Chapter 5

SUMMARY, CONCLUSIONS, IMPLICATIONS,

AND RECOMMENDATIONS

<u>**Summary of the Study**</u>

Today's business and industry leaders have recognized that confronting the phenomenon of rapid change in a global economy must be of paramount importance for those who are charged with preparing the workforce of the 21st century—primarily occupational-technical faculty in post-secondary education. Hence, higher education researchers have been urged to pay more attention to uncovering and disseminating relevant new knowledge and practices. Moreover, occupational-technical faculty must be afforded on-going opportunities to stay abreast of the critical knowledge, skills, and practices necessary to properly train the 21st century workforce. Given the rapidly advancing technologies of today's workplace, continual upgrading of occupational-technical faculty members' skills and knowledge in these technologies is essential for the development of curricula to meet the changing needs of business and industry.

The Virginia Community College System has as its overarching mission to make higher education not just accessible and affordable to all students in Virginia, but also to equip them with the necessary skills to be productively employed in the fast-changing workplace where global competition demands on-going pursuit of learning. Thus, the need for continual learning and skill improvement among occupational-technical faculty in Virginia's Community College System is evident. Yet, despite volumes of published materials related to professional

development, generally, a paucity of research exists pertaining to faculty development of community college instructors—especially in technology and other education-for-work curricula. One trend evidenced from a Virginia Community College System 1993 task force report indicated that faculty members acquired most of their new knowledge and skills through formal and informal discussions and accounts of personal experiences. Moreover, almost no studies surfaced that focused primarily on occupational-technical faculty.

More than a decade ago, Smith (1981) called for more research to determine how staff development programs were perceived by the participants in terms of usefulness and benefit. In the occupational-technical education arena, the call remained unanswered and hence became the primary focus of this study. Today's challenge is to shape faculty development activities that allow occupational-technical faculty to stay abreast of the latest technologies and best training practices in industry. In order to create an environment that optimally cultivates and nurtures the acquisition of important new knowledge, skills, and understandings by occupational-technical faculty, research must be undertaken that builds upon the limited empirical base currently available in the field of occupational-technical professional development in Virginia's community colleges. Specifically, the knowledge base must expand to include determining how current faculty members view the professional development activities available to them and to what extent they participate in them.

Using a research design primarily descriptive in nature that employed both quantitative and qualitative data gathering, the investigator conducting this study thereby advanced the knowledge base needed in occupational-technical professional development. The ensuing pages

of this report discuss the investigation in three parts: first, a summary of study's research design and results; second, a positing of the implications of those results; and third, a proffering of two kinds of recommendations—(a) for further research, and (b) for future directions in policy making and professional development planning.

Research Design

The investigator used two information-gathering tools to collect the data for this study—a survey instrument and a semi-structured telephone interview protocol. The faculty development survey instrument was used to gather baseline information from faculty regarding their level of participation in and benefit derived from professional development activities available in Virginia's community college system. Full-time occupational-technical faculty from two instructional fields participated in the survey: (a) Business Technology, and (b) Engineering and Industrial Technology. The survey instrument (Appendix A) was mailed to 407 faculty at 34 campuses representing the 23 community colleges in Virginia (Appendix I). A total of 332 surveys were returned for an 81.6% response rate. Data collection took place from February 27, 1999 to April 8, 1999.

Data collected from the questionnaires were tabulated and analyzed using descriptive statistics generated by the Statistical Package for Social Sciences (SPSS). The investigator then used the results to answer five research questions: (a) What faculty development activities had full-time occupational-technical faculty members in the Virginia Community College System participated in during the last 3 years? (b) To what extent had the faculty members derived personal benefit from the activities identified in the first question? (c) To what extent did the

participating faculty members believe their participation in the activities had similarly benefited

their students? (d) How did faculty perceptions of benefit to themselves vary by age, gender,

teaching experience? (e) How did 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?

After using the quantitative data to explicate the research questions, the investigator used

a follow-up semi-structured interview protocol with selected participants in order to (a) confirm

the most important findings that issued from the quantitative statistics; (b) elucidate some of the

enigmatic findings; and (c) elicit from the participants relevant contexts or ancillary factors that

may have influenced their opinions regarding different professional development activities.

