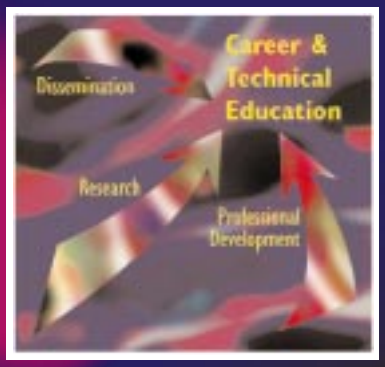

Characteristics of Teacher Educators in Career and Technical Education

CTE
CAREER & TECHNICAL EDUCATION

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EXECUTIVE SUMMARY

The purpose of this study was to describe the characteristics of teacher educators in Career and Technical Education (CTE) programs, including the following: teacher educator demographics; professional development activities of teacher educators; and the methods, models, and approaches currently used within teacher preparation programs. In this time of educational reform, coupled with a changing workplace, the data showed that CTE teachers were being prepared for public schools in a very traditional manner. Additionally, the decline in the number of CTE teacher preparation programs across the nation contrasts sharply with the growing number of public-school and post-secondary teaching positions.

Three hundred and fifty-nine teacher educators from institutions of higher education across the U.S. responded to this study. Demographically, CTE teacher educators are similar to other teacher educators. Ninety percent of teacher educators in this study were white, four percent African American, and three percent Hispanic. The percentage of minority teacher educators has not increased in 10 years, although the percentage of women CTE teacher educators has increased during the same period. The average age of a CTE teacher educator was slightly more than 50 years, and more than half were tenured at their institutions. A large percentage of the teacher educators' professional time was spent teaching. Female faculty tended to spend more of their professional time teaching, compared with their male counterparts. The number of adjunct faculty increased by 10 percent, compared with 10 years ago.

Respondents indicated that traditional approaches, such as university course work, coupled with local school-based teaching/learning centers, solution-oriented investigations, and seminars were the most effective approaches toward developing future secondary teachers and, therefore, were most used in practice. Generally, teacher educators had mixed opinions as to the effectiveness of Web-based and other technology-based courses in the preparation of new teachers. Adjunct faculty and/or non-tenure-track faculty in higher education participated in almost as many professional development activities as did their tenure-track colleagues.

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INTRODUCTION AND BACKGROUND

Ensuring an adequately prepared labor supply is a concern shared by both the education and business communities. Teacher educators are the crucial link, as they prepare Career and Technical Education (CTE) high school teachers to be more effective in their role in workforce preparation. CTE teacher educators need to be responsive to the climate of educational reform that began in the mid-1980s, gained momentum in the 1990s, and is now starting to change teacher preparation (National Council for Accreditation of Teacher Education, 2001; National Board for Professional Teaching Standards, 1997).

Several notable trends are occurring in CTE teacher preparation. The number of CTE teacher preparation programs has declined at least 11% during the 1990s (Bruening Scanlon, Hodes, Dhital, Shao, & Liu, 2001), while the demand for CTE teachers is projected to increase for several years (U.S. Department of Labor, 2000). Some of the decline in program numbers may be due to expected faculty attrition, some of which could be predicted from the statistics summarized by Lynch (1990); but attrition does not completely explain this decline.

Another trend revealed by Bruening et al. (2001) was that the educational reform movement has started to transform some of the professional development methods used in CTE teacher preparation programs. The current CTE teacher preparation curriculum appeared to have a healthy emphasis on assessment, collaboration, and curricular integration skills; however, the phenomenon is one of change without reform, or revision of content without fundamental change in process (Cuban, 1999; Finch, Schmidt, & Faulkner, 1992). Thus, discrepancies between teacher preparation, practice, and professional development remain.

The U.S. Department of Education (1999) reported that fewer than 30% of new teachers felt well-prepared, suggesting that large discrepancies exist between teacher preparation and practice. This reinforces findings of an earlier study by Goodlad (1990) that found teacher preparation suffered from a lack of coherence and sense of mission, thus producing teachers prepared to assume little more than an operational role in the classroom.

Stasz and Brewer (1999) noted that students' current academic coursework did not include the full range of skills needed on the job. They found that traditional academic preparation often lacked authentic tasks and, therefore, often failed to teach important transferable job skills. Although Goodlad (2000) warned that education should not be limited to a narrow set of skills, the quality of the workforce is a major issue. As jobs become increasingly complex, communities not only need workers who can apply higher-level math skills and specific scientific knowledge in the workplace, but they also need teachers who can integrate these skills into the curriculum.

The bottom line is that the basic manner in which teachers are prepared remains largely unchanged in this climate of educational reform (Bruening, et al., 2001; Goodlad, 1999). Teacher preparation programs often are a fragmented sequence of activities that do not support the goals of educational reform (Goodlad, 1990, 1999, 2000; Mooney, 1999). Even the best programs may not prepare teachers for a climate of change (Sparks, 2000). Presently, CTE teacher preparation programs rely on traditional classroom and lecture methods; thus, it is not clear how reforms can be sustained through in-service professional development activities. According to a RAND study (Stasz & Brewer, 1999) and an earlier study by Goodlad (1990), traditional pre-service program models have developed a population of teachers socialized into narrowly focused technocratic

behavior, rather than focusing on the larger issues of teaching and needs of the community. This focus is contrary to the current climate of change.

With an increasing demand for well-trained CTE teachers in local schools, CTE teacher preparation programs require faculty who desire to learn throughout their careers, form partnerships between schools and businesses, and incorporate work-based skills into the curriculum to ensure a well-trained profession. Curriculum comes from beyond the classroom, and teacher educators need to use the workplace as a resource and basis for integrating academic and workplace skills. Today's teacher educators must increase their understanding of the role of academics in business, industry and community organizations to ensure that their curricula reflect the skills required for the contemporary workplace (Copa & Ammentorp, 1998; Naylor, 1997; Phelps, 1998; Sargent & Ettinger, 1998; U.S. Department of Education, 1997). This means that teacher educators should consider periodically returning to the workplace to gain new insight into applications of academics and translating this knowledge into classroom practice.

Enhanced professional development activities can be the primary vehicle by which teacher educators keep current in their field and become motivated to update their programs. Professional development has the potential to be one of the transforming forces in CTE teacher preparation, as it has been linked to positive attitudes of faculty and higher levels of student learning (Sparks, 2000). Many studies have recommended various professional development activities for faculty involved in public education (Finch *et al*., 1999; Hartley & Wentling, 1996; Hernandez-Gantes, 1998; Holder & Pearson, 1996; Phelps, 1998; Pribbenow & Sargent, 1997; Sargent & Ettinger, 1998). These activities included strategies such as summer internships, sabbaticals, site visits, co-op agreements, and team teaching. Usually these activities have the following purposes in mind: to expand teaching competencies; to increase technology proficiencies; to improve content knowledge; and to enhance curriculum development skills. It is equally important for teacher educators to have such professional development opportunities available to them.

Professional development in higher education operates under several strong influences. For tenure-track higher education faculty, much professional development activity revolves around career progression—traditional promotion and tenure requirements of teaching, research, and service—where faculty activities typically are weighted. The "service" portion of the faculty work is often loosely defined and may be changing (Chang, 2001). At some institutions, service includes distance education or outreach activities; once on the fringes of acceptability, these increasingly are becoming recognized as legitimate faculty work (Glassick, Huber, & Maeroff, 1998).

Cuban (1999) documented the evolution of the current higher education system that values research over teaching and reinforces the professor as the solo teacher with little incentive to establish the voluntary partnerships that include collaboration or team teaching. Copa (1998), Copa & Ammentorp (1998), Hernandez-Gantes (1998) and Liston et al. (1998) all cited the need for leadership and sustained institutional support for professional development activities, which often are lacking.

In addition, professional development may not include all higher education faculty. Reliance on non-tenure-track, adjunct, and/or part-time faculty is a growing trend in higher education (Kelly, Pannapacker, & Wiltse, 1998; Mooney, 1992). Adjunct or part-time faculty make up one-

half of the higher education faculty in the U.S. (American Association of University Professors, 1993; Leatherman, 2001). Adjunct and part-time faculty typically find themselves outside the system, ineligible to apply for research or travel funds, etc., and, therefore, are more isolated than tenure-track faculty. In light of these variables, it was not clear to what extent faculty participate in professional development activities and maintain their expertise.

