expression as does research.
- ___ 4. I enjoy doing research too much to give it up.
- ___ 5. Teaching requires only mediocre ability.
- ___ 6. I do not specially like or dislike research.
- ___ 7. I believe that teaching tends to get one in a rut.
- ___ 8. Faculty research is a waste of time and money.
- ___ 9. Teaching is dull and uneventful.
- ___ 10. Research should be practiced by all college and university faculty.

- ___ 11. Teaching is a lazy person's job.
- ___ 12. I am not interested in conducting research.
- ___ 13. Teaching requires more than mere knowledge.
- ___ 14. Faculty research benefits too few people.
- ___ 15. Outstanding teaching is not rewarded at my institution.
- ___ 16. Research is frowned upon by faculty on my campus.
- ___ 17. Teaching offers few opportunities for advancement.
- ___ 18. Research is frowned upon by administrators on my campus.
- ___ 19. Teaching becomes boring in a short time.
- ___ 20. Faculty who engage in research are generally poor teachers.
- ___ 21. Teaching stifles ambition.
- ___ 22. Research is vitally necessary for the welfare of the country.
- ___ 23. Teaching gives me a great deal of pleasure.
- ___ 24. Research can advance civilization to higher levels.
- ___ 25. Only unambitious faculty are satisfied with teaching.
- ___ 26. At my institution publications used for tenure and promotion are just counted, not qualitatively measured.
- ___ 27. Teaching used to be enjoyable for me, but not any more.
- ___ 28. The pressure to publish reduces the quality of teaching in my department.

29. I do not specially like or dislike teaching.
30. In my opinion it is difficult for a person in my department to achieve tenure if he or she does not publish.

Please check your position

1. Professor
2. Associate Professor
3. Assistant Professor
4. Instructor
5. Other (Please specify) _____

Gender

- Male Female

Age

- 20 - 29 30 - 39 40 - 49
- 50 - 59 60 - 69 Over 70

Thank you very much for your participation. You may attach any additional comments. Please use enclosed self-addressed postage paid envelope to return the questionnaire.

APPENDIX D

OUTLINE OF QUESTIONNAIRE DISTRIBUTION PROCEDURES

Outline of Questionnaire Distribution Procedures

1. Official mailing labels for all members of the population were obtained from the *College Marketing Group Information Services*.
2. Because the current Carnegie Foundation's Classification list of Texas institutions of higher education contains schools in existence in 1987, the names of those who were not operating were eliminated. The new operating institutions were added to the sample list. Operation status were determined by reference to the *1992 Higher Education Directory*.
3. All remaining members within each category were sent color coded questionnaires. Survey instruments were color coded for identification purposes throughout the questionnaire distribution process.
4. Approximately 1,280 packets each containing a cover letter (Appendix E), a questionnaire, and a self-addressed postage paid return envelope were mailed to all the names from the mailing lists.
5. Official university stationary, number 9, and number 10 envelopes were obtained and used in the mailing process, encouraging participation.

6. The survey instruments were mailed first class. Sharp (1992) suggests that envelopes bearing third-class postage have only a 60 percent chance of being opened by junk-mail-wary Americans. But put a first-class stamp on those same envelopes, and we will bite nearly every time. The downside to going first-class, as usual, is the cost: it adds 20 cents or more--a large chunk of change for research.
7. Selected collector stamps were used to mail the survey instrument packages to further encourage participation (for example animal stamps for zoologists, plant stamps for botanists, etc. . . .).

APPENDIX E
COVER LETTER



University of North Texas

178

Department of Higher Education
College of Education

MEMORANDUM

To: Biology Faculty in Texas Institutions of Higher Education

From: D. Barry Lumsden, Professor *DL*

Date: February 15, 1993

At the University of North Texas we are conducting a study of the attitudes of Texas biology faculty toward teaching and research. To successfully conduct the survey, we need your cooperation.

