SOUTHEASTERN UNIVERSITY AND COLLEGE COALITION FOR ENGINEERING EDUCATION

2002 SUCCEED FACULTY SURVEY OF TEACHING PRACTICES AND PERCEPTIONS OF INSTITUTIONAL ATTITUDES TOWARD TEACHING*

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Abstract

SUCCEED (Southeastern University and College Coalition for Engineering Education) is an eight-campus coalition of engineering schools formed in 1992 under the sponsorship of the National Science Foundation. In 1997, members of SUCCEED's faculty development and program assessment teams designed a faculty survey of instructional practices and attitudes regarding the climate for teaching on the Coalition campuses. The respondents were asked about the frequency with which they used various teaching techniques (including active learning, team homework, and technology-assisted instruction), their involvement in faculty development programs, and the effects of those programs on their teaching. They were also asked to rate the importance of teaching quality to themselves, their colleagues, and their department, college, and university administrators and in the faculty reward system on their campus. The survey was first administered late in 1997, a modified version was administered late in 1999, and a third administration took place in the spring of 2002.

The 2002 survey was sent by e-mail in March 2002 to 1589 faculty e-mail addresses, and a follow-up survey was sent a month later to non-respondents. After blank surveys and duplicates were eliminated from the returns, 375 valid and usable surveys remained, a return rate of 24%. Of those, 46 were excluded from most analyses (except for demographic summaries) because the respondent had not taught undergraduates in the prior three years. The demographic profile of the respondents closely matched that of the full faculty with respect to sex, rank, position, engineering discipline, and participation in SUCCEED-sponsored activities.

This report summarizes results from the 2002 administration of the survey and itemizes significant differences among groups (sex, rank, position, years of service, SUCCEED involvement, prior attendance at teaching seminars, and Carnegie classification). When possible, the data are compared with the data from the 1997 and 1999 survey administrations to examine changes in faculty teaching practices and attitudes in the intervening years.

Electronic versions of the complete report may be viewed at

http://www.succeednow.org/products/02faculty_survey.pdf

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Introduction

The SUCCEED Coalition is one of a number of multi-university coalitions sponsored by the National Science Foundation to improve engineering education in the United States. SUCCEED (Southeastern University and College Coalition for Engineering Education) comprises eight engineering schools—Clemson University, Florida A & M and Florida State Universities (which have a joint engineering program), Georgia Institute of Technology, North Carolina A & T University, North Carolina State University, University of Florida, University of North Carolina at Charlotte, and Virginia Polytechnic Institute and State University. SUCCEED was originally funded in 1992 for five years, and its funding was renewed for another five years in 1997.

At the beginning of its second five-year funding period, SUCCEED formed several focus teams, including one to coordinate faculty development (FD) activities. As part of the FD program, a survey was designed to track the SUCCEED institution faculty's instructional practices (including their uses of technology), involvement in instructional development programs, and perceptions about institutional support for teaching on their campuses. The survey was first administered in the 1997-98 academic year; a modified version was administered in 1999; and a third administration took place in the spring of 2002 near the end of the second five-year funding period.

This document reports the findings from the 2002 administration of the survey. The respondents were asked to answer questions about their experience and practice in six primary areas: prior involvement with teaching beyond classroom instruction, rated importance of teaching quality and innovation to themselves and colleagues, frequency of use of various teaching techniques for undergraduate instruction, involvement in teaching improvement programs on campus, use of e-mail and the World Wide Web in instruction, and changes in teaching practices that may have resulted from participation in faculty development activities.

The results in the first four of these areas can be compared with the results of the baseline survey administered during the 1997-1998 academic year[1] and the first follow-up survey in 1999-2000[2] to measure the impact the SUCCEED faculty development program has had on faculty teaching practices and institutional environment in the intervening years. The results in the last two of these areas can be compared for the latter two administrations of the survey in 1999 and 2002. A copy of the 2002 survey instrument appears in Appendix A. This report summarizes responses to each of the questions and itemizes significant differences among groups (sex, rank, position, years of service, SUCCEED involvement, prior attendance at teaching seminars, and Carnegie classification). Where appropriate, comparisons with the 1997 and 1999 surveys are made.

The 1997 survey was designed by Dr. Rebecca Brent and Dr. Richard Felder, co-directors of the SUCCEED Faculty Development Coalition Focus Team, with assistance from Dr. Catherine Brawner of Research Triangle Educational Consultants, a consultant to SUCCEED. The 1999 survey was based on the 1997 survey with modifications made to clarify some questions, make it

[1] The report on that survey, *1997-1998 Faculty Survey of Teaching Practices and Perceptions of Institutional Attitudes Toward Teaching*, is available through ERIC Document Reproduction Service (ED 428 607).
[2] The report on that survey, *1999-2000 SUCCEED Faculty Survey of Teaching Practices and Perceptions of Institutional Attitudes Toward Teaching*, is available through ERIC Document Reproduction Service (ED 461 510).

easier for subjects to respond, and add questions on Web and e-mail use and behavioral change. The 2002 survey had few substantive changes from the 1999 version. It was administered to all engineering faculty members via e-mail. The analysis of the data was performed by Dr. Brawner and Dr. Rodney Allen of COMP-AID.

Survey Methodology

Campus Implementation Team leaders from each SUCCEED campus were asked to provide complete lists of engineering faculty members. The survey was sent to all 1589 faculty with e-mail addresses provided by the team leaders in mid-March of 2002. A month later faculty who had not responded were sent a follow-up survey. All surveys were returned directly to Dr. Brawner and respondents were assured that no one on their campus would see their individual responses.[3]

Description of Sample

After blank surveys and duplicates[4] were eliminated from the returns, 375 valid and usable surveys remained, a return rate of 24%. This response rate is lower than in the previous two administrations, and the decrease is consistent among the schools. We surmise that some of this decrease is caused by a diminished faculty attention to SUCCEED as its programs wind down and to changes in leadership at Georgia Tech and Virginia Tech. Table 1 shows the surveys returned by institution in 2002, 1999, and 1997.

[3] In 1997 and 1999, respondents were provided with the opportunity to mail their responses anonymously to Dr. Brawner. Few people took advantage of this option and it was not offered in 2002.

[4] Duplicate responses were determined by e-mail addresses and, if available, the real names of the respondents. In cases of duplication, the first survey returned was used in the analysis and the second was discarded.

Table 1
Survey responses by institution and year

	2002			1999			1997		
	N	n	%	N	n	%	N	n	%
Clemson	138	44	32	145	59	41	141	64	45
FAMU-FSU	71	16	23	73	25	34	72	29	40
Georgia Tech	348	72	21	341	159	47	321	84	26
NCSU	287	74	26	265	89	34	199	68	34
NC A&T	73	18	25	75	22	29	81	27	33
UNC Charlotte	77	29	38	93	35	38	93	34	37
U. Florida	328	74	23	348	98	28	353	98	28
Virginia Tech	267	48	18	281	95	34	289	99	34
Total	1589	375	24	1621	582	36	1549	503	32

Eighty-nine percent of the 366 respondents who reported their sex were men. Tables 2 and 3 show the respondents' rank by primary academic function and their engineering discipline. The mean years as a faculty member was 15.7 (SD = 11.3) and that at the current institution was 12.7 years (SD = 9.5). The longest service by a current faculty member was 55 years. Assistant professors averaged about 4 years as a faculty member at their current institution (SD = 4.2), associate professors averaged 11.5 (SD = 6.1), and full professors averaged nearly 18 (SD = 8.8). The demographic makeup of the three samples was substantially the same using the Chi-squared test of independence with respect to the respondents' sex, department, rank (assistant, associate or full professor), and years as a faculty member for the 1999 and 2002 samples. The samples were different with respect to the schools represented (χ^2 (14, N = 1460) = 34.19, p = .002) and position (χ^2 (8, N = 1446) = 16.87, p =. 032) although much of that difference may be accounted for by the systematic elimination of faculty members who identified themselves as "research faculty" or "other" who did not answer many other questions from the 1997 dataset. (This led to the modification of the 1999 and 2002 surveys to purposefully exclude respondents who had not taught undergraduates in the preceding three years while retaining their demographic information.)

Table 2
Rank by primary academic function

Rank	Current Position						
	Teaching	Teaching Research	Research	Dept. Chair	Dean/other admin	Other	Total
Assistant	2 2.5%	72 90.0%	4 5.0%	0 0.0%	1 1.3%	1 1.3%	80 21.7%
Associate	8 8.2%	80 82.5%	3 3.1%	4 4.1%	1 1.0%	1 1.0%	97 26.4%
Professor	15 9.9%	112 74.2%	5 3.3%	7 4.6%	10 6.6%	2 1.3%	151 41.0%
Instructor / Lecturer	9 75.0%	1 8.3%	0 0.0%	0 0.0%	2 16.7%	0 0.0%	12 3.3%
Adjunct/ Visiting	8 66.7%	0 0.0%	2 16.7%	0 0.0%	0 0.0%	2 16.7%	12 3.3%
Emeritus/ retired	2 28.6%	3 42.9%	0 0.0%	1 14.3%	0 0.0%	1 14.3%	7 1.9%
Other	1 11.1%	5 55.6%	1 11.1%	0 0.0%	2 22.2%	0 0.0%	9 2.4%
Total	45 12.2%	273 74.2%	15 4.1%	12 3.3%	16 4.3%	7 1.9%	368 100.0%

Table 3
Engineering discipline of responses

Discipline	Frequency	Percent
Chemical	35	9
Civil and Environmental	52	14
Computer Science	21	6
Electrical/ECE	77	21
Industrial and Systems	40	11
Ceramics and Materials	23	6
Mechanical and Aerospace	70	19
Other	57	15
Total	375	100.0

Notes: *Computer Science is not in the College of Engineering at all schools. These numbers only represent computer science faculty who are in the College of Engineering.
**Includes: Agricultural, Architectural, Coastal, Engineering Science and Mechanics, Engineering Technology, College of Engineering, Freshman Engineering, Engineering Technology, Mining and Minerals, Nuclear, and Textiles

The demographic profile of the faculty at large was not available for the 2002 population so that of the 1999 population was used. The demographics of the 1999 and 1997 populations were indistinguishable so we feel that this assumption is justified. With this proviso, the demographic profile of the respondents is representative of the full faculty with respect to rank and engineering discipline. Women are somewhat overrepresented in the sample, which, given their generally low representation in the faculty ranks, allows for better statistical comparisons. We initially speculated that faculty inclined to participate in faculty development activities and to use non-traditional instructional methods like active and cooperative learning would be over-represented among respondents to a survey of teaching practices. This fear proved to be unfounded. When the survey asked about participation in SUCCEED-sponsored activities (by attending workshops, seminars, etc. or otherwise being actively involved), 39% of 335 respondents reported having participated. An independent database of faculty participants in SUCCEED-sponsored activities (workshops, seminars, etc.) shows that near the end of 2000-2001 academic year, 61% of 1615 tenure track faculty members had participated. Our sample includes faculty members who are not tenure track. In addition, as SUCCEED faculty development activities have become integrated into the campus environments through university teaching centers and other mechanisms, its sponsorship of activities has become less apparent to typical faculty members. We conclude that the 2002 survey respondents constitute a fair sample of the entire SUCCEED engineering faculty population in most important respects.

Administrators who responded were also almost all actively involved in SUCCEED χ^2 (8, N = 312) $\leq$ .001 which may confound the results by position and yield significant results that are in fact due to involvement in SUCCEED rather than administrator status.

Methodology

The survey data were analyzed using standard statistical methods . Responses were classified according to respondents' sex, rank, position, years of service, level of involvement with SUCCEED, prior attendance at teaching seminars, and Carnegie classification[5] of the respondents' schools. They were tested to determine if there were any significant response differences within these categories. The data were analyzed using SPSS® for Windows ™ version 11.5, a popular statistical package for social science research.

Responses to questions were analyzed using either t-tests or one-way analysis of variance (ANOVA), with the Bonferroni multiple comparisons procedure used to compare mean responses among the various groups.[6] The significant differences will be pointed out in the text and in the tables through the use of subscripts, where columns that have different subscripts have significantly different means and those that share a subscript have statistically indistinguishable means. The F-statistic reported in the tables is the result of the ANOVA. An indication of significance in a table signifies that the means of the groups reported in the tables are significantly different using the scales in the following paragraph.

Levene's test for equality of variances was used with the t-tests to determine the appropriate degrees of freedom. If the degrees of freedom indicated in the report are reported to the tenth (e.g., 872.4 or 78.0), Levene's test indicated that the variances were not equal. In order to calculate the t- or F-statistics in these analyses, the following scale was used: Never = 0, One or more times a semester = 1, One or more times a month = 2, one or more times a week = 3, and Every class = 4. Other similarly worded response sets were anchored by Never = 0 and proceeded in order of increasing frequency. Chi-squared analyses were used for categorical data. For the purpose of determining significance, alpha was set at 0.05.

To identify significant differences among groups, it was necessary to eliminate certain low-incidence groups from further analysis within these groups or to combine categories[7]. Taking this step improves the likelihood that significant differences found among the groups are meaningful rather than simply a statistical artifice. These adjustments may slightly alter the total sample means reported in different contexts. For instance when comparing faculty members by

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[5] Carnegie Foundation for the Advancement of Teaching, 2000: See http://www.carnegiefoundation.org/classification/. Clemson, Florida, Florida State, Georgia Tech, NC State, and Virginia Tech are classified by the Carnegie Foundation as Doctoral/Research Universities – Extensive while FAMU, NCA&T, and UNC-Charlotte are classified as Masters Colleges and Universities I. These categories correspond with the 1994 classifications of the same institutions as "Research" and "Masters" used in the 1997 report. For the purposes of this report, the FAMU-FSU College of Engineering is classified as a Masters institution.

[6] Because of the nature of these tests, it is possible for the ANOVA to report a significant difference in the mean responses of the subgroups without the Bonferroni test identifying which of the groups is significantly different from the others. This is most likely to occur when the reported significance level of the ANOVA is near p = .05. In other cases, where the p-value of the ANOVA indicates a higher significance, the Bonferroni test may report that Group A is significantly different from Group C, but that Group B is statistically indistinguishable from both A and C.

[7] For example, an "instructor/lecturer" who was also a woman would be excluded from analyses of the data by rank but included in analyses by sex.

rank a mean might be 3.4 but when comparing them by position, the reported mean might be 3.5 because more respondents were included. The following adjustments of this nature were made:

- Within the rank category, only assistant professor, associate professor, and (full) professor categories were investigated. This decision eliminated 52 people who listed their rank as instructor/lecturer, adjunct/visiting, emeritus/retired, or other, or who did not list their rank.
- Within the current position category, only teaching, teaching/research, and administration categories were investigated. In addition, department chairs were combined with "dean's office/other administration" category in some instances, particularly to compare the 1999 and 2002 results with the 1997 results. This decision eliminated 22 people who listed their position as research or other.
- Within the level of involvement in SUCCEED category, the 11 people who indicated that their involvement level was "other" were eliminated.

In addition, in order to get a more realistic portrayal of those faculty who teach undergraduates, the 46 people who indicated that they had not taught undergraduates during the prior three years were asked to answer demographic questions only. This is a substantive change from the 1997 survey where those faculty members were not systematically eliminated and therefore people in that circumstance may have provided information about their teaching behavior that was not current.

In order to compare the 2002 and 1999 surveys with the 1997 survey, adjustments needed to be made to the data sets to make them comparable. These were as follows:

- From 1997, the level of involvement in SUCCEED variable combined the responses "actively involved" and "project leader" into "actively involved" to match the 1999 and 2002 response choices.
- A number of questions in 1997 had the response choices:
    - One to three times per week
    - One to three times per month
    - One to three times per semester
    - Never

  The corresponding questions in 1999 and 2002 added the choice of "every class." When the response sets were combined, "every class" was combined with "one or more times per week" to yield a response set like that above.
- The 1997 survey "teaching quality" (e.g., "please rate the importance of teaching quality to you") responses were in the range 0-10 where 0 = "not at all important" and 10 = "extremely important." The 1999 and 2002 survey "teaching quality" responses were in the integer range 1-7 where 1 = "not at all important" and 7 = "extremely important." To compare teaching quality on the same scale, the 1997 responses were mathematically transformed to the 1999/2002 scale using the formula $y = 1+.6x$ (where x is the 1997 reponse) and rounded to the nearest integer. It is assumed that the responses are approximately continuous and linear in the ranges 0-10 and 1-7. Therefore 0 converts to 1, 1 and 2 to 2, 3 and 4 to 3, 5 to 4, 6 and 7 to 5, 8 and 9 to 6, and 10 to 7.

Findings

Involvement in teaching seminars, workshops, and conferences

Table 4 shows the number of teaching seminars, workshops, and conferences attended by the respondents in their careers and the number attended during the previous academic year. In 1999 and 2002, only those respondents who had taught in the prior three years were asked this question while in 1997 all respondents answered it. This difference may account in part for the higher percentages of respondents in those years who attended workshops in the prior academic year. There was no significant difference in the average number of prior year teaching seminars attended in 2002 and 1999.

Table 4
Attendance at teaching seminars, workshops, or conferences

# of teaching seminars	Career			# of teaching seminars	Prior academic year		
	2002	1999	1997		2002	1999	1997
0	10%	10%	15%	0	40%	41%	44%
1-2	21%	21%	26%	1	22%	23%	30%
3-5	25%	31%	30%	2	10%	20%	16%
6-10	18%	16%	16%	≥3	28%	16%	9%
>10	25%	23%	13%	Mean (SD)	1.21 (1.9)	1.36 (1.8)	N/A
Total	336	510	497	Total	384	506	496
Since you began teaching, about how many seminars, workshops, conferences, etc., have you attended that were specifically related to teaching?				From September 1996 [August 1998, January 2001] through August 1997 [July 1999, December 2001], how many seminars, workshops, conferences, etc., did you attend that were specifically related to teaching?			

Although assistant professors reported attending more teaching related seminars during the prior year than associate and full professors in each of the three years, the only significant difference was between assistant and full professors in 1999. Assistant professors attended an average of 1.74 seminars that year compared with full professors' 1.21 ($F(2, 471) = 3.21$, $p = .041$). (The question was not asked as a scale variable in 1997.) Not surprisingly, the number of career teaching seminars has increased for all groups over the five year period as more teaching seminars were offered by SUCCEED and through other venues. This is shown in tables 5 and 6.

Table 5
Teaching seminars attended past year

	Assistant Professor			Associate Professor			Professor		
	2002	1999	1997	2002	1999	1997	2002	1999	1997
0	27%	30%	35%	47%	38%	45%	44%	46%	47%
1	25%	24%	32%	29%	26%	30%	20%	22%	30%
2	22%	25%	18%	7%	21%	17%	8%	16%	15%
≥3	26%	22%	15%	17%	14%	7%	28%	16%	8%
Mean (SD)	1.4 (1.6)	1.7 (1.9)	N/A	.96 (1.5)	1.4 (1.8)	N/A	1.2 (2.2)	1.2 (1.7)	N/A
N	81	110	96	98	149	161	153	215	209

Table 6
Career teaching seminars

	Assistant Professor			Associate Professor			Professor		
	2002	1999	1997	2002	1999	1997	2002	1999	1997
0	10%	11%	19%	3%	6%	9%	12%	10%	14%
1-2	32%	29%	32%	16%	15%	28%	22%	21%	21%
3-5	25%	37%	35%	32%	36%	31%	23%	25%	27%
6-10	18%	11%	8%	17%	23%	21%	20%	14%	19%
>10	15%	13%	6%	33%	20%	11%	23%	30%	19%
N	72	111	97	95	148	160	130	219	210

In both 1999 and 2002, women attended significantly more teaching workshops in the prior year than did men. In 1999 they attended an average of 2.15 (SD=2.7) workshops compared with the men's 1.28 (SD = 1.6), t (50.8) = 2.21, p = .032. In 2002 they attended an average of 1.95 (SD = 2.4) workshops compared with the men's 1.09 (SD = 1.8), t(45.5) = 2.2, p = .034. Similar statistics are not available for 1997. Table 7 shows the teaching seminars attended each year by sex.

Table 7
Teaching seminars attended past year

	Male			Female		
	2002	1999	1997	2002	1999	1997
0	40.6%	40.9%	43.6%	31.7%	39.6%	42.9%
1	23.1%	24.1%	30.9%	17.1%	12.5%	30.6%
2	9.2%	19.9%	15.9%	24.4%	16.7%	20.4%
≥3	27.1%	15.0%	9.5%	26.8%	31.3%	6.1%
Mean (SD)	1.09 (1.8)	1.28 (1.6)	N/A	1.95 (2.4)	2.15 (2.7)	N/A
N	325	452	433	41	48	49

Table 8 shows the level of involvement in SUCCEED-sponsored activities in 2002, 1999 and 1997. The percentage of respondents who reported attending a Coalition program or being actively involved in SUCCEED in 1999 equals the percentage of tenure track faculty (42%) known independently to have attended SUCCEED-sponsored activities through 1999.

Table 8
Level of involvement in SUCCEED programs

	2002	1999	1997
Don't know anything	10%	8%	8%
Heard, not involved	47%	50%	56%
Attended coalition program	21%	26%	13%
Actively involved (PI, CIT or CFT member)	19%	16%	21%
Other	3%	1%	1%
Number of respondents	335	509	499

Rated importance of teaching quality and innovation

Respondents were asked to rate on a scale of 1 to 7 – with 1 meaning "not at all important" and 7 meaning "extremely important" – the importance of teaching quality to themselves, their department faculty colleagues, their department head, their dean, and the top administrator at their university. They were also asked to rate on the same scale the importance of teaching quality and of teaching innovation (testing new methods, writing textbooks or instructional software) in their institution's faculty incentive and reward system (recognition, raises, tenure, promotion).

As shown in Table 9, respondents rated the importance of teaching quality to themselves quite highly—significantly higher than the ratings they gave their colleagues, their department chair, their dean, or their top administrator. As was true in previous years, the importance of teaching quality and innovation in the reward system was rated rather low. All of the pairs of means except those that share the subscript "a" are significantly different from each other at the $p \leq .05$ level.

Table 9
Rated importance of teaching quality and innovation

Importance of	To	Mean	Standard Deviation	N
Quality	Respondent	6.47	0.70	335
Quality	Colleagues	5.16_a	1.23	335
Quality	Dept. Head	5.29_a	1.41	333
Quality	Dean	4.86	1.58	331
Quality	Top Administrator	4.98	1.52	327
Quality	Reward System	3.49	1.59	332
Innovation	Reward System	3.34	1.49	331

As shown in Table 10, respondents rated the importance of teaching quality to the department head and the dean significantly lower in 2002 than in either 1999 or 1997. They also rated the importance of teaching quality to their colleagues, in the institutional reward system and the importance of teaching innovation in the reward system lower in 2002 than they did in 1997.

Table 10

Change in rated importance of teaching quality 1997-2002

	2002	1999	1997
Importance of teaching quality to you	6.47_a (.70) 335	6.50_a (.71) 511	6.49_a (.63) 500
Importance of teaching quality to colleagues	5.16_a (1.23) 335	5.21_a (1.24) 507	5.42_b (.99) 490
Importance of teaching quality to dept head	5.29_a (1.41) 333	5.58_b (1.31) 506	5.58_b (1.24) 489
Importance of teaching quality to dean	4.86_a (1.58) 331	5.14_b (1.49) 496	5.17_b (1.34) 483
Importance of teaching quality to top administrator	4.98_a (1.52) 327	5.10_a (1.52) 487	5.19_a (1.27) 475
Importance of teaching quality in reward system	3.49_a (1.59) 332	3.71_a (1.49) 504	3.84_b (1.39) 488
Importance of teaching innovation in rewards	3.34_a (1.49) 331	3.50_a (1.42) 501	3.72_b (1.42) 483

Note: means in the same row that do not share a subscript are significantly different at the $p < .05$ level using the Bonferroni test. Standard deviations appear in parentheses below the means and above the number of respondents in each cell.

The following significant differences among subgroups in 2002 were noted.

- Men (M = 3.41, SD = 1.48) rated the importance of teaching innovation in the institutional rewards system higher than women (M = 2.87, SD = 1.45); t(315) = 2.12, p = .035.
- Professors (M = 3.68, SD = 1.45) rated the importance of teaching innovation in the institutional rewards system higher than both assistant professors (M =3.15, SD = 1.53) and associate professors (M = 3.13, SD = 1.51) although only the difference between professors and associate professors was significant F(2, 291) = 4.79, p = .009.
- Faculty at Masters institutions (M = 3.72, SD = 1.67) rated the importance of teaching innovation in the institutional rewards system higher than faculty at Research institutions (M = 3.24, SD = 1.42), t(322) = 2.26, p = .024.
- Faculty members at Masters institutions also rated the importance of teaching quality to the dean (M = 5.39, SD = 1.52) and top administrator at their university (M = 5.32, SD = 1.48) higher than did faculty members at Research institutions (M = 4.75, SD = 1.55; M = 4.88, SD = 1.49), t(322) = 2.85, p = .005; t(318) = 2.00, p = .046 respectively.
- Faculty members whose primary position is teaching (M = 6.75, SD = .71) rated the importance of teaching quality to themselves significantly higher than did faculty members whose primary position is teaching and research (M = 6.42, SD = .71). Administrators were statistically indistinguishable from both groups (M = 6.72, SD = .46), F(2, 309) = 5.03, p = .007.

- Faculty members who have been actively involved in SUCCEED (M = 5.00, SD =1.59) and those who have heard of the coalition (M = 5.20, SD = 1.46) rated the importance of teaching quality to their department chairs lower than did those who had attended a coalition program (M = 5.59, SD = 1.10) or had never heard of the Coalition (M = 5.68, SD = 1.17), F(3, 316) = 3.01, p = .031. Although on the whole these means are statistically different, it is not possible to tell specifically which groups are different from each other using the Bonferroni test.

Tables 11, 12, 13, and 14 show all of the results by sex, Carnegie classification, rank, and position for all three years.

Table 11
Importance of teaching quality by sex and year

	2002		1999		1997	
	Male	Female	Male	Female	Male	Female
Importance of teaching quality to you	6.44 (.72) 280	6.60 (.59) 40	6.50 (.70) 456	6.53 (.71) 49	6.50 (.61) 436	6.46 (.68) 50
Importance of teaching quality to colleagues	5.21 (1.18) 281	4.90 (1.53) 40	**5.27** (1.19) 453	**4.63** (1.52) 48	**5.45** (.96) 429	**4.98** (1.19) 47
Importance of teaching quality to dept head	5.31 (1.37) 280	5.10 (1.59) 39	**5.63** (1.30) 452	**5.10** (1.39) 48	5.63 (1.21) 428	5.30 (1.38) 47
Importance of teaching quality to dean	4.85 (1.56) 277	5.03 (1.42) 40	5.19 (1.45) 442	4.87 (1.70) 48	**5.23** (1.32) 425	**4.73** (1.37) 45
Importance of teaching quality to top administrator	4.95 (1.49) 275	5.08 (1.53) 39	5.16 (1.50) 433	4.75 (1.64) 48	5.21 (1.30) 415	5.07 (1.04) 46
Importance of teaching quality in reward system	3.53 (1.58) 278	3.33 (1.73) 40	**3.77** (1.47) 450	**3.21** (1.52) 48	3.88 (1.38) 425	3.73 (1.32) 49
Importance of teaching innovation in rewards	**3.41** (1.48) 278	**2.87** (1.45) 39	**3.56** (1.40) 447	**3.02** (1.45) 48	3.77 (1.41) 423	3.57 (1.33) 47

Note: means that are significantly different at $p \leq .05$ within a year appear in **boldface**. Standard deviations appear in parentheses below the means and above the number of respondents in each cell.