Faculty responses from the qualitative interviews enhanced the survey's findings, adding

depth, insight, clarification, and new ideas. The results of both types of collection and analysis

processes are described in the paragraphs that follow. Then the investigator carefully explores

areas where future research is needed and offers insights into the findings and implications for

policy makers and occupational-technical practitioners, especially in institutions that must

prepare technology-based curricula for community college faculty in Virginia.

Research Results

Results for Research Question #1

The survey results revealed that the three professional development activities with the

most faculty involvement in terms of participation were (a) training in computer skills,

(b) college-sponsored presentations and workshops, and (c) professional conferences (see Table

7). These findings are consistent with the Freidlander and Gocke (1985) study mentioned in

chapter 2, where over 80% of faculty had participated in conferences, workshops, and seminars.

These activities, as indicated by faculty in the telephone interviews, are popular because they

usually only last a couple of hours and they offer the opportunity to network with colleagues.

In terms of age and teaching experience, faculty who are older and have more teaching experience

participated in fewer faculty development activities.

The results depicted in Table 8 indicate, as previously summarized, that females were

more likely than males to participate in professional development activities. These findings were

consistent with the 1993 VCCS Professional Development Task Force report which noted that

females participated in more activities than males, especially those faculty development activities

conducted in groups.

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. 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).

<u>Results for Research Questions #2 and #3</u>

When asked to rate different activities as to the level of personal benefit (no benefit, little

benefit, beneficial, or very beneficial) they felt they had derived from participating in them,

"Internships" was highest in the Business Technology area; with "Funded Research or Development Projects" rated highest by the Engineering and Industrial Technology Faculty, slightly higher than their average rating for internships.   Note that the "other" category was rated first by Engineering and Industrial Technology faculty, and also had the highest mean personal benefit for all faculty.   However, because there were a variety of responses listed as "other" activities, the "other" category, although recognized by the researcher, was not included in discussion about the activities with the most personal or student benefit.   (Appendix H lists each activity indicated by 36 participants as being an "other" activity for faculty development and places each response into one of four categories).   Moreover, the participants also rated internships as being the activity that their students overall derived the most benefit from as a result of faculty member participation.   Furthermore, it was the only professional development activity with a higher average rating for benefits accruing to the students compared to the personal benefits accruing to the faculty.   A close competitor, nevertheless, was "Retraining for Fields in Technology" (see Tables 11 and 12).

On the other hand, "Professional Conferences" and "College Sponsored Workshops and Presentations," which both had a high participation rate, were rated lowest in terms of benefits that accrued to the participants' students (see Tables 7 and 12).   The investigator surmised that this could have been because faculty in Business Technology relied more on computers. Information from the telephone interviews indicated that activities that faculty participate in provide skills and information have no bearing on student learning.   For example, faculty members attend seminars to improve their computer skills to help them develop a better

syllabus. This would probably not benefit student learning, except for the fact that students

would now receive a better quality syllabus.

Results for Research Questions #4 & #5

Analysis of the age, gender, and years-of-experience variables of the respondents among

the five most frequently participated-in activities revealed insightful statistics. First, gender

differences were scrutinized. Females, on average, perceived themselves as deriving more

personal benefit from each activity than did the males. The most notable differences were in the

categories of "Retraining for Fields in Technology," "Training in Computer Skills," and "College-

Sponsored Presentations and Workshops" (see Table 13).

When examining the same five activities in terms of age and gender demographics in each

of the two instructional fields, the findings revealed that for males in Business Technology the

perception of personal benefit from "Retraining for Fields of Technology" increased with age.

On the other hand, perceived benefit among Business Technology females decreased with age, as

did the personal benefit level reported by males in the Engineering and Industrial Technology

field (see Table 14). Reasons for these differences are explored in the "Conclusions" section of

this chapter.

The findings pertinent to "Summer Institutes and Workshops" showed that males'

perceptions of benefits from such activities decrease with age. Females, on the other hand,

reported higher perceived personal benefits as age increased. (Note that both the 46-57 and 58-

76 age ranges for females had a mean of 3.5. See Table 15). In looking at the data for "Training in

Computer Skills," no discernable pattern emerged. Interestingly, in the 58-76 age range females

averaged much higher perceptions of benefits than males in each age bracket. Moreover, females

from the Business Technology instructional field ranked each of the five professional

development activities higher than their male counterparts in terms of perceived benefits (see

Tables 14-18). Although this pattern remained consistent among each age group, some cases of

lower female averages emerged within age groups.   When examined by years of teaching

experience, females, as a whole, also perceived more benefits accruing to their students compared

to males.   There are some case where certain male groups, such as Business Technology males

with 1-10 years teaching experience, have a higher mean for perceived student benefit than

females in the same bracket (Tables 21-23).

