Chapter 4

RESULTS

Introduction

As discussed in Chapter 3, the descriptive methodology used in this study uncovered two types of results: quantitative and qualitative. This chapter delineates the findings from both types and explains the dynamics of their synergistic impact. In so doing, it illuminates the more robust findings and notes as well some of the less robust and more enigmatic statistical observations that issued from the interrelated dual methodology. First, the quantitative results, obtained from respondents to the mailed questionnaire instrument, are detailed and summarized, beginning with the demographic statistics. These are then examined as possible factors impacting faculty perceptions of, and participation in, one or more of the 12 selected professional development activities. Thus unfolds the answers, quantitatively, to the five research questions posed previously in this study.

Second, pertinent recollections of selected participants—gathered through semi-structured telephone interviews—are organized and explored in this chapter as contextual factors that likely influenced the quantitative findings. Hence, such recollections, summarized in this chapter, also informed the direction of the study and the investigator's analyses and conclusions—the focus of which comprises Chapter 5.

Quantitative Results

The quantitative results were derived from information gathered through a faculty development survey instrument that was mailed to 407 full-time occupational-technical faculty in two subject-fields: Business Technology, and Engineering and Industrial Technology. The recipients of the survey were selected from all 23 Virginia Community College faculties. The purpose of the questionnaire was two-fold: (a) to gauge the extent and types of professional development activities that the selected faculty members participated in; and (b) to ascertain the extent to which the respondents perceived that they and their students benefitted from such participation. Accordingly, the investigator asked the respondents in the study (a) to indicate which of 12 professional development activities had engaged them as a participant during the last three years; and (b) to assess the value of each according to the level of benefit they believed had accrued to them directly and to their students indirectly.

The assessment of value (both to them and to their students) was based on the following 4-point scale: 1=no benefit; 2=little benefit; 3=beneficial; 4=very beneficial. Data collection began on Thursday, February 27, 1999 and ended on Friday, April 9, 1999. A total of 332 out of 407 surveys were returned for a response rate of 81.6%. This rate may actually be higher given that some faculty members were on sabbatical leave during the time that the survey was distributed. From these responses, the quantitative results first emerged in the form of demographic statistics relevant to this study—statistics regarding gender, experience, and age—as embedded in the total number of respondents and as differentiated by their respective subject-fields or professional domains of expertise. These are discussed below.

Respondents' Demographic Profile

First, of the 332 surveys returned, 64% came from Business Technology faculty and 36%

Table 1

Gender of Respondents

	Male	Female	Row Total
Business Technology	112	100	212 (63.9%)
Engineering and Industrial Technology	119	1	120 (36.1%)
Column Totals	231	101	332
Percent Total	69.6%	30.4%	(100.0%)

from Engineering and Industrial Technology faculty. Moreover, 70% of the respondents were male and 30% were female. In the Business Technology subject-field, 53% were male and 47%, female. Only 1 out of 120 respondents from the Engineering and Industrial Technology domain was female. See Table 1.

Age was another demographic factor deemed important for this study. The majority of faculty (78.9%) were in the 29-57 age range with a mean age of 51.4 years. The mean age for male faculty was 52.3 years and for female faculty, 49.6 years. See Tables 2 and 3.

Male faculty in Business Technology were slightly older than female faculty in Business Technology, with mean ages of 53.5 and 49.5 years, respectively as shown in Table 3. The average age for Engineering and Industrial Technology was 51.1 years for males, with no comparative female statistic possible since only one female responded. See Table 3.

The third demographic factor believed likely to impact professional development preferences and participation rates was teaching experience. The respondents averaged 18 years of teaching experience, with more than half falling into the 11-25 year range, as shown in Table 4.

As a group, male respondents had an average of 18.5 years teaching experience, and females had an average of 17.0 years teaching experience. Males in Business Technology averaged 20.1 years experience while males in Engineering and Industrial Technology averaged 16.9 years teaching experience. See Table 5.

<u>Non-Respondents' Demographic Profile</u>

In addition to gathering and analyzing information from the 332 surveys returned, the investigator also compiled a non-respondent profile of the 75 individuals who did not return their

Table 2

Age of Participants

Age Range	Number in Range	Percent % in Range
29-45	68	20.5%
46-57	194	58.4%
58-76	70	21.1%
Total	330	100.0%
Mean = 51.42	Median = 52	Mode = 50

Table 3

Gender and Age

	Mean	N
Entire Population	51.4	332
Male:	52.3	231
Business Technology	53.5	112
Engineering and Industrial Technology	51.1	119
Female	49.6	101
Business Technology	49.5	100
Engineering and Industrial Technology	47.0	1

Table 4

<u>Teaching Experience</u>

Range of Experience In Years	Number of Respondents Per Range	Percent of Respondents
1-10	68	20.5%
11-25	193	58.1%
26-36	71	21.4%
	Total = 332	100.0%