Table 12

Importance of teaching quality by Carnegie classification and year

	2002		1999		1997	
	Research	Masters	Research	Masters	Research	Masters
Importance of teaching quality to you	6.44 (.70) 271	6.63 (.70) 56	6.50 (.71) 432	6.54 (.70) 76	6.48 (.65) 410	6.53 (.58) 90
Importance of teaching quality to colleagues	5.16 (1.19) 271	5.21 (1.37) 57	5.20 (1.20) 429	5.24 (1.45) 75	5.44 (.96) 403	5.31 (1.11) 87
Importance of teaching quality to dept head	5.25 (1.36) 269	5.47 (1.56) 57	5.59 (1.27) 427	5.50 (1.54) 76	5.61 (1.22) 402	5.44 (1.33) 87
Importance of teaching quality to dean	**4.75** (1.55) 268	**5.39** (1.52) 56	5.12 (1.48) 420	5.31 (1.53) 74	5.13 (1.35) 396	5.37 (1.30) 87
Importance of teaching quality to top administrator	**4.88** (1.49) 264	**5.32** (1.48) 56	5.11 (1.50) 412	5.07 (1.64) 73	5.21 (1.28) 392	5.08 (1.22) 83
Importance of teaching quality in reward system	3.43 (1.56) 268	3.75 (1.72) 57	**3.65** (1.49) 427	**4.03** (1.44) 74	3.87 (1.39) 400	3.70 (1.42) 88
Importance of teaching innovation in rewards	**3.24** (1.42) 267	**3.72** (1.67) 57	3.48 (1.42) 425	3.56 (1.41) 73	3.75 (1.40) 397	3.62 (1.50) 86

Note: means that are significantly different at $p \leq .05$ within a year appear in **boldface**. Standard deviations appear in parentheses below the means and above the number of respondents in each cell.

Table 13

Importance of teaching quality by rank and year

	2002			1999			1997		
	Assistant Professor	Associate Professor	Professor	Assistant Professor	Associate Professor	Professor	Assistant Professor	Associate Professor	Professor
Importance of teaching quality to you	6.34 (.67) 71	6.49 (.65) 95	6.44 (.79) 131	6.35_{a} (.71) 111	6.46_{ab} (.75) 149	6.58_{b} (.68) 219	6.45 (.65) 96	6.49 (.62) 160	6.48 (.66) 211
Importance of teaching quality to colleagues	5.08 (1.28) 72	5.03 (1.32) 95	5.35 (1.09) 131	4.98_{a} (1.19) 110	5.12_{ab} (1.33) 148	5.38_{b} (1.11) 218	5.19_{a} (1.12) 93	5.38_{ab} (.92) 157	5.54_{b} (.95) 209
Importance of teaching quality to dept head	5.30 (1.30) 70	5.03 (1.53) 95	5.43 (1.36) 130	5.54 (1.25) 110	5.40 (1.39) 147	5.72 (1.27) 217	5.49 (1.21) 95	5.46 (1.24) 157	5.70 (1.26) 208
Importance of teaching quality to dean	5.01 (1.49) 71	4.71 (1.60) 95	4.84 (1.59) 127	5.16 (1.42) 106	5.05 (1.48) 146	5.23 (1.45) 213	5.03 (1.25) 94	5.08 (1.40) 155	5.32 (1.29) 204
Importance of teaching quality to top administrator	5.27 (1.47) 71	4.77 (1.57) 94	5.07 (1.40) 125	5.05 (1.49) 104	5.09 (1.48) 143	5.18 (1.52) 211	5.27 (1.11) 91	5.16 (1.25) 152	5.18 (1.32) 203
Importance of teaching quality in reward system	3.50 (1.51) 72	3.32 (1.69) 95	3.77 (1.52) 128	3.65 (1.44) 110	3.63 (1.49) 147	3.85 (1.50) 218	3.78 (1.29) 92	3.74 (1.44) 159	3.93 (1.36) 208
Importance of teaching innovation in rewards	3.15_{ab} (1.53) 72	3.13_{a} (1.51) 94	3.68_{b} (1.45) 128	3.46 (1.45) 109	3.54 (1.42) 147	3.51 (1.38) 215	3.56 (1.29) 90	3.61 (1.50) 158	3.84 (1.37) 204

Note: means in the same row within a year that do not share a subscript are significantly different at the $p \leq .05$ level using the Bonferroni test. If there is no subscript in a row within a year, the means are not significantly different. Standard deviations appear in parentheses below the means and above the number of respondents in each cell.

Table 14

Importance of teaching quality by position and year

	2002			1999			1997		
	Teaching	Teaching/ Research	Admin.	Teaching	Teaching/ Research	Admin.	Teaching	Teaching/ Research	Admin.
Importance of teaching quality to you	6.75_a (.71) 40	6.42_b (.71) 254	6.72_a (.46) 18	6.80_a (.45) 50	6.45_b (.71) 405	6.72_a (.53) 29	6.80_a (.41) 49	6.45_b (.66) 379	6.52_{ab} (.58) 52
Importance of teaching quality to colleagues	5.05 (1.47) 40	5.16 (1.21) 255	5.50 (1.04) 18	5.00 (1.46) 49	5.18 (1.21) 402	5.48 (1.09) 29	5.49 (1.02) 47	5.37 (.99) 373	5.71 (.97) 51
Importance of teaching quality to dept head	5.12 (1.60) 41	5.29 (1.33) 252	5.72 (1.64) 18	5.57_a (1.43) 49	5.50_a (1.31) 401	6.48_b (.74) 29	5.50_a (1.35) 48	5.49_a (1.23) 374	6.20_b (.96) 49
Importance of teaching quality to dean	4.88 (1.66) 41	4.82 (1.56) 250	5.72 (.89) 18	4.90_a (1.56) 49	5.11_a (1.47) 392	6.00_b (1.09) 28	4.83_a (1.55) 46	5.14_a (1.30) 368	5.71_b (1.22) 51
Importance of teaching quality to top administrator	4.46 (1.54) 39	5.04 (1.50) 248	5.28 (1.18) 18	4.71_a (1.61) 48	5.10_a (1.52) 385	5.93_b (1.12) 28	4.89 (1.42) 47	5.21 (1.24) 359	5.37 (1.26) 51
Importance of teaching quality in reward system	3.30 (1.81) 40	3.48 (1.56) 252	3.89 (1.23) 18	3.66_{ab} (1.40) 47	3.66_a (1.49) 402	4.38_b (1.29) 29	3.42_a (1.22) 48	3.84_{ab} (1.38) 371	4.25_b (1.48) 51
Importance of teaching innovation in rewards	3.25 (1.41) 40	3.27 (1.48) 251	3.94 (1.35) 18	3.62 (1.55) 47	3.46 (1.43) 399	3.79 (1.08) 29	3.62 (1.47) 47	3.71 (1.43) 367	4.00 (1.29) 50

Note: means in the same row within a year that do not share a subscript are significantly different at the $p \leq .05$ level using the Bonferroni test. If there is no subscript in a row within a year, the means are not significantly different. Standard deviations appear in parentheses below the means and above the number of respondents in each cell.

Frequency of use of instructor-centered teaching techniques

Respondents were asked to "think of a typical undergraduate lecture course that you teach. We would like to know how frequently you use certain teaching techniques." The techniques asked about may be subdivided into instructor-centered methods (lecturing for most of a class session, using live or multimedia demonstrations, and addressing questions to the class as a whole), in-class activities, and methods related to assignments, communicating with students, preparing for class, and soliciting feedback from students. This section will report the findings related to instructor-centered methods.

An overwhelming majority of faculty members lecture for most of the class period most of the time. Similarly, most of them address questions to the entire class at least once a week. Fewer use demonstrations that often, but nearly all report using demonstrations at least once a semester. (See Table 15.)

Table 15
Use of instructor-centered teaching techniques

	How often lecture		How often use demonstrations		Ask questions to whole class	
	n	%	n	%	n	%
Never	11	3%	29	9%	1	0%
1+ times/semester	5	1%	93	28%	3	1%
1+ times/month	18	5%	106	32%	11	3%
1+ times/week	109	33%	88	26%	62	19%
every class	192	57%	20	6%	257	77%
Total	335	100%	336	100%	334	100%

Within the 2002 sample, there were differences among certain subpopulations in their use of instructor-centered teaching techniques. As shown in Tables 16-22 below, most of the differences were with respect to lecturing for most of a class period and using demonstrations in class. Different subscripts in the column headers indicate significantly different means using the Bonferroni test. Column headers without subscripts indicate that the Bonferroni multiple comparisons procedure did not yield any specific group differences even though the analysis of variance indicated an overall difference in the group means.

Generally, those who had attended a lot of teaching seminars in 2001 or in their careers and those who were more involved in SUCCEED were less likely to lecture for an entire class period and tended to use demonstrations more often than those who attended fewer teaching workshops and those who had heard of SUCCEED but weren't involved in it. Administrators lectured for an entire class period substantially less often than either teaching/research faculty or teaching faculty although this may be related to their heavy involvement in SUCCEED rather than their status as administrators. Faculty members at masters institutions also were less likely to lecture for most of every class period than were those at research institutions.

Table 16

Lecture most of class period by 01-02 teaching seminars

n =	0_a 151	1_{ab} 85	2_{ab} 40	3 or more$_b$ 59
Never	3%	1%	5%	7%
1+ times/semester	1%	4%	0%	2%
1+ times/month	3%	8%	3%	9%
1+ times/week	32%	28%	28%	44%
every class	62%	59%	65%	39%
	F(3, 334) = 3.244, p = .022			

Table 17

Lecture most of class period by career teaching seminars

n=	0_a 33	$1\text{-}2_{ab}$ 71	$3\text{-}5_{ab}$ 85	$6\text{-}10_a$ 62	$>10_b$ 83
Never	0%	3%	4%	3%	5%
1+ times/semester	0%	0%	2%	0%	4%
1+ times/month	0%	6%	4%	3%	11%
1+ times/week	15%	32%	28%	32%	4%
every class	85%	59%	62%	61%	37%
	F(4, 429) = 5.572, p $\leq$ .001				

Table 18

Lecture most of class period by involvement in SUCCEED

n =	Don't know anything 33	Heard, not involved 158	Attended coalition program 69	Actively involved 63
Never	3%	3%	0%	8%
1+ times/semester	0%	1%	3%	0%
1+ times/month	0%	3%	9%	11%
1+ times/week	30%	39%	38%	33%
every class	67%	63%	51%	48%
	F(3, 319) = 2.707, p = .045			

Table 19

Lecture most of class period by position

n =	Teaching 41	Teaching/Research 254	Administration 18
Never	7%	3%	6%
1+ times/semester	0%	2%	6%
1+ times/month	5%	4%	17%
1+ times/week	39%	32%	33%
every class	49%	60%	39%
	F(2, 310) = 3.286, p = .039		

Table 20
Lecture most of class period by Carnegie classification

n =	Research 271	Masters 57
Never	3%	7%
1+ times/semester	2%	2%
1+ times/month	5%	7%
1+ times/week	32%	35%
every class	59%	49%
	t(326) = 1.99, p = .048	

Table 21
Frequency of using demonstrations by involvement in SUCCEED

n =	Don't know anything$_{ab}$ 33	Heard, not involved$_{a}$ 158	Attended coalition program$_{ab}$ 69	Actively involved$_{b}$ 63
Never	15%	12%	6%	2%
1+ times/semester	24%	32%	25%	22%
1+ times/month	30%	29%	38%	32%
1+ times/week	21%	22%	28%	38%
every class	9%	5%	4%	6%
	F(4, 329) = 2.05, p = .017			

Table 22
Frequency of using demonstrations by career teaching seminars

n =	0 34	1-2 71	3-5 85	6-10 62	>10 83
Never	24%	10%	8%	7%	4%
1+ times/semester	32%	41%	25%	21%	22%
1+ times/month	15%	21%	37%	37%	39%
1+ times/week	21%	24%	26%	31%	28%
every class	9%	4%	5%	5%	8%
	F (4, 330) = 2.858, p = .024				

On the other instructor-centered variable, directing questions to the entire class, women were more likely to do so every class than were men, although nearly all of both sexes do so one or more times per week (see Table 23).

Table 23
Direct questions to the entire class by sex

n =	Male 281	Female 39
Never	>0%	.0%
1+ times/semester	1%	.0%
1+ times/month	3%	3%
1+ times/week	21%	10%
every class	75%	87%
	t(62.5) = 2.076, p = .042	

Comparison of 2002, 1999 and 1997 responses. The 2002 and 1999 respondents lectured significantly less often than the 1997 respondents. Both the 2002 and 1999 respondents used demonstrations in class significantly more often that the 1997 respondents. There was no difference over the years in how often respondents directed questions to the entire class, which most of them did every class period. These results are shown in Table 24.

Table 24
Use of instructor centered techniques in 2002, 1999, and 1997

	Lecture			Demonstrations			Question		
n=	2002_a 335	1999_{ab} 509	1997_b 468	2002_a 336	1999_a 509	1997_b 465	2002 334	1999 508	1997 466
Never	3%	2%	1%	9%	8%	14%	0%	1%	0%
1+ times/semester	1%	1%	1%	28%	29%	32%	1%	1%	1%
1+ times/month	5%	5%	3%	32%	33%	34%	3%	3%	2%
1+ times/week	33%	33%	29%	26%	25%	17%	19%	17%	13%
every class	57%	59%	66%	6%	6%	3%	77%	79%	84%
	F(2, 1309) = 5.6, p = .004			F(2, 1309) = 11.1, p ≤ .001			F(2, 1305) = 2.3, p = .101		

Tables 25-28 show comparisons by year and sex, Carnegie classification, rank, and position. In both 1999 and 2002, women were more likely to indicate that they asked questions to the entire class. In 1997 and 2002, faculty members at research institutions were more likely to report that they lectured for most of every class period than were those at masters institutions.

In 1997, professors were significantly less likely to report using demonstrations than were associate professors in the same year. Otherwise, there were no significant differences in the use of instructor-centered techniques by rank within years. There was also little difference by position in each year except that administrators were less likely to lecture for most of every class period in 2002 as reported above.

Table 25

Use of instructor-centered techniques by sex

		2002		1999		1997	
		Male	Female	Male	Female	Male	Female
How often lecture	Never	2.8%	2.5%	2.2%	2.1%	1.2%	.0%
	1+ times/semester	1.8%	.0%	.9%	.0%	1.2%	.0%
	1+ times/month	5.3%	5.0%	4.6%	8.3%	2.7%	4.2%
	1+ times/week	31.7%	40.0%	32.5%	37.5%	28.5%	33.3%
	every class	58.4%	52.5%	59.8%	52.1%	66.3%	62.5%
	Total	281	40	455	48	407	48
		t(319) =.062, p = .957		t(501) = .756, p = .45		t(453) =.078, p = .938	
How often use demonstrations	Never	8.2%	7.5%	8.1%	10.4%	15.3%	2.1%
	1+ times/semester	27.7%	35.0%	29.0%	29.2%	31.7%	41.7%
	1+ times/month	32.3%	20.0%	32.5%	27.1%	32.7%	37.5%
	1+ times/week	27.7%	20.0%	24.6%	27.1%	16.6%	16.7%
	every class	4.3%	17.5%	5.7%	6.3%	3.7%	2.1%
	Total	282	40	455	48	404	48
		t(46.6)=.615, p = .542		t(501) =.075, p = .941		t(453) =1.02, p = .314	
How often ask questions to whole class	Never	.4%	.0%	.7%	.0%	.5%	.0%
	1+ times/semester	1.1%	.0%	.9%	.0%	.5%	2.1%
	1+ times/month	3.2%	2.6%	2.9%	2.1%	2.5%	.0%
	1+ times/week	20.6%	10.3%	17.8%	10.4%	12.3%	18.8%
	every class	74.7%	87.2%	77.8%	87.5%	84.2%	79.2%
	Total	281	39	454	48	405	48
		t(64.5)=2.07, p=.042		t(72.6)=2.15, p=.035		t(451) =.505, p = .614	

Table 26

Use of instructor-centered techniques by Carnegie Classification

		2002		1999		1997	
		Research	Masters	Research	Masters	Research	Masters
How often lecture	Never	2.6%	7.0%	1.6%	5.3%	1.0%	1.2%
	1+ times/semester	1.5%	1.8%	.9%	.0%	1.3%	.0%
	1+ times/month	4.8%	7.0%	4.2%	8.0%	1.8%	7.1%
	1+ times/week	31.7%	35.1%	32.5%	34.7%	27.6%	36.9%
	every class	59.4%	49.1%	60.8%	52.0%	68.2%	54.8%
	Total	271	57	431	75	384	84
		t(326)=1.99, p=.048		t(89.4)=1.79, p = .076		t(466)=1.97, p=.049	
How often use demonstrations	Never	7.4%	12.3%	9.3%	2.6%	14.6%	9.8%
	1+ times/semester	29.0%	22.8%	29.3%	26.3%	31.6%	36.6%
	1+ times/month	31.6%	29.8%	31.6%	35.5%	33.7%	32.9%
	1+ times/week	25.7%	29.8%	24.0%	28.9%	16.7%	17.1%
	every class	6.3%	5.3%	5.8%	6.6%	3.4%	3.7%
	Total	272	57	430	76	383	82
		t(327)=.098, p = .922		t(504) = 1.76, p = .08		t(463)=.451, p = .652	
How often ask questions to whole class	Never	.4%	.0%	.2%	2.7%	.3%	1.2%
	1+ times/semester	.7%	1.8%	.7%	1.3%	.8%	.0%
	1+ times/month	3.3%	1.8%	3.0%	1.3%	2.4%	1.2%
	1+ times/week	18.5%	21.1%	16.7%	18.7%	13.1%	11.9%
	every class	77.0%	75.4%	79.3%	76.0%	83.5%	85.7%
	Total	270	57	430	75	382	84
		t(325) =.107, p = .915		t(86.9) =1.04, p =.302		t(464) =.327, p = .744	

Table 27

Use of instructor-centered techniques by rank

		2002			1999			1997		
		Assistant Professor	Associate Professor	Professor	Assistant Professor	Associate Professor	Professor	Assistant Professor	Associate Professor	Professor
How often lecture	Never	2.8%	3.2%	3.1%	.9%	.7%	3.7%	2.3%	.6%	1.0%
	1+ times/semester	2.8%	2.1%	.0%	.9%	.7%	.5%	1.1%	1.3%	.5%
	1+ times/month	2.8%	8.4%	3.8%	7.3%	4.7%	3.2%	4.6%	2.6%	2.0%
	1+ times/week	27.8%	36.8%	27.7%	28.2%	34.9%	34.7%	28.7%	27.1%	29.9%
	every class	63.9%	49.5%	65.4%	62.7%	59.1%	58.0%	63.2%	68.4%	66.5%
	Total	72	95	130	110	149	219	87	155	197
		F(2, 294) = 2.27, p = .105			F(2, 475) = .607, p = .545			F(2, 436) = .927, p = .396		
How often use demonstrations	Never	8.3%	6.3%	9.2%	9.0%	8.8%	8.2%	8.0%	9.9%	19.8%
	1+ times/semester	31.9%	27.4%	26.0%	28.8%	27.7%	28.8%	34.5%	29.6%	33.5%
	1+ times/month	31.9%	30.5%	35.1%	33.3%	28.4%	36.1%	43.7%	36.2%	27.4%
	1+ times/week	23.6%	31.6%	24.4%	26.1%	29.7%	20.1%	11.5%	19.1%	16.8%
	every class	4.2%	4.2%	5.3%	2.7%	5.4%	6.8%	2.3%	5.3%	2.5%
	Total	72	95	131	111	148	219	87	152	197
		F(2, 295) = .553, p = .576			F(2, 475) = .353, p = .703			F(2, 433) = 4.15, p = .016 (Associate, Professor)		
How often ask questions to whole class	Never	.0%	.0%	.8%	.0%	.0%	.9%	.0%	.7%	.5%
	1+ times/semester	.0%	2.1%	.8%	.0%	1.3%	.5%	.0%	.0%	.5%
	1+ times/month	.0%	8.4%	.8%	4.5%	2.7%	1.8%	1.1%	2.6%	2.0%
	1+ times/week	23.9%	15.8%	20.8%	13.5%	21.5%	16.1%	16.1%	13.7%	10.6%
	every class	76.1%	73.7%	76.9%	82.0%	74.5%	80.6%	82.8%	83.0%	86.4%
	Total	71	95	130	111	149	217	87	153	198
		F(2, 293) = .1.45, p = .236			F(2, 474) = .761, p = .468			F(2, 436) = .206, p = .814		

Note: Groups that are significantly different using the Bonferroni adjustment are reflected in parentheses following the F-statistic.

Table 28

Use of instructor-centered techniques by position

		2002			1999			1997		
		Teaching	Teaching/ Research	Admin.	Teaching	Teaching/ Research	Admin.	Teaching	Teaching/ Research	Admin.
How often lecture	Never	7.3%	2.8%	5.6%	2.0%	1.7%	10.3%	.0%	1.4%	.0%
	1+ times/semester	.0%	1.6%	5.6%	2.0%	.5%	.0%	6.1%	.3%	.0%
	1+ times/month	4.9%	3.9%	16.7%	10.0%	4.5%	.0%	.0%	3.0%	4.8%
	1+ times/week	39.0%	31.9%	33.3%	28.0%	33.4%	37.9%	38.8%	26.2%	42.9%
	every class	48.8%	59.8%	38.9%	58.0%	59.9%	51.7%	55.1%	69.1%	52.4%
	Total	41	254	18	50	404	29	49	362	42
		F(2, 310) = 3.29, p = .039			F(2, 480) = 1.99, p = .138			F(2, 450) = 2.04, p = .132		
How often use demonstrations	Never	7.3%	8.6%	5.6%	4.0%	8.9%	10.3%	24.5%	12.3%	16.3%
	1+ times/semester	29.3%	27.5%	27.8%	22.0%	29.2%	34.5%	18.4%	35.5%	23.3%
	1+ times/month	29.3%	32.2%	33.3%	40.0%	31.7%	34.5%	32.7%	32.4%	41.9%
	1+ times/week	19.5%	27.1%	27.8%	26.0%	24.8%	20.7%	22.4%	15.9%	16.3%
	every class	14.6%	4.7%	5.6%	8.0%	5.4%	.0%	2.0%	3.9%	2.3%
	Total	41	255	18	50	404	29	49	358	43
		F(2, 311) = .303, p = .739			F(2, 480) = 1.97, p = .141			F(2, 447) = 2.04, p = .953		
How often ask questions to whole class	Never	.0%	.4%	.0%	.0%	.0%	10.3%	2.1%	.3%	.0%
	1+ times/semester	2.4%	.4%	.0%	2.0%	.5%	.0%	2.1%	.3%	.0%
	1+ times/month	4.9%	2.8%	5.6%	4.1%	3.0%	.0%	2.1%	2.5%	.0%
	1+ times/week	19.5%	17.8%	27.8%	12.2%	17.8%	6.9%	10.4%	14.4%	4.7%
	every class	73.2%	78.7%	66.7%	81.6%	78.7%	82.8%	83.3%	82.5%	95.3%
	Total	41	253	18	499	404	29	48	360	43
		F(2, 309) = .88, p = .416			F(2, 479) = 1.96, p = .141			F(2, 448) = 2.56, p = .078		

In-Class Activities

Respondents were asked how often they put students into groups for some or most of a class period to answer questions or solve problems. As can be seen in Table 29 below, 63% of respondents reported doing so for brief intervals during class at least once during the semester and just under 40% did so for most of a class period.

Table 29
Put students into groups during a class period

	Put students in groups for brief intervals		Put students in groups for most of class	
	n	%	n	%
Never	124	37%	199	60%
1+ times/semester	70	21%	61	18%
1+ times/month	67	20%	51	15%
1+ times/week	56	17%	16	5%
every class	18	5%	7	2%
Total	335	100%	334	100%

There was no significant difference by sex or rank in faculty members reporting putting students in groups either for brief intervals or for most of class. Administrators were more likely to use groups than were people with other responsibilities, and people who were at all involved in SUCCEED were more likely to report putting students into groups for brief intervals than those who were not, with those actively involved in SUCCEED more likely to put students into groups for most of class than anyone else. Faculty members at masters institutions reported putting students into groups for most of class significantly more often than their colleagues at research institutions. (See Tables 30-35.

Those who attended three or more teaching seminars in 2001 were more likely than those who attended two or fewer to report that they put students into groups for brief intervals or most of class and those who attended any career teaching seminars were more likely than those who had never attended any to put students into groups for brief intervals and for most of class.

Different subscripts in the column headers indicate significantly different means using the Bonferroni test. Column headers without subscripts indicate that the Bonferroni multiple comparisons procedure did not yield any specific group differences.

Table 30

Put students into groups by position

	For brief intervals			For most of class		
n =	Teaching[a] 41	Teaching/ Research[a] 255	Admin.[b] 18	Teaching[a] 41	Teaching/ Research[a] 254	Admin.[b] 18
Never	54%	36%	17%	68%	59%	39%
1+ times/semester	12%	22%	17%	10%	20%	17%
1+ times/month	15%	21%	22%	17%	15%	17%
1+ times/week	17%	16%	33%	5%	4%	22%
every class	2%	5%	11%	0%	2%	6%
	F(2, 311) = 4.27, p = .015			F(2, 310) = 4.37, p = .013		

Table 31

Put students into groups by institution type

	For brief Intervals		For most of class	
n=	Research 272	Masters 57	Research 271	Masters 57
Never	38%	32%	62%	47%
1+ times/semester	23%	14%	18%	16%
1+ times/month	19%	21%	13%	25%
1+ times/week	15%	28%	4%	7%
every class	5%	5%	1%	5%
	t(327) = 1.90, p = .06		t(71.6) = 2.48, p = .015	

Table 32

Put students into groups for brief intervals by involvement in SUCCEED

n =	Don't know anything[a] 33	Heard, not involved[a] 157	Attended coalition program[b] 69	Actively involved[b] 63
Never	58%	45%	30%	14%
1+ times/semester	18%	22%	22%	19%
1+ times/month	15%	18%	20%	27%
1+ times/week	9%	11%	20%	27%
every class	0%	3%	7%	13%
	F(3, 318) = 13.10, $p \leq .001$			

Table 33

Put students into groups for most of class by involvement in SUCCEED

n =	Don't know anything$_a$ 33	Heard, not involved$_a$ 157	Attended coalition program$_a$ 68	Actively involved$_b$ 63
Never	64%	65%	63%	41%
1+ times/semester	18%	20%	18%	14%
1+ times/month	9%	11%	12%	32%
1+ times/week	9%	3%	3%	8%
every class	0%	1%	4%	5%
	F(3, 317) = 6.77, $p \leq .001$			

Table 34

Put students into groups by seminars in 2001

	For brief intervals				For most of class			
n =	0_a 151	1_a 85	2_{ab} 40	$\geq 3_b$ 59	0_a 151	1_{ab} 85	2_{ab} 39	$\geq 3_b$ 59
Never	51%	33%	28%	14%	69%	55%	59%	42%
1+ times/semester	19%	19%	30%	22%	17%	24%	23%	12%
1+ times/month	16%	28%	18%	20%	9%	13%	10%	37%
1+ times/week	9%	18%	23%	31%	3%	7%	5%	5%
every class	5%	2%	3%	14%	2%	1%	3%	3%
	F(3, 331) = 12.05, $p \leq .001$				F(3, 330) = 5.48, p = .001			

Table 35

Put students into groups by career teaching seminars

	For brief intervals					For most of class				
n =	0_a 34	$1\text{-}2_b$ 71	$3\text{-}5_b$ 85	$6\text{-}10_b$ 61	$>10_b$ 83	0_a 34	$1\text{-}2_b$ 71	$3\text{-}5_{ab}$ 84	$6\text{-}10_{ab}$ 61	$>10_b$ 83
Never	79%	39%	33%	33%	25%	85%	54%	55%	61%	59%
1+ times/semester	9%	24%	21%	23%	22%	12%	27%	21%	20%	10%
1+ times/month	9%	17%	29%	15%	22%	3%	10%	20%	13%	20%
1+ times/week	3%	14%	14%	25%	20%	0%	8%	2%	7%	5%
every class	0%	6%	2%	5%	11%	0%	1%	1%	0%	6%
	F(4, 329) = 7.59, $p \leq .001$					F(4. 328) = 3.17, p = .014				

There were no significant differences on the whole between the 1997, 1999, and 2002 responses with respect to putting students into groups during class, as shown in Table 36.