The results indicate that females generally perceived more benefit accruing to their

students than males, which is similar to the analysis for personal benefit.   The only activity in

which females had a lower mean for perceived student benefit was for "summer institutes and

workshops" (see Tables 24 and 26).   Results for the different groups of age and teaching

experience yielded no clear patterns, although some noticeable findings emerged.   For example in

"retraining for fields in technology" (Table 30), Business Technology females and Engineering

and Industrial Technology males with 11-25 years of teaching experience had a much higher mean

for perceived student benefit (3.82 and 3.76) than males in Business Technology (3.28).   The

lowest means for the entire study were in "college-sponsored presentations and workshops"

(Table 34).   Engineering and Industrial Technology males with 26-36 years teaching experience

had a mean perceived student benefit of 2.18, and males in Business Technology with 26-36

years of teaching experience had a mean of 2.19.   Possible reasons for these low ratings will be

discussed in the next section.

Conclusions and Implications

The findings from this study led the researcher to draw a number of conclusions pertaining to the five research sections; these are examined below. Research Question #1 asked what faculty development activities faculty had participated in during the last three years. Full-time occupational-technical faculty in the Virginia Community College System had a very high participation rate for training in computer skills, professional conferences, and college sponsored presentations and workshops (see Table 7). The researcher found three reasons based on the survey and telephone interviews that these activities were high in participation: (a) these activities, such as college-sponsored workshops and one-day conferences, are the easiest to attend for faculty members because of location and do not take much time. The faculty who were interviewed indicated they receive very little to zero funding for activities. They are however, some instances where faculty indicated they were required to attend a college-sponsored workshop; (b) faculty can collaborate with each other in groups at conferences and workshops; and (c) many of the faculty attend workshops which involve training in computer skills because many faculty use their computer skills to some extent in their work, such as developing course outlines, keeping track of student grades, or teaching a class in computer software. The open-ended nature of the telephone interviews added insights relative to future intentions of the interviewees. Most indicated that they would continue to participate in professional conferences and college sponsored workshops, although such less participated-in activities such as internships could provide greater personal benefits.

The survey found that faculty 58 years and older and with 26 or more years teaching experience, as a whole, participated in fewer activities (see Tables 9 and 10). Those who were interviewed that were at least 58 years old with 26 years of teaching experience cited limited institutional funding and availability of resources as factors. They also indicated that they have attended the same kinds of activities for more than three years, and do not go out of their way to participate in new kinds of activities, such as internships.

Research Question #2 asked to what extent faculty had personally benefited from faculty development activities. Although the objective results showed that some benefit had been derived from all activities, the most personal benefit had been derived from internships—an activity with a low participation rate. Internships are among the most expensive professional development activities and occur mostly during the summer. The telephone interviews elicited additional insights supportive of the investigator's hypotheses: First, the high cost of internships is an impediment to their being offered more extensively by community colleges as a professional development activity. This is because faculty would have to pay out of their own pocket for an internship. One faculty member indicated paying with their own money, but most faculty indicate that they would not do so for an internship. In addition, faculty members could not themselves defray the expense of an internship—most would have to forego paid summer work in order to do so. As indicated by two participants during the telephone interviews, there is some funding available through grants from organizations such as the National Science Foundation, to help defray the costs for internships.

Professional conferences and college sponsored workshops, which had a high

participation rate, were at the bottom in terms of personal and student benefit derived from participation (see Tables 7, 11, and 12). Careful probing during the telephone interviews elucidated this enigmatic finding. The high rate of participation was primarily because such activities gave faculty the opportunity to be in groups and network with one another. This may explain why faculty did not perceive these to be high in student benefit. Additionally, one could surmise that not every conference or workshop that a faculty member attends is beneficial, except to the extent that they network with others.