Enclosed is a short questionnaire we ask that you complete **anonymously**. Completing the questionnaire will require only a few minutes of your time. Your completed questionnaire may be returned in the enclosed self-addressed and postage paid envelope.

Please feel free to write or call (817-565-2045) with whatever questions you may have. In the meantime, a very special note of thanks for your cooperation. We hope to receive your questionnaire no later than March 10, 1993.

jm

enclosures

APPENDIX F
PERMISSION FOR USE OF SUBJECTS



University of North Texas

180

Office of Research Administration

November 4, 1992

Faiz Salehi
P.O. Box 1105
Lake Dallas, Texas 75065-1105

Dear Mr. Salehi:

Your proposal entitled "Attitudes Toward Teaching and Research Among Biology Faculty in Texas Institutions of Higher Education," has been approved by the IRB and is exempt from further review under 45 CFR 46.101.

If you have any questions, please contact me at (817) 565-3946.

Good luck on your project.

Sincerely,

A handwritten signature in black ink, appearing to read "Peter Witt".

Peter Witt, Chair
Institutional Review Board

PW/tl

REFERENCES

- Alreck, Pamela L. and Robert B. Settle. (1985). *The Survey Research Handbook*. Homewood, Illinois: Richard D. Irwin, Inc.
- American Association of State Colleges and Universities. (1984). *Governance of state colleges and universities: Achieving institutional mission*. Washington, DC: U.S. Department of Education, National Institute of Education. (ERIC Document Reproduction Service No. ED 255 125)
- Arrowsmith, William. (1967). The future of teaching. In Calvin B. T. Lee (Ed.), *Improving college teaching*, (pp. 57-71). Washington, DC: American Council on Education.
- Bell, Daniel. (1966). *The reforming of general education*. New York: Columbia University Press.
- Berghe, Pierre van den. *Academic gamesmanship*. New York: Abelard-Schuman Limited.
- Borg, Walter R., and Meredith Damien Gall. (1983). *Educational Research*. New York, New York: Longman Inc.
- Bowen, Howard R. (1978). *Investment in learning: The individual and social value of american higher education*. San Francisco, California: Jossey-Bass Inc., Publishers.
- Bowyer, Karen A. (1992). *Faculty Renewal Through Scholarship*. Washington, DC: U.S. Department of Education, National Institute of Education. (ERIC Document Reproduction Service No. ED 336 140).
- Boyer, Ernest L. (1987). Forward to Carnegie Foundation for the Advancement of Teaching. (1987). *A classification of institutions of higher education* (pp. 1-9). Princeton, New Jersey: The Carnegie Foundation for the Advancement of Teaching.

- Boyer, Ernest L. (1990). *Scholarship reconsidered: Priorities of the professoriate*. Princeton, New Jersey: Princeton University Press.
- Bresler, Jack B. (1968, April 12). Teaching Effectiveness and Government Awards. *Science*, pp. 164-167.
- Bues, Harry W. (1934). The construction and validation of a scale to measure attitude toward any practice. *Purdue University Studies in Higher Education XXVI*, 35(4), 64-67.
- Buzza, Bonnie W. (1990, October). Faculty perceptions of publication expectations in the small college setting: Have the rules changed? *Association for Communication Administration Bulletin*, pp. 54-61.
- Cadwallader, Mervyn L. (1982). A manifesto: The case for an academic counterrevolution. *Liberal Education*, 68, 403-420.
- Caplow, Theodore & Reece J. McGee. (1977). *The academic marketplace*. (p. 82). New York, New York: Arno Press.
- The Carnegie Foundation for the Advancement of Teaching. (1987). Carnegie Foundation Technical Report, *A classification of institutions of higher education*. Princeton, NJ: The Carnegie Foundation for the Advancement of Teaching.
- Carnegie Foundation for the Advancement of Teaching. (1989). *The condition of the professoriate: Attitudes and trends, 1989*. Princeton, New Jersey: Princeton University Press.
- Churchill, G. N., Jr. (1976). *Marketing research: Methodological foundation*. Hinsdale, IL: The Dryden Press.
- Clover, Vernon T. & Howard L. Balsley. (1984). *Business research methods*. Columbus, Ohio: Grid Publishing, Inc.
- CMG Information Services, Inc. (1993). *1993 Marketing List Catalog*. Wilmington, Massachusetts.
- Crimmel, Henry H. (1984). The myth of the teacher-scholar. *Liberal Education*, 70(3), pp. 183-198.