Table 36
Put students in groups in 2002, 1999 and 1997

	For brief intervals			For most of class		
	2002	1999	1997	2002	1999	1997
n =	297	477	434	296	473	436
Never	37%	40%	42%	60%	63%	60%
1+ times/semester	21%	20%	17%	18%	17%	21%
1+ times/month	20%	18%	23%	15%	12%	12%
1+ times/week	17%	16%	14%	5%	6%	6%
every class	5%	6%	3%	2%	2%	1%
	F(2, 1305) = 1.18, p = .309			F(2, 1302) = .248, p = .781		

The tables on the following pages show comparisons by year and sex, Carnegie classification, rank and position. There were significant differences in 1999 and 1997 but not in 2002 between men and women with regard to putting students in groups for brief intervals. (Table 37.) There were significant differences between faculty members at research and masters institutions with regard to putting students into groups both for brief intervals and for most of class, except that in 2002 the difference was only significant for putting students in groups for most of class. (Table 38.) There was a significant difference by rank for faculty members putting students in groups for brief intervals in 1997 and 1999, but not in 2002, and there was no significant difference by rank for putting students in groups for most of class. (Table 39.) In 2002, but not in 1999 nor in 1997, there were significant differences by rank for both putting students in groups for brief intervals and for most of class. (Table 40.)

Table 37
Put students in groups by sex

		2002		1999		1997	
		Male	Female	Male	Female	Male	Female
Put students in groups for brief intervals	Never	38%	28%	41%	27%	43%	25%
	1+ times/semester	22%	20%	21%	13%	18%	17%
	1+ times/month	20%	18%	18%	21%	22%	35%
	1+ times/week	15%	30%	14%	31%	13%	23%
	every class	5%	5%	6%	8%	4%	0%
	Total	282	40	455	48	403	48
		t(320) = 1.73, p = .084		t(501) = 3.07, p = .002		t(449) = 2.16, p = .031	
Put students in groups for most of class	Never	60%	55%	65%	50%	61%	44%
	1+ times/semester	18%	20%	17%	23%	20%	27%
	1+ times/month	16%	10%	11%	17%	10%	23%
	1+ times/week	4%	13%	5%	10%	7%	6%
	every class	2%	3%	2%	0%	1%	0%
	Total	281	40	451	48	405	48
		t(319) = 1.02, p = .310		t(497) = 1.55, p = .121		t(451) = 1.61, p = .109	

Table 38

Put students in groups by Carnegie classification

		2002		1999		1997	
		Research	Masters	Research	Masters	Research	Masters
Put students in groups for brief intervals	Never	38%	32%	41%	30%	44%	33%
	1+ times/semester	23%	14%	21%	16%	18%	15%
	1+ times/month	19%	21%	18%	21%	23%	26%
	1+ times/week	15%	28%	14%	25%	13%	19%
	every class	5%	5%	6%	8%	3%	6%
	Total	272	57	430	76	380	84
		t(327) = 1.90, p = .059		t(504) = 2.68, p = .008		t(462) = 2.48, p = .014	
Put students in groups for most of class	Never	62%	47%	66%	43%	62%	49%
	1+ times/semester	18%	16%	17%	20%	20%	24%
	1+ times/month	13%	25%	10%	22%	11%	17%
	1+ times/week	4%	7%	5%	12%	6%	7%
	every class	1%	5%	2%	3%	1%	2%
	Total	271	57	426	76	383	83
		t(71.6) = 2.48, p = .015		t(94.6) = 3.62, p $\leq$ .001		t(464) = 2.05, p = .041	

Table 39

Put students in groups by rank

		2002			1999			1997		
		Assistant Professor	Associate Professor	Professor	Assistant Professor	Associate Professor	Professor	Assistant Professor	Associate Professor	Professor
Put students in groups for brief intervals	Never	32%	36%	40%	30%	36%	49%	32%	41%	47%
	1+ times/semester	21%	24%	21%	22%	19%	20%	14%	16%	21%
	1+ times/month	21%	20%	19%	23%	21%	14%	29%	25%	19%
	1+ times/week	21%	12%	17%	17%	19%	12%	22%	14%	11%
	every class	6%	8%	2%	9%	5%	5%	3%	4%	3%
	Total	72	95	131	111	149	219	87	151	197
		F(2, 295) = 1.19, p = .305			F(2, 475) = 6.51, p = .002 (Full, Assistant/Associate)			F(2, 432) = 4.92, p = .008 (Assistant, Full)		
Put students in groups for most of class	Never	56%	62%	63%	58%	60%	70%	56%	56%	65%
	1+ times/semester	25%	16%	17%	24%	18%	13%	20%	20%	21%
	1+ times/month	13%	15%	14%	12%	15%	10%	17%	14%	7%
	1+ times/week	6%	1%	5%	5%	7%	5%	7%	9%	5%
	every class	0%	6%	1%	2%	1%	3%	0%	1%	2%
	Total	71	95	131	111	146	217	86	152	199
		F(2, 294) = .285, p = .752			F(2, 471) = .99, p = .372			F(2, 434) = 2.07, p = .127		

Note: Groups that are significantly different using the Bonferroni adjustment are reflected in parentheses following the F-statistic.

Table 40

Put students in groups by position

		2002			1999			1997		
		Teaching	Teaching/ Research	Admin.	Teaching	Teaching/ Research	Admin.	Teaching	Teaching/ Research	Admin.
Put students in groups for brief intervals	Never	54%	36%	17%	34%	41%	28%	35%	44%	28%
	1+ times/semester	12%	22%	17%	20%	20%	28%	16%	17%	28%
	1+ times/month	15%	21%	22%	22%	18%	17%	20%	23%	28%
	1+ times/week	17%	16%	33%	18%	15%	21%	22%	13%	14%
	every class	2%	5%	11%	6%	6%	7%	6%	3%	2%
	Total	41	255	18	50	404	29	49	359	43
		F(2, 311) = 4.27, p = .015 Admin, Teaching/Teaching/Research			F(2, 480) = .929, p = .396			F(2, 448) = 1.97, p = .141		
Put students in groups for most of class	Never	68%	59%	39%	52%	67%	48%	59%	61%	51%
	1+ times/semester	10%	20%	17%	26%	16%	17%	20%	19%	33%
	1+ times/month	17%	15%	17%	16%	11%	21%	12%	12%	9%
	1+ times/week	5%	4%	22%	4%	6%	10%	8%	7%	5%
	every class	0%	2%	6%	2%	2%	3%	0%	1%	2%
	Total	41	254	18	50	400	29	49	360	43
		F(2, 310) = 4.37, p = .013 Admin, Teaching/Teaching/Research			F(2, 476) = 2.76, p = .064			F(2, 449) = .052, p = .949		

Note: Groups that are significantly different using the Bonferroni adjustment are reflected in parentheses following the F-statistic.

Assignments

This section reports frequencies with which respondents assigned homework to individuals (as opposed to teams), gave students the option of working in teams to complete homework, required students to work in teams to complete homework, assigned at least one major team project, and gave writing assignments (exercises that required verbal explanations and not just calculations). Table 41 shows the overall frequency distributions for the 2002 respondents.

Table 41
Assignments

	Assign homework to individuals		Option to do homework in teams		Require teams for homework		Give a writing assignment	
	n	%	n	%	n	%	n	%
Never	13	4%	95	29%	169	51%	45	14%
1+ times/semester	25	8%	69	21%	75	23%	95	29%
1+ times/month	67	20%	60	18%	47	14%	126	38%
1+ times/week	225	68%	106	32%	39	12%	65	20%
Total	330	100%	330	100%	330	100%	331	100%

	Assign one major team project	
	n	%
Never	48	16%
In some but not all courses I teach	189	62%
In every course I teach	68	22%
Total	305	100%

Those who have been more involved in SUCCEED and administrators (who are likely also to have been involved in SUCCEED) were more likely both to give students the option of working in teams to do homework and to require them to. (See Tables 42 and 43.)

Table 42
Teams for homework by involvement in SUCCEED

	Option to do homework in teams				Require teams for homework			
n =	Don't know anything 31_{ab}	Heard, not involved 155_{a}	Attend coalition program 68_{ab}	Actively involved 63_{b}	Don't know anything 32_{a}	Heard, not involved 155_{a}	Attend coalition program 68_{a}	Actively involved 63_{b}
Never	29%	34%	25%	17%	69%	55%	60%	25%
1+ times/semester	19%	25%	18%	17%	6%	28%	13%	29%
1+ times/month	26%	15%	15%	25%	19%	10%	12%	24%
1+ times/week	26%	26%	43%	40%	6%	7%	15%	22%
	$F(3, 313) = 4.08$, $p = .007$				$F(3, 314) = 8.54$, $p \leq .0005$			

Table 43
Teams for homework by position

	Option to do homework in teams			Require teams for homework		
n =	Teaching$_{ab}$ 40	Teaching/ Research$_{a}$ 251	Admin.$_{b}$ 18	Teaching$_{a}$ 41	Teaching/ Research$_{a}$ 250	Admin.$_{b}$ 18
Never	30%	31%	6%	66%	52%	22%
1+ times/semester	8%	23%	11%	10%	25%	22%
1+ times/month	20%	17%	39%	7%	15%	17%
1+ times/week	43%	30%	44%	17%	9%	39%
	F(2, 306) = 4.07, p = .018			F(2, 306) = 6.80, p = .001		

Faculty members at masters institutions and those who attended 10 or more teaching related seminars in their careers were significantly more likely than those at research institutions and those that attended no teaching seminars to require students to work in teams to complete their homework, as shown in Tables 44 and 45.

Table 44
Require teams for homework by Carnegie classification

% requiring teams n =	Research 267	Masters 57
Never	55%	39%
1+ times/semester	22%	25%
1+ times/month	13%	19%
1+ times/week	10%	18%
	t(322) = 2.48, p = .014	

Table 45
Require teams for homework by career teaching seminars

% requiring teams n =	0$_{a}$ 34	1-2$_{ab}$ 69	3-5$_{ab}$ 85	6-10$_{ab}$ 60	>10$_{b}$ 81
Never	76%	54%	53%	48%	40%
1+ times/semester	6%	20%	25%	27%	26%
1+ times/month	12%	16%	15%	10%	16%
1+ times/week	6%	10%	7%	15%	19%
	F(4, 324) = 2.83, p = .025				

Faculty members who attended 3 or more teaching seminars in 2001 and those who had attended at least 10 in their careers were significantly more likely to require team projects in all of the courses that they teach than those who did not attend any teaching seminars in 2001 or in their careers respectively. (Table 46.) The more involved in SUCCEED the respondents were, the more likely they were to require team projects in all of their classes, as shown in Table 47.

Table 46

Assign team projects by teaching seminars attended

	Teaching seminars last year				Career teaching seminars				
n =	0_a 138	1_{ab} 77	2_{ab} 39	$\geq 3_b$ 51	0_a 30	$1\text{-}2_{ab}$ 62	$3\text{-}5_{ab}$ 76	$6\text{-}10_{ab}$ 59	$>10_b$ 77
Never	22%	12%	10%	10%	30%	19%	13%	12%	13%
In some but not all courses I teach	60%	70%	64%	53%	60%	65%	68%	59%	56%
In every course I teach	18%	18%	26%	37%	10%	16%	18%	29%	31%
	F(3, 301) = 3.59, p = .014				F(4, 299) = 2.98, p = .019				

Table 47

Assign team projects by involvement in SUCCEED

n =	Don't know anything 28	Heard, not involved 147	Attended coalition program 63	Actively involved 54
Never	18%	20%	13%	9%
In some but not all courses I teach	71%	62%	62%	59%
In every course I teach	11%	18%	25%	31%
	F(3, 288) = 2.69, p = .046			

Differences between 2002, 1999 and 1997 respondents

2002 and 1999 respondents were more likely to assign weekly homework to students than were 1997 respondents, although only the difference between the 2002 and 1997 respondents is significant. Both 1999 and 2002 respondents were significantly more likely to allow students the option of working in teams weekly than were the 1997 respondents and the 1999 respondents were significantly more likely to require students to work in teams weekly than were the 1997 respondents. 2002 and 1999 respondents were also significantly more likely to require a writing assignment at least once a month than were the 1997 respondents. These results are shown in Table 48. The reader should note that the "every class" and one or more times per week categories were combined for the 2002 and 1999 samples to allow for comparison, which may have impacted the significance tests. In the discussion that follows, "weekly" should be understood to mean once a week or more frequently.

Table 48
Types of assignments in 2002, 1999 and 1997

		2002	1999	1997
Assign homework to individuals	Never	4%	8%	7%
	1+ times/semester	8%	6%	7%
	1+ times/month	20%	19%	32%
	1+ times/week	68%	67%	55%
	Total	330	508	467
		F(2, 1302) = 4.67, p = .009		
Option to do homework in teams	Never	29%	27%	34%
	1+ times/semester	21%	18%	24%
	1+ times/month	18%	20%	17%
	1+ times/week	32%	36%	24%
	Total	330	504	454
		F(2, 1285) = 9.31, p ≤ .0005		
Require teams for homework	Never	51%	46%	55%
	1+ times/semester	23%	25%	25%
	1+ times/month	14%	13%	10%
	1+ times/week	12%	16%	10%
	Total	330	507	465
		F(2, 1299) = 6.60, p = .001		
Give a writing assignment	Never	14%	12%	16%
	1+ times/semester	29%	35%	48%
	1+ times/month	38%	32%	28%
	1+ times/week	20%	21%	8%
	Total	331	504	465
		F(2, 1297) = 22.36, p ≤ .0005		
Assign one major team project	Never	16%	17%	24%
	In some but not all courses I teach	62%	57%	52%
	In every course I teach	22%	26%	24%
		305	504	466
		F(2, 1272) = 2.29, p = .101		

Differences by sex, Carnegie classification, rank and position

Tables 49-52 show the frequency of giving various assignments by sex, Carnegie classification, rank and position for 2002, 1999, and 1997. In none of the years were there any significant differences by sex (Table 49). Faculty at masters institutions were significantly more likely to require students to work in teams to complete homework in 2002. In both 1999 and 1997, faculty at masters institutions were significantly more likely to assign a team project to their students (Table 50). The only significant difference among the faculty ranks was that assistant professors in 1999 were more likely to assign a team project than full professors (Table 51). Administrators

in 2002 were more likely to allow and require students to work in teams as discussed above. In 1997, administrators were more liekly than people with other responsibilities to assign a team project (Table 52).

Table 49
Assignments in 2002, 1999, and 1997 by sex

		2002		1999		1997	
		Male	Female	Male	Female	Male	Female
Assign homework to individuals	Never	5%	0%	8%	6%	7%	6%
	1+ times/semester	7%	3%	6%	13%	7%	6%
	1+ times/month	18%	33%	19%	13%	30%	49%
	1+ times/week	70%	65%	67%	69%	56%	38%
	Total	277	40	454	48	407	47
		t(68.5)=.96, p=.343		t(500)=.10, p=.92		t(452)=1.15, p=.249	
Option to do homework in teams	Never	29%	33%	27%	21%	34%	39%
	1+ times/semester	22%	15%	18%	19%	24%	28%
	1+ times/month	17%	25%	19%	26%	17%	17%
	1+ times/week	33%	28%	36%	34%	25%	15%
	Total	277	40	451	47	395	46
		t(315)=.32, p=.747		t(496)=.46, p=.642		t(58.1)=1.35, p=.155	
Require teams for homework	Never	51%	54%	47%	40%	55%	56%
	1+ times/semester	23%	21%	23%	38%	24%	27%
	1+ times/month	13%	21%	13%	10%	10%	13%
	1+ times/week	13%	5%	17%	13%	10%	4%
	Total	278	39	453	48	404	48
		t(315)=.60, p=.549		t(499)=.17, p=.867		t(450)=.72, p=.419	
Give a writing assignment	Never	14%	10%	12%	13%	16%	15%
	1+ times/semester	29%	23%	36%	25%	48%	40%
	1+ times/month	37%	44%	31%	40%	27%	36%
	1+ times/week	20%	23%	21%	23%	8%	9%
	Total	280	39	450	48	405	47
		t(317)=1.09, p=.278		t(496)=.82, p=.413		t(450)=.89, p=.373	
Assign one major team project	Never	16%	9%	17%	27%	23%	32%
	In some but not all courses I teach	63%	59%	58%	44%	53%	43%
	In every course I teach	21%	32%	25%	29%	24%	26%
	Total	260	34	451	48	406	47
		t(292)=1.64, p=.102		t(497)=.68, p=.552		t(451)=.62, p=.536	

Table 50

Assignments in 2002, 1999, and 1997 by Carnegie classification

		2002		1999		1997	
		Research	Masters	Research	Masters	Research	Masters
Assign homework to individuals	Never	4%	2%	8%	5%	7%	10%
	1+ times/semester	8%	5%	6%	8%	5%	12%
	1+ times/month	19%	25%	19%	14%	32%	29%
	1+ times/week	69%	68%	67%	72%	56%	50%
	Total	267	57	430	76	383	84
		t(322)=.68, p=.496		t(504)=.91, p=.364		t(465)=1.70, p=.091	
Option to do homework in teams	Never	30%	26%	27%	25%	35%	29%
	1+ times/semester	21%	18%	18%	17%	25%	23%
	1+ times/month	16%	23%	20%	17%	17%	19%
	1+ times/week	33%	33%	35%	41%	23%	29%
	Total	267	57	426	76	375	79
		t(322)=.62, p=.534		t(500)=.70, p=.487		t(452)=1.40, p=.163	
Require teams for homework	Never	55%	39%	47%	42%	56%	49%
	1+ times/semester	22%	25%	25%	25%	25%	27%
	1+ times/month	13%	19%	12%	18%	10%	9%
	1+ times/week	10%	18%	16%	14%	8%	16%
	Total	267	57	429	76	383	82
		t(322)=2.48, p=.014		t(503)=.58, p=.56		t(463)=1.73, p=.085	
Give a writing assignment	Never	14%	11%	12%	15%	17%	11%
	1+ times/semester	28%	34%	35%	31%	48%	52%
	1+ times/month	39%	36%	32%	32%	28%	30%
	1+ times/week	19%	20%	21%	23%	8%	7%
	Total	270	56	427	75	384	81
		t(324)=.15 p=.882		t(500)=.03, p=.975		t(463)=.65, p=.516	
Assign one major team project	Never	15%	19%	19%	11%	28%	9%
	In some but not all courses I teach	64%	50%	57%	55%	50%	61%
	In every course I teach	21%	31%	24%	34%	22%	30%
	Total	246	54	427	76	384	82
		t(70.8)=.71, p=.482		t(501)=2.26, p=.024		t(464)=3.25, p=.001	

Table 51

Assignments in 2002, 1999, and 1997 by rank

		2002			1999			1997		
		Assistant Professor	Associate Professor	Professor	Assistant Professor	Associate Professor	Professor	Assistant Professor	Associate Professor	Professor
Assign homework to individuals	Never	0%	6%	5%	8%	7%	8%	5%	7%	8%
	1+ times/semester	10%	5%	8%	9%	7%	5%	8%	5%	7%
	1+ times/month	31%	17%	15%	27%	20%	13%	38%	35%	28%
	1+ times/week	60%	72%	72%	55%	66%	75%	49%	53%	57%
	Total	72	95	128	110	149	218	87	153	198
		F(2, 292) = .047, p = .954			F(2, 474) = 2.671, p = .07			F(2, 435) = .019, p = .981		
Option to do homework in teams	Never	26%	35%	27%	24%	26%	28%	35%	35%	32%
	1+ times/semester	31%	21%	16%	24%	18%	15%	27%	21%	25%
	1+ times/month	21%	16%	20%	20%	23%	18%	21%	17%	17%
	1+ times/week	22%	28%	38%	31%	32%	39%	17%	26%	26%
	Total	72	94	128	108	146	219	86	149	191
		F(2, 291) = 2.37, p = .096			F(2, 470) = .289, p = .749			F(2, 423) = .513, p = .599		
Require teams for homework	Never	53%	53%	49%	46%	43%	50%	56%	58%	54%
	1+ times/semester	22%	26%	22%	26%	28%	23%	21%	24%	27%
	1+ times/month	19%	9%	16%	13%	11%	14%	10%	10%	11%
	1+ times/week	6%	12%	13%	15%	19%	13%	13%	9%	9%
	Total	72	95	126	110	148	218	87	153	196
		F(2, 290) = .581, p = .56			F(2, 473) = .905, p = .405			F(2, 428) = .218, p = .804		
Give a writing assignment	Never	13%	8%	18%	7%	10%	13%	8%	18%	18%
	1+ times/semester	24%	29%	32%	39%	32%	36%	51%	45%	51%
	1+ times/month	43%	48%	29%	35%	38%	28%	31%	29%	24%
	1+ times/week	21%	14%	22%	18%	19%	22%	9%	8%	7%
	Total	72	95	129	109	149	215	86	153	197
		F(2, 293) = 1.00, p = .368			F(2, 470) = .345, p = .709			F(2, 433) = 1.98, p = .139		
Assign one major team project	Never	18%	12%	14%	12%	14%	21%	24%	21%	25%
	In some but not all courses I teach	61%	68%	63%	57%	59%	57%	44%	56%	54%
	In every course I teach	21%	20%	23%	31%	27%	22%	31%	22%	21%
	Total	66	90	116	110	146	218	86	154	197
		F(2, 269) = .248, p = .781			F(2, 471) = .3.695, p = .026 Professor, Assistant			F(2, 434) = .875, p = .418		

Table 52

Assignments in 2002, 1999, and 1997 by position

		2002			1999			1997		
		Teaching	Teaching/ Research	Admin.	Teaching	Teaching/ Research	Admin.	Teaching	Teaching/ Research	Admin.
Assign homework to individuals	Never	0%	4%	6%	2%	8%	10%	2%	8%	7%
	1+ times/semester	8%	8%	6%	8%	6%	14%	6%	7%	7%
	1+ times/month	11%	21%	17%	10%	20%	14%	27%	33%	33%
	1+ times/week	82%	67%	72%	80%	66%	62%	65%	52%	53%
	Total	38	253	18	50	403	29	49	361	43
		F(2, 306) = 1.30, p = .274			F(2, 479) = 2.13, p = .12			F(2, 450) = 1.79, p = .168		
Option to do homework in teams	Never	30%	31%	6%	37%	26%	24%	33%	37%	16%
	1+ times/semester	8%	23%	11%	18%	17%	21%	17%	24%	33%
	1+ times/month	20%	17%	39%	14%	21%	24%	13%	17%	26%
	1+ times/week	43%	30%	44%	31%	36%	31%	38%	22%	26%
	Total	40	251	18	49	400	29	48	349	43
		F(2, 306) = 4.07, p = .018 Admin., Teaching/Research			F(2, 475) = 1.20, p = .303			F(2, 437) = 2.00, p = .051		
Require teams for homework	Never	66%	52%	22%	44%	48%	38%	55%	58%	33%
	1+ times/semester	10%	25%	22%	24%	25%	28%	22%	22%	47%
	1+ times/month	7%	15%	17%	18%	11%	24%	14%	9%	16%
	1+ times/week	17%	9%	39%	14%	17%	10%	8%	11%	5%
	Total	41	250	18	50	402	29	49	358	43
		F(2, 306) = 6.80, p = .001 Admin., Teaching/Teaching/Res.			F(2, 478) = .149, p = .862			F(2, 447) = .737, p = .479		
Give a writing assignment	Never	24%	12%	11%	24%	11%	7%	19%	17%	5%
	1+ times/semester	29%	29%	28%	28%	36%	28%	48%	48%	53%
	1+ times/month	32%	39%	39%	30%	32%	48%	25%	27%	37%
	1+ times/week	15%	20%	22%	18%	22%	17%	8%	8%	5%
	Total	41	253	18	50	399	29	48	359	43
		F(2, 309) = 1.85, p = .158			F(2, 475) = 1.51, p = .221			F(2, 447) = .78, p = .459		
Assign one major team project	Never	25%	14%	19%	20%	16%	24%	31%	25%	14%
	In some but not all courses I teach	60%	63%	38%	64%	57%	48%	57%	52%	45%
	In every course I teach	15%	23%	44%	16%	27%	28%	12%	23%	40%
	Total	40	231	16	50	400	29	49	360	42
		F(2, 284) = 2.34, p = .098			F(2, 476) = 1.26, p = .285			F(2, 448) = 4.87, p = .008		

	2002			1999			1997		
	Teaching	Teaching/ Research	Admin.	Teaching	Teaching/ Research	Admin.	Teaching	Teaching/ Research	Admin.
							Admin., Teaching/Teaching/Res.		

Class Preparation and Student Feedback

This section describes faculty members' preparation for their undergraduate classes and their interactions with their students. Respondents were asked to comment on time spent preparing for lectures, frequency of writing instructional objectives and study guides, time spent with students outside of class, and solicitation of feedback from students.

On average, faculty members reported spending just over 9.5 hours per week (SD = 5.46) preparing for their undergraduate courses. Women spent nearly 2 hours more than men, but the difference is not quite statistically significant. Masters faculty spent just over an hour more than research faculty per week preparing, but again, the difference is not significant. Assistant professors spent slightly more time than associate professors and full professors, but these differences are not statistically significant. Teaching faculty spent almost three more hours preparing than did teaching/research faculty, or administrators. There was no relationship between the number of teaching seminars attended either in the previous year or over the faculty member's career and the amount of time spent preparing for class. These results are shown in Tables 53-58.

Table 53
Average hours of preparation time by sex

	Male	Female
Mean	9.24	11.10
Std. Dev	5.29	6.49
n	280	40
	t(46.7) = 1.73, p = .09	

Table 54
Average hours of preparation time by Carnegie classification

	Research	Masters
Mean	9.35	10.56
Std. Dev.	5.17	6.74
n	270	57
	t(325) = 1.52, p = .129	

Table 55
Average hours of preparation time by rank

	Assistant Professor	Associate Professor	Professor
Mean	9.86	9.17	9.32
Std. Dev.	5.36	6.28	4.77
n	72	95	129
	F(2, 293) = .36, p = .698		

Table 56
Average hours of preparation time by position

	Teaching	Teaching/ Research	Administration
Mean	12.15_a	9.37_b	7.11_b
Std. Dev.	7.49	5.09	4.10
n	41	254	18
	F(2, 310) = 6.67, p = .001		

Note: means that do not share a subscript are significantly different at the $p \leq .05$ level using the Bonferroni test

Table 57
Average hours of preparation time by 2001 teaching seminars

	0	1	2	3 or more
Mean	9.39	10.60	9.28	8.58
Std. Dev.	5.01	6.56	5.20	4.90
n	150	83	40	59
	F(3, 328) = 1.74, p = .159			

Table 58
Average hours of preparation time by career teaching seminars

	0	1-2	3-5	6-10	>10
Mean	9.97	9.14	9.59	9.35	9.71
Std. Dev.	6.15	4.28	4.85	5.23	6.75
n	34	71	83	60	83
	F(4, 326) = .185, p = .946				

Instructional objectives are formal statements of what the faculty member expects the students to be able to do to demonstrate mastery of the course content. Two-thirds of the respondents reported that they always or usually write instructional objectives for their courses and only 12% indicated that they never did. Faculty members also were asked how often they provided study guides to students before tests. Over 60% did so always or usually and 80% did so at least sometimes. These results are shown in Table 59.