Time and teaching load were also factors in the professional development participation rate. The qualitative information gathered from the survey participants showed that many often taught 5 courses, sometimes more. It was not uncommon for some business technology faculty to have 5 courses which were all different, requiring 5 different preparations. One faculty member had 7 different courses, requiring 7 different preparations.

The investigator surmised that faculty, with many different interests and needs would continue to benefit from a wide variety of faculty development activities. The survey results showed that activities such as training in computer skills, retraining for fields in technology, and internships/exchange in business and industry were all perceived by faculty as beneficial. Again, the interviews with selected participants confirmed what the researcher had posited as a key reason for the high rating of those activities—namely, as technology continues to improve and change, faculty felt the pressure to stay current would be more acute than ever. Hence, these technology-oriented activities would continue to provide faculty with the much needed newer skills and knowledge.

The "Other" activity category (see Appendix H) ranked first overall in terms of perceived personal benefit and second overall in terms of perceived student benefit. The activities listed as "other" by faculty were put into 4 categories relating to owning a business, research and development, self-study, and belonging to a professional organization. Ten faculty indicated doing self-study as an other category. As elucidated from the telephone interviews, faculty members indicated doing research and self-study that directly related to what they taught, thus the faculty member learned while doing self-study and in turn the students benefitted from learning from the faculty member. One faculty member indicated that since technology and computer software are rapidly changing, self-study is an important way for faculty to stay up to date.

Research Question #3 asked to what extent faculty perceived that their students had benefited as a result of their participation in faculty development activities. The same patterns that existed in analyzing personal benefit were evident in the amount of perceived student benefit: internships, retraining for fields in technology, and training in computer skills were the top 3 in terms of perceived student benefit (excluding "other" category, see Table 12). Again, supported by subsequent telephone interviews, the investigator found that faculty often learned new technologies related to computers and new technologies and processes in industry. This enabled them to transfer their new knowledge to their students. Activities that rated low in perceived student benefit were professional conferences and college sponsored presentations and workshops (see Table 12). As discussed under Research Question #2, these activities provided a variety of activities that may or may not have been beneficial to the students of the

participants. The opportunity to network, for example, did not translate directly into student benefit. One faculty member indicated using some ideas from a colleague in their classroom, however, for the most part, faculty indicated that most of the knowledge they learn from colleauges is for their personal benefit.

Due to the changing world of computers and technology, faculty will continue to participate in technology oriented activities because the material covered in these activities directly relates to what the students will learn. Of the top 5 activities with the most participation, faculty perceived training in computer skills, and retraining for fields in technology, as the activities providing them with the most personal benefit, and also the most benefit to their students (see Tables 13 and 24). The reasons for the favorable perceptions accorded those activities were again extrapolated from the investigator's hypothesis, supported by information gained from the telephone interviews—namely, that such professional development activities were convenient and provided information that could be used in day-to-day classroom situations.

Research questions #4 and #5 asked about how personal and student benefit were perceived by faculty in terms of age, teaching experience, and gender. Females, with one exception (summer institutes and workshops), had a higher mean in perceived personal and student benefit than males for the top 5 activities with the most participation. There are some cases among age and teaching experiences groups were males were higher, but females as a whole gave higher ratings. Two activities where females are much higher are "retraining for fields in technology" and "training in computer skills." These are two where a lot can be learned about new technologies and new versions of software. All of the females but 1 teach in a discipline

related to Business Technology and thus benefit the most from these two activities.

The differences between males and females may be due to females being, in general, younger with less experience and more active in activities. Then again, maybe not. These differences could also result from differences in perceptions of the rating system, for example females may perceive the same activity to be more beneficial than males. Also, because females are more likely to favor group activities more than men, their perceptions could have a social influence.

The lowest means for perceived personal and student benefit were in "college-sponsored presentations, and workshops" (Tables 18, 23, 29, and 34). Females in the 58-76 age bracket and with 26-36 years of experience were consistently higher in their ratings for perceived personal and student benefit deriving from this activity compared to any other group. This may be because females, who like group activities, have a tendency to give higher ratings then men. Females may like social activities more, and thus, give activites higher ratings for personal and student benefit. This is consistent with the research in Chapter 2, which indicated that females preferred group activities over men. The findings here would suggest that older females benefit more from college-sponsored presentations and workshops than the other groups because of the ability to network and converse with colleagues. Note that older females rated "retraining for fields in technology" and "training in computer skills" as providing them with the most personal benefit, and also providing their students with the most benefit. The perception among all groups is that college-sponsored presentations and workshops provide the least amount of benefits. The responses for older females in this category are consistent with their peers in that