Table 5

Teaching Experience and Gender

	Mean	N
Entire Population	18.0	332
Male	18.5	231
Business Technology	20.1	112
Engineering and Industrial Technology	16.9	119
Female	17.0	101
Business Technology	17.0	100
Engineering and Industrial Technology	14.0	1

questionnaires. The methodology used to select the number of non-respondents to contact was explained and justified in Chapter 3. Accordingly, 15 males and 7 females (22 total) were contacted for development of a non-respondent profile. The ratio of males to females was comparable to that of the respondents: non-respondent females, 31.9% of total, compared to respondent females, 30.4%; non-respondent males, 68.1%, compared to respondent males 69.6%. More significantly, the 22 non-respondents' mean number of years teaching experience was 20.8, compared with 18.0 years for the respondent group. The non-respondents were not asked their age because the researcher felt that would be inappropriate to do over the phone. Based on these comparisons of the non-response follow-up answers with the respondents' initial answers to quantitative demographic questions, the non-respondent group, aside from a slight variation in years teaching experience, was judged to be demographically similar to the respondent group. Thus these demographic statistics informed the answers to the first research question as described in the next section.

Research Question #1

What faculty development activities have full-time occupational-technical faculty members in the Virginia Community College System participated in during the last 3 years?

To answer this question, the survey instrument solicited from the full-time occupational-technical faculty information designating which of 12 professional development activities they had participated in during the previous three years (Appendix A). Table 6 displays the results. Faculty participated in an average of 4.8 activities with 62.4% of faculty having participated in 4-6 activities. The mean for number of activities participated in by the non-respondents was 4.7,

Table 6

Extent of Participation

12 Professional Development Activities and Level of Participation			
Number of Activities _Participated In	**Number of Responses**	**Percent of Responses**	**Cumulative Percent**
0	5	1.5	1.5
1	10	3.0	4.5
2	12	3.6	8.1
3	42	12.7	20.8
4	75	22.6	43.4
5	78	23.5	66.9
6	54	16.3	83.1
7	31	9.3	92.5
8	20	6.0	98.5
9	4	1.2	99.7
10	1	.3	100.0
Total	330		100.0
Mean = 4.8	Median = 5	Mode = 5	

sufficiently comparable to the 4.8 mean for respondents, further strengthening the statistical validity of the response. Male faculty participation averaged 4.7 activities and female participation averaged 4.9 activities. Most faculty were active in faculty development activities, with only 8.1% participating in 2 or fewer activities during the last 3 years. Perhaps the most salient finding that issued from Table 5 was that only 5 of the 332 respondents reported having participated in 0 (none of the) professional development activities. Of the 5 who did not participate in any activities, four faculty members (3 in Business Technology and 1 in Engineering and Industrial Technology), all male, were 50 years of age and older, with three, having 25 years or more of teaching experience. One faculty member was age 50 with 6 years of teaching experience. The other faculty member who did not participate in any faculty development activities was a female under 40 years of age with 1 year of teaching expereince.

Additional pertinent statistics generated from the tabulated responses included participation frequencies for each of the 12 professional activities selected for study. Table 7 displays these frequencies in rank order, revealing the three activities with the highest participation rates as follows: (a) training in computer skills (91%); (b) college-sponsored presentations, workshops, etc. (88.3%); and (c) professional conferences (87.3%). From the telephone interviews, faculty indicated that these activities were the most participated in because they were the easiest to attend in terms of time, location, and cost. These activities usually did not cost the faculty member much to attend, and usually lasted only a few hours to a day. Five of the 12 activities had over a 50% participation rate. On the other hand, three

Table 7

Participation Frequency

Activities Rank-Ordered Highest to Lowest by Number of Participants Total number of participants = 332	N	Percent
Training in computer skills	302	91.0%
College-sponsored presentations, workshops, etc.	293	88.3%
Professional conference(s)	290	87.3%
Summer institute(s), workshops, etc.	176	53.0%
Retraining for fields in technology	167	50.3%
University credit courses	116	34.9%
Internship or exchange in business/industry or back-to-practice	69	20.8%
Conducting funded research or development project(s)	65	19.6%
Academic exchange	36	10.8%
Other	36	10.8%
Published article/book based on research or teaching	27	8.1%
Sabbatical leave	20	6.0%

Table 8

Number of Activities Participated in by Gender and Field

	Mean	N
Entire Population	4.8	332
Male	4.8	231
Business Technology	4.7	112
Engineering and Industrial Technology	4.8	119
Female	4.9	101
Business Technology	4.9	100
Engineering and Industrial Technology	8.0	1

activities—sabbatical leave, publishing an article or book, and academic exchange—had the smallest rates of participation. Gender differences as related to instructional subject-fields were also generated as indicated in Table 8. On average, females participated in slightly more activities than males, and males in Engineering and Industrial Technology were slightly more active than males in Business Technology. Females in Business Technology had the highest mean number of activities participated in at 4.9.

To what extend did age impact the level of participation in faculty development activities? The variable of age was tabulated and displayed in Table 9. The results indicated that faculty in the oldest age bracket, as a whole, participated in fewer activities compared to the other faculty age groups while younger faculty members participated in more activities.