The objectives of this study were to:

1. Describe demographic characteristics of CTE teacher educators;

2. Describe preferred approaches used by CTE teacher educators to prepare new teachers;

3. Describe teacher preparation programs and professional development practices of CTE teacher educators that can be used to define: (a) CTE teacher preparation programs, and (b) identify areas where further research is needed to develop efficient and effective models for CTE teacher preparation programs.

Findings from this study can be used to strengthen CTE teacher preparation by more effectively addressing the needs of CTE teachers.

Operational Definitions

Many operational definitions are used throughout this document. The following terms define the concepts used in this study, many of which are based on those of the National Council for Accreditation of Teacher Education (2001).

Academic Integration—including academic content and skills, such as math and writing, as part of the career-technical program of study.

Alternative pathways—use of nontraditional pathways to bring students into a teacher certification program. Articulation agreements with community colleges or recruitment from institutions that do not have a teacher certification program are examples.

Approach—plan or style used to deliver education.

Articulation—uniting curricula or programs of study through a formal agreement between institutions.

Assessment—evaluation measures used to provide information for monitoring a candidate and improving educational programs.

Authentic tasks—developing, as part of the curriculum, challenges and roles that reflect the complexities of actual scenarios encountered in the workplace or in life.

Career Technical Education (CTE)—formerly vocational education. Career and technical skills are the focus of the curriculum that is experientially based to demonstrate how education relates to the workplace and life.

Curriculum—courses, experiences, and assessments necessary to prepare candidates to teach or work with students of a particular age or at a specific subject level.

Distance education—a formal education process where the majority of the instruction occurs with the learner and the instructor not in the same place at the same time, often mediated by technology.

Field experience/field-based experience—a variety of opportunities in which candidates may observe, assist, tutor, instruct, or conduct research. Field experience may occur in off-campus settings such as schools or agencies.

In-service—education delivered to teachers/administrators working in schools as educators.

Integration—a curriculum development approach that makes academic course work relevant to work. This may involve teachers across disciplines teaching related concepts concurrently, using occupational themes.

Outreach—extending the intellectual expertise and resources of a college or university through teaching, research and service to groups that may not be enrolled in a formal program of study.

Pre-service—education that is pre-baccalaureate and, generally, teachers not yet certified.

Professional development—opportunities to develop new knowledge and skills through pre-service or in-service education, conference attendance, sabbatical leave, summer leave, intra- or inter-institutional visitations, fellowships, etc.

Professional development model—developing new knowledge and skills through a formal structure.

Professional development school—specially structured school in which P–12 and higher education faculty collaborate to (1) provide practicum, student teaching and internship experiences, (2) support and enable inquiry directed at the improvement of practice, and (3) support and enhance student achievement.

Program—a planned sequence of courses and experiences leading to a degree or recommendation for a state license.

Research—traditional scholarly activity such as investigation of problems through use of specific methods, the analysis of results, and dissemination of findings in refereed journals.

Service—a broad range of faculty activity that may include outreach, committee membership, or other participation in the campus community.

Teacher educator—a faculty member who teaches in a teacher preparation program at an institution of higher learning.

Teacher preparation program—a formal program of study that prepares teacher candidates for a state license; a teacher education program.

Trade and industrial—a teacher preparation program grounded in the manufacturing and construction skills.

METHODS

The Instrument

The survey was designed to collect data that could be used to develop a profile of CTE teacher educators and to describe their preferred professional activities and practices, including their efforts to stay current. It had five sections: Professional Development Approaches for both Pre-service and In-service Programs; Professional Development Activities and Practices for the Pre-service Program; Professional Development Activities and Practices for Teacher Educators; Teaching Expertise; and Demographic Information.

Several sections of the instrument referred to specific approaches and models suggested in the literature as commonly used in CTE teacher preparation (Finch, Kelly, Heath-Camp, Harris, Zimmerlin, & Aragon, 1999; Hartley & Wentling, 1996; Hernandez-Gantes, 1998; Holder & Pearson, 1996; Phelps, 1998; Pribbenow & Sargent, 1997; Sargent & Ettinger, 1998). The approaches and models used in the instrument also were based on the researchers' experience in CTE teacher preparation. The instrument did not attempt to identify or stratify CTE teacher educators by CTE area. Therefore, if one CTE teacher preparation area, i.e., trade and industrial, uses a different professional development approach, it is not reflected in this study.

Survey item construction also was guided by several reports: Standards for National Board Certification: Vocational Education by the National Board for Professional Teaching Standards (1997), and A National Database on Vocational Teacher Education (Lynch, 1990). Four CTE teacher educators from other institutions and several internal reviewers validated the survey. The instrument (Appendix A) was pilot-tested with a group of 20 teacher educators selected at random from the larger database, which included all CTE areas. Fourteen agreed to participate, but only eight returned the pilot test. After the pilot test, changes were made to strengthen wording and refine the instrument. The pilot test group was too small to run reliabilities.

The Population

The population for the Professional Development Survey was intended to be inclusive and representative of faculty active in all CTE teacher preparation program areas. The Appendix B table lists respondents by area of highest degree earned, and the Appendix C table lists respondents' institutions. The investigators realized that different tenure models are used at various institutions. An instructor may be on tenure track at one institution, while at another institution an assistant professor is employed outside the tenure track.

To acquire the list of teacher educators, a request form was sent to the teacher educators with administrative responsibility at each CTE teacher preparation program. These individuals were located through several national directories. This was the same database of CTE teacher preparation programs used in the study of Bruening, et al. (2001). The result was a database of 647 teacher educators nationwide.

Each CTE teacher educator was sent a survey, cover letter, and return envelope. Also included was a postcard giving individuals an option to remove themselves from the sample. After two weeks, a reminder postcard was sent, and after another two weeks, a follow-up survey

was mailed to the non-respondents. The survey also was available on the Web for those who preferred an on-line format.

Forty-six individuals from the potential sample returned the postcard asking to be removed from the sample. Their reasons cited were related to not teaching CTE courses or not being involved with teacher preparation. With the valid cases reduced to a sample size of 601, 359 surveys (60%) were returned, including about 6% that arrived via the Web site. The return rate of 60% is more than double the average of 28% for surveys with no incentive (Dillman, 2000).

Limitations

While every effort was made to ensure a comprehensive database of CTE teacher educators, the reader is cautioned that the following limitations may apply:

1. Participation in the study was on a voluntary basis and data supplied were generated by the participant and may or may not be accurate.

2. The data are reported as aggregate data and based on the limited responses of CTE teacher educators.

3. Some of the data attempted to measure complex indices related to a variety of teaching and learning approaches, and were single individuals' perceptions, which may not reflect the views of their entire university or college.

Finally, the reader should recall that statistical analyses of data have a tendency to aggregate data into an average or mean score. Since it is impossible to verify responses on a number of variables, such as workload, professional development activity, etc., the reader is cautioned that the mean reported may not be a true representation of activities or practices of any individual.

Thus this study does not intend to produce solutions that are comprehensive or generalizable to all problems facing professional development of CTE teacher educators. The present study does give new insight into the status of CTE teacher educators in the United States and demographic shifts that have occurred over the previous 10 years.

Data Analysis

Survey returns were entered into Statistical Package for the Social Sciences (SPSS) for analysis. The on-line surveys were collected in a FileMaker Pro™ database prior to being entered into SPSS. The data were primarily Likert-type and categorical data. Measures of central tendency and percentages were used to report the results of most of the survey items. Numbers in the tables and charts may not add up to 100%, due to rounding. Reliabilities of the Likert-type survey items are reported in Appendix D.

RESULTS

Profile of CTE Teacher Educators

Almost half (46%) of the respondents were female (Figure 1). This finding represented a large increase over the Lynch study (1990), which reported that only 29% of CTE teacher educators were female. The mean age of the respondents was 50, ranging from a low of 23 to a high of 75 years of age (Figure 2), which is a slight increase over the 1990 study where Lynch reported a mean age of 49. More than 40% (42.8%) of the respondents were between 51 and 60 years of age. Older teacher educators (>70 years) were few in number (0.6%).