- Dent, Preston L. & Donald J. Lewis. (1976). The relationship between teaching effectiveness and measures of research quality. *Educational Research Quarterly*, 1(3), 3-16.
- Deutsch, M. (1975). Graduate training of the problem-oriented social psychologist. In M. Deutsch, & H. Hornstein, (Eds.), *Applying Social Psychology*, (pp. 261-278). Hillsdale, NJ: Erlbaum.
- DeVellis, Robert F. (1991). *Scale Development: Theory and Application*. Newbury Park, California: Sage Publications, Inc.
- Di Vesta, Francis J. & Jack C. Merwin. (1960). The effects of need-oriented communications on attitude change. *Journal of Abnormal and Social Psychology*, 60(1), 80-85.
- D'Souza, Dinesh. (1991). *Illiberal Education: The Politics of Race and Sex on Campus*. New York: The Free Press.
- Eble, Kenneth E. (1972). *Professors as teachers*. San Francisco, California: Jossey-Bass Inc., Publishers.
- Elliott, Allen & Marcia Stoesz. (1992). *KwikStat: Statistical Data Analysis Program*. [Computer program]. Cedar Hill, TX: TexaSoft.
- Elliott, Allen & Marcia Stoesz. (1992). *KwikStat: Statistical Data Analysis Program*. [Program manual]. Cedar Hill, TX: TexaSoft.
- Eurich, Nell P. (1985). *Corporate classrooms: The learning business*. Princeton, New Jersey: The Carnegie Foundation for the Advancement of Teaching.
- Euster, Gerald & Robert W. Weinbach. (1986). Deans' quality assessment of faculty publications for tenure/promotion decisions. *Journal of Social Work Education*, 22(3), 79-84.
- Feldman, Dan & Jim Gagnon. (1986). *StatView 512+*. [Computer program]. Calabasas, CA: Brian Power, Inc.
- Feldman, Dan & Jim Gagnon. (1986). *StatView 512+*. [Program manual]. Calabasas, CA: Brian Power, Inc.

- Fine, Benjamin. (1965, July 26). *New Orleans States-Item*. In Schmitt, Hans A. (1965). Teaching and Research. *Journal of Higher Education*, 36, 419.
- Finkelstein, Martin J. (1984). *The American Academic Profession: A Synthesis of Social Scientific Inquiry Since World War II*. Columbus, Ohio: Ohio State University Press.
- Friedrich, Robert J. & Stanley J. Michalak, Jr. (1983). Why doesn't research improve teaching? Some answers from a small liberal arts college. *The Journal of Higher Education*, 54, 145-163.
- Fu, Yu-Fang Salony. (1991). *Computer Literacy among Faculty in Higher Education*. Unpublished doctoral dissertation. University of North Texas, Denton, Texas.
- Gerson, Mark. (1985, July 3). McGill U. assails president 'inaccuracies' in report on its role by Quebec Council." *The Chronicle of Higher Education*, pp. A25.
- Grove, H. D., and Savich, R. S. (1979). Attitude research in accounting: A Model for reliability and validity considerations. *The Accounting Review*. 54, 522-537.
- Hammond, Phillip E., John Meyer, & David Miller. (1969). Teaching versus research: Sources of misperception. *The Journal of Higher Education*, 40, 682-690.
- Hands, J. (1953). A method of weighing attitude scale items from subject responses. *Journal of Clinical Psychology*, 9, 37-39.
- Harry, Joseph & Norman S. Goldner. (1972). The null relationship between teaching and research. *Sociology of Education*, 45, 47-60.
- Hartley, James & Christopher K. Knapper. (1984). Academics and their writing. *Studies in Higher Education*, 9, 151-167.
- Hayes, John R. (1971, April 16). Research, teaching, and faculty fate. *Science*, pp. 227-230.