Thus, as faculty grow older they appear to participate in fewer professional development activities. One can logically infer some relationship between age and experience, considering that an instructor must advance one year in age with each additional year of experience. An analysis of crosstabs on age and teaching experience yielded a correlation of .433 (43.3%). This was not as high as expected, however, not surprising, due to the fact that not all faculty who are the same age have the same amount of teaching experience. Hence, Table 10 depicts years of experience as a variable relative to professional development participation. The comparative means between designated groups in the age and experience categories were exceptionally close. This is consistent with findings by Baldwin (1990) and the VCCS professional development task force (1993).

Summarizing Research Question #1, the top three activities that faculty participated in were training in computer skills, college-sponsored presentations and workshops, and

Table 9

Number of Activities Participated in by Age

Age Ranges	Mean Number of Activities	Number of Respondents
Entire Population	4.8	332
(29-45)	5.2	68
(46-57)	4.8	194
(58-76)	4.4	70

Table 10

Number of Activities Participated in by Teaching Experience

Experience Ranges (In Years)	Mean Number of Activities	Number of Respondents
Entire population.	4.8	332
1-10	4.8	68
11-25	5.0	193
26-36	4.4	71

professional conferences. In terms of age and teaching experience, older and more experienced faculty, on average, participated in fewer faculty development activities. Thus, older faculty may have different professional development needs than younger, less experienced faculty. As indicated from the telephone interviews, those who were older indicated that they have participated in the same types of activities during the last three years. They also indicated participating in more during their earlier years, but as they gained experience they generally participated in fewer activities.

Research Question #2

To what extent have the faculty members derived personal benefit from the activities identified in Research Question #1?

In addition to indicating which activities they had participated in during the previous 3 years, participants were asked to rate the level of personal benefit derived from each activity. Faculty selected one of four levels: (a) no benefit; (b) little benefit; (c) beneficial; or (d) very beneficial (The same scale was used to rank the student benefit levels in answer to Research Question #3). The amount of personal benefit for each activity is listed in Table 11. Table 11 also lists the mean personal benefit for each activity among Business Technology faculty and Engineering and Industrial Technology faculty. One notable finding was the #1 rank for the "other" category overall and in the Engineering and Industrial Technology domain. The "other" category ranked #2 in Business Technology. Activities listed under "other" were catgeorized into 4 areas for further analysis: owning a business or working/consulting in the field; research and development and workshops; self-study/training, and belonging to professional organizations, etc.

Table 11

Personal Benefit of Faculty Development Activities

	Total Personal Benefit	N	Business Technology Personal Benefit	N	E & I Technology Personal Benefit	N
Other	3.78	36	3.68	22	3.93	14
Internship or Exchange (in business/industry _or back-to-practice	3.75	69	3.84	31	3.68	38
Sabbatical leave	3.65	20	3.64	14	3.67	6
Retraining for fields in technology	3.60	167	3.60	103	3.59	64
Training in computer skills	3.52	302	3.60	198	3.38	104
Conducted research/ development project(s)	3.52	65	3.42	43	3.73	22
Academic exchange	3.47	36	3.48	25	3.45	11
Published article/book based on research or teaching	3.44	27	3.50	20	3.29	7
Summer institute(s), workshops, etc.	3.41	176	3.42	107	3.41	69
University credit courses	3.28	116	3.34	77	3.18	39
Professional conference(s)	3.27	290	3.26	185	3.30	105
College-sponsored presentations, workshops, etc.	2.84	293	2.87	189	2.78	104

Table 11a

Personal and Student Benefit for "Other" Categories

Category of "Other"	Personal Benefit	Student Benefit	N
Own Business or work/consult in the field	3.86	4.00	7
Research and development, etc.	3.87	3.53	15
Self-study/training	3.80	3.80	10
Professional organizations, etc.	3.50	3.00	4

Table 11a shows the other categories and the mean personal and student benefit means for each of the four categories.Although intern-ships in business/industry ranked 7th in terms of participation, they ranked among the top in the amount of personal benefit derived. Internships ranked 1st for Business

Technology faculty and 3rd for Engineering and Industrial Technology faculty. The mean personal benefit computed for the research projects category for Engineering and Industrial Technology faculty was 3.73, slightly behind the “other” category (3.93) and above the mean calculated for internships (3.68).

Two of the top 3 most participated-in activities (Table 7), professional conferences and college-sponsored workshops and presentations, ranked 11th and 12th respectively in terms of overall perceived personal benefit (Table 11). Moreover, tabulated by domain, college-sponsored workshops ranked 11th among Business Technology faculty and 12th among Engineering and Industrial Technology faculty. Professional conferences ranked 12th and 9th respectively. The most participated-in activity, training in computer skills, ranked 4th in terms of personal benefit for the entire population. Business Technology faculty perceived more personal benefit from training in computer skills than Engineering and Industrial Technology faculty (3.60 vs 3.38), a somewhat enigmatic finding delved into further during the telephone interview.