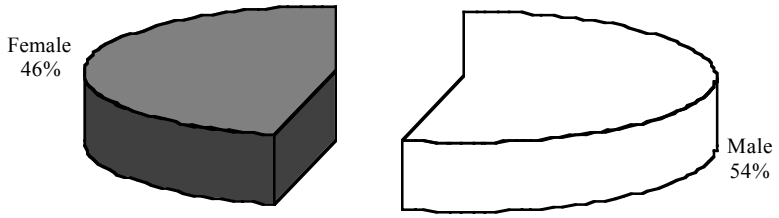
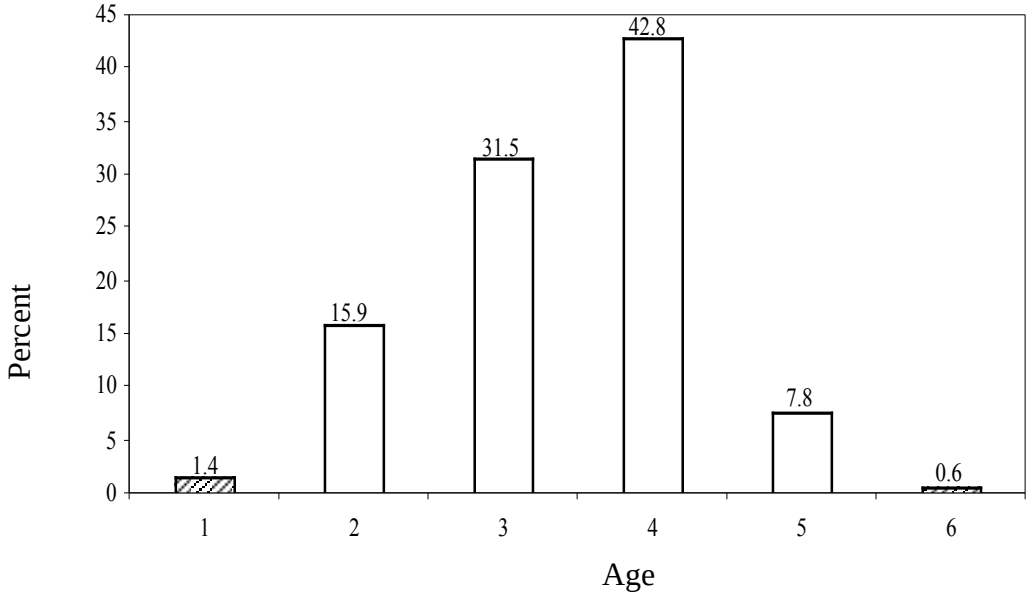


Figure 1. Gender of respondents (*N* =356).



1=23–30, 2=31–40, 3=41–50, 4=51–60, 5=61-–70, 6=>70.

Figure 2. Respondents by age category (*N*=346, *Mean*=49.9).

About 90% of the respondents identified themselves as white, 4% as African American, and 3% as Hispanic (Figure 3). Of the remaining 3%, 1.1% were Pacific Islander, 6% were Asian American, 1% were Native American, and .3% chose not to provide this information. These figures are reasonably stable over the 10 years since Lynch (1990) reported that CTE teacher educators were 90.6% white and about 5% African American.

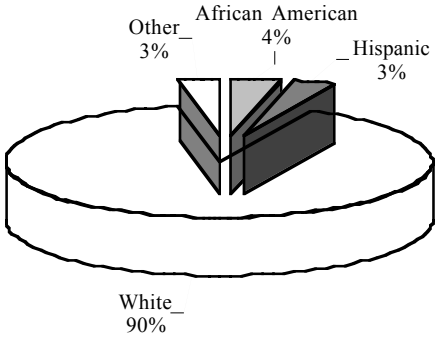


Figure 3. Ethnic composition of respondents (*N* =354).

Qualifications and Experience

Of the total, more than half (52%) of the respondents were either associate or professors (25%) or assistant professors (27%; Figure 4). About 34% of the respondents identified themselves as professors, 11% as instructors, and 3% as adjuncts.

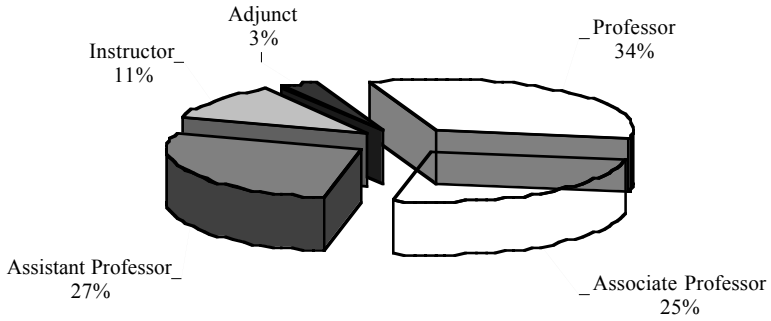


Figure 4. Respondents by professional rank (N =357).

In 10 years, some shifts in percentages of faculty by type of appointment have occurred. The majority (54%) of teacher educators were tenured (Figure 5), but the percentage had declined considerably when compared with the 68% reported 10 years ago (Lynch, 1990). Slightly more than one-fifth (23%) indicated that they were not tenured, but held a tenure-track position, whereas only 18% held such an appointment 10 years ago. In 1990, 13% of the CTE teacher educators were not on tenure-track (Lynch, 1990); in 2000, 23% were employed outside the tenure system.

As can be seen in Figure 6, more than half (55%) of the teacher educators in the current study reported a Ph.D. as their highest degree, while another 26% reported their highest degree as an Ed.D. This contrasts with 10 years ago, when 45% held a Ph.D. and 41% held an Ed.D. Appendix C is a table of programs from which the respondents' highest degrees were earned.

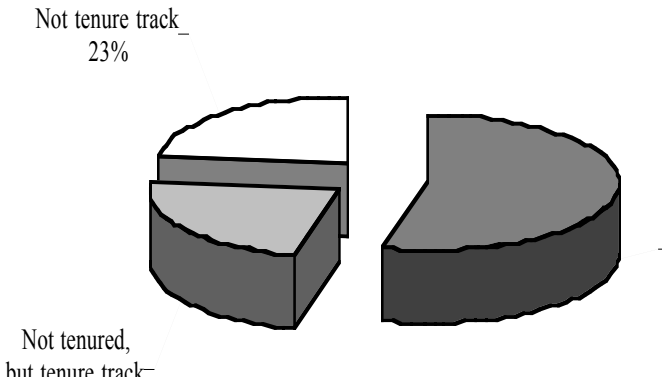


Figure 5. Respondents by tenure status (*N* =357).

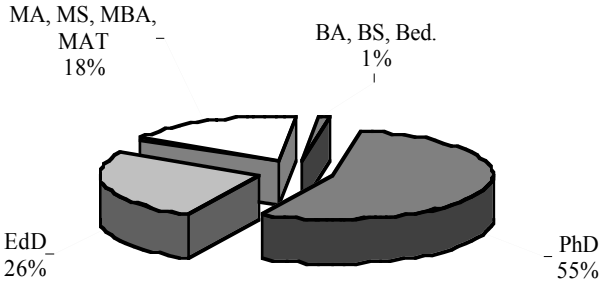


Figure 6. Respondents by highest degree earned (*N* =355).

The respondents had an average of 16.2 years of employment in higher education, whereas Lynch (1990) reported 16.8 years. The majority (64%) of the respondents had more than 10 years of employment (Figure 7). Few respondents were employed in higher education for more than 30 years (8%).

The respondents indicated that they were employed in their present institution for an average of 12.6 years, which is similar to the 12.9 years reported in 1990. A majority (51%) had been employed from 11 to 30 years in their present institution (Figure 8). About 46% of the respondents had between two months and 10 years' of experience at their present institution.

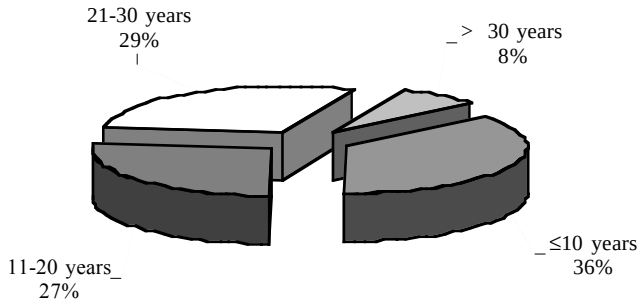


Figure 7. Respondents by years of employment in higher education (*N* =354, *Mean* =16.2).