Table 59
Objectives and study guides

	How often do you write formal instructional objectives		How often do you give students study guides before tests	
	n	%	n	%
Never	36	11%	59	18%
Sometimes	73	22%	65	20%
Usually	70	21%	74	22%
Always	152	46%	133	40%
Total	331	100%	331	100%

Faculty members at masters institutions were significantly more likely to write instructional objectives than were those at research institutions, with nearly three-fifths always doing so compared with only two-fifths of research institution faculty (Table 60). Table 61 shows that

faculty members who had attended at least three teaching seminars in 2001 were more likely than those who attended zero or one teaching seminar to give students study guides before tests.

Table 60
Write instructional objectives by Carnegie classification

	Research	Masters
Never	13%	4%
Sometimes	25%	9%
Usually	20%	26%
Always	43%	61%
	t(104.2) = 4.23, p ≤ .0005	

Table 61
Give students study guides by 2001 teaching seminars

	0_a	1_a	2_{ab}	$\geq 3_b$
Never	21%	21%	13%	7%
Sometimes	18%	20%	28%	17%
Usually	22%	26%	20%	19%
Always	38%	32%	40%	57%
	F(3, 327) = 3.36, p = .019			

On average, faculty members reported that they spent slightly less than four hours per week outside of office hours with undergraduate students (M = 3.9, SD = 4.26). Faculty members at masters institutions reported spending nearly 6 hours per week with their undergraduate students compared with only 3.5 hours spent by faculty at research institutions. (See Table 62) Likewise, teaching faculty reported that they spent more time with undergraduate students (M = 7.2 hours) than did either teaching/research faculty (M = 3.3), or administrators (M = 4.1) (Table 63).

Table 62
Average time spent with undergraduates by Carnegie classification

	Research	Masters
Mean	3.45	5.93
Std. Dev.	3.75	5.86
n	271	56
	t(64.6) = 3.05, p = .003	

Table 63
Average time spent with undergraduates by position

	Teaching	Teaching/ Research	Administration
Mean	7.15_a	3.32_b	4.06_b
Std. Dev.	6.48	3.64	2.73
n	40	255	18
	F(2, 310) = 15.32, p ≤ .0005		

Faculty members were asked a simple yes or no question about whether they solicited feedback regarding their teaching from their students during the semester (other than through the end-of-course evaluation). Seventy-seven percent indicated that they did. Assistant professors (92%) were more likely than associate professors or full professors (71% each) to solicit such feedback,

χ^2 (2, N = 292) = 12.84, p = .002, indicating that new faculty orientation workshops that include teaching effectiveness training (which includes recommendations to seek regular feedback from students) may be having the desired effect. In addition, those who attended any career teaching seminars were more likely to ask for feedback than those who had not (0 – 52%; 1-2 – 74%; 3-5 – 81%; 6-10 – 79%; ≥10 – 84%), χ^2 (4, N = 324) = 15.2, p = .004.

Comparison of 2002, 1999, and 1997 respondents

Time spent for and with undergraduates. As shown in Table 64, there was no significant difference between the 2002 and 1999 respondents with respect to the amount of time they spent preparing for their courses or meeting with undergraduates outside of office hours (these questions were not asked in 1997). There was no difference between men and women in either year on either variable (Table 65). Faculty members at masters institutions spent significantly more time outside of office hours with undergraduates than those at research institutions in both 1999 and 2002 (Table 66).

Table 64

Time spent for and with undergraduates in 2002 and 1999

Hours per week preparing for undergraduate course		Hours per week with undergraduates outside of office hours	
2002	1999	2002	1999
9.54 (5.46) 332	9.16 (5.35) 501	3.89 (4.26) 332	3.85 (3.76) 502
t(831) = .997, p = .319		t(832) = .117, p = .907	

Note: Standard deviations appear in parentheses below the means and above the number of respondents in each cell.

Table 65

Time spent for and with undergraduates in 2002 and 1999 by sex

Hours per week preparing for undergraduate course				Hours per week with undergraduates outside of office hours			
2002		1999		2002		1999	
Male	Female	Male	Female	Male	Female	Male	Female
9.24 (5.29) 280	11.10 (6.49) 40	9.01 (5.27) 448	10.58 (5.96) 48	3.79 (4.28) 280	4.10 (4.35) 40	3.79 (3.70) 449	4.42 (4.10) 48
t(46.7) = 1.73, p = .09		t(494) = 1.94, p = .052		t(318) = .429, p = .668		t(495) = 1.11, p = .269	

Note: Standard deviations appear in parentheses below the means and above the number of respondents in each cell.

Table 66

Time spent for and with undergraduates in 2002 and 1999 by Carnegie classification

Hours per week preparing for undergraduate course				Hours per week with undergraduates outside of office hours			
2002		1999		2002		1999	
Research	Masters	Research	Masters	Research	Masters	Research	Masters
9.35 (5.17) 270	10.56 (6.74) 57	9.06 (4.75) 424	9.75 (7.94) 75	3.45 (3.75) 271	5.93 (5.86) 56	3.66 (3.61) 425	5.03 (4.43) 75
t(325) = 1.52, p = .129		t(83.6) = .723, p = .472		t(64.6) = 3.05, p = .003		t(92.1) = 2.53, p = .013	

Note: Standard deviations appear in parentheses below the means and above the number of respondents in each cell.

Assistant professors spent significantly more time preparing for their courses in 1999 than did full professors but the gap narrowed to an insignificant difference in 2002. In recent years, participants in new faculty orientation programs on many SUCCEED campuses were told about the work of Robert Boice, whose *Advice to New Faculty Members* includes a guideline limiting class preparation time to two hours per hour of lecture. The reduction in the time spent by the assistant professors from 1999 to 2002 could reflect this training. There was no difference by rank in the amount of time spent with undergraduates outside of office hours. See Table 67.

Table 67

Time spent for and with undergraduates in 2002 and 1999 by rank

Hours per week preparing for undergraduate course						Hours per week with undergraduates outside of office hours					
2002			1999			2002			1999		
Asst.	Assoc.	Prof.	Asst.	Assoc.	Prof.	Asst.	Assoc.	Prof.	Asst.	Assoc.	Prof.
9.86 (5.36) 72	9.17 (6.28) 95	9.32 (4.77) 129	10.30_{a} (5.43) 109	9.29_{ab} (6.20) 146	8.41_{b} (4.49) 216	3.28 (3.88) 72	3.46 (3.65) 95	3.64 (4.20) 129	3.80 (3.37) 109	3.68 (3.47) 148	3.77 (4.00) 215
F(2, 293) = .36, p = .698			F(2, 468) = 4.76, p = .009			F(2, 293) = .203, p = .816			F(2, 469) = .04, p = .958		

Note: Means in the same row within a year that do not share a subscript are significantly different at the p < .05 level using the Bonferroni test. If there is no subscript in a row within a year, the means are not significantly different. Standard deviations appear in parentheses below the means and above the number of respondents in each cell.

Administrators spent significantly less time preparing for their undergraduate courses than either teaching or teaching/research faculty in 1999 while teaching faculty spent significantly more time preparing for undergraduate classes in 2002 than either teaching/research faculty or administrators. Teaching faculty also spent more time outside of office hours with undergraduates than teaching/research faculty in 1999 and than both teaching/research faculty and administrators in 2002 (Table 68).

Table 68

Time spent for and with undergraduates in 2002 and 1999 by position

Hours per week preparing for undergraduate course						Hours per week with undergraduates outside of office hours					
2002			1999			2002			1999		
Teach	Teach Resrch	Admin.	Teach	Teach Resrch	Admin.	Teach	Teach Resrch	Admin.	Teach	Teach Resrch	Admin.
12.15_a	9.37_b	7.11_b	11.08_a	9.18_a	5.96_b	7.15_a	3.32_b	4.06_b	5.64_a	3.51_b	4.36_{ab}
(7.49)	(5.09)	(4.10)	(9.03)	(4.78)	(2.62)	(6.48)	(3.64)	(2.73)	(5.01)	(3.39)	(4.10)
41	254	18	50	399	28	40	255	18	50	400	28
$F(2, 310) = 6.67, p = .001$			$F(2, 474) = 8.4, p \leq .0005$			$F(2, 310) = 15.31, p \leq .0005$			$F(2, 475) = 8.04, p \leq .0005$		

Note: Means in the same row within a year that do not share a subscript are significantly different at the $p < .05$ level using the Bonferroni test. Standard deviations appear in parentheses below the means and above the number of respondents in each cell.

Instructional objectives and study guides. Sixty-seven percent of the 2002 respondents always or usually wrote instructional objectives, a significantly greater percentage than that for the 1997 respondents (Table 69). This result might be attributable in part to a universal implementation in 2001 of the new ABET Engineering Program Accreditation System, which mandates the formulation of course learning objectives (which are synonymous with instructional objectives).

Table 69

Write instructional objectives and provide study guides in 2002, 1999 and 1997

	How often do you write formal instructional objectives			How often do you give students study guides before tests		
	2002_a	1999_{ab}	1997_b	2002	1999	1997
Never	11%	12%	19%	18%	20%	22%
Sometimes	22%	23%	22%	20%	20%	21%
Usually	21%	23%	22%	22%	25%	27%
Always	46%	43%	39%	40%	36%	31%
Total	331	505	497	331	501	494
	$F(2, 1330) = 4.74, p = .009$			$F(2, 1323) = 2.39, p = .092$		

Within each year, there were few significant differences among groups with respect to writing instructional objectives or providing study guides for tests and exams to students. The only significant differences found were that women (73%) were more likely to always or usually give study guides to students in 1999 than were men (59%) and faculty at masters institutions (87%) were more likely to always or usually write formal instructional objectives in 2002 than were faculty at research institutions (63%). The results for all demographic groups are shown in Tables 70-74.

Table 70

Write instructional objectives and provide study guides in 2002, 1999 and 1997 by sex

		2002		1999		1997	
		Male	Female	Male	Female	Male	Female
How often do you write formal instructional objectives	Never	10%	10%	13%	8%	19%	18%
	Sometimes	23%	20%	24%	10%	21%	20%
	Usually	20%	23%	22%	33%	21%	20%
	Always	46%	48%	42%	48%	39%	41%
	Total	280	40	452	48	434	49
		t(318) = .26, p = .794		t(60.7) = 1.97, p= .054		t(481) = .24, p = .81	
How often do you give students study guides before tests	Never	19%	13%	21%	8%	22%	21%
	Sometimes	19%	25%	20%	19%	22%	10%
	Usually	24%	10%	25%	25%	26%	29%
	Always	38%	53%	34%	48%	31%	40%
	Total	281	40	448	48	432	48
		t(319) = 1.05, p = .293		t(61.0) = 2.6, p = .012		t(478) = 1.30, p= .194	

Table 71

Write instructional objectives and provide study guides in 2002, 1999 and 1997 by Carnegie classification

		2002		1999		1997	
		Research	Masters	Research	Masters	Research	Masters
How often do you write formal instructional objectives	Never	13%	4%	12%	12%	20%	14%
	Sometimes	25%	9%	23%	23%	20%	26%
	Usually	20%	26%	23%	21%	21%	20%
	Always	43%	61%	42%	44%	39%	40%
	Total	270	57	428	75	407	90
		t(104.2)=4.23,p≤.0005		t(501) = .15, p = .881		t(495) = .53, p = .594	
How often do you give students study guides before tests	Never	18%	19%	19%	26%	21%	23%
	Sometimes	20%	19%	20%	17%	22%	17%
	Usually	22%	25%	25%	22%	26%	31%
	Always	41%	37%	36%	34%	32%	30%
	Total	271	57	423	76	406	88
		t(326) = .38, p = .705		t(497) = .99, p = .323		t(492) = .03, p = .973	

Table 72

Write instructional objectives and provide study guides in 2002, 1999 and 1997 by rank

		2002			1999			1997		
		Assistant Professor	Associate Professor	Professor	Assistant Professor	Associate Professor	Professor	Assistant Professor	Associate Professor	Professor
How often do you write formal instructional objectives	Never	14%	9%	10%	6%	12%	14%	12%	19%	22%
	Sometimes	13%	22%	28%	21%	24%	24%	28%	23%	18%
	Usually	25%	24%	16%	25%	24%	20%	23%	15%	22%
	Always	49%	44%	46%	48%	41%	42%	37%	43%	38%
	Total	72	95	129	111	147	218	95	161	211
		F(2, 293) = .241, p = .786			F(2, 473) = 2.18, p = .114			F(2, 464) = .235, p = .791		
How often do you give students study guides before tests	Never	22%	15%	18%	16%	20%	21%	24%	20%	21%
	Sometimes	17%	24%	18%	23%	18%	20%	17%	22%	23%
	Usually	24%	27%	22%	27%	26%	24%	29%	23%	27%
	Always	38%	34%	42%	34%	37%	35%	30%	35%	29%
	Total	72	95	130	110	147	214	94	159	211
		F(2, 294) = .226, p = .798			F(2, 468) = .149, p = .862			F(2, 461) = .268, p = .765		

Table 73

Write instructional objectives and provide study guides in 2002, 1999 and 1997 by position

		2002			1999			1997		
		Teaching	Teaching/ Research	Admin.	Teaching	Teaching/ Research	Admin.	Teaching	Teaching/ Research	Admin.
How often do you write formal instructional objectives	Never	12%	9%	28%	18%	12%	7%	22%	19%	16%
	Sometimes	17%	23%	11%	18%	23%	29%	20%	21%	14%
	Usually	29%	21%	6%	20%	23%	11%	20%	19%	34%
	Always	41%	46%	56%	43%	42%	54%	37%	41%	36%
	Total	41	253	18	49	403	28	49	380	50
		F(2, 309) = .183, p = .833			F(2, 477) = .414, p = .661			F(2, 476) = .326, p = .722		
How often do you give students study guides before tests	Never	15%	18%	28%	18%	19%	32%	20%	21%	20%
	Sometimes	20%	20%	22%	22%	19%	21%	24%	20%	24%
	Usually	10%	22%	33%	32%	25%	21%	27%	25%	40%
	Always	55%	40%	17%	28%	37%	25%	29%	34%	16%
	Total	40	254	18	50	398	28	49	378	50
		F(2, 309) = 2.079, p = .127			F(2, 473) = 1.872, p = .155			F(2, 474) = .692, p = .501		

Soliciting student feedback. In both 1999 and 2002, just over three fourths of faculty members reported soliciting student feedback other than through the obligatory end-of-semester course evaluations. The only significant difference among the demographic groups in either year was by rank, where assistant professors were much more likely than associate professors or full professors to report that they solicited such feedback. Tables 74 through 77 show the percentage of respondents who indicated that they solicit feedback by year and demographic group.

Table 74
Solicit student feedback by sex and year

2002		1999	
Male 77%	Female 78%	Male 78%	Female 83%
χ^2 (1, N = 316) = .009, p = .923		χ^2 (1, N = 493) = .725, p = .395	

Table 75
Solicit student feedback by Carnegie classification and year

2002		1999	
Research 76%	Masters 79%	Research 77%	Masters 81%
χ^2 (1, N = 323) = .122, p = .727		χ^2 (1, N = 495) = .579, p = .447	

Table 76
Solicit student feedback by rank and year

2002			1999		
Assistant Professor 92%	Associate Professor 71%	Professor 71%	Assistant Professor 88%	Associate Professor 81%	Professor 71%
χ^2 (2, N = 292) = 12.84, p = .002			χ^2 (2, N = 470) = 13.24, p = .001		

Table 77
Solicit student feedback by position and year

2002			1999		
Teaching 75%	Teaching/ Research 77%	Admin. 75%	Teaching 76%	Teaching/ Research 78%	Admin. 89%
χ^2 (2, N = 309) = .072, p = .965			χ^2 (2, N = 474) = 1.95, p = .377		

Involvement in Teaching Improvement Activities

In 1999 and 2002 respondents were asked a series of yes or no questions to assess their use of faculty development services and activities on their campus. Specifically, they were asked which of the following faculty development services they had [ever] used on their campus.

- Attended workshops or seminars.
- Worked individually with a teaching consultant.
- Attended meetings (e.g., discussion groups, brown bag lunches) to discuss professional development.
- Participated in a formal mentoring program (as a mentor or mentee).
- Consulted or borrowed books, tapes, etc.
- Consulted newsletter or web site.
- Had their teaching videotaped.
- Peer/colleague observation and feedback (2002 only)
- Other, specify [ ]

Figure 1 shows the results from both years.

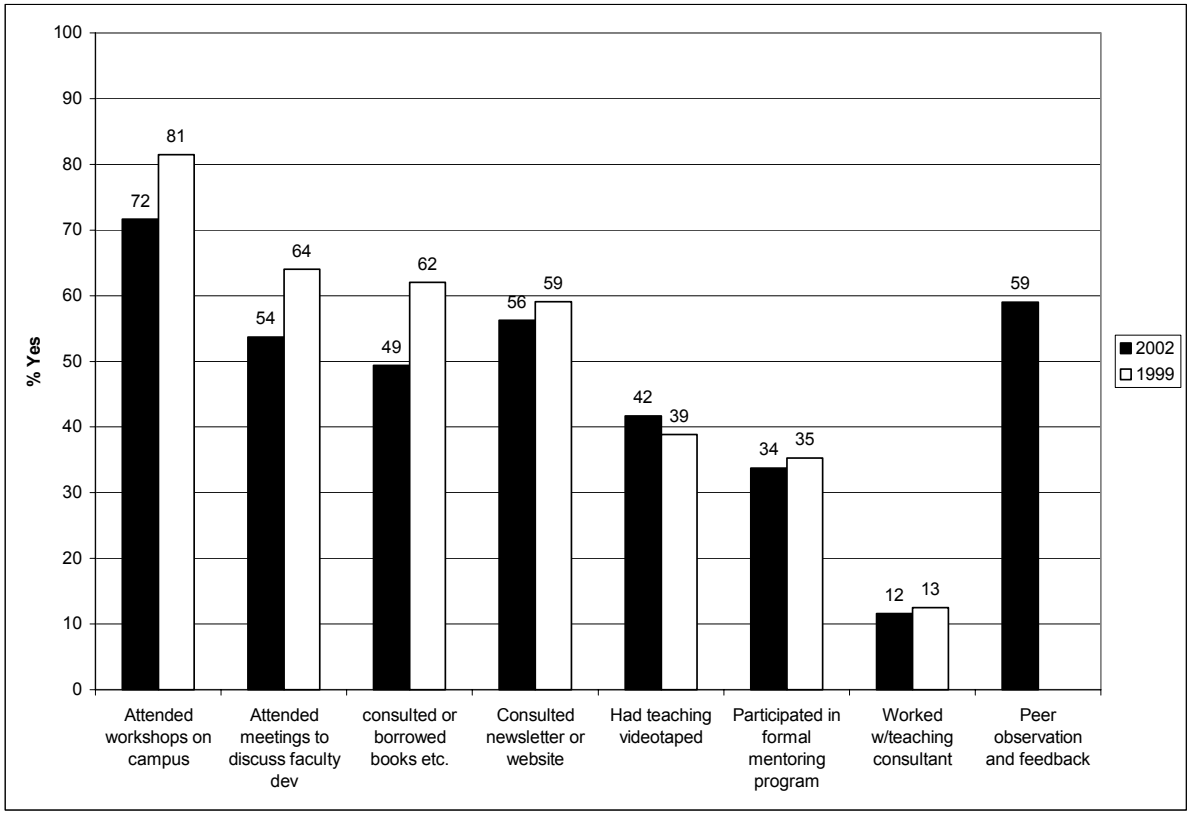


Figure 1. Use of faculty development services on campus

Other than having their teaching videotaped, the percentage of faculty members who report that they have used the various faculty development services on campus decreased from 1999 to 2002. These differences are significant with respect to attending workshops on campus (χ^2 (1, N = 835) = 11.04, p = .001); attending meetings or brownbags (χ^2 (1, N = 834) = 8.92, p = .003;

and consulting books (χ^2 (1, N = 831) = 12.94, $p \leq .0005$). With few exceptions, the decreases were common to all of the SUCCEED campuses.

A possible explanation of the decrease in reported usage of faculty development services is that the greatest faculty involvement in SUCCEED occurred in the first five years of the Coalition's existence, when many research and development projects were sponsored, and as direct involvement decreased so did participation in faculty development activities. . In addition, the faculty development focus team, with representation from all campuses, was most active from about 1998 through 2001. These individuals were charged with providing or arranging faculty development for faculty members in their colleges and many took to this task with great enthusiasm. After 2001, as SUCCEED began to reach the end of its funding period and as some focus team members retired or moved on to other duties, faculty development opportunities specifically targeted to engineering faculty were provided less frequently.

Tables 78 through 81 below show the differences by demographic group and year for use of all of the faculty development services on campus. The only significant difference by sex was that in 1999, women were more likely than men to work individually with a teaching consultant, 27% to 11% (Table 78).

Table 78
Use of faculty development services in 2002 and 1999 by sex

	2002		1999	
	Male	Female	Male	Female
Attended workshops on campus	70%	84%	81%	82%
	χ^2 (1, N = 318) = 3.15, p = .076		χ^2 (1, N = 503) = .001, p = .982	
Worked w/teaching consultant	11%	22%	11%	27%
	χ^2 (1, N = 317) = 3.69, p = .055		χ^2 (1, N = 499) = 10.49, p = .001	
Attended meetings/brownbags	53%	61%	63%	67%
	χ^2 (1, N = 318) = .792, p = .374		χ^2 (1, N = 502) = .305, p = .581	
Consulted or borrowed books	49%	58%	63%	56%
	χ^2 (1, N = 318) = 1.08, p = .300		χ^2 (1, N = 499) = .73 p = .394	
Participated in formal mentoring program	33%	41%	35%	37%
	χ^2 (1, N = 316) = .92, p = .337		χ^2 (1, N = 503) = .043, p = .836	
Consulted newsletter or website	55%	70%	60%	55%
	χ^2 (1, N = 317) = 3.24, p = .072		χ^2 (1, N = 497) = .316, p = .574	
Had teaching videotaped	42%	39%	37%	48%
	χ^2 (1, N = 316) = .11 p = .74		χ^2 (1, N = 500) = 2.03, p = .154	
Peer observation and feedback	60%	51%		
	χ^2 (1, N = 317) = 1.10, p = .295			

Over 40% of faculty at research institutions reported having their teaching videotaped compared with about 30% of masters faculty in both years, a difference that was not quite significant. Masters faculty were significantly more likely to have their teaching observed by a colleague, 79% to 55% (Table 79). We speculate that this may be due to the smaller number of faculty members at the masters institutions that allows for this sort of collegiality.

Table 79

Use of faculty development services in 2002 and 1999 by Carnegie classification

	2002		1999	
	Research	Masters	Research	Masters
Attended workshops on campus	70%	80%	81%	87%
	χ^2 (1, N = 325) = 2.50, p = .114		χ^2 (1, N = 506) = 1.63, p = .202	
Worked w/teaching consultant	11%	14%	12%	13%
	χ^2 (1, N = 324) = .428, p = .513		χ^2 (1, N = 502) = .03, p = .862	
Attended meetings/brownbags	53%	58%	63%	72%
	χ^2 (1, N = 328) = .527, p = .468		χ^2 (1, N = 505) = 2.62, p = .105	
Consulted or borrowed books etc.	50%	49%	62%	65%
	χ^2 (1, N = 325) = .005), p = .945		χ^2 (1, N = 502) = .38, p = .538	
Participated in formal mentoring program	34%	35%	35%	38%
	χ^2 (1, N = 323) = .019, p = .891		χ^2 (1, N = 506) = .303, p = .582	
Consulted newsletter or website	55%	63%	59%	60%
	χ^2 (1, N = 324) = .998, p = .318		χ^2 (1, N = 500) = .036, p = .849	
Had teaching videotaped	44%	30%	41%	29%
	χ^2 (1, N = 323) = 3.64, p = .056		χ^2 (1, N = 503) = 3.78, p = .052	
Peer observation and feedback	55%	79%		
	χ^2 (1, N = 324) = 10.77, p = .001			

Assistant and associate professors were more likely than full professors in both years to attend workshops on campus related to teaching. Full and associate professors in 1999 were more likely to consult books or videotapes on teaching than assistant professors. Full and assistant professors were more likely than associate professors to participate in a formal mentoring program in 1999 (Table 80).

Table 80

Use of faculty development services in 2002 and 1999 by rank

	2002			1999		
	Assistant Professor	Associate Professor	Professor	Assistant Professor	Associate Professor	Professor
Attended workshops on campus	76%	80%	64%	87%	86%	77%
	χ^2 (2, N = 295) = 7.38, p = .025			χ^2 (2, N = 477) = 7.51, p = .023		
Worked w/teaching consultant	11%	15%	12%	15%	11%	11%
	χ^2 (2, N = 294) = .599, p = .741			χ^2 (2, N = 473) = 1.36, p = .506		
Attended meetings/brownbags	51%	59%	52%	63%	72%	61%
	χ^2 (2, N = 294) = 1.39, p = .50			χ^2 (2, N = 476) = 4.98, p = .08		
Consulted or borrowed books etc.	55%	47%	48%	52%	66%	65%
	χ^2 (2, N = 294) = 1.07, p = .587			χ^2 (2, N = 473) = 6.41, p = .041		
Participated in formal mentoring program	27%	34%	36%	36%	29%	42%
	χ^2 (2, N = 293) = 1.86, p = .39			χ^2 (2, N = 477) = 7.00, p = .03		
Consulted newsletter or website	62%	54%	51%	60%	62%	56%
	χ^2 (2, N = 294) = 2.34, p = .311			χ^2 (2, N = 472) = 1.11, p = .574		
Had teaching videotaped	32%	41%	50%	34%	46%	38%
	χ^2 (2, N = 293) = 5.91, p = .052			χ^2 (2, N = 474) = 4.51, p = .105		
Peer observation and feedback	58%	68%	56%			
	χ^2 (2, N = 294) = 3.69, p = .158					

Administrators were more likely than other faculty to attend meetings about teaching. This difference was significant in 2002 and nearly so in 1999. Administrators were more likely to participate in a formal mentoring program (presumably as a mentor) in 1999 than were other faculty (Table 81).

Table 81
Use of faculty development services in 2002 and 1999 by position

	2002			1999		
	Teaching	Teaching/ Research	Admin.	Teaching	Teaching/ Research	Admin.
Attended workshops on campus	66%	71%	88%	86%	81%	86%
	χ^2 (2, N = 310) = 2.99, p = .225			χ^2 (2, N = 482) = .99, p = .61		
Worked w/teaching consultant	20%	11%	12%	12%	12%	11%
	χ^2 (2, N = 310) = 2.60, p = .273			χ^2 (2, N = 478) = .041, p = .979		
Attended meetings/brownbags	56%	51%	83%	66%	63%	86%
	χ^2 (2, N = 311) = 7.29, p = .026			χ^2 (2, N = 481) = 5.94, p = .051		
Consulted or borrowed books etc.	46%	48%	61%	58%	61%	72%
	χ^2 (2, N = 311) = 1.21, p = .547			χ^2 (2, N = 478) = 1.71, p = .425		
Participated in formal mentoring program	39%	32%	38%	26%	35%	59%
	χ^2 (2, N = 309) = .999, p = .607			χ^2 (2, N = 482) = 8.79, p = .012		
Consulted newsletter or website	61%	54%	71%	57%	59%	69%
	χ^2 (2, N = 310) = 2.15, p = .341			χ^2 (2, N = 476) = 1.26, p = .533		
Had teaching videotaped	34%	42%	35%	32%	41%	32%
	χ^2 (2, N = 309) = 1.18, p = .555			χ^2 (2, N = 479) = 2.14, p = .343		
Peer observation and feedback	63%	57%	76%			
	χ^2 (2, N = 310) = 2.84, p = .242					

In general, as faculty attended more teaching workshops in their careers, they were significantly more likely to participate in the various teaching improvement programs on campus in both 1999 and 2002. Figures 2 and 3 show this for 1999 and 2002 respectively. The significant differences are shown below.