Summarizing Research Question #2, faculty perceived they personally benefitted from all activities. The “other” category, rated #1 in personal benefit overall and by the Engineering and Industrial Technology faculty, needed clarification, a function of the subsequent telephone interviews. Internships, with a #2 overall ranking were rated #1 among Business Technology faculty and #3 among Engineering and Industrial Technology faculty, slightly behind the research and development category. College-sponsored presentations and workshops were the lowest rated overall and in both instructional domains. Training in computer skills, which had the most participation, also rated high. However, those in Engineering and Industrial Technology rated the benefit of training in computer skills lower than those in Business Technology.

<u>Research Question #3</u>

To what extent do the participating faculty members believe their participation in the activities has similarly benefitted their students?

Table 12 charts the survey data related to this question. Most notable is the "Other" category—ranked #1 in student benefit just as in personal benefit among Engineering and Industrial Technology faculty. Internships in business and industry ranked first overall in terms of perceived benefit to students as a result of participation by faculty. Internships were also the only activity that had a higher mean for student benefit than personal benefit, 3.77 and 3.75 respectively. Another activity that had a high student benefit mean (3.56) was retraining for fields in technology. This was just slightly lower than the 3.60 mean for personal benefit in the same activity. Table 12 indicates the means for student benefit of each activity. Once again, professional conferences and college sponsored workshops and presentations, which both have a high participation rate, are at the bottom in terms of student benefit.

Summarizing Research Question #3, faculty in general believed their engagement in professional development activities had benefitted themselves more than their students overall. Nevertheless, faculty from both instructional domains—Industrial Technology and Engineering and

Table 12

Student Benefit of Faculty Development Activities

	Total Student Benefit	N	Business Technology Student Benefit	N	E & I Technology Student Benefit	N
Internship or Exchange (in business/industry _or back-to-practice	3.77	69	3.74	31	3.79	38
Other	3.58	36	3.41	22	3.86	14
Retraining for fields in technology	3.56	167	3.50	103	3.66	64
Training in computer skills	3.34	302	3.43	198	3.17	104
Conducted research/ development project(s)	3.26	65	3.09	43	3.59	22
Sabbatical leave	3.15	20	3.00	14	3.50	6
Summer institute(s), workshops, etc.	3.11	176	3.02	107	3.25	69
Academic exchange	3.08	36	3.04	25	3.18	11
University credit courses	3.03	116	3.05	77	2.97	39
Professional conference(s)	2.97	290	2.96	185	2.99	105
Published article/book based on research or teaching	2.78	27	2.75	20	2.86	7
College-sponsored presentations, workshops, etc.	2.53	293	2.56	189	2.48	104

Business Technology—rated internships highest and second highest, respectively, of the 12 activities in terms of benefits that flowed to students. Assessments of the value of training in computer skills were more enigmatic. Business technology faculty assessed their personal benefit higher than Engineering and Industrial Technology faculty, but both groups rated their personal benefit higher than that which flowed to their students, with the Business Technology faculty rating their student benefit slightly higher than that given by the Engineering and Industrial Technology faculty. The second highest ranking by Business Technology faculty in terms of student-benefit was retraining for fields in technology, while Engineering and Industrial Technology faculty ranked internships as #2 and retraining for fields in technology as #3. Thus, one could infer that faculty overall believed the new knowledge they acquired in professional development activities had a corollary impact on their students' learning.

Research Question #4

How do faculty perceptions vary by age, gender, and teaching experience in terms of the extent to which they have personally benefitted from participation in professional development activities?

To answer this question, the data were first tabulated for each demographic dimension: (a) age, (b) gender, and (c) teaching experience. Then the personal benefit ratings were examined to see if there were significant differences in perceived benefits among the designated age groups, between the two genders, and among professionals with varying levels of teaching experience. Moreover, the researcher also compared the demographics and ratings between the two instructional fields: Business Technology and Engineering and Industrial Technology, for possible

Table 13

Summary of Male and Female Personal Benefit for Top 5 Activities in Participation

Activity	Mean	Total Population (N)	Male Personal Benefit	N	Female Personal Benefit	N
Retraining for fields in technology	3.60	(167)	3.53	118	3.78	49
Training in computer skills	3.52	(302)	3.43	208	3.73	94
Summer institutes, workshops	3.41	(176)	3.39	116	3.47	60
Professional conferences	3.27	(290)	3.25	199	3.33	91
College-sponsored presentations, workshops	2.84	(293)	2.77	199	2.99	94

further insights to Research Question #4.

Gender and Personal Benefit

Table 13 summarizes the personal and student benefit means for males and females for the 5 activities with the most participation. Females had higher means in personal benefit for each activity. The female means were unusually higher than male means in three of the five activities: (a) retraining for fields in technology (b) training in computer skills, and (c) college sponsored presentations and workshops. Table 13 suggests that women perceived slightly higher personal benefit derived from participation in faculty development activities than men.

Age Gender, Field, and Personal Benefit

In addition to overall gender differences previously outlined, data were collected and charted to show comparisons of benefit perceptions along other demographic lines and between instructional domains, as embedded in each of the five professional development activities listed in Table 13. Tables 14-18 chart the results, accordingly. Retraining for fields in technology is the focus of Table 14, and some notable demographic revelations are imbedded therein. First, it shows the mean personal benefit for males in Business Technology increased with age, and for females in

Business Technology as well as males in Engineering and Industrial Technology, the mean personal benefit decreased with age. Possible reasons for these differences are explored in the "Conclusions" section of Chapter 5.