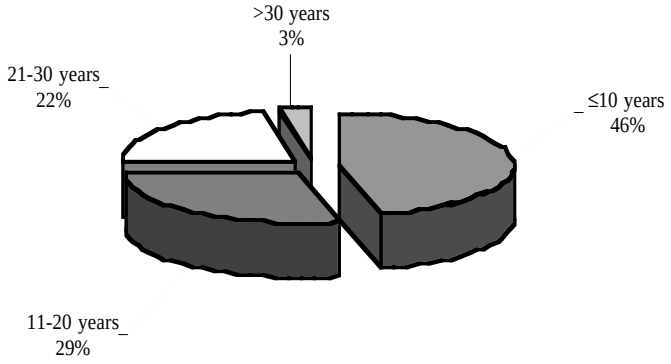


Figure 8. Respondents by years of employment in present institution (*N* =353, *Mean* =12.6).

Responsibilities

A separate analysis of the data (not presented in any table) indicated that 97% of the respondents were involved in teaching at their institutions. A majority (59%) indicated that they were involved in teaching activities for both undergraduate and graduate classes. About 30% of the respondents had responsibility only for undergraduate courses. Fewer respondents were teaching only graduate courses (7%). A small percentage (3.4%) indicated that they did not teach any classes.

Effective Professional Development Models for Pre-service Teachers

Teacher educator respondents were asked to indicate the effectiveness of professional development delivery models for pre-service teachers using a 5-point Likert-type scale (Table 1), in which "5" was most effective, "4" was effective, "3" was undecided, "2" was marginally effective, and "1" was not effective. In actual analysis, the "undecided" category was treated as "a missing value," and the other four categories were recoded from "1" for "not effective" to "4" for "most effective." An analysis of the responses indicated that application of theory in practice at a real school setting under supervision such as internships (M=3.65) was perceived either as "effective" or "most effective" by 98.5% of the respondents. Delivery models such as collaborative inquiry of teachers and student teachers working together to solve student learning problems (M= 3.39) were considered "effective" or "most effective" as delivery models in pre-service education by 95.4% of the respondents. Three-fourths (79.6%) of the teacher educators felt that developing extensive school-university partnerships was an "effective" (56.2%) or "most effective" (23.4%) method in pre-service teacher education.

Table 1
Effective Pre-service Professional Development Models

Professional Development Delivery Model	Effectiveness [a]									
	Total			NE		MAE		E		ME	
	M	SD	N	%	(N)	%	(N)	%	(N)	%	(N)
Application of theory in practice at a real school setting under supervision (such as internships)	3.65	0.51	337	0.0	(0)	1.5	(5)	32.3	(109)	66.2	(223)
Collaborative inquiry of teachers and student teachers working together to solve student learning problems	3.39	0.57	322	0.0	(0)	4.7	(15)	51.6	(166)	43.8	(141)
Development of extensive school and university partnerships beyond student-teaching relationships (i.e., Tech Prep, School-to-Work)	2.98	0.76	299	5.0	(15)	15.4	(46)	56.2	(168)	23.4	(70)
Development of collaborative teacher teams that foster change at the local level by utilizing more release time	2.98	0.70	243	4.5	(11)	11.9	(29)	64.2	(156)	19.3	(47)
Establishment of professional development schools (more than 50% of course work taught in field-based settings)	2.97	0.81	238	5.5	(13)	17.6	(42)	50.4	(120)	26.5	(63)
Increase standards and expectations of pre-service certification programs	2.82	0.89	285	8.8	(25)	23.8	(68)	43.2	(123)	24.2	(69)
Used Web-based courses that meet state certification standards	2.43	0.90	228	17.5	(40)	32.9	(75)	38.6	(88)	11.0	(25)
Others [b]	3.60	0.51	10	0.0	(0)	0.0	(0)	40.0	(4)	60.0	(6)

Note: Percent total may not add to 100%, due to rounding.

[a] Effectiveness was measured using 4-point Likert-type scale: 4=ME (Most Effective); 3= E (Effective); 2=MAE (Marginally Effective); and 1=NE (Not Effective).

[b] Other Pre-service delivery models mentioned include: university-school partnerships; induction programs; IVDL; CTSO experience, working with BPA; DECA conferences; and action research.

Establishing professional development schools was perceived to be either an "effective" or "most effective" model by 76.9% of the respondents. Slightly more than four-fifths (83.5%) indicated that the development of collaborative teacher teams that foster change at the local level by using more release time was an "effective" or "most effective" model. These data indicated that a school-oriented application-based student-teacher relationship was considered the "most effective" professional development model in pre-service settings.

Disagreement existed over increasing standards as an effective professional development model in pre-service programs. While about two-thirds of the respondents considered "increasing standards and expectations for pre-service programs" as either "effective" or "most effective," one-third considered it as "not effective" or "marginally effective."

The least-effective model, as indicated by the respondents, was a Web-based course that met state certification standards (M = 2.43). The distribution for this item showed that teacher educators had mixed feelings about the effectiveness of Web-based courses, with about half (50.4%) selecting either "not effective" or "marginally effective," and nearly half of the respondent (49.6%) selecting either "effective" or "most effective."

Ten teacher educators pointed out some delivery models that seemed "effective" or "most effective" in their specific context. These models were included in the "Others" category.

One respondent contended that present pre-service delivery models depend heavily on format, content and strategy, and suggested an alternative—a professional development school oriented model with good methodology courses related to content.

Pre-service Teaching and Learning Approaches

Respondents were asked to rate the effectiveness of eleven teaching and learning approaches used in their pre-service programs with a recoded 4-point scale (Table 2) where a "4" was most effective, a "3" was effective, a "2" was marginally effective, and a "1" was not effective. Traditional university coursework was considered "effective" or "most effective" (M =3.87) by 88.7% of respondents. The local school-based teaching learning center (M =3.31) was selected as either "effective" or "most effective" by 94.5% of CTE teacher educators. Solution-oriented investigations (M =3.21), such as action research, were considered "effective" or "most effective" by 91.2% of the respondents. Seminars (M=2.90) were considered "effective" or "most effective" by 80.9% of the respondents. Workshops were considered "effective" by about 80% of the respondents.

Responses to several common technology-based delivery systems—video (M=2.33), computer-based (M=2.49), and Web-based (M =2.38) courses—revealed mixed responses as to their effectiveness, with an almost equal proportion of the respondents selecting "effective" or "marginally effective" categories for each.

In-service Teaching and Learning Approaches

The rated effectiveness of teaching and learning approaches by in-service (graduate) teacher educators is presented in Table 3. The results indicated that workshops (*M*=3.37) were selected as "effective" or "most effective" by 92.6 % of the respondents. Seminars (*M*=2.21) were considered either "most effective" or "effective" by about 91% of the respondents. About 86% of the respondents rated local school-based teaching/learning centers (*M* =3.04), and action research (*M*=3.13) either "most effective" or "effective" teaching and learning approach in in-service education.

Teaching learning in-service approaches such as sabbaticals (*M*=3.01), learning academy (*M*=2.88) and traditional university course work (*M*=2.80) were considered "effective" or "most effective" by a fair proportion of the respondents, ranging from 73% for traditional university course work to about 81% for sabbaticals. Respondents also preferred external consultancy for in-service programs (*M*=2.74; Table 3), rather than for their pre-service program (*M* =2.39; Table 2).

As seen with the responses relating to the pre-service programs, technology-based course delivery strategies received mixed responses. Sixty percent of the respondents rated Web-based courses (*M*=2.60) either "effective" or " most effective," while 40% suggested they were either "not effective" or "marginally effective." Computer-based instruction (*M*=2.54) and video courses (*M*=2.53) were seen as "effective" or "most effective" by 56.3% and 53% of the respondents, respectively.