<u>1999</u>

- Attended workshops, χ^2 (4, N = 506) = 135.44, p ≤ .0005;
- Worked with teaching consultant, χ^2 (4, N = 502) = 32.61, p ≤ .0005;
- Attended meetings, χ^2 (4, N = 505) = 68.95, p ≤ .0005;
- Participated in a mentoring program, χ^2 (4, 506) = 15.60, p = .004;
- Consulted books, tapes, etc., χ^2 (4, N = 502) = 24.79, p ≤ .0005;
- Consulted a newsletter or web site, χ^2 (4, N = 500) = 24.87, p ≤ .0005;
- Had teaching videotaped, χ^2 (4, N = 503) = 11.43, p = .022.

We note the anomaly that 25% of people who reported attending no career teaching workshops nonetheless report having attended a workshop on campus. We can only assume that either they did not consider the workshop on campus to be a workshop "specifically related to teaching" or that they simply forgot about it when responding to the question about attending teaching workshops.

2002

- Attended workshops, χ^2 (4, N = 327) = 89.85, p ≤ .0005
- Worked with teaching consultant, χ^2 (4, N = 326) = 16.83, p = .002
- Attended meetings, χ^2 (4, N = 327) = 62.82, p ≤ .0005
- Consulted books, tapes, etc., χ^2 (4, N = 327) = 23.84, p ≤ .0005
- Participated in a mentoring program, χ^2 (4, N = 325) = 17.76, p = .001
- Consulted a newsletter or web site, χ^2 (4, N = 326) = 45.62, p ≤ .0005

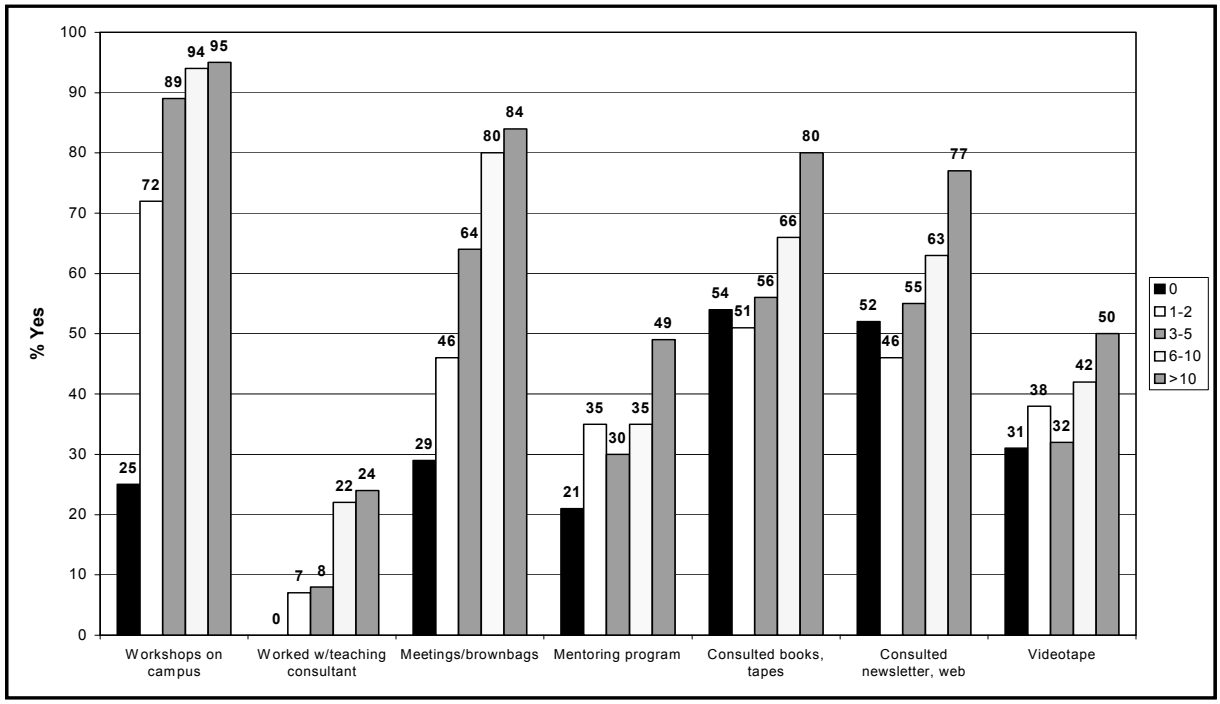
Likewise, faculty members who were more involved with SUCCEED were more likely to participate in many of the faculty development activities on campus. Figures 4 and 5 show this for 1999 and 2002 respectively

1999

- Attended workshop, χ^2 (3, N = 501) = 26.41, p ≤ .0005
- Attended meetings/brownbags, χ^2 (3, N = 500) = 12.90, p = .005
- Participated in a mentoring program, χ^2 (3, N = 501) = 11.38, p = .01)
- Consulted a newsletter or web site, χ^2 (3, N = 495) = 17.07, p = .001.

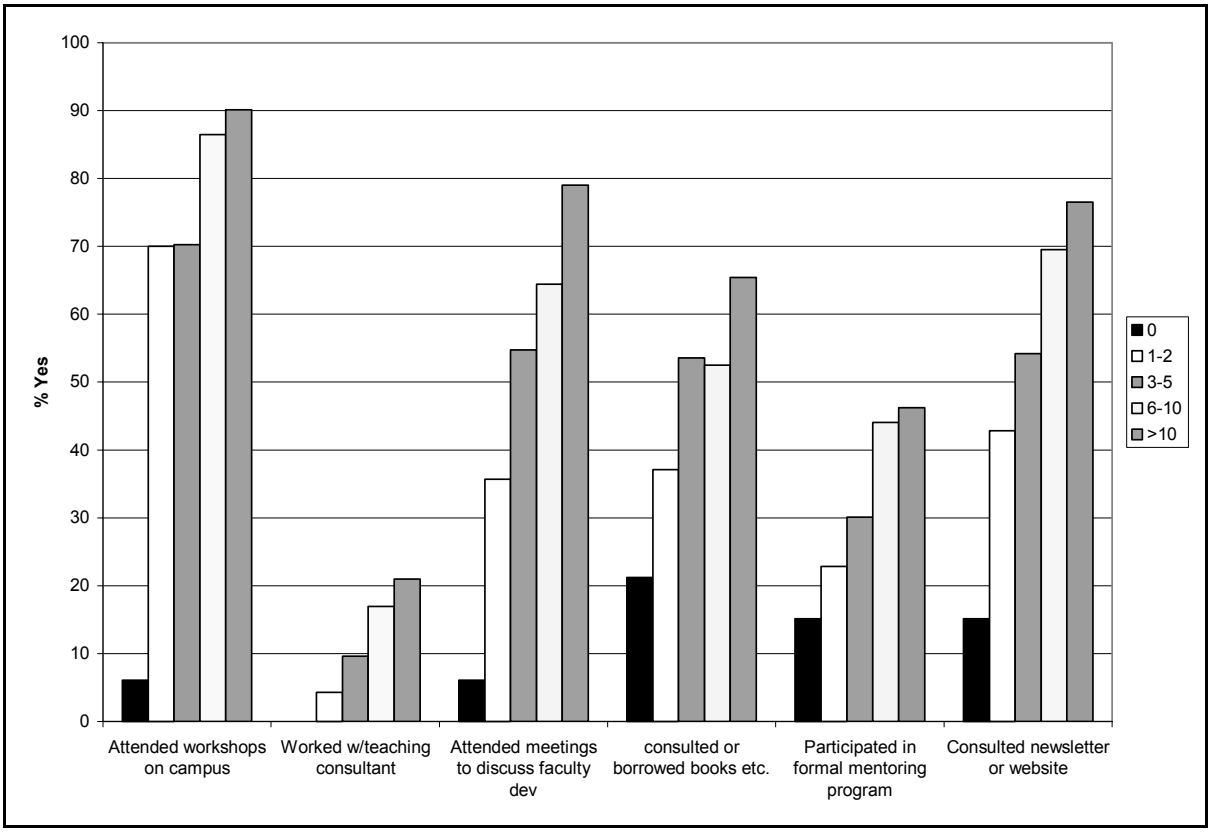
2002

- Attended workshops, $\chi 2$ (3, N = 326) = 46.69, p ≤ .0005
- Attended meetings/brownbags, $\chi 2$ (3, N = 326) = 26.16, p ≤ .0005
- Consulted or borrowed books, etc., $\chi 2$ (3, N = 326) = 12.54, p = .006
- Consulted newsletter or web site, $\chi 2$ (3, N = 325) = 28.21, p ≤ .0005
- Peer observation, $\chi 2$ (3, N = 325) = 8.12, p = .044



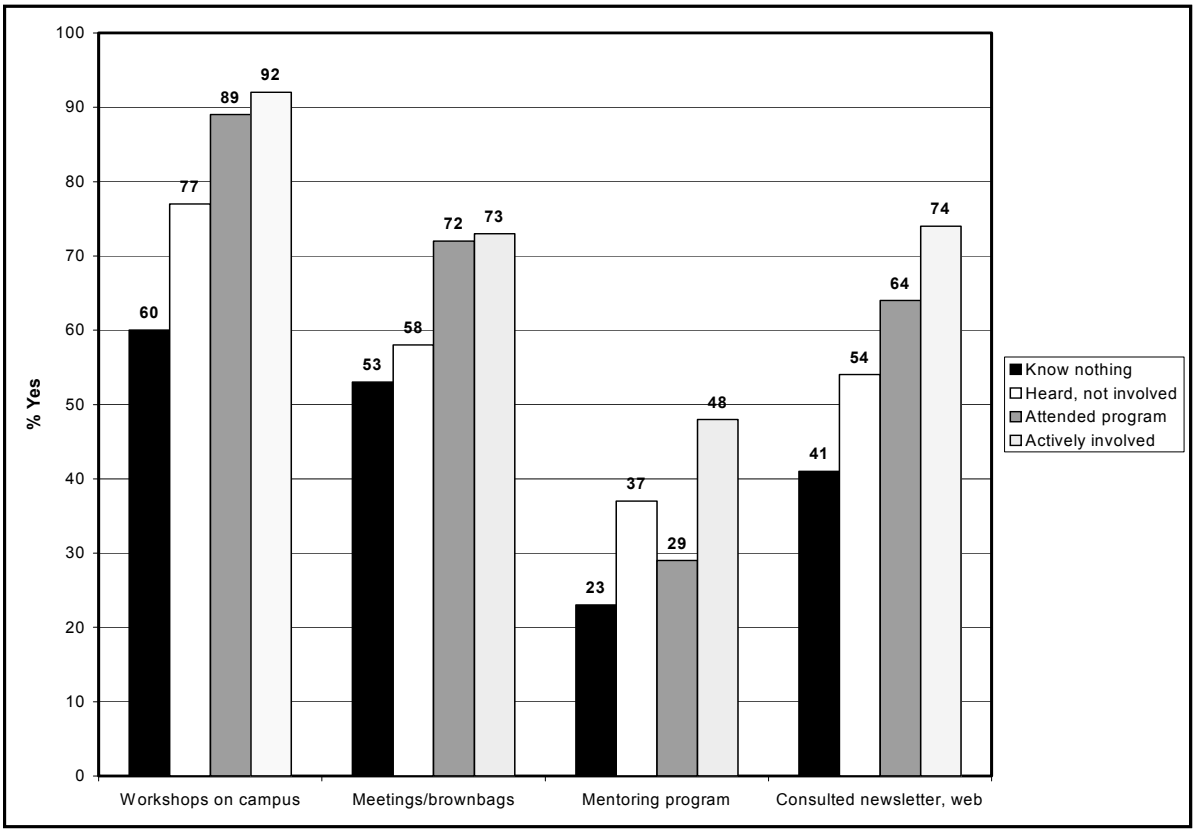
n = 506, 502, 505, 506, 502, 500, 503

Figure 2. Use of faculty development services by career teaching seminars attended (1999)



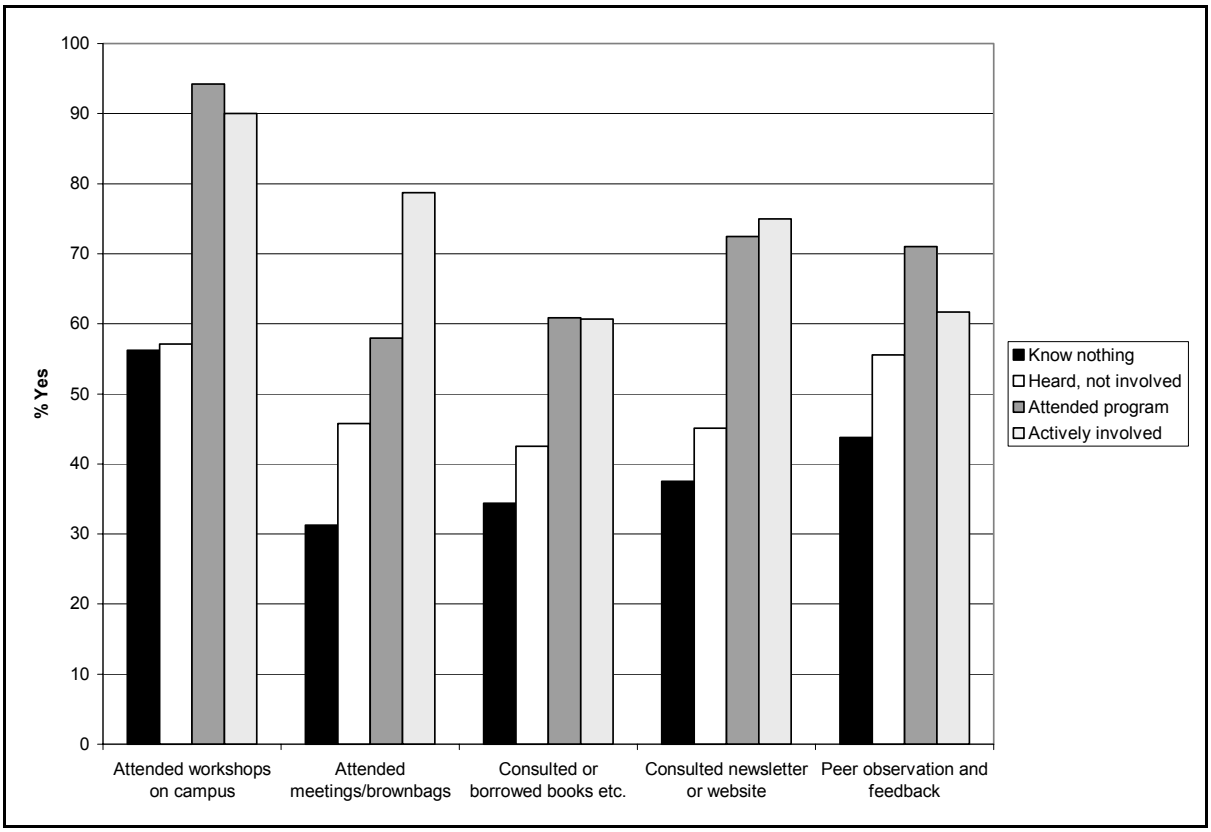
n = 327, 326, 327, 327, 325, 326

Figure 3. Use of faculty development services by career teaching seminars attended (2002)



n = 501, 500, 501, 495

Figure 4. Use of faculty development services by level of involvement in SUCCEED (1999)



n = 326, 326, 326, 325, 325

Figure 5. Use of faculty development services by level of involvement in SUCCEED (2002)

Respondents were also asked if they had changed their teaching behavior in the following areas *as a result of* attending education-related seminars/workshops/conferences in the three years prior.

- Write formal instructional objectives
- Use more active learning in class
- Use more cooperative (team-based) learning for assignments
- Provide study guides to students before tests
- Participate in a mentoring program
- Other

In 1999, these questions were asked simply as yes or no. However, in 2002, respondents were asked if they had 1) started to use the technique for the first time, 2) increased use of the technique, 3) did not change their use of the technique, or 4) if they did not use the technique. Although this change makes direct comparisons between the two years impossible, the information does provide a better understanding of the true impact of the teaching seminars. Table 82 shows the results. More than half of the respondents began to use or increased their use of active learning in class, 45% began to write or more frequently wrote instructional objectives for their classes, and 35% began to use or increased their use of cooperative learning in their classes.

Table 82
Change in teaching behavior as a result of attending teaching workshops

	Started to use for the 1st time		Increased Use		Did not change use		Do not use		Total	
	n	%	n	%	n	%	n	%	n	%
Write instructional objectives	52	17%	84	28%	119	39%	50	16%	305	100%
Use active learning	43	14%	118	39%	97	32%	48	16%	306	100%
Use cooperative learning	29	10%	75	25%	126	41%	74	24%	304	100%
Provide study guides	21	7%	53	17%	164	54%	66	22%	304	100%
Participate in mentoring	19	6%	21	7%	117	39%	144	48%	301	100%

Almost two-thirds of the respondents indicated that the changes they made improved their students' learning slightly or moderately, and small percentages indicated that their students' learning did not improve (7%) or improved greatly (6%). Just less than one-fourth indicated that they did not change any of their activities at all.

Tables 83-88 show these behavior changes by sex, Carnegie classification, rank, position, involvement in SUCCEED, and career teaching seminars. There were no significant differences between males and females or among faculty members of different ranks in their use of these techniques. However, faculty members at masters institutions, those who have attended a SUCCEED program or been actively involved in the coalition, and those who had attended more career teaching seminars were significantly more likely to begin or increase use of active and cooperative learning and to write instructional objectives than were faculty at research institutions, those who had not been involved with SUCCEED and those who had attended no teaching seminars. Administrators were more likely to begin or increase use of active and cooperative learning than were teaching or teaching/research faculty. Faculty members who had attended at least three career teaching seminars were more likely to be involved in a formal mentoring program. There were no differences among groups with respect to giving students study guides before tests.

Table 83

Change in teaching behavior as a result of attending teaching workshops by sex

		Male	Female
Write instructional objectives	Started to use for the 1st time	16%	32%
	Increased use	28%	24%
	Did not change use	40%	26%
	Do not use	17%	18%
	Total	258	38
		χ^2 (3, N = 296) = 6.75, p = .08	
Use active learning	Started to use for the 1st time	15%	10%
	Increased use	36%	59%
	Did not change use	33%	18%
	Do not use	16%	13%
	Total	258	39
		χ^2 (3, N = 297) = 7.76, p = .051	
Use cooperative learning	Started to use for the 1st time	9%	10%
	Increased use	23%	36%
	Did not change use	42%	31%
	Do not use	25%	23%
	Total	256	39
		χ^2 (3, N = 295) = 3.44, p = .328	
Provide study guides	Started to use for the 1st time	7%	8%
	Increased use	16%	24%
	Did not change use	54%	53%
	Do not use	23%	16%
	Total	257	38
		χ^2 (3, N = 295) = 1.85, p = .605	
Participate in mentoring	Started to use for the 1st time	6%	11%
	Increased use	7%	8%
	Did not change use	40%	29%
	Do not use	48%	53%
	Total	254	38
		χ^2 (3, N = 292) = 2.57, p = .463	

Table 84

Change in teaching behavior as a result of attending teaching workshops by Carnegie classification

		Research	Masters
Write instructional objectives	Started to use for the 1st time	15%	26%
	Increased use	22%	53%
	Did not change use	44%	15%
	Do not use	19%	6%
	Total	251	53
		χ^2 (3, N = 304) = 32.6, p $\leq$ .0005	
Use active learning	Started to use for the 1st time	12%	22%
	Increased use	35%	52%
	Did not change use	35%	15%
	Do not use	17%	11%
	Total	251	54
		χ^2 (3, N = 305) = 13.03, p = .005	
Use cooperative learning	Started to use for the 1st time	8%	19%
	Increased use	22%	37%
	Did not change use	45%	26%
	Do not use	26%	19%
	Total	249	54
		χ^2 (3, N = 303) = 14.59, p = .002	
Provide study guides	Started to use for the 1st time	7%	8%
	Increased use	15%	26%
	Did not change use	57%	42%
	Do not use	21%	25%
	Total	250	53
		χ^2 (3, N = 303) = 5.35, p = .148	
Participate in mentoring	Started to use for the 1st time	6%	10%
	Increased use	6%	8%
	Did not change use	40%	33%
	Do not use	48%	49%
	Total	249	51
		χ^2 (3, N = 300) = 1.82, p = .612	

Table 85

Change in teaching behaviors as a result of attending teaching workshops by rank

		Assistant Professor	Associate Professor	Professor
Write instructional objectives	Started to use for the 1st time	28%	19%	11%
	Increased use	22%	30%	25%
	Did not change use	35%	39%	44%
	Do not use	16%	13%	20%
	Total	69	88	117
		χ^2 (6, N = 274) = 10.33, p = .111		
Use active learning	Started to use for the 1st time	16%	16%	11%
	Increased use	46%	35%	38%
	Did not change use	25%	36%	33%
	Do not use	13%	13%	18%
	Total	69	88	117
		χ^2 (6, N = 274) = 5.43, p = .49		
Use cooperative learning	Started to use for the 1st time	12%	9%	9%
	Increased use	26%	27%	22%
	Did not change use	46%	38%	42%
	Do not use	16%	26%	28%
	Total	69	88	115
		χ^2 (6, N = 272) = 4.54, p = .604		
Provide study guides	Started to use for the 1st time	10%	9%	4%
	Increased use	12%	14%	20%
	Did not change use	57%	57%	54%
	Do not use	22%	20%	22%
	Total	69	88	117
		χ^2 (6, N = 274) = 4.94, p = .551		
Participate in mentoring	Started to use for the 1st time	7%	9%	4%
	Increased use	1%	6%	10%
	Did not change use	39%	38%	40%
	Do not use	52%	47%	46%
	Total	69	87	115
		χ^2 (6, N = 271) = 6.79, p = .34		

Table 86

Change in teaching behavior as a result of attending teaching workshops by position

		Teaching	Teaching/ Research	Admin.
Write instructional objectives	Started to use for the 1st time	13%	19%	13%
	Increased use	31%	25%	56%
	Did not change use	44%	39%	6%
	Do not use	13%	17%	25%
	Total	39	234	16
		χ^2 (6, N = 289) = 11.95 p = .063		
Use active learning	Started to use for the 1st time	10%	14%	41%
	Increased use	41%	38%	41%
	Did not change use	23%	33%	12%
	Do not use	26%	15%	6%
	Total	39	234	17
		χ^2 (6, N = 290) = 15.46, p = .017		
Use cooperative learning	Started to use for the 1st time	8%	9%	35%
	Increased use	21%	24%	41%
	Did not change use	36%	44%	18%
	Do not use	36%	24%	6%
	Total	39	232	17
		χ^2 (6, N = 288) = 21.06, p = .002		
Provide study guides	Started to use for the 1st time	3%	8%	6%
	Increased use	26%	15%	25%
	Did not change use	50%	56%	38%
	Do not use	21%	21%	31%
	Total	38	234	16
		χ^2 (6, N = 288) = 5.97, p = .427		
Participate in mentoring	Started to use for the 1st time	3%	7%	0%
	Increased use	5%	6%	19%
	Did not change use	42%	40%	31%
	Do not use	50%	47%	50%
	Total	38	232	16
		χ^2 (6, N = 286) = 6.80, p = .34		

Table 87

Change in teaching behavior as a result of attending teaching workshops by involvement in SUCCEED

		Don't know anything	Heard, not involved	Attended coalition program	Actively involved
Write instructional objectives	Started to use for the 1st time	20%	13%	29%	17%
	Increased use	16%	23%	29%	42%
	Did not change use	44%	43%	38%	30%
	Do not use	20%	21%	5%	12%
	Total	25	141	66	60
		χ^2 (9, N = 292) = 24.57, p = .003			
Use active learning	Started to use for the 1st time	4%	11%	23%	18%
	Increased use	32%	31%	47%	49%
	Did not change use	44%	35%	23%	26%
	Do not use	20%	23%	8%	7%
	Total	25	141	66	61
		χ^2 (9, N = 293) = 26.25, p = .002			
Use cooperative learning	Started to use for the 1st time	0%	5%	23%	11%
	Increased use	20%	17%	24%	46%
	Did not change use	56%	43%	41%	28%
	Do not use	24%	35%	12%	15%
	Total	25	139	66	61
		χ^2 (9, N = 291) = 48.90, p $\leq$ .0005			
Provide study guides	Started to use for the 1st time	4%	8%	5%	10%
	Increased use	16%	14%	21%	20%
	Did not change use	60%	53%	62%	45%
	Do not use	20%	25%	12%	25%
	Total	25	140	66	60
		χ^2 (9, N = 291) = 9.08, p = .43			
Participate in mentoring	Started to use for the 1st time	4%	6%	6%	5%
	Increased use	8%	6%	5%	10%
	Did not change use	32%	40%	36%	43%
	Do not use	56%	47%	53%	42%
	Total	25	139	64	60
		χ^2 (9, N = 288) = 3.56, p = .938			

Table 88

Change in teaching behavior as a result of attending teaching workshops by career teaching seminars

		0	1-2	3-5	6-10	>10
Write instructional objectives	Started to use for the 1st time	9%	18%	13%	19%	21%
	Increased use	14%	17%	34%	24%	36%
	Did not change use	23%	43%	40%	44%	36%
	Do not use	55%	22%	13%	14%	7%
	Total	22	66	77	59	81
		χ^2 (12, N = 304) = 37.84, $p \leq .0005$				
Use active learning	Started to use for the 1st time	5%	9%	12%	17%	21%
	Increased use	9%	38%	35%	39%	49%
	Did not change use	27%	32%	36%	37%	25%
	Do not use	59%	20%	18%	7%	5%
	Total	22	65	78	59	81
		χ^2 (12, N = 305) = 52.40, $p \leq .0005$				
Use cooperative learning	Started to use for the 1st time	0%	6%	6%	12%	16%
	Increased use	5%	22%	22%	33%	28%
	Did not change use	27%	45%	43%	41%	42%
	Do not use	68%	28%	29%	14%	14%
	Total	22	65	77	58	81
		χ^2 (12, N = 303) = 39.64, $p \leq .0005$				
Provide study guides	Started to use for the 1st time	0%	5%	8%	5%	11%
	Increased use	10%	15%	21%	17%	19%
	Did not change use	48%	52%	53%	63%	51%
	Do not use	43%	28%	18%	15%	20%
	Total	21	65	77	59	81
		χ^2 (12, N = 303) = 14.12, p = .293				
Participate in mentoring	Started to use for the 1st time	0%	5%	5%	10%	8%
	Increased use	0%	2%	8%	10%	10%
	Did not change use	27%	29%	39%	49%	42%
	Do not use	73%	65%	48%	31%	40%
	Total	22	65	77	59	77
		χ^2 (12, N = 300) = 25.32, p = .013				

There were a number of significant differences among the subpopulations with respect to their perception of the change in student learning that came about as a result of changes in teaching practices.[8] Even though there were not significant differences between men and women with respect to their use of the teaching techniques, there were significant differences in how effective these techniques were perceived. Women were significantly more likely to report that student learning improved greatly or moderately (78%) than were the men (38%), $t(53.8) = 5.0$, $p \leq .0005$.