Second, the chart shows that females rated this activity as being noticeably more beneficial than males. Why would females and males have different perceptions regarding the benefits

Table 14

Personal Benefit for Retraining for Fields in Technology by Age

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	3.60	167	3.45	55	3.77	48	3.59	63	4.00	1
29-45	3.63	35	3.40	10	3.80	10	3.67	15		0
46-57	3.61	104	3.46	37	3.77	30	3.61	36	4.00	1
58-76	3.54	28	3.50	8	3.75	8	3.42	12		0

Table 15

Personal Benefit for Summer Institutes and Workshops by Age

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	3.41	176	3.36	47	3.47	60	3.41	69		0
29-45	3.47	43	3.40	10	3.39	18	3.60	15		0
46-57	3.42	103	3.35	31	3.50	34	3.39	38		0
58-76	3.33	30	3.33	6	3.50	8	3.25	16		0

Table 16.

Personal Benefit for Training in Computer Skills by Age

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	3.52	302	3.48	105	3.74	93	3.38	103	3.00	1
29-45	3.54	63	3.60	15	3.72	25	3.30	23		0
46-57	3.55	175	3.52	63	3.72	53	3.43	58	3.00	1
58-76	3.44	64	3.30	27	3.87	15	3.32	22		0

Table 17

Personal Benefit for Professional Conference(s) by Age

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	3.27	290	3.20	95	3.32	90	3.29	104	4.00	1
29-45	3.33	60	3.20	15	3.45	22	3.30	23		0
46-57	3.25	171	3.29	56	3.21	53	3.23	61	4.00	1
58-76	3.29	59	3.00	24	3.53	15	3.45	20		0

Table 18

Personal Benefit for College-sponsored Presentations and Workshops by Age

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	2.84	293	2.77	96	2.98	93	2.77	103	4.00	1
29-45	2.71	59	2.93	14	2.72	25	2.55	20		0
46-57	2.88	173	2.73	59	3.04	53	2.88	60	4.00	1
58-76	2.84	61	2.78	23	3.20	15	2.65	23		0

derived from learning new technologies? The implications for such a gender difference are examined in the "Conclusions and Implications" section of Chapter 5. Table 15, representing summer institutes and workshops, shows that males, regardless of age, evidenced a decrease in the mean level of mean personal benefit derived from this activity as they grew older. This may indicate that older males are not learning any new material, and thus, would not perceive as much benefit. Females have the opposite characteristic, being lower at the 29-45 age group and higher in the 46-57 and 58-76 age groups. This may indicate that older females benefit more from activities during the summer because they have less time to participate in other activities during the fall and spring semesters.

In looking at the data for training in computer skills (Table 16), no discernable pattern emerged. However females in the 58-76 age group had a much higher mean compared to the male groups, 3.87 versus 3.30 and 3.32 respectively. This may indicate that older females use computers more in their work compared to older males.

Looking at all 5 activities, females in Business Technology had a higher personal benefit mean for each activity than males. This pattern remained consistent among each age group. Some cases emerged within age groups in which females had a lower mean. For example, Table 17 shows that males in Business Technology had a higher mean personal benefit in the 46-57 age bracket.

Comparing males in Engineering and Industrial Technology with males in Business Technology, there are instances where one group had higher means than the other depending on the activity and age group. Thus, no discernible patterns emerged from this comparison.

Table 19

Personal Benefit for Retraining for Fields in Technology by Years of Teaching Experience

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	3.60	167	3.45	55	3.77	48	3.59	63	4.00	1
1-10	3.73	30	3.57	7	3.89	9	3.71	14		0
11-25	3.63	95	3.38	29	3.82	28	3.68	37		0
26-36	3.43	42	3.53	19	3.55	11	3.17	12	4.00	1

Table 20

Personal Benefit for Summer Institutes and Workshops by Years of Teaching Experience

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	3.41	176	3.36	47	3.47	60	3.41	69		0
1-10	3.52	42	3.50	10	3.53	17	3.53	15		0
11-15	3.36	100	3.24	25	3.47	34	3.34	41		0
26-36	3.44	34	3.50	12	3.33	9	3.46	13		0

Table 21

Personal Benefit for Training in Computer Skills by Years of Teaching Experience

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	3.52	302	3.48	105	3.74	93	3.38	103	3.00	1
1-10	3.55	60	3.77	13	3.71	21	3.31	26		0
11-25	3.56	177	3.46	63	3.79	56	3.46	57	3.00	1
26-36	3.40	65	3.38	29	3.63	16	3.25	20		0

Table 22

Personal Benefit for Professional Conference(s) by Years of Teaching Experience

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	3.27	290	3.20	95	3.32	90	3.29	104	4.00	1
1-10	3.33	61	3.46	13	3.38	21	3.22	27		0
11-25	3.29	170	3.18	55	3.35	54	3.33	60	4.00	1
26-36	3.15	59	3.11	27	3.13	15	3.24	17		0

Table 23

Personal Benefit for College-sponsored Presentations and Workshops by Years of Teaching Experience

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	2.84	293	2.77	96	2.98	93	2.77	103	4.00	1
1-10	2.87	55	3.25	12	2.83	23	2.70	20		0
11-25	2.91	173	2.75	57	2.98	54	2.97	61	4.00	1
26-36	2.63	65	2.59	27	3.19	16	2.27	22		0

Teaching Experience, Gender, Field and Personal Benefit

Tables 19 through 23 present mean personal benefit statistics computed for the variables of teaching experience, gender, and instructional field and generated for the top 5 activities with the most participation.