- Helmstadter, G. C. (1964). *Principles of psychological measurement*. New York: Appleton-Century-Crofts.
- Hicks, Robert A. (1974). The relationship between publishing and teaching effectiveness. *California Journal of Educational Research*, 25, 140-146.
- Higginbotham, Patricia E. (1982). The publish or perish syndrome. *Journal of Physical Education, Recreation and Dance*, 53(5), 73-75.
- Huer, Jon. (1991). *Tenure for Socrates: A Study in the Betrayal of the American Professor*. New York: Bergin & Garvey.
- Hutchins, Robert M. (1953). *The University of Utopia*. Chicago: The University of Chicago Press.
- Killian, James R., Jr. (1965, December). Teaching is better than ever. *The Atlantic Monthly*, pp. 53-65.
- Linsky, Arnold S. & Murray A. Straus. (1975). Student evaluations, research productivity, and eminence of college faculty. *The Journal of Higher Education*, 56, 89-102.
- Madsen, John. (1980). Education—A horse on you. *Educational Leadership*, 37, 512-513.
- Martin, Thomas W. & K. J. Berry. (1969). The teaching-research dilemma: Its sources in the university setting. *The Journal of Higher Education*, 40, 691-703.
- McCall, Chester H., Jr. (1980). *Sampling and statistics handbook for research in education*. Playa Del Rey, CA: National Education Association.
- McCauley, Robert N. (1982). The business of the university. *Liberal Education*, 68, 27-34.
- McGrath, Earl J. (1959). *The graduate school and the decline of liberal education*. New York: Bureau of Publications, Teachers College, Columbia University.

- Meiklejohn, Alexander. (1957). Address at St. John's College. Cynthia Stokes Brown, ed., (1981). *Alexander Meiklejohn: Teacher freedom*. Berkeley: Meiklejohn Civil Liberties Institute, In Mervyn L. Cadwallader, A manifesto: The case for an academic counterrevolution. *Liberal Education*, 1982, 68, 417.
- Merriam, Robert W. (1986). Academic research vs. The liberal arts. *Journal of College Science Teaching*, 16(2), 105-109.
- Merwin, Jack C. & Francis J. Di Vesta. (1959). A Study of need theory and career choice. *Journal of Counseling Psychology*, 6(4), 302-308.
- Miller, Floyd D. (1934). The validation of a generalized attitude scaling technique. Construction of an attitude scale toward teaching. *Purdue University Studies in Higher Education XXVI*, 35(4), 98-110.
- Miller, Harold E. (1934). The construction and evaluation of a scale of attitudes toward occupations. *Purdue University Studies in Higher Education XXVI*, 35(4), 68-76.
- Mooney, Carolyn J. (1991, May 22). Efforts to cut amounts of 'trivial' scholarship win new backing from many academics. *The Chronicle of Higher Education*, A1, A13, A16.
- Neumann, Yoram & Edith Finaly-Neumann. (1990). The reward-support framework and faculty commitment to their university. *Research in Higher Education*, 31(1), 75-97.
- Newton, Robert R. (1982, Summer). Performance Evaluation in Education. *Journal of the College and University Personnel Association*, 33(2), 39-43.
- Norusis, Marija J. (1990). *SPSS/PC+*. [Computer program]. Chicago, IL: SPSS Inc.
- Norusis, Marija J. (1990). *SPSS/PC+: 4.0 Base Manual for the IBM PC/XT/AT and PS/2*. [Computer manual]. Chicago, IL: SPSS Inc.
- Nikkhah-Azad, Ali. (1988). *Perception of college and university auditors concerning the importance of selected factors associated with successful*