[8] Statistical note: For the tests of statistical significance in this section, the following scale was used: Did not change my activities – 0, did not improve – 1, improved slightly – 2, improved moderately – 3, improved greatly – 4.

Faculty members at masters institutions were more likely to write instructional objectives and to increase their use of active learning and of cooperative learning; and they were also significantly more likely to believe that these changes improved their students' learning moderately or greatly (62%) than were faculty at research institutions (39%), $t(87.3) = 4.27$, $p \leq .0005$.

As can be seen in Table 89, faculty members who were actively involved in SUCCEED or who attended a coalition program were more likely to report that their changed behavior resulted in an increase in student learning than those who didn't know anything about the coalition, although the only significant difference was between those who were actively involved in the coalition and those who had heard of it but weren't involved.

Table 89
How teaching methods improved student learning by involvement in SUCCEED

	Don't know anything$_{ab}$	Heard, not involved$_{a}$	Attended coalition program$_{ab}$	Actively involved$_{b}$
I did not change my activities	36%	30%	9%	15%
Did not improve	12%	9%	11%	0%
Improved slightly	16%	23%	30%	31%
Improved moderately	28%	33%	46%	44%
Improved greatly	8%	5%	4%	9%
Total	25	115	54	54
	F(3, 244) = 4.26, p = .006			

Assistant professors (to whom many faculty development programs have been targeted) were also significantly more likely to report that they changed their behavior and that students' learning improved than were full professors, as can be seen in Table 90. Associate professors were statistically indistinguishable from both groups.

Table 90
How teaching methods improved student learning by rank

	Assistant Professor$_{a}$	Associate Professor$_{ab}$	Professor$_{b}$
I did not change my activities	19%	21%	28%
Did not improve	3%	10%	9%
Improved slightly	24%	28%	30%
Improved moderately	40%	36%	32%
Improved greatly	13%	5%	2%
Total	62	78	94
	F(2, 231) = 3.21, p = .042		

Faculty members who attended teaching seminars during their careers were more likely to report that their changed teaching behavior impacted their students' learning than were those who attended none (Table 91).

Table 91
How teaching methods improved student learning by career teaching seminars

	0_a	$1\text{-}2_b$	$3\text{-}5_b$	$6\text{-}10_b$	$>10_b$
I did not change my activities	59%	29%	26%	14%	14%
Did not improve	18%	10%	4%	8%	6%
Improved slightly	6%	25%	31%	27%	25%
Improved moderately	12%	31%	32%	45%	49%
Improved greatly	6%	6%	6%	6%	6%
Total	17	52	68	51	71
	$F(4, 254) = 5.40, p \leq .0005$				

Table 91 shows the anomalous result that about 40% of the respondents who reported never having attended a teaching seminar also reported changing their instructional methods as a consequence of having attended teaching seminars. Some of these individuals may have changed their behavior after consulting a colleague, book, or web site and ignored the specification that the changes they made had to result from teaching seminars; others may have forgotten about attending a program when they were initially asked about their participation but then thought of one when they were asked about changes in their teaching. In any case, only 17 out of 259 respondents in Table 91 fell into this category, so too much significance should not be attached to the anomaly.

In addition to resource use and behavior change, respondents were asked how often they discussed teaching techniques with their colleagues and graduate students. As can be seen in Table 92 more than half of the faculty reported discussing teaching techniques with their colleagues at least once a month and 37% of those who had graduate students reported doing so with graduate students.

Table 92
Discussion of teaching techniques with colleagues and graduate students

	With colleagues		With graduate students	
	n	%	n	%
Never	21	6%	63	21%
1-3 times/semester	130	40%	124	42%
1-3 times/month	111	34%	86	29%
1-3 times/week	67	20%	23	8%
Total	329	100%	296	100%

There were no significant differences reported by sex, Carnegie classification or involvement in SUCCEED in how often faculty members discuss teaching techniques with each other or with graduate students.

Full professors (43%) were significantly more likely to discuss teaching techniques with their graduate students at least once a month than were associate professors (27%). Assistant professors (35%) fell inbetween and were statistically indistinguishable from the other two ranks (Table 93).

Table 93
Discussion of teaching techniques with graduate students by rank

	Assistant$_{ab}$	Associate$_{a}$	Professor$_{b}$
Never	24%	25%	16%
1-3 times/semester	41%	47%	42%
1-3 times/month	29%	25%	31%
1-3 times/week	6%	2%	12%
Total	68	87	121
	F (2, 273) = 4.08, p = .018		

Administrators (72%) were more likely to discuss teaching techniques with their colleagues at least once a month than were teaching/research faculty (52%). Teaching faculty (64%) were statistically indistinguishable from the others (Table 94).

Table 94
Discussion of teaching techniques with colleagues by position

	Teaching$_{ab}$	Teaching/ Research$_{a}$	Admin.$_{b}$
Never	10%	6%	0%
1-3 times/semester	27%	42%	28%
1-3 times/month	44%	33%	28%
1-3 times/week	20%	19%	44%
Total	41	254	18
	F(2, 310) = 3.18, p = .043		

Faculty members who attended three or more teaching seminars in 2001 (72%) were more likely to discuss teaching techniques with their colleagues at least once a month than were those who attended no teaching seminars that year (47%). Those who attended one (56%) or two (51%) were not statistically distinguishable from the others (Table 95).

Table 95
Discussion of teaching techniques with colleagues by 2001 teaching seminars

	0$_{a}$	1$_{ab}$	2$_{ab}$	3 or more$_{b}$
Never	12%	2%	3%	0%
1-3 times/semester	41%	42%	48%	28%
1-3 times/month	32%	35%	33%	37%
1-3 times/week	15%	21%	18%	35%
Total	148	84	40	57
	F (3, 325) = 6.46, p $\leq$ 0005			

Similarly, those who attended more than 10 teaching seminars in their careers were more likely to discuss teaching techniques with their colleagues than were those who had attended two or fewer, as shown in Table 96.

Table 96
Discussion of teaching techniques with colleagues by career teaching seminars

	0_a	$1\text{-}2_a$	$3\text{-}5_{ab}$	$6\text{-}10_{ab}$	$>10_b$
Never	16%	7%	5%	8%	2%
1-3 times/semester	53%	47%	42%	35%	27%
1-3 times/month	22%	30%	33%	42%	37%
1-3 times/week	9%	16%	20%	15%	33%
Total	32	70	85	60	81
	$F(4, 323) = 5.71, p \leq .0005$				

Comparison of 2002, 1999, and 1997 respondents

There were no overall differences among the 2002, 1999 and 1997 responses in the frequency of discussing teaching techniques with colleagues or graduate students as shown in Table 97.

Table 97
Discussion of teaching techniques with colleagues and graduate students in 2002, 1999, and 997

		2002	1999	1997
Discuss teaching techniques w/colleagues	Never	6%	7%	5%
	1-3 times/semester	40%	43%	42%
	1-3 times/month	34%	33%	41%
	1-3 times/week	20%	17%	12%
	Total	329	503	497
		$F(2, 1326) = .934, p = .393$		
Discuss teaching techniques with grad students	Never	21%	22%	17%
	1-3 times/semester	42%	48%	52%
	1-3 times/month	29%	23%	24%
	1-3 times/week	8%	7%	8%
	Total	296	452	448
		$F(2, 1193) = .963, p = .382$		

Tables 98-101 show how often faculty members discuss teaching techniques with their colleagues and graduate students by sex, Carnegie classification, rank, and position for each of the three years of the survey. There was no difference in any year by sex (Table 98). In both 1999 and 1997, faculty at research institutions were more likely to speak with both their colleagues and graduate students at least monthly than those at masters institutions. Although the latter might be expected given the smaller numbers of graduate students at masters institutions, the former is a bit surprising. The differences disappeared in 2002 (Table 99). In 1999, full professors were somewhat less likely to discuss teaching techniques with their colleagues than were assistant or associate professors. They were more likely to discuss teaching techniques with their graduate students than were associate professors in 2002 (Table 100).

Table 98

Discussion of teaching techniques with colleagues and graduate students in 2002, 1999, and 1997 by sex

		2002		1999		1997	
		Male	Female	Male	Female	Male	Female
Discuss teaching techniques w/colleagues	Never	7%	0%	7%	6%	5%	4%
	1-3 times/semester	40%	40%	43%	43%	43%	37%
	1-3 times/month	32%	40%	33%	34%	40%	49%
	1-3 times/week	20%	20%	17%	17%	12%	10%
		280	40	453	47	434	49
		t(318)=.97, p=.331		t(498)=.06, p=.952		t(481)=.57, p=.567	
Discuss teaching techniques with grad students	Never	21%	24%	22%	20%	18%	8%
	1-3 times/semester	43%	35%	48%	53%	50%	59%
	1-3 times/month	28%	35%	23%	18%	24%	21%
	1-3 times/week	8%	6%	7%	10%	7%	13%
		253	34	409	40	396	39
		t(285)=.01, p=.991		t(447)=.19, p=.85		t(433)=1.32, p=.19	

Table 99

Discussion of teaching techniques with colleagues and graduate students in 2002, 1999, and 1997 by Carnegie classification

		2002		1999		1997	
		Resrch	Masters	Resrch	Masters	Resrch	Masters
Discuss teaching techniques w/colleagues	Never	6%	11%	6%	11%	4%	8%
	1-3 times/semester	40%	40%	42%	49%	41%	49%
	1-3 times/month	35%	28%	34%	32%	41%	39%
	1-3 times/week	20%	21%	19%	9%	14%	5%
	Total	270	57	426	76	409	88
		t(325)=.759, p=.448		t(500)=2.48, p=.013		t(495)=2.84, p=.005	
Discuss teaching techniques with grad students	Never	20%	31%	18%	49%	15%	32%
	1-3 times/semester	42%	44%	50%	39%	53%	45%
	1-3 times/month	30%	23%	25%	8%	25%	14%
	1-3 times/week	8%	3%	8%	3%	7%	9%
	Total	255	39	392	59	382	66
		t(292)=1.94, p=.053		t(449)=4.94, p≤.0005		t(446)=2.35, p=.019	

Table 100

Discussion of teaching techniques with colleagues and graduate students 2002, 1999, and 1997 by rank

		2002			1999			1997		
		Assistant Professor	Associate Professor	Professor	Assistant Professor	Associate Professor	Professor	Assistant Professor	Associate Professor	Professor
Discuss teaching techniques w/colleagues	Never	0%	9%	9%	3%	7%	9%	2%	4%	8%
	1-3 times/semester	46%	40%	36%	41%	39%	46%	44%	43%	41%
	1-3 times/month	32%	33%	37%	33%	35%	32%	46%	43%	35%
	1-3 times/week	22%	18%	18%	23%	19%	14%	9%	10%	17%
	Total	72	95	129	111	149	217	94	161	211
		F(2, 293) = .861, p = .424			F(2, 474) = 3.443, p = .033			F(2, 463) = .005, p = .995		
Discuss teaching techniques with grad students	Never	24%	25%	16%	19%	19%	25%	17%	18%	17%
	1-3 times/semester	41%	47%	42%	52%	47%	47%	58%	52%	50%
	1-3 times/month	29%	25%	31%	23%	25%	21%	20%	25%	23%
	1-3 times/week	6%	2%	12%	6%	8%	7%	5%	5%	10%
	Total	68	87	121	104	135	197	88	147	195
		F(2, 273) = 4.078, p = .018			F(2, 433) = .824, p = .439			F(2, 427) = 1.138, p = .322		

Table 101

Discussion of teaching techniques with colleagues and graduate students 2002, 1999, and 1997 by position

		2002			1999			1997		
		Teaching	Teaching/ Research	Admin.	Teaching	Teaching/ Research	Admin.	Teaching	Teaching/ Research	Admin.
Discuss teaching techniques w/colleagues	Never	10%	6%	0%	4%	7%	3%	4%	4%	6%
	1-3 times/semester	27%	42%	28%	42%	41%	48%	45%	42%	38%
	1-3 times/month	44%	33%	28%	32%	34%	31%	33%	43%	36%
	1-3 times/week	20%	19%	44%	22%	17%	17%	18%	10%	20%
		41	254	18	50	402	29	49	379	50
		F(2, 310) = 3.182, p = .043			F(2, 478) = .326, p = .722			F(2, 475) = .584, p = .558		
Discuss teaching techniques with grad students	Never	33%	20%	42%	14%	21%	50%	27%	17%	15%
	1-3 times/semester	25%	43%	33%	49%	49%	30%	40%	52%	59%
	1-3 times/month	25%	30%	17%	31%	22%	15%	20%	24%	22%
	1-3 times/week	17%	7%	8%	6%	8%	5%	13%	8%	5%
		24	246	12	35	379	20	30	359	41
		F(2, 279) = .802, p = .449			F(2, 431) = 2.804, p = .06			F(2, 427) = .091, p = .913		

Use of on-line resources

In 1999 and 2002, respondents were asked a series of yes or no questions to assess their use of email and the World Wide Web within the context of undergraduate instruction. Specifically, they were asked whether they did the following:

- Sent information by email to the whole class.
- Responded to student questions by email.
- Used a course management tool (2002 only)
- Provided a class listserv or mailing lists for students to use.
- Posted course syllabus
- Assigned on-line homework (2002 only)
- Posted student assignments
- Posted old tests
- Posted solutions to problems
- Posted handouts (2002 only)
- Posted grades on-line (2002 only)
- Posted frequently asked questions
- Posted links to other sites
- Provided a class chat room
- Offered on-line tutorials.
- Posted lecture notes/slides
- Provided on-line quizzes
- Provided on-line video
- Provided on-line audio
- Other, specify [ ]

As can be seen in Figure 6, the use of all on-line resources increased from 1999 to 2002. All of these increases were significant at the .05 level except responding to student questions by email, providing a class listserv, offering on-line tutorials and providing on-line quizzes.

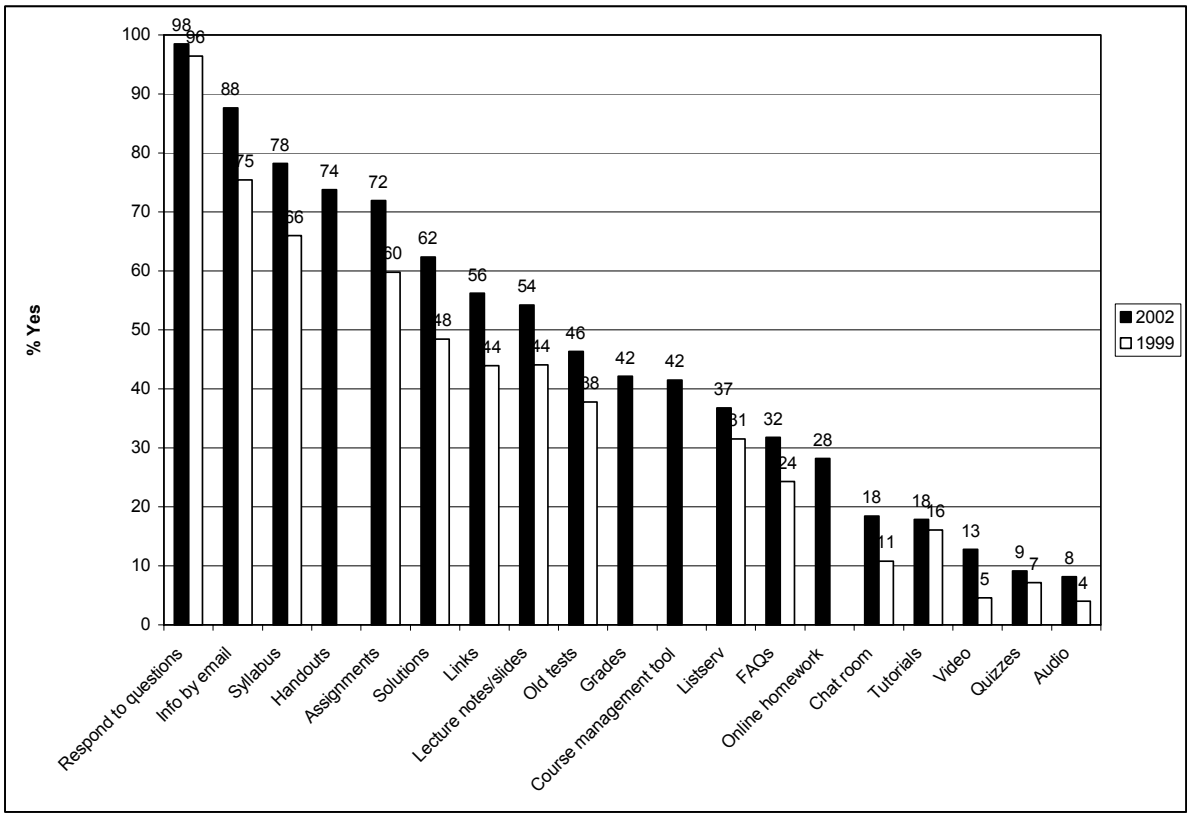


Figure 6. Use of on-line resources

In 2002, women were more likely than men by about 20 percentage points to post their course syllabus on line, post assignments on line, post links to other web sites on line and to use a course management tool. In 1999, women were more likely to post old tests on line (Table 102).

Table 102

Use of on-line resources by sex

	2002		1999	
	Male	Female	Male	Female
Send info by email to whole class	89%	88%	75%	79%
	χ^2 (1, N = 320) = .07, p = .789		χ^2 (1, N = 503) = .376, p = .54	
Respond to student questions by email	98%	100%	96%	98%
	χ^2 (1, N = 321) = .723, p = .395		χ^2 (1, N = 502) = .347, p = .556	
Provide class listserv	38%	35%	30%	44%
	χ^2 (1, N = 318) = .146, p = .703		χ^2 (1, N = 500) = 3.76, p = .053	
Post course syllabus on line	76%	95%	65%	75%
	χ^2 (1, N = 320) = 7.21, p = .007		χ^2 (1, N = 502) = 2.02, p = .155	
Post assignments on line	70%	90%	59%	65%
	χ^2 (1, N = 320) = 7.22, p = .007		χ^2 (1, N = 501) = .484, p = .484	
Post old tests on line	45%	60%	35%	57%
	χ^2 (1, N = 321) = 3.23, p = .072		χ^2 (1, N = 499) = 8.83, p = .003	
Post solutions to problems on line	61%	75%	48%	53%
	χ^2 (1, N = 321) = 2.85, p = .091		χ^2 (1, N = 500) = .52, p = .472	
Post frequently asked questions on line	32%	30%	24%	28%
	χ^2 (1, N = 319) = .04, p = .844		χ^2 (1, N = 499) = .29, p = .59	
Post links to other sites on line	53%	75%	43%	53%
	χ^2 (1, N = 318) = 6.72, p = .01		χ^2 (1, N = 501) = 1.81, p = .178	
Provide a class chat room	18%	20%	11%	13%
	χ^2 (1, N = 320) = .074, p = .785		χ^2 (1, N = 497) = .248, p = .618	
Offer on line tutorials	18%	20%	16%	15%
	χ^2 (1, N = 320) = .149, p = .699		χ^2 (1, N = 500) = .065, p = .798	
Post lecture notes/slides	54%	58%	43%	53%
	χ^2 (1, N = 319) = .197, p = .657		χ^2 (1, N = 500) = 1.78, p = .182	
Provide on-line quizzes	9%	10%	7%	9%
	χ^2 (1, N = 318) = .017, p = .896		χ^2 (1, N = 500) = .133, p = .715	
Use course management tool	39%	60%		
	χ^2 (1, N = 319) = 6.54, p = .011			
Assign online homework	29%	28%		
	χ^2 (1, N = 319) = .024, p = .878			
Post handouts online	72%	85%		
	χ^2 (1, N = 321) = 2.95, p = .086			
Post grades online	41%	50%		
	χ^2 (1, N = 321) = 1.28, p = .258			
Provide on line video	13%	13%	5%	2%
	χ^2 (1, N = 318) = .002, p = .961		χ^2 (1, N = 499) = .683, p = .408	
provide on line audio	8%	8%	4%	2%
	χ^2 (1, N = 321) = .022, p = .882		χ^2 (1, N = 497) = .449, p = .503	

In both 1999 and 2002, faculty at research institutions were significantly more likely to post old tests on line and post solutions to problems on line, whereas masters faculty were more inclined to provide on line quizzes. In 1999, faculty at research institutions were also more likely to respond to student questions by e-mail while masters faculty were more likely to provide a class chat room. In 2002, research faculty were more likely to send information to the whole class by e-mail while masters faculty were more likely to use a course management tool (Table 103).

Table 103

Use of on-line resources by Carnegie classification

	2002		1999	
	Research	Masters	Research	Masters
Send info by email to whole class	91%	72%	76%	70%
	χ^2 (1, N=327) = 15.19, p≤.0005		χ^2 (1, N = 506) = 1.49, p = .223	
Respond to student questions by email	99%	96%	97%	91%
	χ^2 (1, N = 328) = 1.81, p = .179		χ^2 (1, N = 505) = 8.30, p = .004	
Provide class listserv	36%	39%	32%	29%
	χ^2 (1, N = 325) = .117, p = .732		χ^2 (1, N = 503) = .214, p = .644	
Post course syllabus on line	79%	75%	68%	57%
	χ^2 (1, N = 327) = .330, p = .566		χ^2 (1, N = 505) = 3.49, p = .062	
Post assignments on line	73%	68%	61%	53%
	χ^2 (1, N = 327) = .405, p = .524		χ^2 (1, N = 505) = 1.53, p = .216	
Post old tests on line	50%	28%	41%	20%
	χ^2 (1, N = 328) = 8.96, p = .003		χ^2 (1, N=503) = 12.39, p≤.0005	
Post solutions to problems on line	65%	49%	51%	35%
	χ^2 (1, N = 328) = 5.01, p = .025		χ^2 (1, N = 504) = 6.67, p = .01	
Post frequently asked questions on line	33%	26%	24%	24%
	χ^2 (1, N = 326) = .891, p = .345		χ^2 (1, N = 503) = .016, p = .90	
Post links to other sites on line	56%	56%	46%	34%
	χ^2 (1, N = 325) = .004, p = .952		χ^2 (1, N = 505) = 3.45, p = .063	
Provide a class chat room	18%	19%	9%	21%
	χ^2 (1, N = 327) = .042, p = .838		χ^2 (1, N = 501) = 9.83, p = .002	
Offer on line tutorials	18%	18%	16%	16%
	χ^2 (1, N = 327) = .012, p = .914		χ^2 (1, N = 504) = .005, p = .942	
Post lecture notes/slides	55%	49%	45%	38%
	χ^2 (1, N = 326) = .658, p = .417		χ^2 (1, N = 504) = 1.26, p = .262	
Provide on-line quizzes	7%	16%	6%	14%
	χ^2 (1, N = 325) = 4.25, p = .039		χ^2 (1, N = 504) = 7.25, p = .007	
Use course management tool	38%	58%		
	χ^2 (1, N = 326) = 8.04, p = .005			
Assign online homework	27%	33%		
	χ^2 (1, N = 326) = .891, p = .345			
Post handouts online	75%	67%		
	χ^2 (1, N = 328) = 1.81, p = .179			
Post grades online	41%	44%		
	χ^2 (1, N = 328) = .124, p = .725			
Provide on line video	14%	7%	5%	3%
	χ^2 (1, N = 325) = 1.84, p = .175		χ^2 (1, N = 502) = .655, p = .418	
provide on line audio	7%	11%	4%	5%
	χ^2 (1, N = 328) = .639, p = .424		χ^2 (1, N = 500) = .525, p = .469	

In 2002, assistant professors were more likely to post course syllabi, assignments, and handouts on line than were either associate or full professors. However, full and associate professors were more likely to provide on-line video than were assistant professors. In 1999, associate professors were more likely to post frequently asked questions on line than were either assistant or full professors (Table 104).

Table 104
Use of on-line resources by rank

	2002			1999		
	Assistant Professor	Associate Professor	Professor	Assistant Professor	Associate Professor	Professor
Send info by email to whole class	83%	89%	88%	77%	78%	74%
	χ^2 (2, N = 296) = 1.42, p = .492			χ^2 (2, N = 478) = .859, p = .651		
Respond to student questions by email	100%	99%	98%	98%	97%	95%
	χ^2 (2, N = 297) = 1.95, p = .378			χ^2 (2, N = 477) = 2.66, p = .264		
Provide class listserv	42%	39%	35%	35%	35%	28%
	χ^2 (2, N = 294) = 1.02, p = .601			χ^2 (2, N = 475) = 2.57, p = .276		
Post course syllabus on line	88%	80%	73%	70%	68%	63%
	χ^2 (2, N = 296) = 6.04, p = .049			χ^2 (2, N = 477) = 2.20, p = .333		
Post assignments on line	81%	76%	64%	67%	60%	58%
	χ^2 (2, N = 296) = 7.76, p = .021			χ^2 (2, N =476) = 2.78, p = .249		
Post old tests on line	44%	52%	44%	45%	39%	33%
	χ^2 (2, N = 297) = 1.48, p = .478			χ^2 (2, N = 474) = 4.87, p = .088		
Post solutions to problems on line	69%	63%	60%	55%	49%	45%
	χ^2 (2, N = 297) = 1.78, p = .411			χ^2 (2, N = 475) = 2.72, p = .257		
Post frequently asked questions on line	26%	35%	34%	23%	31%	20%
	χ^2 (2, N = 295) = 1.67, p = .434			χ^2 (2, N = 474) = 6.37, p = .041		
Post links to other sites on line	58%	63%	50%	51%	45%	38%
	χ^2 (2, N = 294) = 3.78, p = .151			χ^2 (2, N = 476) = 5.30, p = .071		
Provide a class chat room	21%	15%	20%	16%	10%	8%
	χ^2 (2, N = 296) = 1.38, p = .501			χ^2 (2, N = 476) = 4.41, p = .11		
Offer on line tutorials	14%	20%	15%	14%	21%	13%
	χ^2 (2, N = 296) = 1.50, = .473			χ^2 (2, N = 475) = 4.12, p = .128		
Post lecture notes/slides	57%	57%	48%	42%	47%	42%
	χ^2 (2, N = 295) = 2.45, p = .293			χ^2 (2, N = 475) = .933, p = .627		
Provide on-line quizzes	10%	11%	7%	6%	10%	7%
	χ^2 (2, N = 294) = .966, p = .617			χ^2 (2, N = 475) = 1.64, p = .44		
Use course management tool	36%	50%	37%			
	χ^2 (2, N = 295) = 4.63, p = .099					
Assign online homework	19%	36%	29%			
	χ^2 (2, N = 295) = 5.56, p = .062					
Post handouts online	85%	75%	67%			

	2002			1999		
	Assistant Professor	Associate Professor	Professor	Assistant Professor	Associate Professor	Professor
	χ^2 (2, N = 297) = 7.65, p = .022					
Post grades online	40%	45%	41%			
	χ^2 (2, N = 297) = .583, p = .747					
Provide on line video	4%	15%	17%	6%	5%	4%
	χ^2 (2, N = 294) = 6.63, p = .036			χ^2 (2, N = 474) = .336, p = .845		
provide on line audio	3%	9%	9%	3%	5%	4%
	χ^2 (2, N = 297) = 3.29, p = .193			χ^2 (2, N = 472) = .686, p = .71		

In 2002, administrators were more likely than other faculty members to provide a class chat room, use a course management tool, and to assign on-line homework but teaching faculty were much more likely than teaching/research faculty and somewhat more likely than administrators to offer on-line tutorials. In 1999, teaching/research faculty were more likely than teaching faculty or administrators to post old tests and problem solutions on line (Table 105).