Table 2
Effective Pre-service Teaching and Learning Approaches

Teaching and Learning Approach	Effectiveness [a] NE	MAE	E	ME	Total		
	% (N)	*% (N)*	*% (N)*	*% (N)*	*M*	*SD*	*N*
Local school-based teaching/learning center	1.0 (3)	4.5 (13)	56.4 (164)	38.1 (111)	3.31	0.61	291
Solution-oriented investigations	0.7 (2)	8.2 (24)	60.1 (176)	31.1 (91)	3.21	0.61	293
Traditional university course work	1.2 (4)	10.1 (33)	68.3 (224)	20.4 (67)	3.07	0.59	328
Workshops	4.6 (15)	15.8 (51)	59.8 (193)	19.8 (64)	2.94	0.73	323
Seminars	2.4 (9)	16.7 (55)	69.1 (228)	11.8 (39)	2.90	0.61	330
Learning academy	5.6 (10)	15.2 (27)	61.2 (109)	18.0 (32)	2.90	0.74	178
Computer-based instruction	10.2 (23)	38.1 (86)	43.8 (99)	8.0 (18)	2.49	0.78	226
External consultants	14.8 (35)	37.3 (88)	41.9 (99)	5.9 (14)	2.39	0.81	236
Web-based courses	15.6 (34)	38.1 (83)	39.0 (85)	7.3 (16)	2.38	0.83	218
Video courses (satellite or Pictel™)	10.9 (25)	50.7(116)	32.8 (75)	5.7 (13)	2.33	0.74	229
Other [b]	0.0 (0)	0.0 (0)	27.3 (3)	72.7 (8)	3.72	0.46	11

Note: Percent total may not add to 100% due to rounding.

[a] Effectiveness was measured using 4-point Likert-type scale: 4=ME (Most Effective); 3= E (Effective); 2=MAE (Marginally Effective); and 1=NE (Not Effective).

[b] Other Pre-service teaching and learning approaches mentioned include: work experience; clinical experience; reflective/micro teaching; consultancy with follow-up support; follow-up implementation plus accountability; study model program through satellite; individual conference; and course work with clinical PDS.

Table 3
Effective In-service Teaching and Learning Approaches

Teaching and Learning Approach	Effectiveness [a]						
	NE	MAE	E	ME	Total		
	% (N)	*% (N)*	*% (N)*	*% (N)*	*M*	*SD*	*N*
Workshops	1.4 (5)	6.0 (21)	46.0 (160)	46.6 (162)	3.37	0.66	348
Seminars	1.2 (4)	7.7 (25)	59.2 (193)	31.9 (104)	3.21	0.63	326
Action research	1.3 (4)	12.4 (37)	57.5 (172)	28.8 (86)	3.13	0.66	299
Local school-based teaching/learning centers	2.8 (10)	10.1 (28)	64.5 (178)	21.7 (60)	3.04	0.68	276
Sabbaticals	4.8 (13)	14.1 (38)	56.3 (152)	24.8 (67)	3.01	0.76	270
Learning academy	7.3 (14)	17.6 (34)	54.4 (105)	20.7 (40)	2.88	0.81	193
Traditional university course work	5.9 (18)	21.1 (64)	60.2 (183)	12.8 (39)	2.80	0.73	304
External consultants	8.4 (24)	22.0 (63)	55.9 (160)	13.6 (39)	2.74	0.79	286
Web-based courses	8.6 (21)	31.3 (76)	51.4 (125)	8.6 (21)	2.60	0.76	243
Computer-based instruction	10.0 (23)	33.6 (77)	48.0 (110)	8.3 (19)	2.54	0.78	229
Video courses (satellite or Pictel™)	8.5 (20)	38.5 (90)	44.9 (105)	8.1 (19)	2.53	0.76	234
Other [b]	0.0 (0)	12.5 (1)	12.5 (1)	75.0 (6)	3.62	0.74	8

Note: Percent total may not add to 100% due to rounding.

[a] Effectiveness was measured using 4-point Likert-type scale: 4=ME (Most Effective); 3= E (Effective); 2=MAE (Marginally Effective); and 1=NE (Not Effective).

[b] Other in-service teaching and learning approaches mentioned include: vocational instructor practicum; consultant with follow-up support; retreats; proven study model program; and combination of various approaches overtime.

Activities and Practices Used in Pre-service Education

To evaluate the extent to which various activities and practices are used in pre-service education, respondents were asked to rate 16 different activities used in teaching and learning situations on a 5-point Likert-type scale (Table 4). The scale used was the following: “5” for nearly all the time; “4” for most of the time; “3” for some of the time; “2” for rarely used; and “1” for not used.

Respondents indicated using the following activities and practices at least “most of the time”: establishing measurable outcomes of courses taught (M = 4.36); working individually with students to develop their personal goals and outcomes (M = 4.23); the use of “standards-based education models” (M = 4.07); and providing “examples of academic and technical integration” (M = 4.01) in pre-service education.

“Involving business and industry in certification process” was either a rarely used activity (23.9%), or not used at all (15.6%). A similar response pattern was observed for the item “providing alternative strategies for certification,” which was rarely used by 23.8%, but used some of the time by 30.6% of these teacher educators.

Table 4
Activities and Practices Used in Pre-service Education

Activity/Practice	Extent of Use [a]							
	N	R	ST	MT	NAT	Total		
	% (N)	*% (N)*	*% (N)*	*% (N)*	*% (N)*	*M*	*SD*	*N*
Establish measurable outcomes for courses taught	0.0 (0)	2.0 (7)	10.6 (37)	36.6 (128)	50.9 (178)	4.36	0.75	350
Work individually with students to develop their personal goals and outcomes	0.3 (1)	2.6 (9)	14.3 (50)	39.5 (138)	43.3 (151)	4.23	0.81	349
Use a standards-based education model	2.0 (7)	4.3 (15)	16.4 (57)	39.7 (138)	37.6 (131)	4.07	0.94	348
Provide examples of academic and technical integration	0.3 (1)	2.5 (9)	21.0 (74)	48.7 (172)	27.5 (97)	4.01	0.78	353
Develop new strategies to reshape teacher education programs	1.1 (4)	6.3 (22)	27.6 (97)	38.9 (137)	26.1 (92)	3.83	0.93	352
Provide examples of community-based learning	0.8 (3)	6.2 (22)	32.1 (114)	40.0 (142)	20.8 (74)	3.74	0.89	355
Involve students in academic and technical integration	2.0 (7)	7.4 (26)	27.6 (97)	43.8 (154)	19.3 (68)	3.71	0.93	352
Involve students in community-based learning	1.7 (6)	8.0 (28)	33.8 (118)	34.1 (119)	22.3 (78)	3.67	0.97	349
Involve students in authentic contextual assessment	2.6 (9)	7.2 (25)	31.9 (110)	38.6 (133)	19.7 (68)	3.66	0.96	345

Table 4 (continued)

Activity/Practice	Extent of Use [a]							
	N	R	ST	MT	NAT	Total		
	% (N)	*% (N)*	*% (N)*	*% (N)*	*% (N)*	*M*	*SD*	*N*
Develop student cooperative learning groups	2.3 (8)	10.6 (37)	31.2 (109)	35.5 (124)	20.3 (71)	3.61	1.00	349
Involve students in collaborative inquiry	1.1 (4)	8.3 (29)	35.2 (123)	40.4 (141)	14.9 (52)	3.60	0.88	349
Show models of institutional partnerships with business and industry	1.7 (6)	17.4 (62)	32.3 (115)	33.4 (119)	15.2 (54)	3.43	0.89	356
Involve students and teachers in learning partnership with business and industry	4.9 (17)	19.1 (67)	38.6 (135)	26.0 (91)	11.4 (40)	3.20	1.03	350
Work with business and industry to set standards and competencies	11.8 (42)	17.7 (63)	31.0 (110)	26.2 (93)	13.2 (47)	3.11	1.20	355
Provide alternative strategies for certification	10.5 (37)	23.8 (84)	30.6 (108)	22.1 (78)	13.0 (46)	3.03	1.18	353
Involve business and industry in the certification process	15.6 (55)	23.9 (84)	35.8 (126)	19.3 (68)	5.4 (19)	2.75	1.10	352
Other [b]	25.0 (2)	0.0 (0)	0.0 (0)	37.5 (3)	37.5 (3)	3.63	1.69	8

[a] Extent of use was measured using 5-point Likert type scale: 5=Used nearly all of the time (NAT); 4=Used most of the time (MT); 3= Used some of the time (ST); 2= Rarely used (R); and 1=Not used (N).

[b] Other activities include involvement in professional development school and site based learning activities.

Professional Development Activities of Teacher Educators

Table 5 summarizes the frequency of involvement of the respondents in various professional activities in the previous year. The reader should note that there was a large variation in use of various activities, as can be seen in the standard deviations. These results show that an average teacher educator read about 35 professional articles annually. The respondents reported spending an average of 10.6 days gaining experience in industry each year. The average number of times per year teacher educators collaborated with other educators was nearly 22. Professional activities included workshops and seminars attended (M =7.6), professional conferences attended (M =3.9), and collaboration with industry experts (M =3.9).