- performance in operational auditing*. Unpublished doctoral dissertation proposal. University of North Texas, Denton, Texas.
- Oppenheim, A. N. (1966). *Questionnaire design and attitude measurement*. New York: Basic Books, Inc., Publishers.
- Philips, B. S. (1971). *Social research: Strategy and tactics* (2nd ed.). New York: MacMillan.
- Professor X. (1973). *This Beats Working For a Living: The Dark Secrets of a College Professor*. New York: Manor Books Inc.
- Remmers, H. H. (1960). *A scale for measuring attitudes toward any proposed social action*. Lafayette, Indiana: Purdue University.
- Remmers, H. H. (1934). Studies in Higher Education XXVI: Studies in attitudes. *Bulletin of Purdue University*, 35(4), 64-109.
- Rodenhouse, Mary Pat. (1992). *The HEP: 1992 higher education directory*. Falls Church, Virginia: Higher Education Publications, Inc.
- Rugarcia, Armando. (1991). The link between teaching and research: Myth or possibility? *Engineering Education*, 81(1), 20-22.
- Salvia, John & James E. Yesseldyke. (1978). *Assessment in Special and Remedial Education*. Boston, MA: Houghton Mifflin Company.
- Schaefer, William D. (1990). *Education without compromise*. San Francisco, California: Jossey-Bass Inc., Publishers.
- Schmitt, Hans A. (1965). Teaching and Research. *Journal of Higher Education*, 36, 419-427.
- Schweitzer, John C. (1989). The research climate in programs in journalism and mass communication. *Journalism Quarterly*, 66, 987-991.
- Sellitz, C., Wrightsman, L. J., & Cook, S. W. (1976). *Research methods in social relations* (3rd ed.). New York: Holt, Rinehard, and Winston.

- Silance, Ella B. and H. H. Remmers. (1934). An experimental generalized master scale: A Scale to measure attitude toward any school subject. *Purdue University Studies in Higher Education XVI, 35*, 84-87.
- Sharp, David. (1992, November/December). How to Read a Fund-Raising Letter. *Special Report*. 42-43.
- Showalter, Dennis E. (1978). Publication and stagnation in the liberal arts college. *Educational Record, 59*, 166-172.
- Smith, Page. (1990). *Killing the spirit: Higher education in America*. New York: Viking Penguin.
- Staff. (1987, July 8). Carnegie foundation's classifications of colleges. *The Chronicle of Higher Education*, pp. 22-30.
- Startup, Richard. (1985). The changing perspective of academic researchers, 1973-1983. *Studies in Higher Education, 10(1)*, 69-78.
- Sykes, Charles J. (1988). *ProfScam: Professors and the Demise of Higher Education*. Washington, D.C.: Regnery Gateway.
- Turns, Stephen R. (1991). Faculty research and teaching--A view from the trenches. *Engineering Education, 81(1)*, 23-25.
- Tussman, Joseph. (1969). *Experiment at Berkeley*. New York: Oxford University Press.
- Voeks, Virginia W. (1962). Publications and teaching effectiveness. *The Journal of Higher Education, 33*, 212-218.
- Wachtel, P. (1980). Investigation and its discontents: Some constraints on progress in psychological research. *American Psychologist, 35*, 399-408.
- Wandel, Lee P. (1992, Winter). Teaching in research universities. *American Council of Learned Societies Newsletter, (Second series)*, pp. 7-9.
- Weaver, Frederick S. (1986). Scholarship for the teaching faculty. *College Teaching, 34(2)*, 51-58.

Wilson, John Harold & Robin Scott Wilson. (1972). The teaching-research controversy. *Educational Record*, 53, 321-326.