As was the case with age, there are only a few cases where females do not have either the highest mean personal benefit or student benefit among each teaching experience group in each of the top 5 most participated in activities. In three activities, retraining for fields in technology, summer institutes and workshops and professional conferences, the personal benefit for females declined with teaching experience (Tables 19, 20, and 22). This pattern can be seen in Business Technology males in training in computer skills, professional conferences, and college-sponsored presentations and workshops (Tables 21, 22, and 23), however for engineering males, this pattern of personal benefit declining with teaching experience can only be seen in retraining for fields in technology (Table 19). In a few instances significant differences in the amount of mean personal benefit appeared to exist. For example, this can be observed in college-sponsored presentations and workshops (Table 23), comparing Business Technology females to either Engineering and Industrial Technology males (3.19 vs 2.27) or Business Technology males (3.19 vs 2.59) for those with 26 years or more teaching experience. Summarizing Research Question #4, females perceived more personal benefit than males. This finding was fairly consistent among age, teaching experience, and field. However, there are some cases that vary among age and teaching experience, in which males perceived more personal benefit, which was the case for summer institutes and workshops for faculty with 26 years or more of teaching experience.

Table 24

Male and Female Perceived Student Benefit for Top 5 Activities in Participation

Activity	Population Student Benefit	(N)	Male Student Benefit	N	Female Student Benefit	N
Retraining for fields in technology	3.56	(167)	3.49	118	3.71	49
Training in computer skills	3.34	(302)	3.21	208	3.64	94
Summer institutes, workshops	3.11	(176)	3.16	116	3.02	60
Professional conferences	2.97	(290)	2.92	199	3.09	91
College-sponsored presentations, workshops	2.53	(293)	2.43	199	2.73	94

Table 25

Student Benefit for Retraining for Fields in Technology by Age

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	3.56	167	3.31	55	3.71	48	3.65	63	4.00	1
29-45	3.66	35	3.30	10	3.70	10	3.87	15		0
46-57	3.53	104	3.24	37	3.70	30	3.67	36	4.00	1
58-76	3.54	28	3.63	8	3.75	8	3.33	12		0

Table 26

Student Benefit for Summer Institutes and Workshops by Age

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	3.11	176	3.02	47	3.02	60	3.25	69		0
29-45	3.14	43	3.20	10	2.94	18	3.33	15		0
46-57	3.10	103	2.94	31	3.03	34	3.29	38		0
58-76	3.10	30	3.17	6	3.13	8	3.06	16		0

Table 27

Student Benefit for Training in Computer Skills by Age

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	3.34	302	3.24	105	3.65	93	3.17	103	3.00	1
29-45	3.49	63	3.47	15	3.72	25	3.26	23		0
46-57	3.34	175	3.22	63	3.62	53	3.21	58	3.00	1
58-76	3.20	64	3.15	27	3.60	15	3.00	22		0

Table 28

Student Benefit for Professional Conference(s) by Age

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	2.97	290	2.86	95	3.08	90	2.98	104	4.00	1
29-45	2.93	60	2.87	15	3.00	22	2.91	23		0
46-57	2.98	171	2.91	56	3.06	53	2.95	61	4.00	1
58-76	3.00	59	2.71	24	3.27	15	3.15	20		0

Research Question #5

How do faculty perceptions vary by age, gender, and teaching experience in terms of assessing the corollary benefits their students derived from the faculty members' participation in professional development activities? To answer this question, the data were analyzed in three different sections. The first sections analyzed gender and student benefit of faculty development activities. Next, student benefit was analyzed by age, gender and field. Finally, student benefit was analyzed by teaching experience, gender, and field.

The analysis of student benefit was very similar to that of personal benefit for age, gender, and field. Females only have a lower student benefit mean for summer institutes and workshops, see Table 26. As indicated in Table 27, for training in computer skills, females have much higher student benefit means than males in either field. Again, other than females, any patterns are sporadic at best. For example, males ages 46-57 in Business Technology have a low mean of 2.27 in college sponsored presentations and workshops (Table 29). However, in Table 28, professional conferences, that same age group has a mean of 2.91, highest among the age groups in Business Technology but still lower than the means for females in Business Technology and males in Engineering and Industrial Technology. This indicates that there are isolated cases where one group, for example Business Technology males ages 46-57, appears to be significantly different in their student benefit means for a particular activity than another group, for example females ages 46-57 (see Table 29, the 46-57 age group for males and females).