Table 105
Use of on-line resources by position

	2002			1999		
	Teaching	Teaching Research	Admin.	Teaching	Teaching Research	Admin.
Send info by email to whole class	90%	87%	89%	78%	75%	79%
	χ^2 (2, N = 312) = .382, p = .826			χ^2 (2, N = 483) = .451, p = .798		
Respond to student questions by email	98%	98%	100%	96%	97%	93%
	χ^2 (2, N = 313) = .478, p = .788			χ^2 (2, N = 482) = 1.12, p = .575		
Provide class listserv	37%	37%	39%	30%	31%	41%
	χ^2 (2, N = 311) = .041, p = .98			χ^2 (2, N = 480) = 1.21, p = .546		
Post course syllabus on line	76%	78%	94%	72%	66%	62%
	χ^2 (2, N = 312) = 2.94, p = .23			χ^2 (2, N = 482) = 1.01, p = .604		
Post assignments on line	68%	72%	83%	60%	61%	55%
	χ^2 (2, N = 312) = 1.43, p = .49			χ^2 (2, N = 481) = .466, p = .792		
Post old tests on line	54%	45%	50%	30%	41%	18%
	χ^2 (2, N = 313) = 1.08, p = .582			χ^2 (2, N = 479) = 7.54, p = .023		
Post solutions to problems on line	59%	63%	61%	38%	51%	31%
	χ^2 (2, N = 313) = .31, p = .856			χ^2 (2, N = 480) = 7.06, p = .029		
Post frequently asked questions on line	45%	30%	39%	24%	24%	38%
	χ^2 (2, N = 311) = 3.65, p = .162			χ^2 (2, N = 479) = 2.73, p = .256		
Post links to other sites on line	56%	56%	61%	44%	45%	38%
	χ^2 (2, N = 311) = .211, p = .90			χ^2 (2, N = 481) = .557, p = .757		
Provide a class chat room	20%	16%	50%	10%	10%	22%
	χ^2 (2, N = 312) = 13.20, p = .001			χ^2 (2, N = 477) = 4.21, p = .122		

	2002			1999		
	Teaching	Teaching Research	Admin.	Teaching	Teaching Research	Admin.
Offer on line tutorials	37%	14%	28%	24%	16%	7%
	χ^2 (2, N = 312) = 13.23, p = .001			χ^2 (2, N = 480) = 3.80, p = .15		
Post lecture notes/slides	63%	51%	67%	52%	43%	41%
	χ^2 (2, N = 312) = 3.32, p = .19			χ^2 (2, N = 480) = 1.57, p = .456		
Provide on-line quizzes	17%	8%	12%	10%	7%	10%
	χ^2 (2, N = 310) = 3.17, p = .205			χ^2 (2, N = 480) = 1.21, p = .546		
Use course management tool	50%	38%	72%			
	χ^2 (2, N = 311) = 9.20, p = .01					
Assign online homework	39%	26%	56%			
	χ^2 (2, N = 311) = 9.36, p = .009					
Post handouts online	71%	74%	78%			
	χ^2 (2, N = 313) = .382, p = .826					
Post grades online	41%	43%	44%			
	χ^2 (2, N = 313) = .046, p = .977					
Provide on line video	10%	13%	17%	0%	5%	4%
	χ^2 (2, N = 310) = .577, p = .749			χ^2 (2, N = 479) = 2.85, p = .24		
Provide on line audio	10%	7%	11%	6%	4%	4%
	χ^2 (2, N = 313) = .674, p = .713			χ^2 (2, N = 477) = .467, p = .792		

Differences in responses among SUCCEED campuses

As was pointed out elsewhere, SUCCEED encompasses widely varying campuses, ranging from some of the largest research universities in the country to universities with relatively small engineering programs that are committed to graduate education through the masters level. Appendix B provides a summary of individual campus responses to the survey items, with institution names and the number of respondents from each institution obscured for reasons of confidentiality but with like institutions (research and masters) grouped together. The institutions appear with the same pseudonym and in the same order as in previous reports.

Several noteworthy differences among the campuses are summarized below.

- *Faculty teaching undergraduate courses.* The lowest percentage of respondents on an individual campus who reported teaching undergraduate courses in the preceding three years was 81% at a research institution and the highest was 94% at both a masters and a research institution.
- *Involvement in SUCCEED.* The percentage of respondents actively involved in the coalition (as either a principal investigator, campus implementation team member or coalition focus team member) ranged from 3% (at a research institution) to 38% (at a masters institution), with the other institutions averaging around 20%.
- *Use of active learning.* The percentage of respondents using active learning weekly or more often in a typical undergraduate course varied from 8% to 40% with three institutions at 31%. The percentages for all three masters institutions were at the high end of this range, while the range for research institutions was almost as broad as that for all eight campuses.
- *Use of team assignments.* The percentage of respondents assigning weekly homework that could be done by teams varied from 15% to 45%, with both the highest and lowest values being at research institutions. The percentage assigning required team homework at some time during the semester was between 39% and 75% with the other six institutions concentrated between 41% and 58%. The percentage doing so weekly or more often varied from 5% (at a research institution) to 23% (at a masters institution).
- *Writing instructional objectives.* The percentage of respondents who reported usually or always writing formal instructional objectives varied from 45% to 94% with all of the masters institutions at 84% or better and none of the research institutions higher than 76%.
- *Incorporating technology into teaching.* Not surprisingly, technology use varied considerably from one campus to another. The ranges were as shown below. For all questions that were asked in 1999 except providing a class chat room, on-line video, and on-line audio, both the low and high percentages are greater than they were then.
  - posting handouts: 56% – 87%
  - posting course syllabi: 55% – 89%
  - posting assignments: 45% – 87%
  - posting solutions to problems: 42% – 70%
  - posting lecture notes and slides: 34% – 73%

- posting grades on line: 32% – 53%
- use a course management tool (e.g., WebCT): 20% – 73%
- posting responses to frequently asked questions: 19% – 37%
- setting up class listservs and mailing lists: 20% – 55%
- posting old tests: 23% – 68%
- assigning on-line homework: 10% – 43%
- providing a class chat room: 12% – 27%
- offering on-line tutorials: 6% (the second lowest was 12%) – 27% (2 schools)
- on-line quizzes: 7% (3 schools) – 21%
- on-line video: 0% – 20%
- on-line audio: 0% – 27%

- *Class preparation and student contact time.* The average time spent preparing lectures, assignments, and tests for a single course varied from 8.5 hours to 12.5 hours with both the greatest and least time spent at masters institutions. The time spent with undergraduates outside of office hours varied from 3 hours to 7 hours, with the times being generally greater at masters institutions.

- *Discussing teaching techniques*. The percentage of respondents reporting discussions about teaching with colleagues once a week or more often varied from 13% to 32%, and the percentage reporting discussions with graduate students at research institutions once a month or more often varied from 30% to 47%.

- *Soliciting feedback on teaching other than through end-of-semester evaluations.* The percentage of respondents reporting doing so varied from 68% to 93%.

- *Rated importance of teaching quality and innovation.* Most respondents rated the importance of teaching quality to themselves rather high, with all institutions averaging above 6 on a 7 point scale. There was a wider range in the importance of teaching quality to colleagues with a low of 4.6 and a high of 5.7 (both at masters institutions). The importance of teaching quality to department heads, deans, and top administrators all had a similar range – 4.9 to 5.8 for department heads, 4.1 to 5.7 for deans, and 4.6 to 5.6 for top administrators. It is interesting to note that institution Theta had nearly the highest rating of the importance of teaching quality to colleagues but the lowest ratings of the importance of teaching quality to both department heads and their dean. The importance of teaching quality and innovation in the institutional rewards system was substantially lower at all institutions ranging from 3.2 to 4.2 for teaching quality and 3.1 to 4.1 for teaching innovation.

- *Attendance at teaching seminars, workshops, and conferences.* The percentages of respondents who reported attending three or more events in their careers varied from 51% to 93%, and the percentages attending six or more varied from 28% to 66%. The ranges were similar for masters and research institutions. The average number of teaching seminars attended during the 2001 calendar year ranged from a low of 0.7 at a research institution to a high of 1.8 at a masters institution. The second highest average (1.6) was also at a masters institution.

- *Use of faculty development services.* The variations in availability and promotion of faculty development facilities on the different campuses were reflected in substantial variations in use of faculty development services. These ranges included lower lows and lower highs than in 1999 for attended workshops, attended meetings, and consulted or borrowed books. The other options were substantially similar except for peer observation and feedback, which wasn't included in 1999. The ranges were as follows:
  - attended workshops: 58% – 88%.
  - attended meetings (discussion groups, brown-bag lunches): 29% – 73%
  - peer observation and feedback: 37% – 92%
  - participated in a formal mentoring program (as mentor or mentee): 26% – 44%
  - consulted or borrowed books, tapes, etc.: 44% – 59%
  - consulted a newsletter or web site: 45% – 81%
  - had teaching videotaped: 20% – 55%
  - worked individually with a teaching consultant: 7% – 26% (the second highest was 16%)
- *Effect of faculty development services*. There were substantial variations in the reported level of use of teaching techniques as a result of teaching seminars that the respondent may have attended during the three years prior to the survey. The ranges of those that started to use the technique for the first time or indicated that they increased their use were as follows (these questions were not asked in this fashion in 1999):
  - wrote formal instructional objectives: 24% – 93%
  - used active learning in class: 34% – 86%
  - used cooperative learning for assignments: 24% – 63%
  - provided study guides to students before tests: 13% – 47%
  - participated in a mentoring program: 5% – 28%

Summary

The data collected in the 2002 survey provide a snapshot of the SUCCEED faculty's use of various instructional practices, the level of their participation in faculty development programs, and their attitudes regarding the importance of teaching to themselves and their colleagues and in their campus's faculty incentive and reward system. Comparison of the results with the data from the 1997 and 1999 administrations of the survey provides an indication of trends in practices and attitudes.

The paragraphs that follow summarize the principal survey results in terms of responses to several focus questions. In some cases, percentages of all the respondents replying in specified ways are followed by the minimum and maximum percentages for individual SUCCEED campuses.

To what extent did respondents report using nontraditional instructional methods advocated in faculty development programs?

Extensive evidence from cognitive science and empirical classroom research supports the effectiveness of active learning, team-based learning, writing formal instructional objectives, and assigning writing exercises at promoting acquisition of knowledge and skills.[9,10] Our experience in teaching workshops given when SUCCEED began in 1992 suggests that at that time very few engineering faculty members at that time used these methods or even knew of their existence. Workshops given on all of the SUCCEED campuses have vigorously promoted the use of the first three methods and provided guidance on effective ways to implement them, and several of the campuses have had programs on writing to learn.

In 2002 as in 1999, a substantial portion of the faculty was using active learning. Sixty-three percent of the survey respondents (54%–80%) reported assigning small group exercises for brief intervals sometime during a semester, with 22% (8%–40%) doing so once a week or more. Forty percent (32%–67%) reported that they sometimes used active learning for most of a class period, with 7% (4%–16%) doing so once a week or more. Most of these percentages represent slight increases from the 1999 values.

Similarly, in 2002 71% (60%–81%) of the respondents reported giving assignments on which students had the option of working in teams, with 33% (15%–45%) doing so weekly or more often; 48% (39%–75%) reported giving assignments on which teams were required, with 11% (5%–23%) doing so weekly or more often; and 84% (74%-94%) reported assigning a major team project in some or all of the courses they taught. The percentage of respondents using optional team assignments rose by 7% from 1997 to 1999 and declined by 2% from 1999 to 2002, and the percentage giving assignments that had to be done by teams rose by 9% from 1997 to 1999 and declined by 5% from 1999 to 2002.

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[9] W. McKeachie, *Teaching Tips: Strategies, Research, and Theory for College and University Teachers*, 10th Edition. Boston, Houghton Mifflin, 1999.

[10] R.M. Felder, D.R. Woods, J.E. Stice, and A. Rugarcia, "The Future of Engineering Education: 2. Teaching Methods that Work," *Chem. Engr. Education, 34*(1), 26–39 (2000).

Writing instructional objectives (or in ABET terminology, course learning objectives), is an instructional method strongly encouraged by SUCCEED teaching workshops and mandated by the ABET Engineering Criteria, and the workshops encourage participants to give their objectives to their students in the form of study guides for examinations. The number of respondents who reported usually or always writing instructional objectives in 2002 was 67% (45%–94%), up from 60% in 1997 and 65% in 1999. Similar results were obtained regarding the provision of study guides for tests. In 2002, 62% (47%–80%) reported usually or always providing them, up from 57% in 1997 and 60% in 1999.

A movement to increase writing content in engineering courses has followed the adoption by ABET of EC 2000 as the engineering program accreditation standard. The percentage of the 2002 respondents who reported ever giving writing assignments was 86% (73%–100%) as compared with 84% in 1997 and 88% in 1999, and the percentage doing so weekly or more often in 2002 was 20% (10%–33%) as compared with 8% in 1997 and 21% in 1999.

While we have no data on the frequency of use of these methods in 1992 when SUCCEED began, we feel confident in saying that they were known to relatively few engineering faculty members and practiced by even fewer. Their use in 1999 and 2002 by over half of the faculty and in some cases considerably more than half, and the relatively high percentages using them on all of the SUCCEED campuses, suggest that the combined effects of faculty development programs, education-related articles in professional journals, the ABET Engineering Criteria, word-of-mouth from colleagues, and pressure from students have had significant effects on faculty teaching practices. While there is no definitive way to identify the extent to which each of those factors contributed to the observed changes, evidence to be discussed shortly indicates that the contribution of faculty development on the SUCCEED campuses was an important one.

In what ways and to what extent did respondents report using computer technology in their course instruction?

The reported use of technology for course instruction in 2002 varied considerably by the nature of the application and showed the greatest increases from 1999 of any instructional method. (These data were not collected in 1997.)

- 98% (94%–100%) of the respondents reported using e-mail to respond to questions from their students. The 1999 value was 96% and the lowest campus value was 75%.
- 88% (65%–98%) used e-mail to give information to their entire class, up from 75% in 1999.
- 78% (55%–89%) posted syllabi, up from 66% in 1999.
- 74% (56%–87%) posted course handouts. This question was not asked in 1999.
- 72% (45%–87%) posted assignments, up from 60% in 1999.
- 56% (29%–65%) posted links to other web sites, up from 44% in 1999.
- 54% (34%–73%) posted lecture notes, up from 44% in 1999.
- 62% (42%–70%) posted problem solutions, up from 48% in 1999.
- 46% (23%–68%) posted old tests, up from 38% in 1999.

- 41% (20%–73%) used a course management tool such as WebCT or Blackboard, and , 28% (10%–43%) gave on-line assignments (e.g., using WebAssign). These questions were not asked in 1999.
- 37% (20%–55%) set up class listservs, up from 31% in 1999
- 32% (19%–37%) posted responses to frequently asked questions, up from 24% in 1999.
- 18% (10%–27%) set up class chat rooms, up from 11% in 1999.
- 18% (12%–27%) used on-line tutorials, up from 16% in 1999.
- 13% (0%–20%) used on-line streaming video, up from 5% in 1999
- 9% (7%–21%) gave on-line tests, up from 7% in 1999.
- 8% (0%–27%) used on-line streaming audio, up from 4% in 1999.

Engineering education is in a transitional state regarding the use of instructional technology, and the variations observed on the SUCCEED campuses undoubtedly reflect the situation throughout the country. Some of the SUCCEED campuses have a fully networked computing environment, make extensive use of course management tools, and require all engineering students to purchase laptops. These are the schools that make the greatest use of technology for communication and instruction—where over 80% of the instructors post their syllabi on the Web, for example, and over half set up listservs for their classes. At other schools with fewer resources and/or more traditional and technology-resistant faculties, most professors tend to use only e-mail, programming, and word-processing. The full use of instructional technology for course delivery with such tools as on-line test administration and multimedia courseware is still in its early stages on all of the campuses. We anticipate dramatic changes in this situation in the coming years.

To what extent had respondents taken part in teaching improvement activities, and to what extent did they credit their participation with changing their teaching practices and improving their teaching?

In 1992, none of the eight SUCCEED campuses had a faculty development program that involved more than a handful of engineers, and most had no faculty development programs at all. One of the Coalition's principal objectives was to change this situation. The 1999 and 2002 surveys showed a high level of participation in faculty development activities, although the percentages declined from 1999 to 2002. (These data were not collected in 1997.)

- In 2002, 72% (58%–88%) of the survey respondents reported having attended one or more teaching workshops on their campuses, down from 82% in 1999.
- 54% (29%–73%) attended discussion groups or brown-bag lunches dealing with teaching, down from 64% in 1999.
- 59% (37%–92%) were involved in peer review of teaching. This question was not asked in 1999.
- 56% (45%–81%) consulted a newsletter or a web site, down from 59% in 1999.
- 49% (44%–59%) consulted books and/or tapes, down from 62% in 1999.
- 42% (20%–55%) had their teaching videotaped, up from 39% in 1999.
- 34% (26%–44%) participated in a mentoring program, down from 35% in 1999.
- 12% (5%–26%) worked with a teaching consultant, down from 13% in 1999.

A possible explanation of the decrease in reported usage of faculty development services from 1999 to 2002 is that the greatest faculty involvement in SUCCEED occurred in the first five years of the Coalition's existence, when many research and development projects were sponsored, and as direct involvement decreased so did participation in faculty development activities. In addition, the faculty development focus team, with representation from all campuses, was most active from about 1998 through 2001. These individuals were charged with providing or arranging faculty development for faculty members in their colleges and many took to this task with great enthusiasm. After 2001, as SUCCEED began to reach the end of its funding period and as some focus team members retired or moved on to other duties, faculty development opportunities specifically targeted to engineering faculty were provided less frequently.

The survey data also indicate that the frequency of participation in faculty development activities was positively associated with the use of active learning, team-based assignments, and other nontraditional instructional methods referred to in the first section. To gauge the extent to which the association might be causal and not merely correlational, the survey asked the respondents to indicate which teaching practices they had adopted as a consequence of their participation in teaching seminars. Of roughly 300 respondents

- 53% reported that they either began or increased their use of active learning,
- 45% wrote instructional objectives,
- 35% began or increased their use of cooperative learning,
- 24% provided study guides before tests, and
- 13% participated in a mentoring program.

Women were more likely than men to try new methods (although this difference was not statistically significant), assistant professors more likely than associate professors and full professors, and faculty at masters institutions more likely than faculty at research institutions. Willingness to try new approaches generally correlated positively with the number of teaching seminars attended. When asked how the changes they made as a consequence of seminar participation affected their students' learning, nearly two-thirds of the respondents reported improvements, small percentages indicated that their students' learning did not improve (7%) or improved greatly (6%), and just less than one-fourth indicated that they did not change any of their activities at all.

Our conclusion is that while SUCCEED's faculty development effort cannot claim exclusive credit for the increased use of the instructional methods it has sought to promote in recent years, it clearly had a major effect in accomplishing the increase, and the faculty who adopted or increased their use of the new methods overwhelmingly believed that the effects of the changes on their teaching were positive. Considering the historic reluctance of engineering faculty to participate in campus-wide faculty development programs, engineering schools would do well to strengthen their internal faculty development efforts and create effective partnerships with campus-wide teaching centers rather than relying primarily or entirely on them for guidance in improving teaching. Guidelines for the design and implementation of engineering faculty

development programs formulated by the SUCCEED Coalition[11] might prove useful in this regard.

How did respondents rate the importance of teaching quality and innovation to themselves and their colleagues and in the faculty reward system?

Another component of SUCCEED's mission was to improve the climate for teaching on the coalition campuses. Efforts to achieve this goal included involving a large percentage of the faculty in coalition programs and giving presentations to administrators on ways to help new faculty members become both more productive in research and more effective in teaching.

Despite these efforts, from the point of view of the survey respondents the climate for teaching on their campuses moderately but steadily declined during the period 1997–2002. In the remainder of this paragraph, the three figures in parentheses represent average responses in 1997, 1999, and 2002 respectively on a scale from 1 (not at all important) to 7 (extremely important). Most respondents expressed a belief that teaching quality was very important to them, a belief that did not change over time (6.5, 6.5, 6.5). They considered teaching quality as being decreasingly important to their department heads (5.6, 5.6, 5.3), faculty colleagues (5.4, 5.2, 5.2), dean (5.2, 5.1, 4.9), and top university administrator (5.2, 5.1, 5.0). There was general agreement that teaching quality and teaching innovation (testing new instructional methods, writing textbooks or instructional software) were not important in the faculty incentive and reward system, with average ratings (3.8, 3.7, 3.5) for quality and (3.7, 3.5, 3.3) for innovation. Women generally gave lower ratings of the importance of teaching to colleagues and administrators and in the reward system than did men, and assistant and associate professors gave lower ratings than did full professors. In all cases, except for that of the the university administrator, the 2002 responses were significantly lower than the 1997 ones.

We infer from these findings that professors who spend time and energy participating in faculty development programs and learning and implementing new methods do so despite their general belief that their efforts will neither be appreciated by their colleagues nor rewarded by their administrators. (There is some comfort in the fact that respondents gave department chairs the second-highest rating after themselves, indicating a belief that those who rise to that level feel that teaching is more important than it is to most rank-and-file faculty.) Nevertheless, the study shows that many of them choose to make the effort anyway, which we regard as a tribute to their dedication. The dramatic advances in the quality of American engineering education that might result from putting teaching and research on a more equal footing in the faculty reward system can only be imagined.

[11] R. Brent, R. Felder, T. Regan, A. Walser, C. Carlson-Dakes, D. Evans, C. Malave, K. Sanders, J. McGourty, "Engineering Faculty Development: A Multicoalition Perspective," *Proceedings, 2000 Annual Meeting of the American Society for Engineering Education*, ASEE, June 2000.

Appendix A

2002-2003 SUCCEED Coalition Faculty Survey

2002 SUCCEED FACULTY SURVEY

This survey has been e-mailed to your university engineering faculty by Dr. Catherine Brawner of Research Triangle Educational Consultants for SUCCEED. The purpose is to determine the frequency of use of various teaching methods and to examine the climate for teaching on the SUCCEED campuses. Your individual responses will be held in strict confidence, will only be reported in the aggregate, and will not be seen by anyone on your campus. It should take approximately 15 minutes to complete.

INSTRUCTIONS

Click "Reply" or equivalent in your email program to respond to this survey and make sure that the survey itself appears in your reply.

Select your response to each question from the list given next to the question number.

- For each question that calls for an integer or single letter response, enter your answer within the brackets [ ] to the left of the question. (For example, [5] or [A].) Type only integers or single letters within brackets--no spaces, multiple answers, decimal points, etc.

- If a question calls for a free response, type the text within the brackets.

- Please do not type outside brackets anywhere on the survey.

If you would like to comment about any of the survey items or about the entire survey or if you want to clarify any of your responses, please do so only in your response to the final question. When you have responded to all questions, click Send or equivalent. Thank you for your help.

=====SURVEY

[ ]Q1.(Y=yes, N=no) Have you taught undergraduates in the past 3 years?

If your answer to Question 1 was Y, proceed to Question 2. If N, skip to Question 65.

[ ]Q2.(0,1,...,90) From January 2001 through December 2001, how many seminars, workshops, conferences, etc., did you attend that were specifically related to teaching?

[ ]Q3.(A=0, B=1-2, C=3-5, D=6-10, E=more than 10) Since you began teaching, about how many seminars, workshops, conferences, etc., have you attended that were specifically related to teaching?

[ ]Q4.(A,B,C,D,E (see below)) What level of involvement have you had in SUCCEED Coalition programs?
A. I don't know anything about the SUCCEED Coalition.
B. I've heard of the Coalition but haven't been involved with it.
C. I've attended a Coalition program (e.g., a workshop or conference), but haven't actively participated.
D. I have been involved as a principal investigator, campus implementation team member, or coalition focus team member.
E. Other

If your answer to Question 4 was E (Other), state your level of involvement in the brackets below; otherwise skip to the next paragraph.

[ ]Q4E.State your level of involvement with SUCCEED.

****

Questions 5-10 refer to "teaching quality." By this we mean teaching that sets high but attainable standards for learning, enables most students being taught to meet or exceed those standards, and produces high levels of satisfaction and
self-confidence in the students. Rate the importance of teaching quality and innovation on a scale from 1-7, with 1 meaning "not at all important" and 7 meaning "extremely important."

[ ]Q5.(1,2,3,4,5,6,7) How important is teaching quality to you?

[ ]Q6.(1,2,3,4,5,6,7) How important do you feel teaching quality is to most of your department faculty colleagues?

[ ]Q7.(1,2,3,4,5,6,7) How important do you feel teaching quality is to your department head?

[ ]Q8.(1,2,3,4,5,6,7) How important do you feel teaching quality is to your dean?

[ ]Q9.(1,2,3,4,5,6,7) How important do you feel teaching quality is to the top administrator at your university?

[ ]Q10.(1,2,3,4,5,6,7) How important is teaching quality in your institution's faculty incentive and reward system (recognition, raises, tenure, promotion)?

[ ]Q11.(1,2,3,4,5,6,7) How important is making contributions to education (developing or testing new instructional methods, writing textbooks or instructional software) in your institution's faculty incentive and reward system (recognition, raises, tenure, promotion)?

****

In Questions 12-25, please think of a typical undergraduate course that you teach. We would like to know how frequently you use certain teaching techniques. Select the letter that corresponds to the first response that applies to you and type it in the brackets.

Questions 12-20 use the following scale: A=Every class, B=One or more times a week, C=One or more times a month, D=One or more times a semester, E=Never

[ ]Q12.(A,B,C,D,E) How often do you lecture for most of the class period?

[ ]Q13.(A,B,C,D,E) How often do you use demonstrations (live or multimedia)?

[ ]Q14.(A,B,C,D,E) How often do you address questions to the class as a whole?

[ ]Q15.(A,B,C,D,E) How often do you put students into pairs or small groups for
brief intervals during class to answer questions or solve problems?

[ ]Q16.(A,B,C,D,E) How often do you put students into pairs or small groups for
most of a class period to answer questions or solve problems?

[ ]Q17.(A,B,C,D,E) How often do you assign homework to individuals (as opposed to teams)?

[ ]Q18.(A,B,C,D,E) How often do you give students the option of working in teams
(2 or more) to complete homework?

[ ]Q19.(A,B,C,D,E) How often do you REQUIRE students to work in teams (2 or more) to complete homework?

[ ]Q20.(A,B,C,D,E) How often do you give a writing assignment (any exercise that
requires verbal explanations and not just calculations)?

****
[ ]Q21.(A=In every course I teach, B=In some but not all courses I teach, C=Never) How often do you assign at least one major team project?

****
[ ]Q22.(0,1,...,90) On average, how many hours do you spend per week preparing lectures, assignments, and tests for a typical undergraduate course?

[ ]Q23.(0,1,...,90) On average, how many hours, EXCLUSIVE OF OFFICE HOURS, do you spend outside of class each week with undergraduate students for advising, study sessions, or other individual or group help?

[ ]Q24.(A=Always, B=Usually, C=Sometimes, D=Never) How often do you write formal
instructional objectives for your courses (detailed statements of things you expect your students to be able to do to demonstrate their mastery of the course
content)?

[ ]Q25.(A=Always, B=Usually, C=Sometimes, D=Never) How often do you give students study guides before tests?

****
Indicate whether or not you use the following applications of email and the Web in undergraduate instruction. Y=yes, N=no.