117

their ratings are lower for this activity compared to all other activities.   However, the ratings for

personal and student benefit for older females in college-sponsored presentations and workshops

are the highest for any group in this activity.   This seems to indicate that there is some benefit

derived from participating in this activity, and although greater benefits result from activities that

involve direct training with technology, older females see greater benefits, personal and student,

deriving from college-sponsored presentations and workshops.   On the other hand, the two

lowest ratings in the entire study came from Business Technology and Engineering and Industrial

Technology males with 26-36 years of experience with regard to perceived student benefit (2.19

and 2.18 respectively, Table 34).   Also, the two lowest ratings for personal benefit came from

the same two groups in the same activity (2.59 and 2.27 respectively, Table 23).   This was

elucidated during the telephone interviews in which faculty indicated that many of the topics of

the workshops are not relevant to what they teach.   If older faculty spend most of their time

teaching new technologies, then it is clear that this activity would not be beneficial to them.

Also, since females tend to prefer group activities, this could be the reason while females with

26-36 years of experience give much higher ratings than males with the same experience.

Implications for Practitioners

From the conclusions just discussed, several implications followed and resulted in the

following observations and suggestions.

Faculty should carefully evaluate the topics of college-sponsored workshops before they

attend them to determine if they would be worthwhile. Faculty should also carefully select

which professional conferences they attend, looking not only at the opportunities for

networking, but the topics and material being covered at the conference.

Faculty, and especially females in Business Technology, need to participate in group activities that provide opportunities to network with colleagues, and also provide faculty with new knowledge and skills that they can then pass on to their students.

Faculty should encourage their administrations to provide funding for internships in industry.

Faculty need to consider the benefits of participation in activities other than conferences and workshops and weigh the benefits that may result versus the cost of that activity.

Faculty towards the end of their careers should make every effort to participate in a variety of activities as well as activities that they might not have participated in during the last three years. For older faculty who teach in Business Technology, this is especially important.

Recommendations for Researchers and Policy Makers

Researchers

Based on the data in this study and the conclusions drawn, the following topics for additional research are recommended:

Additional research is needed on the actual measures of student benefit, not just perceptions, that result from faculty participating in faculty development activities to gain a more accurate picture of the impact of professional development activities on student learning.

Additional research is needed to determine gender differences as they relate to how males and females rate their perceptions about benefits derived from participation so that researchers can more accurately interpret data about male and female perceptions.

Additional research is needed to determine the impact of social activities on professional development to see if faculty prefer to participate alone or in groups.

Additional research is needed to further probe the nature of the differences in participation rates among younger and older faculty, especially regarding what additional commitments, outside the college that these two groups have, to see how their participation is influenced.

Policy Makers and Planners

The findings from this study should propel state-level policy makers and educators to develop some method of analyzing the cost-benefit ratio between professional development programs and the beneficial impact of those programs on the participants and their students. For example, if internships have an extremely beneficial impact on those involved, but are believed to be too costly by those in charge of budgets, perhaps new avenues of funding for internships could be found or created. Such avenues could include persuading relevant businesses and industries to partner with communities in order to provide *paid* internships comparable to the an intern's on-going salary. Two faculty indicated in the follow-up interview that they had received some grant money from the National Science Foundation. Partnerships with businesses and industries and receiving grant money from various organizations should be explored as viable options to help defray some of the costs for faculty willing to participate in internships.

The activities deemed least valuable in the findings of this study should be revisited by policy makers and higher education planners. Are they selected because of efficient mass-production administrative procedures, giving them the appearance of being cost-effective because

of the high participation rate (just as mass schooling came about as a by-product of mass-production)? If so, should more utilitarian just-in-time, technology-based, alternative learning environments be created to replace the outmoded ones—environments that transfer learning from anywhere in the world, on time and tailored to meet each individual's needs?

As Virginia moves into the 21st century, the decisions currently being undertaken and plans currently being made by policy makers and education leaders will shape the direction and efficacy of occupation-technical education for decades to come. This investigation may assist them in their visionary tasks—spurring them to move expeditiously but cautiously.