Tables 30 through 34 present data on student benefit using the variables teaching

Table 29

Student Benefit for College-sponsored Presentations and Workshops by Age

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	2.53	293	2.40	96	2.72	93	2.47	103	4.00	1
29-45	2.42	59	2.64	14	2.40	25	2.30	20		0
46-57	2.53	173	2.27	59	2.79	53	2.52	60	4.00	1
58-76	2.64	61	2.57	23	3.00	15	2.48	23		0

Table 30

Student Benefit for Retraining for Fields in Technology by Years of Teaching Experience

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	3.56	167	3.31	55	3.71	48	3.65	63	4.00	1
1-10	3.53	30	3.43	7	3.44	9	3.64	14		0
11-25	3.63	95	3.28	29	3.82	28	3.76	37	4.00	1
26-36	3.40	42	3.32	19	3.64	11	3.33	12		0

Table 31

Student Benefit for Summer Institutes and Workshops by Years of Teaching Experience

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	3.11	176	3.02	47	3.02	60	3.25	69		0
1-10	3.24	42	3.30	10	3.06	17	3.40	15		0
11-25	2.98	100	2.72	25	3.00	34	3.12	41		0
26-36	3.32	34	3.42	12	3.00	9	3.46	13		0

experience, gender, and field. Most noticeable from Table 30 (retraining for fields in technology) was that Business Technology females and Engineering and Industrial Technology males with 11-25 years of experience have a much higher student benefit mean than business males with the same experience (3.82 and 3.76 versus 3.28). This may indicate that females in Business Technology and males in Engineering and Industrial Technology emphasized learning new technologies and perceive that their student benefit from the transfer of knowledge from faculty member to student.

The data in Table 31 indicate that males, other than Business Technology males with 11-25 years experience, have a higher mean for student benefit in each teaching experience group for summer institutes and workshops. Also in Table 31, Business Technology males with 11-25 years experience have a much lower student benefit mean than the other two groups of Business Technology males. Business males show a pattern of declining student benefit means with more teaching experience in tables 32, 33, and 34. These three activities, training in computer skills, professional conferences, and college sponsored presentations and workshops, were the top 3 activities in terms of participation. Also note that for those same activities, the means for the entire population follow that same trend, less perceived student benefit with more teaching experience. This may indicate, that for these activities, faculty members like to interact with each other, or that the topic of the activity does not relate to what students will learn. In 2 out of 3 cases, the same trend is found in Engineering and Industrial Technology males (Tables 32 and 34). For Business Technology females, 2 out of 3 cases for Tables 32, 33, and 34 actually show the reverse trend, higher perceived benefit with less teaching experience (Tables 32 and 34).

Also in Table 34, females with 26-36 years of experience have a much higher student

Table 32

<u>Student Benefit for Training in Computer Skills by Years of Teaching Experience</u>

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	3.34	302	3.24	105	3.65	93	3.17	103	3.00	1
1-10	3.45	60	3.62	13	3.62	21	3.23	26		0
11-25	3.33	177	3.19	63	3.64	56	3.18	57	3.00	1
26-36	3.28	65	3.17	29	3.69	16	3.10	20		0

Table 33

<u>Student Benefit for Professional Conference(s) by Years of Teaching Experience</u>

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	2.97	290	2.86	95	3.08	90	2.98	104	4.00	1
1-10	3.07	61	3.00	13	3.19	21	3.00	27		0
11-25	2.96	170	2.85	55	3.04	54	2.97	60	4.00	1
26-36	2.92	59	2.78	27	3.07	15	3.00	17		0

Table 34

Student Benefit for College-sponsored Presentations and Workshops by Years of Teaching Experience

	Population Mean	N	Business Technology Males	N	Business Technology Females	N	Engineering & Industrial Technology Males	N	Engineering & Industrial Technology Females	N
Pop. Mean	2.53	293	2.40	96	2.72	93	2.47	103	4.00	1
1-10	2.69	55	2.83	12	2.65	23	2.65	20		0
11-25	2.54	173	2.40	57	2.70	54	2.51	61	4.00	1
26-36	2.35	65	2.19	27	2.88	16	2.18	22		0

benefit mean than males in Business and Engineering and Industrial Technology (2.88 versus 2.19 and 2.18). This may indicate that older males who participate in college sponsored workshops during the summer, do so merely to interact with colleagues, or that the topic is irrelevant to student learning. With the exception of summer institutes, all females have a higher mean student benefit for each activity. This is similar to the analysis using age in tables 14-18 and 19-23.

Summarizing research question #5, it appears that all faculty regardless of age perceive more student benefit in those activities which involve computers and technology. Training in computer skills, and retraining for fields in technology rated the highest in perceived student benefit. As for personal benefit, females generally perceive more, although there is some variability among certain age and teaching experience groups.

Telephone Interviews

A total of 20 participants were interviewed by telephone. The purpose of the interviews was to provide more in depth analysis into the responses given by faculty for personal and student benefit that derived from participation in faculty development activities. Each participant was asked the same list of questions (Appendix B).