Time Spent in Professional Activities per Week

Figure 9 shows the percentage of time spent in four main areas. Instruction, or work that supports classroom teaching, consumes just over one-half (52%) of a teacher educator's time, which is similar to the 53% reported by Lynch (1990). The other three categories are research, outreach and other service. Research represented 13% of the respondents' time, and included traditional scholarly work such as writing articles for journals. Sixteen percent of the respondents' time was spent conducting various outreach activities involving practicing teachers at either their own school building or a community college. "Other service" comprised 19% of the respondents' time. About 40% of the respondents indicated that their involvement in service activities included committee meetings and other service to their university or college, such as serving on a curriculum committee or reviewing journals articles.

Table 5
Professional Development Activities of Teacher Educators

Professional Activity	*M*	*SD*	*N*
Number of times respondent had collaborated with other educators	21.7	39.7	351
Number of days worked in industries to gain experience	10.6	82.2	357
Number of workshops or seminars the respondent had attended	7.6	9.0	359
Number of professional conferences the respondent had attended	3.9	5.9	359
Number of times the respondent had collaborated with industry experts	3.9	11.1	359
Other activities [a]	12.0	19.1	13

[a] Other activities include: meetings; general administration; working with students; directing research grants; research grant writing; staff development; extension and recruitment; and custom program design.

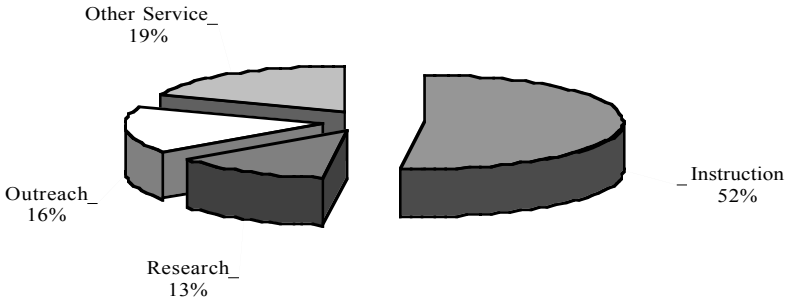


Figure 9. Percent time spent on activities by respondents (*N* =262)

Respondents then were asked to indicate the amount of time, to the nearest one-half hour per week, they spent on six common professional activities (summarized in Table 6). As shown, an average workweek was about 58 hours, which represented a 16% increase over the 50 hour workweek reported by Lynch in 1990. Instruction and its related activities consumed the largest portion of a teacher educator's time. These teacher educators estimated that they spent an average of 24.6 hours weekly on instructional activities such as teaching, class preparation, advising and grading, followed by service to university/college (*M*=6.8 hours), and scholarship (research, writing) (*M* =6.2 hours). In contrast, less time was spent each week in consulting or commercial publication (*M* =2.6 hours), providing in-service education (*M*=3.1 hours), and in clinical supervision (*M*=4.5 hours). Respondents also indicated involvement in several other weekly activities (*M*=9.9 hours) such as meetings, individual work with students, directing research grants, staff development, extension and recruitment, administration, and custom program design.

Table 6
Time (hours per week) Spent on Professional Activities

Professional Activity	*M*	*SD*	*N*
Instruction (includes class preparation, advising, grading)	24.6	13.2	314
Other service to college/university (committee)	6.8	10.3	302
Scholarship (research, writing)	6.2	8.9	303
Clinical supervision (on-site with student teachers)	4.5	7.2	309
Providing in-service education (i.e. work-shops)	3.1	6.6	306
Consulting or commercial publication	2.6	6.1	299
Other activities [a]	9.9	11.0	73
Total [b]	57.7	-	-

[a] Other activities include: meetings; general administration; working with students; directing research grants; staff development; extension and recruitment; and custom program design.

[b] Sum total of individual activity means.

Courses Taught Most Often

Respondents were asked to indicate the course they taught most often at the graduate level and the undergraduate level. A number of respondents reported teaching at only one level; either the graduate level or undergraduate level. Several respondents indicated multiple courses and, thus, they were eliminated from this analysis. The results are summarized in Table 7.

Table 7
Graduate and Undergraduate Course Taught Most Frequently by Respondents

Course Taught	Undergraduate/ Pre-service		Graduate/ In-service	
	%	*N*	*%*	*N*
Pedagogy	28.4	48	35.8	73
Curriculum development	15.4	26	9.3	19
Program planning	9.5	16	5.4	11
Leadership	8.3	14	2.9	6
Seminar	5.3	9	2.5	5
Technical skills	3.6	6	9.8	20
Education philosophy	3.6	6	2.0	4
Computer skills	3.0	5	5.4	11
Introduction to major	1.8	3	10.3	21
History	1.8	3	1.5	3
Communication	1.2	2	5.4	11
Other [a]	18.3	31	9.8	20
Total	100.2	169	100.1	204

[a] Other courses stated were: diffusion of innovation; research skills; work-based learning; policy development; problem solving; family studies; internships; and training and development

At the baccalaureate level, the most frequently taught courses by the respondents were pedagogy (*N*=48, 28.4%) followed by curriculum development (*N*=26, 15.4%). Courses such as program planning were taught by 9.5% of the respondents, and leadership was taught by slightly more than 8% of the respondents. Courses such as seminar (*N*=9), educational philosophy (*N*=6), technical skills (*N*=6), and computer skills (*N*=5) were taught only by a few respondents. The courses least taught by the respondents at the undergraduate level were communication (*N*=2), history (*N=3*), and introduction to major (*N*=3).

The most frequently taught graduate level course was pedagogy (*N*=73, 35.8%). About 10% of the respondents taught either introduction to major (*N*=21) or technical skills (*N*=20) at the graduate level. Another 9% of the respondents taught curriculum development (*N*=19). The percentage of respondents who taught courses such as program planning, computer skills, communication, leadership, educational philosophy, and seminar ranged from about 2% to 5.4%.

Some respondents (18.3% at undergraduate level and 9.8% at graduate level) indicated that they taught other courses both at graduate and undergraduate levels, such as diffusion of innovation, research skills, work-based learning, policy development, problem solving skills, family studies, internships, and training and development.

Percent Time Spent Teaching Subject Matter

Table 8 summarizes average percentages of time spent by the respondents in teaching subject matter/skills in the course they taught most frequently at either the graduate or undergraduate level. Those responses, with totals exceeding 100%, were not used in the analysis. For those who taught at the undergraduate level, the highest average percentage of their time (17.4%) was spent teaching about collaborative inquiry, followed by basic mathematics (15.6%) and cooperative learning (12.5%). Relatively little time was spent on topics such as standards (3.9%), school-university partnerships (3.0%), or integration of academic and technical skills separate from other curriculum development (1.9%).

The respondents who taught at the graduate (in-service) level spent the highest percentage of their time on student presentations (14.2%), teaching about the integration of technical and academic skills (13.7%), and the evaluation of learning and teaching (11.6%). Other activities were teaching about standards (7.8%), cooperative learning (7.5%), collaborative inquiry (6.7%), and computer applications (6.4%). Teaching about school-university partnerships (4.3%) and the school change process (5.5%) occupied small portions of responding CTE teacher educators' time. Less than one percent of their time was devoted to teaching basic mathematics in the typical graduate level course.

Table 8
Percentage of Time Spent Teaching CTE Subject Matter/Skills

Subject Matter/Skills	Undergraduate/ Pre-service [a]		Graduate/ In-service [b]	
	M	*SD*	*M*	*SD*
Collaborative inquiry	17.4	18.1	6.7	7.6
Mathematics (basic)	15.6	14.7	0.9	3.0
Cooperative learning	12.5	12.6	7.5	6.9
Student verbal & written presentations	8.7	10.6	14.2	14.6
Computer application	8.6	13.5	6.4	9.4
School change process	7.6	7.3	5.5	7.2
Evaluation of learning/teaching	6.6	7.3	11.6	9.91
Community-based learning	4.9	7.3	6.1	9.4
Integration of academic & technical skills	1.9	4.5	13.7	16.5
Standards	3.9	5.8	7.8	7.6
School & university partnerships	3.0	5.1	4.3	5.7

[a] *N*=192, [b] *N*= 140

Tenure Status and Professional Development Activity

Table 9 summarizes the professional development activities of CTE teacher educators in higher education, by tenure or tenure eligibility. Tenured respondents reported reading the most professional articles (about 41 per year) while non-tenure-track faculty read an average of 34. Tenured respondents attended fewer workshops or seminars annually (*M*=6.6) than either non-tenured (but in tenure track) (*M*=9) or non-tenure-track faculty (*M*=8.7). Non-tenure-track faculty worked more in industry (about 29 days per year) compared with non-tenured faculty (about 6.7 days per year) and tenured faculty (about 4.4 days per year). Non-tenure-track faculty consulted on an average of 7 teaching and research projects within the previous year, compared with tenured faculty who consulted on only 3.5 projects and non-tenured faculty who consulted on an average of 2.8 projects.