[ ]Q26.(Y,N) Send information by email to the whole class.
[ ]Q27.(Y,N) Respond to student questions by email.
[ ]Q28.(Y,N) Provide a class listserv or mailing lists for students to use.
[ ]Q29.(Y,N) Use a course management tool (e.g., WebCT, Blackboard)
[ ]Q30.(Y,N) Post course syllabus on-line.
[ ]Q31.(Y,N) Post student assignments on-line.
[ ]Q32.(Y,N) Assign online homework (e.g., WebAssign)
[ ]Q33.(Y,N) Post old tests on-line.
[ ]Q34.(Y,N) Post solutions to problems on-line.
[ ]Q35.(Y,N) Post handouts on-line.
[ ]Q36.(Y,N) Post grades on-line.
[ ]Q37.(Y,N) Post frequently asked questions on-line.
[ ]Q38.(Y,N) Post links to other sites on-line.
[ ]Q39.(Y,N) Provide a class chat room.
[ ]Q40.(Y,N) Offer on-line tutorials.
[ ]Q41.(Y,N) Post lecture notes/slides.
[ ]Q42.(Y,N) Provide on-line quizzes.
[ ]Q43.(Y,N) Provide on-line video.
[ ]Q44.(Y,N) Provide on-line audio.
[ ]Q45.(Y,N) Other.

If your answer to Question 45 was Y, please explain in the brackets below; otherwise skip to the next paragraph.
[ ]Q45A.State how you use e-mail and/or the Web in undergraduate instruction.

Indicate whether or not you have used the listed faculty development services on your campus. Y=yes, N=no. If a service is not provided on your campus, enter N.

[ ]Q46.(Y,N) Attended workshops or seminars.
[ ]Q47.(Y,N) Worked individually with a teaching consultant.
[ ]Q48.(Y,N) Peer/colleague observation and feedback.
[ ]Q49.(Y,N) Attended meetings (e.g., discussion groups, brown bag lunches) to discuss teaching.
[ ]Q50.(Y,N) Participated in a formal mentoring program (as a mentor or mentee).
[ ]Q51.(Y,N) Consulted or borrowed books, tapes, etc., about teaching.
[ ]Q52.(Y,N) Consulted newsletter or web site related to teaching.
[ ]Q53.(Y,N) Had your teaching videotaped.
[ ]Q54.(Y,N) Other.

If your answer to Question 54 was Y, please explain in the brackets below; otherwise skip to the next paragraph.
[ ]Q54A.State the faculty development service or services you have used.

In Questions 55-60, please indicate how your use of the listed activities changed as a result of seminars/workshops/conferences that you attended in the last three years. Use the following system: A=started to use for the first time, B=increased use, C=did not change use, D=do not use.

[ ]Q55.(A,B,C,D) Writing formal instructional objectives.
[ ]Q56.(A,B,C,D) Using active learning in class.
[ ]Q57.(A,B,C,D) Using cooperative (team-based) learning for assignments.
[ ]Q58.(A,B,C,D) Providing study guides to students before tests.
[ ]Q59.(A,B,C,D) Participating in a mentoring program.
[ ]Q60.(A,B,C,D) Other. (If you have no other activities to list, enter D.)

If your answer to Question 60 was A or B, please explain in the brackets below; otherwise skip to Question 61.
[ ]Q60A.State the activities you started to use or used more of as a consequence of attending a teaching seminar, workshop, or conference.

[ ]Q61.(A,B,C,D,E (see below)) On average, how have the methods in Questions 55-60 to which you responded A or B impacted your students' learning?
A=Improved greatly
B=Improved moderately
C=Improved slightly
D=Did not improve
E=I did not change my activities

*****
[ ]Q62.(A,B,C,D (see below)) How often do you discuss teaching techniques with your colleagues?
A=1-3 times a week
B=1-3 times a month
C=1-3 times a semester
D=Never

[ ]Q63.(A,B,C,D,E (see below)) How often do you discuss teaching techniques with your graduate students?

A=1-3 times a week
B=1-3 times a month
C=1-3 times a semester
D=Never
E=Don’t work with graduate students

[ ]Q64.(Y=yes N=no) Do you solicit student feedback toward improving your teaching during the semester (other than through the end-of-course evaluation)?

Please tell us a little about yourself.

[ ]Q65.(A,B,C,D,E,F,G,H) What is your University?
A. Clemson
B. FAMU-FSU
C. Georgia Tech
D. NC A&T
E. NC State
F. University of Florida
G. University of North Carolina at Charlotte
H. Virginia Tech

[ ]Q66.(A,B,..,Q) What is your primary department or discipline? (If you have a dual appointment, enter the department you consider primary. If you can't decide, enter either department.)

A. Agriculture
B. Aerospace
C. Architectural
D. Chemical
E. Civil
F. College of Engineering (no department)
G. Computer Science
H. Electrical or Electrical and Computer
I. Engineering Science and Mechanics
J. Engineering Technology
K. Environmental
L. General (Freshman, Fundamentals) Engineering
M. Industrial
N. Materials
O. Mechanical
P. Nuclear
Q. Other

If your answer to Question 66 was Q (Other) or if you have a dual appointment, please explain in the brackets below; otherwise skip to Question 67.
[ ]Q66Q.(Department name or A-P) Specify your primary department or your second department if you have a dual appointment.

[ ]Q67.(0,1,...,90) How many years have you been a faculty member at this institution?

[ ]Q68.(0,1,...,90) How many total years have you been a faculty member at this
or any other institution?

[ ]Q69.(F=Female, M=Male) Gender

[ ]Q70.(A,B,C,D,E,F,G) Current Rank
A. Assistant Professor

B. Associate Professor
C. Professor
D. Instructor/Lecturer
E. Adjunct/Visiting (any rank)
F. Emeritus/Retired (any rank)
G. Other

If your answer to Question 70 was G (Other), please explain in the brackets below; otherwise skip to Question 71.
[ ]Q70G. State your current rank.

[ ]Q71.(A,B,C,D,E,F) Which category best describes your primary position?
A. Teaching Faculty
B. Teaching/Research Faculty
C. Research Faculty
D. Department Chair
E. Dean's office or other administration
F. Other

If your answer to Question 71 was F (Other), please explain in the brackets below; otherwise skip to Question 72.
[ ]Q71A.State a category that describes your primary position.

[ ]Q72.(Y=yes N=no) Do you have any comments about the quality or importance of teaching on your campus?

If your answer to Question 72 was Y, please state your comments in the brackets below; otherwise skip to Question 73.
[ ]Q72Y.State your comments about the quality or importance of teaching on your campus.

[ ]Q73.(Y=yes N=no) Do you have any comments about the survey or any of your responses?

If your answer to Question 73 was Y, please explain in the brackets below; otherwise, skip to the next paragraph.
[ ]Q73A.State your comments about the survey or your responses.

This completes the survey. If you are satisfied with your responses, please click on Send or its equivalent to submit the survey. Thank you.

Appendix B

Survey Summary by Institution

Notes to the Appendix

These tables show the answers to each question by institution. The number of respondents and the percent of respondents are shown for the coalition as a whole. Only the percent of respondents at each institution is shown. The sample sizes range from 59 to 158 at research institutions and 21 to 35 at masters institutions. The number of people answering an individual question may vary.

1. Have you taught undergradustes in the past 3 years (% yes)?

Total		Research					Masters		
N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
383	88%	94%	93%	81%	84%	85%	94%	90%	89%

2. From January 2001 through December 2001, how many seminars, workshops, conferences, etc., did you attend that were specifically related to teaching?

	Total	Research					Masters		
		Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
N	322								
M	1.20	1.12	1.39	1.53	.70	1.15	1.60	1.08	1.75
SD	(1.87)	(1.90)	(1.51)	(2.79)	(1.05)	(1.83)	(2.03)	(1.12)	(1.53)

3. Since you began teaching, about how many seminars, workshops, conferences, etc., have you attended that were specifically related to teaching?

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
0	34	10%	12%	5%	10%	16%	5%	0%	16%	6%
1-2	71	21%	21%	7%	27%	34%	17%	7%	24%	13%
3-5	85	26%	25%	22%	25%	23%	22%	60%	28%	25%
6-10	62	18%	19%	27%	17%	15%	24%	7%	8%	25%
>10	84	25%	24%	39%	22%	13%	32%	27%	24%	31%

4. What level of involvement have you had in SUCCEED coalition programs?

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Don't know anything about SUCCEED	33	10%	16%	7%	8%	5%	7%	7%	19%	6%
Heard of coalition, not involved in it	159	47%	61%	49%	49%	48%	44%	27%	38%	13%
Attended coalition program, but haven't actively participated	69	21%	12%	17%	22%	18%	29%	47%	15%	44%
Actively involved (PI, CIT or CFT member)	63	19%	3%	22%	17%	27%	20%	20%	23%	38%
Other	11	3%	7%	5%	3%	2%	0%	0%	4%	0%

Questions 5-11 refer to “teaching quality.” By this we mean teaching that sets high but attainable standards for learning, enables most students being taught to meet or exceed those standards, and produces high levels of satisfaction and self-confidence in the students. Rate the importance of teaching quality and innovation on a scale from 1-7 with 1 meaning “not at all important” and 7 meaning “extremely important.”

Importance of teaching		Total	Research					Masters		
			Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Quality to you	N	327								
	M	6.47	6.18	6.54	6.43	6.55	6.59	6.53	6.80	6.44
	SD	(.70)	(.85)	(.60)	(.65)	(.69)	(.50)	(.52)	(.50)	(1.03)
Quality to colleagues	N	328								
	M	5.17	4.72	5.59	5.27	5.25	5.20	4.60	5.65	5.06
	SD	(1.22)	(1.12)	(1.28)	(1.26)	(1.09)	(1.10)	(1.35)	(1.35)	(1.24)
Quality to dept head	N	326								
	M	5.29	5.12	4.93	5.63	5.33	5.07	5.00	5.58	5.75
	SD	(1.40)	(1.42)	(1.52)	(1.34)	(1.27)	(1.13)	(1.69)	(1.68)	(1.18)
Quality to dean	N	324								
	M	4.86	4.98	4.12	5.25	4.54	4.56	4.64	5.62	5.69
	SD	(1.56)	(1.54)	(1.54)	(1.42)	(1.69)	(1.30)	(1.45)	(1.70)	(1.08)
Quality to top administrator	N	320								
	M	4.96	5.14	4.72	4.97	4.80	4.62	5.00	5.32	5.63
	SD	(1.50)	(1.45)	(1.41)	(1.62)	(1.45)	(1.53)	(1.25)	(1.73)	(1.26)
Quality in incentive and reward system	N	325								
	M	3.48	3.37	3.17	3.61	3.57	3.29	3.53	4.15	3.31
	SD	(1.59)	(1.48)	(1.60)	(1.70)	(1.61)	(1.40)	(1.60)	(1.93)	(1.40)
Making contributions to education (e.g, developing new instructional methods) in incentive and rewards system	N	324								
	M	3.32	3.18	3.13	3.54	3.18	3.07	3.07	4.12	3.69
	SD	(1.47)	(1.41)	(1.38)	(1.45)	(1.44)	(1.39)	(1.67)	(1.77)	(1.35)

Questions 12-25. Respondents were asked to: “Think of a typical undergraduate course that you teach. We would like to know how frequently you use certain teaching techniques. How often do you _____?”

12. Lecture for most of a class period

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
every class	192	58%	61%	56%	55%	65%	59%	47%	54%	44%
1 or more times/week	109	32%	33%	32%	33%	27%	34%	40%	31%	38%
1 or more times/month	18	5%	6%	2%	5%	5%	5%	7%	4%	13%
1 or more times/semester	5	2%	0%	2%	3%	0%	2%	0%	4%	0%
Never	11	3%	0%	7%	3%	3%	0%	7%	8%	6%

13. Use demonstrations

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
every class	20	6%	3%	7%	3%	11%	7%	13%	4%	0%
1 or more times/week	88	26%	24%	24%	22%	32%	27%	33%	31%	25%
1 or more times/month	106	31%	37%	32%	28%	21%	44%	13%	35%	38%
1 or more times/semester	93	28%	31%	27%	35%	32%	15%	27%	19%	25%
Never	29	8%	6%	10%	12%	3%	7%	13%	12%	13%

14. Address questions to the class as a whole

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
every class	257	77%	69%	78%	87%	76%	78%	67%	81%	75%
1 or more times/week	623	19%	25%	13%	12%	23%	17%	27%	15%	25%
1 or more times/month	11	3%	6%	5%	2%	2%	2%	7%	0%	0%
1 or more times/semester	3	1%	0%	3%	0%	0%	2%	0%	4%	0%
Never	1	0%	0%	3%	0%	0%	0%	0%	0%	0%

15. Put students into pairs or small groups for brief intervals during class to answer questions or solve problems

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
every class	18	5%	1%	12%	8%	5%	0%	13%	4%	0%
1 or more times/week	56	17%	7%	12%	25%	13%	17%	27%	27%	31%
1 or more times/month	67	20%	19%	12%	20%	21%	24%	33%	15%	19%
1 or more times/semester	70	21%	31%	29%	17%	19%	17%	7%	8%	31%
Never	124	37%	41%	34%	30%	42%	41%	20%	46%	19%

16. Put students into pairs or small groups for most of a class period to answer questions or solve problems

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
every class	7	2%	1%	0%	2%	3%	0%	13%	4%	0%
1 or more times/week	16	5%	3%	5%	8%	2%	5%	0%	12%	6%
1 or more times/month	51	15%	10%	20%	18%	8%	12%	20%	23%	31%
1 or more times/semester	61	18%	18%	10%	12%	33%	17%	33%	15%	0%
Never	199	60%	68%	66%	60%	54%	66%	33%	46%	63%

17. Assign homework to individuals (as opposed to teams)

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
every class	85	26%	24%	28%	20%	25%	41%	27%	38%	0%
1 or more times/week	140	42%	36%	56%	42%	39%	41%	53%	27%	63%
1 or more times/month	67	20%	24%	10%	22%	23%	10%	20%	23%	31%
1 or more times/semester	25	7%	8%	3%	15%	8%	2%	0%	12%	0%
Never	13	4%	8%	3%	2%	5%	5%	0%	0%	6%

18. Give students the option of working in teams (2 or more) to complete homework

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
every class	45	14%	9%	10%	20%	15%	20%	7%	15%	6%
1 or more times/week	61	19%	6%	20%	25%	20%	22%	20%	23%	25%
1 or more times/month	60	18%	20%	18%	8%	20%	17%	13%	23%	31%
1 or more times/semester	69	21%	32%	25%	15%	18%	15%	20%	15%	19%
Never	95	29%	33%	28%	32%	27%	27%	40%	23%	19%

19. Require students to work in teams (2 or more) to complete homework

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
every class	12	3%	2%	0%	8%	3%	0%	7%	4%	0%
1 or more times/week	27	8%	3%	8%	8%	7%	12%	7%	19%	13%
1 or more times/month	47	14%	11%	8%	12%	21%	10%	20%	15%	25%
1 or more times/semester	75	23%	24%	33%	14%	25%	20%	20%	19%	38%
Never	169	52%	61%	53%	58%	44%	59%	47%	42%	25%

20. Give a writing assignment (any exercise that requires verbal explanations and not just calculations)

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
every class	9	3%	1%	2%	2%	2%	3%	20%	0%	6%
1 or more times/week	56	16%	9%	24%	20%	19%	15%	13%	12%	13%
1 or more times/month	126	38%	46%	41%	34%	39%	33%	20%	56%	19%
1 or more times/semester	95	29%	26%	22%	31%	29%	30%	20%	24%	63%
Never	45	14%	18%	10%	14%	11%	20%	27%	8%	0%

21. Assign at least one major team project

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
In every course I teach	68	23%	16%	20%	25%	19%	25%	47%	30%	19%
In some but not all courses I teach	189	62%	73%	60%	62%	57%	69%	47%	43%	63%
Never	48	16%	11%	20%	13%	25%	6%	7%	26%	19%

22. On average, how many hours do you spend per week preparing lectures, assignments, and tests for a typical undergraduate course?

Total		Research					Masters		
		Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
N	327								
M	9.56	9.12	9.46	10.00	9.16	8.95	9.20	12.58	8.56
SD	(5.48)	(5.06)	(4.95)	(5.10)	(5.93)	(4.52)	(3.55)	(8.28)	(5.53)

23. On average, how many hours, EXCLUSIVE OF OFFICE HOURS, do you spend outside of class each week with undergraduate students for advising, study sessions, or other individual or group help?

Total		Research					Masters		
		Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
N	327								
M	3.87	2.71	4.20	3.02	4.06	3.61	4.33	6.85	5.93
SD	(4.28)	(3.20)	(5.47)	(2.83)	(3.31)	(4.11)	(3.50)	(7.13)	(5.24)

24. How often do you write formal instructional objectives for your courses (detailed statements of things you expect your students to be able to do to demonstrate their mastery of the course content)?

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Always	152	46%	41%	46%	27%	52%	51%	60%	58%	69%
Usually	70	21%	16%	26%	18%	24%	17%	27%	27%	25%
Sometimes	73	22%	31%	18%	35%	13%	24%	13%	12%	0%
Never	36	11%	12%	10%	20%	11%	7%	0%	4%	6%

25. How often do you give students study guides before tests?

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Always	133	40%	35%	39%	47%	42%	39%	40%	35%	38%
Usually	74	22%	22%	22%	25%	21%	17%	40%	12%	31%
Sometimes	65	20%	18%	20%	19%	21%	24%	13%	19%	25%
Never	59	18%	25%	20%	8%	16%	20%	7%	35%	6%

Questions 26-45. Indicate whether or not you use the following applications of email and the Web in undergraduate instruction. (The total N is the total number of people who answered the question; Percent responding yes is reported)

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Send information by email to whole class	331	87%	93%	93%	98%	77%	95%	87%	65%	69%
Respond to student questions by email	332	98%	99%	98%	100%	98%	100%	100%	96%	94%
Provide class listserv or mailing list	329	37%	38%	20%	40%	29%	55%	53%	31%	38%
Use course management tool	330	41%	37%	53%	42%	20%	44%	73%	58%	44%
Post course syllabus	330	78%	79%	55%	82%	89%	83%	80%	85%	56%
Post assignments	331	72%	75%	45%	75%	79%	83%	87%	65%	56%
Assign online homework (e.g., WebAssign)	330	28%	25%	10%	25%	33%	43%	27%	38%	31%
Post old tests	332	46%	68%	32%	47%	48%	46%	40%	23%	25%
Post solutions to problems	332	62%	68%	56%	70%	66%	61%	67%	42%	44%
Post handouts	332	74%	78%	61%	73%	80%	80%	87%	62%	56%
Post grades	332	42%	38%	32%	42%	46%	49%	53%	35%	50%
Post frequently asked questions	330	32%	37%	20%	37%	33%	33%	27%	31%	19%
Post links to other sites	329	56%	59%	29%	65%	63%	54%	60%	63%	44%
Provide a class chat room	331	18%	25%	12%	25%	13%	10%	27%	19%	13%
Offer on line tutorials	331	18%	15%	17%	27%	18%	12%	13%	27%	6%
Post lecture notes/slides	330	54%	57%	34%	58%	61%	60%	73%	38%	44%
Provide on-line quizzes	329	9%	9%	7%	7%	7%	8%	21%	12%	19%
Provide on line video	329	13%	19%	5%	20%	11%	7%	20%	4%	0%
Provide on line audio	332	8%	6%	2%	12%	8%	7%	27%	8%	0%
Other	287	12%	7%	13%	14%	9%	17%	15%	14%	7%

Questions 46-54. Indicate whether or not you have used the following faculty development services on your campus. (The total N is the total number of people who answered the question; Percent responding yes is reported)

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Attended workshops or seminars	328	72%	66%	83%	68%	58%	83%	87%	72%	88%
Worked individually with a teaching consultant	327	12%	26%	7%	7%	5%	7%	13%	16%	13%
Peer observation and feedback	327	59%	37%	41%	78%	52%	68%	60%	92%	75%
Attended meetings (e.g., brownbags) to discuss teaching	328	54%	62%	49%	61%	29%	66%	40%	73%	50%
Participated in formal mentoring program as mentor or mentee	326	34%	26%	39%	41%	26%	41%	27%	44%	27%
Consulted books, tapes, etc. about teaching	328	50%	46%	54%	44%	50%	59%	53%	50%	44%
Consulted newsletter or website related to teaching	327	56%	51%	66%	63%	45%	56%	60%	52%	81%
Had teaching videotaped	326	42%	52%	24%	47%	55%	32%	20%	40%	25%
Other	384	3%	6%	0%	2%	0%	9%	8%	0%	0%

Questions 55-60. Indicate how your use of the listed activities changed as a result of seminars/workshops/conferences that you attended in the last three years.

55. Write formal instructional objectives

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Started to use for the 1st time	52	17%	8%	15%	20%	13%	23%	33%	26%	20%
Increased use	84	27%	16%	30%	26%	27%	10%	47%	43%	73%
Did not change use	119	39%	54%	40%	33%	40%	54%	20%	17%	7%
Do not use	50	16%	22%	15%	20%	20%	13%	0%	13%	0%

56. Use active learning in class

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Started to use for the first time	43	14%	10%	13%	19%	9%	13%	13%	17%	40%
Increased use	118	38%	33%	43%	39%	40%	21%	73%	50%	33%
Did not change use	97	32%	37%	35%	30%	31%	49%	7%	21%	13%
Do not use	48	16%	21%	10%	13%	20%	18%	7%	13%	13%

57. Use cooperative (team-based) learning for assignments

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Started to use for the 1st time	29	10%	10%	3%	9%	7%	8%	13%	13%	33%
Increased use	75	24%	19%	21%	22%	29%	16%	53%	33%	27%
Did not change use	126	42%	43%	46%	46%	40%	53%	20%	29%	27%
Do not use	74	24%	29%	31%	22%	24%	24%	13%	25%	13%

58. Provide study guides to students before tests

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Started to use for the 1st time	21	7%	6%	18%	6%	2%	5%	20%	4%	0%
Increased use	53	17%	11%	8%	32%	15%	8%	27%	22%	33%
Did not change use	164	54%	62%	55%	45%	56%	67%	40%	35%	53%
Do not use	66	22%	21%	20%	17%	27%	21%	13%	39%	13%

59. Participate in a mentoring program

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Started to use for the 1st time	19	6%	8%	8%	4%	7%	0%	7%	14%	7%
Increased use	21	7%	8%	13%	2%	5%	5%	21%	5%	0%
Did not change use	117	39%	31%	43%	48%	31%	54%	29%	41%	27%
Do not use	144	48%	52%	38%	46%	56%	41%	43%	41%	67%

60. Other

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Started to use for the 1st time	2	1%	0%	0%	0%	2%	0%	8%	0%	0%
Increased use	4	2%	2%	3%	2%	2%	0%	0%	0%	0%
Did not change use	10	4%	8%	6%	2%	4%	3%	0%	0%	0%
Do not use	230	93%	90%	91%	96%	91%	97%	92%	100%	100%

61. On average, how have the methods in questions 55-60 to which you responded [started to use for the first time or increased use] impacted your students' learning?

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Improved greatly	15	6%	4%	3%	6%	9%	0%	15%	10%	7%
Improved moderately	98	38%	33%	40%	39%	35%	25%	54%	57%	43%
Improved slightly	68	26%	27%	40%	29%	20%	19%	31%	14%	36%
Did not improve	19	7%	7%	3%	4%	11%	13%	0%	10%	7%
I did not change my activities	60	23%	29%	13%	22%	26%	44%	0%	10%	7%

62. How often do you discuss teaching techniques with your colleagues?

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
1-3 times/week	67	20%	16%	32%	13%	16%	29%	20%	23%	19%
1-3 times/month	111	34%	28%	29%	45%	34%	37%	27%	23%	38%
1-3 times/semester	130	40%	45%	32%	40%	46%	29%	47%	42%	31%
Never	21	6%	10%	7%	2%	3%	5%	7%	12%	13%

63. How often do you discuss teaching techniques with your graduate students?

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
1-3 times/week	23	7%	6%	5%	2%	15%	14%	8%	0%	0%
1-3 times/month	86	29%	31%	26%	28%	32%	30%	23%	27%	18%
1-3 times/semester	124	42%	48%	44%	43%	40%	30%	38%	47%	45%
Never	63	21%	14%	26%	26%	13%	27%	31%	27%	36%

64. Do you solicit student feedback toward improving your teaching during the semester (other than through the end-of-course evaluation)? (The total N is the total number of people who answered the question; Percent responding yes is reported)

Total		Research					Masters		
N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
325	77%	77%	70%	76%	85%	68%	93%	73%	73%

66. What is your primary department or discipline?

Department	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Agricultural	9	2%	1%	0%	0%	5%	4%	0%	4%	6%
Aerospace	17	5%	6%	0%	4%	9%	4%	0%	4%	0%
Architectural	4	1%	0%	0%	0%	0%	0%	0%	0%	17%
Chemical	35	9%	8%	16%	11%	7%	6%	19%	0%	17%
Civil	37	10%	15%	2%	7%	11%	11%	6%	14%	11%
College of Engineering (no dept)	12	3%	1%	5%	3%	1%	0%	0%	14%	11%
Computer Science	21	5%	0%	0%	9%	15%	0%	0%	0%	11%
Electrical/ECE	77	21%	25%	20%	28%	15%	19%	19%	18%	6%
Engineering Technology	7	2%	0%	0%	0%	0%	0%	0%	25%	0%
Environmental	15	4%	0%	11%	1%	7%	6%	6%	0%	0%
Industrial	40	11%	15%	9%	11%	9%	13%	19%	0%	6%
Materials	23	6%	4%	2%	9%	14%	4%	0%	0%	0%
Mechanical	53	14%	19%	23%	9%	5%	17%	25%	14%	11%
Nuclear	6	2%	1%	0%	5%	1%	0%	0%	0%	0%
Other department	6	2%	3%	2%	1%	0%	0%	6%	0%	6%
Engineering Science and Mechanics	8	2%	0%	5%	0%	0%	9%	0%	7%	0%
General Engineering	5	1%	0%	5%	0%	0%	6%	0%	0%	0%

67. How many years have you been a faculty member at this institution?

Total		Research					Masters		
		Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
N	368								
M	12.69	12.59	13.42	13.03	14.27	14.19	8.63	7.59	10.65
SD	(9.54)	(9.25)	(9.22)	(9.03)	(11.65)	(9.28)	(6.09)	(8.03)	(5.75)

68. How many total years have you been a faculty member at this or any other institution?

Total		Research					Masters		
		Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
N	367								
M	15.65	14.69	17.95	16.01	15.90	17.83	14.81	10.00	15.06
SD	(11.37)	(9.99)	(11.58)	(10.79)	(13.20)	(10.39)	(14.78)	(10.15)	(9.45)

69. Gender

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Male	325	89%	80%	93%	89%	92%	94%	88%	88%	88%
Female	41	11%	20%	7%	11%	8%	6%	13%	12%	12%

70. Rank

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Assistant Professor	81	22%	27%	16%	18%	30%	6%	25%	32%	18%
Associate Professor	98	26%	25%	25%	22%	18%	46%	25%	21%	47%
Professor	153	41%	48%	48%	37%	41%	44%	38%	25%	35%
Instructor/Lecturer	12	3%	0%	5%	5%	4%	2%	6%	4%	0%
Adjunct/Visiting	12	3%	0%	2%	10%	3%	0%	6%	4%	0%
Emeritus/retired	7	2%	0%	0%	5%	4%	0%	0%	0%	0%
Other	10	3%	0%	5%	3%	1%	2%	0%	14%	0%

71. Position

	Total		Research					Masters		
	N	%	Beta	Theta	Eta	Zeta	Omega	Pi	Psi	Phi
Teaching	45	12%	7%	16%	16%	7%	15%	19%	18%	6%
Teaching/Research	275	74%	86%	75%	68%	77%	77%	75%	54%	53%
Research	15	4%	3%	2%	4%	5%	4%	0%	7%	6%
Department Chair	13	4%	3%	2%	1%	4%	2%	0%	4%	24%
Dean's office/other admin	17	5%	0%	5%	8%	3%	0%	6%	14%	12%
Other	7	2%	1%	0%	1%	4%	2%	0%	4%	0%