Question #1 asked which faculty development activity has had the greatest positive impact or benefit on you? Sub parts of question #1 asked about when and who faculty participate with and what determines their participation in an activity. Three activities were listed as most beneficial to Business Technology faculty and five activities were listed as beneficial to Engineering and Industrial Technology faculty (Appendix G). Faculty participated throughout the year and during the summer. Thirteen faculty reported that they do most of their participation during the summer. Six faculty participated in Internships in business/industry during the summer. This is because these faculty had reduced teaching loads and more time during the summer to pursue an internship. Also, funding was available to faculty for this activity.

Faculty reported participating alone, with another faculty member, or with a group of faculty members. Most faculty indicated they liked participating in activities with colleagues because it gives them the chance to share knowledge and ideas. Faculty indicated that their participation is determined by type and topic of activity, time, location, and money. Time is one of the biggest factors indicated by faculty members. Over 70% of the telephone interview participants taught 5 or more classes during the fall and spring semesters, and thus had little time for professional development activities.

Question #2 asked faculty to describe some of the characteristics and features of activities that were beneficial or were not beneficial. Characteristics and features that were beneficial to faculty were hands-on activities in industry; working in small groups and small group discussion; peer groups; relevant real world examples and demonstrations; and exchanging ideas and information with industry representatives and other faculty. Characteristics and features that were not beneficial were the lack of time to do activities and lack of time of certain activities (internships, not enough time during the summer to do everything); guest speakers not being relevant; examples used in activities not relevant; not enough hands on activity; and courses that don't offer anything new.

Question #3 asked faculty about the benefits of activities that were most beneficial to them and whether any changes resulted. Faculty were asked if changes such as improvements to curriculum and using different types of instruction were made. Also, faculty indicated if they felt their students were better prepared or able to get better jobs.

All reported having changed their curriculums or adding a different instructional technique as a result of a faculty development activity. The level of change varied depending on the topic of the activity. One faculty member who participated in an internship in industry indicated that a new course was being developed about the new material that was learned. Fourteen faculty member reported using new examples in class as a result of participating in faculty development activities.

Question #4 asked which faculty development activity had the greatest impact (benefit) on the faculty members' students. Faculty who participated in internships indicated their ability to provide students with examples of the newest technologies being used by various industries. Business Technology faculty reported that their students benefit from learning the latest software versions. Also, one Business Technology faculty member reported that students benefitted from material the faculty member learned at a seminar on tax preparation. Another faculty reported that students benefitting from the research conducted by the faculty member.

Question #5 asked faculty if they were participating in more or fewer activities as they gained teaching experience. Twelve faculty reported attending more activities, five reporting attending fewer activities, and three reported the same level of participation during the last three years.

Question #6 asked faculty if there were activities that were beneficial to them and not their students and vice versa. Activities that faculty reported being beneficial to themselves were peer groups, workshops on topics such as retirement issues that do not relate to students and faculty development activities that focus on teaching methods. Many activities that faculty participate in benefit the faculty member personally, who in turn shares the knowledge and ideas learned to their students. Faculty may use new examples that they learned in a seminar in their classes. The seminar may not have been beneficial to the faculty member, but the students benefit from the examples.

Summarizing the interviews, there was further information in addition to the data obtained from the six questions (Appendix B). This information came as a result of participants' talking about their faculty development experiences. Faculty participated in many college-sponsored workshops because they are convenient, usually located within the building the faculty member works in. Most faculty indicated they liked networking and sharing ideas with colleauges at conferences and workshops. Many faculty also attend workshops which involve training in computer skills because the topics directly relate to what the faculty member teaches. Also, a typical response was that faculty, especially Business Technology faculty, indicated a need to constantly stay up to date with the latest versions of software.

Chapter Summary

This chapter outlined and charted the results of the investigation. The first section of this chapter presented information generated by statistics pertaining to the demographic variables in this study—gender, age, and teaching experience of the participants. The statistics computed the average age and teaching experience of males and females in Business Technology and Engineering and Industrial Technology. The next section presented data showing the number of activities that the respondents had participated in during the previous 3 years. The 12 activities were ranked in order of participation rate among respondents. The participation rates among Business Technology and Engineering and Industrial Technology faculty were presented along with the participation rates among age and teaching experience groups.

This chapter then charted the faculty and student benefit of the top 5 activities with the most participation. Data were presented by age, teaching experience and gender for each of the 5 activities. The final part of this chapter charted age, gender, and faculty and student benefit by instructional field. Data showed the mean personal and student benefit for the three age brackets and teaching-experience ranges among Business Technology males and females, and Engineering and Industrial Technology males. Because only one female was surveyed in Engineering and Industrial Technology, an average for females in that instructional field could not be computed. Thus unfolded the quantitative statistics that answered the research questions.

Information collected as a result of semi-structured telephone interviews with selected recipients was then summarized and analyzed in terms of information that tended to confirm or disconfirm the findings of the quantitative statistics relative to the research questions. Moreover, the information collected from the interviews was scrutinized for additional insights into the context and nature of some of the findings—insights that are further explored in Chapter 5.