Non-tenure-track faculty also engaged in more collaborative efforts. Non-tenure-track faculty collaborated with other educators an average of 29 times in the previous year, compared with their tenured counterparts who reported about 21 collaborations in the previous year. Non-tenure-track faculty also collaborated more with industry experts (*M*=6.1 times per year), compared with non-tenured faculty (*M*=3.8) and tenured faculty (*M*=2.9).

Professional Time and Tenure Status

Table 10 presents the uses of professional time by various levels of tenure within the university system. Non-tenure-track faculty reported a level of service to the university/college that was similar to their tenure track colleagues. The highest portion of faculty members' time, which was almost 25 hours weekly for all faculty regardless of tenure, was dedicated to supporting instruction. Both non-tenured and non-tenure-track faculty spent slightly more than 5 hours each week supervising student teachers.

The amount of time for consulting or commercial publication was between two and three hours per week—similar for all responding CTE faculty. But for traditional scholarly activities such as research and writing, tenured and non-tenured faculty devoted almost twice the amount of time (*M*=6.9 and 7.1 hours, respectively) than non-tenure-track faculty (*M*=3.5 hours). Chang (2001) suggested that providing in-service workshops at schools for practicing teachers (outreach) may be gaining value for promotion and tenure. However, respondents in the present study reported that only about three hours weekly was used for presenting in-service education.

Table 9
Professional Development Activities of Teacher Educators by Tenure Status

Professional Activity	Tenured			Non-tenured, but tenure track			Non-tenure-track		
	M	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*
Number of articles read in the previous year	40.8	48.5	192	38.1	41.8	81	33.9	45.2	83
Number of days worked in industries to gain experience	4.4	12.7	192	6.7	21.6	80	29.0	167.5	83
Number of teaching or research projects the respondent had been involved in as a consultant	3.5	3.5	192	2.8	3.7	82	7.2	21.9	83
Number of times respondent had collaborated with other educators	20.7	38.5	189	17.5	26.1	82	29.1	52.5	78
Number of workshops or seminars the respondent had attended	6.6	5.7	192	9.0	12.1	82	8.7	11.2	83
Number of professional conferences the respondent had attended	3.3	1.9	192	4.6	6.2	82	4.8	10.2	83
Number of times the respondent had collaborated with industry experts	2.9	4.7	192	3.8	16.6	82	6.1	14.4	83
Other activities [a]	5.5	7.3	6	3.5	2.1	2	23.2	27.7	5

[a] Other activities included: attending activities in Department of Education; advisory council; professional leadership development activities; advisory board and services; workshops and training programs; observing industry; and graduate studies.

Table10
Professional Time Spent (in hours) by Tenure Status

Professional Activity	Tenured			Not tenured, but tenure track			Not tenure track		
	M	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*
Instruction (includes class preparation, advising, grading)	24.7	13.3	165	24.7	12.8	76	24.2	13.7	73
Scholarship (research, writing)	6.9	10.3	161	7.1	6.1	75	3.5	7.5	67
Clinical supervision (on-site with student teachers)	3.4	4.4	165	5.8	10.1	75	5.5	8.6	69
Providing in-service education (i.e., workshops)	3.1	5.5	163	3.6	8.5	75	2.7	6.8	68
Consulting or commercial publication	2.2	3.4	161	3.2	7.7	71	3.0	8.8	67
Other service to college/university (committee)	8.1	12.7	162	5.5	4.1	74	5.3	7.9	66
Other activities [a]	11.3	11.3	42	7.6	7.4	13	8.5	12.5	18

[a] Other activities include: meetings; general administration; working with students; directing research grants; staff development; extension and recruitment; and custom program design.

Academic Rank and Professional Activities Outside the Classroom

Table 11 presents a summary of professional faculty activities completed outside the classroom by academic rank. Although only 11 adjunct faculty responded to this survey section, compared with 119 full professors, non-tenured faculty such as adjuncts appeared to have participated in professional development activities outside the classroom as much, and in some cases to a larger extent, than their colleagues. These data suggest that instructor/lecturer, and adjuncts read fewer professional articles (about 35 for instructor/lecturer, and 32 for adjunct) per year on average, compared with associate, assistant or full professors (about 37 articles for associate professor, 39 for assistant professor, and 41 articles for professor).

Table 11
Professional Development Activities of Teacher Educators by Academic Rank

Professional Development Activity	Professor			Associate Professor			Assistant Professor			Instructor/ Lecturer			Adjunct		
	M	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*
Number of articles read in the previous year	41.0	43.5	119	37.4	40.1	90	39.0	52.8	96	34.7	54.7	40	32.3	30.5	11
Number of times respondent had collaborated with other educators	19.9	35.4	118	17.6	28.9	88	22.4	45.8	95	26.7	37.4	37	55.0	83.0	11
Number of workshops or seminars the respondent had attended	6.3	4.8	119	7.2	6.8	90	8.9	11.6	97	7.9	10.1	40	12.4	21.1	11
Number of days worked in industries to gain experience	4.8	14.2	119	7.7	32.8	90	5.7	19.6	95	47.8	236.5	40	7.1	22.9	11
Number of teaching or research projects the respondent had been involved in as a consultant	3.6	3.6	119	4.4	6.9	90	2.9	2.9	97	3.3	5. 0	40	24.7	55.9	11
Number of professional conferences the respondent had attended	3.5	1.9	119	3.9	5.3	90	4.1	5.4	97	4.1	7.1	40	7.8	21.3	11
Number of times the respondent had collaborated with industry experts	3.4	5.0	119	2.4	3.8	90	3.8	15.4	97	6.4	16.4	40	13.1	22.3	11
Other activities[a]	3.0	2.2	4	7.7	10.7	3	11.7	10.1	4	4.0	-	1	70.0	-	1

[a] Other activities included: attending activities in Department of Education; advisory council; professional leadership development activities; advisory boards and services; workshops and training programs; observing industry; and graduate studies.

Adjunct faculty worked about seven days per year in industry, compared with full professors, who worked in industry slightly under five days each year. Adjunct faculty also worked more heavily as consultants on teaching and research projects (*M*= 24.7 projects reported in the previous year), whereas those in other faculty ranks ranged from 2.9 to 4.4 consulting projects.

Adjunct faculty reported more collaborations with other educators than their counterparts, with 55 collaborations, compared with 22.4 collaborations for assistant professors and 26.7 for instructors. Full professors reported about 20 collaborations and associate professors reported about 17.6 collaborations in the previous year.

The reported professional conference attendance revealed a similar pattern. Annual conference attendance of adjunct faculty was almost twice that of other faculty. Conference attendance reported by associate, assistant, and full professors was about four annually.

Adjunct faculty collaborated more with industry experts than their colleagues in the other faculty ranks. Adjunct faculty reported collaborating with industry experts 13 times per year, full professors 3.4 collaborations, associate professors 2.4, and assistant professors 3.8. Instructors exceeded the full, associate and assistant professors responding, with an average of 6.4 industry collaborations annually.

Professional Time and Academic Rank

Table 12 summarizes the use of professional time by academic rank. All faculty provided in-service education to teachers at school sites; adjunct faculty provided the most at 8 hours per week, while assistant, associate, and full professors provided about 3 hours per week. Instructors provided only 1.4 hours of in-service instruction per week.

Full professors spent about three hours per week supervising student teachers at schools, whereas faculty at the lower ranks spent at least twice that amount of time—about six hours for an instructor and seven for an adjunct professor. Instructors spent the least amount of time in scholarly activity, compared with the other teacher educators. Adjunct faculty spent the most time in consulting and publishing activity (6.7 hours). Of all the faculty ranks, associate professors spent the most time in service to their university (9.3 hours weekly), compared with full professors (6.9 hours) and assistant professors (5.7 hours). The adjunct faculty and the instructors, who are not typically expected to give the same amount of service to their institution, reported 7.1 hours and 3.5 hours weekly, respectively.

Table 12
Professional Time Spent (in hours) by Academic Rank

Professional Activity	Professor			Associate Professor			Assistant Professor			Instructor/ Lecturer			Adjunct		
	M	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*	*M*	*SD*	*N*
Instruction (includes class preparation, advising, grading)	24.1	13.8	106	5.1	12.1	76	25.6	13.5	9	21.8	10.8	34	27.3	20.7	9
Other service to college/ university (committee)	6.9	6.3	105	9.3	17.3	75	5.7	4.4	85	3.5	5.4	30	7.1	18.9	7
Scholarships (research, writing)	6.8	10.7	103	6.9	9.1	73	6.0	5.7	87	2.7	5.6	32	6.6	18.3	8
Clinical supervision (on-site with student teachers)	3.1	4.1	106	4.5	5.3	75	5.2	9.7	86	6.0	6.6	34	7.4	18.5	8
Providing in-service education (i.e., work-shops)	3.0	5.4	105	3.3	5.1	74	3.4	7.9	86	1.4	2.1	33	8.0	18.7	8
Consulting or commercial publication	2.3	2.9	103	2.4	4.4	74	3.2	8.7	81	1.5	2.8	33	6.7	17.9	8
Other activities [a]	14.6	11.5	30	6.1	6.2	16	6.2	8.1	16	6.0	7.0	7	12.2	24.5	4

[a] Other activities include: meeting; general administration; working with students; directing research grants; staff development; extension and recruitment; and custom program design

Gender and Professional Time

Differences in estimates of professional time expenditure by gender are summarized in Table 13. Most differences in the hours spent weekly on professional activities between male and female CTE teacher educators are small. However, female faculty spent more time (*M*=26.7 hours) in instruction-related activity than did the male faculty (*M*=22.9 hours). On the other hand, male faculty spent more time each week in traditional scholarly activity such as research and publishing (*M*=7.3 hours) than female faculty (*M*=4.9 hours). Male faculty spent 1.3 more hours weekly on commercial publication and consulting, while female faculty averaged almost an hour more per week in service to their institution.

Gender and Professional Development Activity

Table 14 presents the comparisons between male and female CTE teacher educators' annual professional development activities by which they kept current in their field. As with professional time estimates, many of the differences between the professional development activities of male and female teacher educators were relatively small. For example, males read 39 articles per year and females read almost 38 articles per year.

As consultants, males were involved with about 4.6 teaching and research projects per year, and females were involved with 3.7. Males attended an average of eight workshops or seminars each year, while females attended about seven.

One of the larger differences between the genders was in the interactions with industry. Male teacher educators worked about 16 days in industry and reported about 5 collaborations with industry experts per year, whereas women worked in industry an average of about 5 days and reported about 2 collaborations with industry experts per year.

Women collaborated with other educators slightly more (*M*=23.3 times) than their male counterparts (*M*=20.5 times), and males attended 1.4 more conferences annually than females. Men reported many more "other" activities, consuming almost 22 days annually, compared with about 6 days of miscellaneous professional activity for women.

Table 13
Professional Time Spent (in hours) by Gender

Professional Activity	Male			Female		
	M	*SD*	*N*	*M*	*SD*	*N*
Instruction (includes class preparation, advising, grading)	22.9	12.8	170	26.7	13.5	143
Scholarship (research, writing)	7.3	10.9	164	4.9	5.7	138
Service to college/university (committee)	6.5	6.7	162	7.3	13.4	139
Clinical supervision (on-site with student teachers)	4.5	8.3	168	4.4	5.7	140
Providing in-service education (i.e., workshops)	3.5	6.9	167	2.7	6.1	138
Consulting or commercial publication	3.2	6.5	166	1.9	5.5	132
Other activities [a]	11.7	11.9	45	7.2	8.9	28

[a] Other activities include: meeting; general administration; working with students; directing research grants; staff development; extension and recruitment; and custom program design.

Table 14
Professional Development Activities of Teacher Educators by Gender

Professional Development Activity	Male			Female		
	M	*SD*	*N*	*M*	*SD*	*N*
Number of articles read in the previous year	39.0	44.0	192	37.8	48.9	163
Number of times respondent had collaborated with other educators	20.5	37.3	191	23.3	42.8	157
Number of days worked in industries to gain experience	16.0	110.1	190	4.5	25.1	164
Number of workshops or seminars the respondent had attended	8.2	10.7	192	6.9	6.4	164
Number of times the respondent had collaborated with industry experts	5.3	14.6	192	2.1	3.6	164
Number of teaching or research projects the respondent had been involved in as a consultant	4.6	7.5	192	3.7	14.1	164
Number of professional conferences the respondent had attended	4.6	7.8	192	3.2	2.1	164
Other activities [a]	21.8	28.2	5	5.9	7.5	8

[a] Other activities include: meetings; general administration; working with students; directing research grants; staff development; extension and recruitment; and custom program design.

CONCLUSIONS

Several demographic changes were found when comparing responses of these CTE teacher educators to those who responded to the 1990 study of Lynch:

- An average CTE teacher educator is a 50-year-old white male who is a tenured full professor with 16 years of experience in higher education.
- The percentage of women employed as CTE teacher educators, as reported in this study, increased sharply between 1990 (29%) and 2000 (46%).
- While fewer CTE teacher educators held a doctorate than 10 years previously, more CTE teacher educators hold a Ph.D. Fifty-five percent held a Ph.D. in 2000, but only 45% had a Ph.D. in 1990. On the other hand, the number of teacher educators holding the Ed.D. decreased from 41% in 1990 to 26% in the current study.
- Fewer faculty were tenured in 2000 than in 1990. Only about 54% were tenured in 2000, whereas 68% were tenured 10 years ago.
- Fewer faculty are also employed on the tenure-track. In 2000, 23% of the CTE teacher educators were not on tenure-track, whereas only 13% were employed outside tenure track in 1990.
- The average workweek for a CTE teacher educator has grown from 50 hours, 10 years ago, to about 58 hours in 2000—a 16% increase.
- Instruction and its related activities consume the largest percentage of a teacher educator's time (about 25 hours per week) which was similar to the 23 hours reported in 1990. Therefore, the increased workweek was largely due to activities outside the area of instructional activity.

This sample of CTE teacher educators gave the following perceptions of their programs and courses:

- Traditional approaches, such as university coursework, local school-based teaching and learning centers, solution oriented investigations, and seminars, are considered either "effective" or "most effective" and, therefore, most used in practice.
- CTE teacher educators did not agree on the effectiveness of increasing standards for teacher preparation programs.
- Most teacher educators were not convinced that technology-based course delivery is effective for CTE teacher preparation.
- The most frequently taught undergraduate and graduate course was pedagogy. Within the pedagogy course, the highest percentage of time at the graduate level was spent teaching the integration of academic and technical skills. The largest proportion of time at the undergraduate level was spent teaching collaborative inquiry.

CTE teacher educators at all levels contribute in various ways to their programs through professional activities:

- The non-tenure-track faculty had a level of service to the university/college that was similar to their tenure-track colleagues. For traditional scholarly activities, such as research and writing, the tenured and tenure-track faculty devote almost twice as much time as the non-tenure-track faculty.

- Faculty at all levels participate in professional development. Adjunct faculty worked about seven days per year in industry, compared with full professors, who worked in industry slightly under five days each year.

- Male faculty spent almost twice as much time weekly on academic publications and consulting than females, while females averaged one hour more per week in service to their institutions than males.

- Male teacher educators worked about three times as much in industry and had twice as many collaborations with industry as females. Males also spent more time in scholarly activities.

DISCUSSION AND IMPLICATIONS

Demographic Trends

Several interesting trends are brought to light by these data. First, with the average age of a CTE teacher educator being just over 50 and the largest of these categories being the tenured professor, a flurry of retirements is likely at the end of this decade, if not before. Ten years ago, Lynch reported that an average CTE teacher educator was 49, thus subsequent retirements may have contributed to the decline of the CTE teacher preparation programs in the 1990s. Considering the decline in the number of programs at the end of the 20th century, preserving CTE teacher preparation programs in a time of secondary teacher shortages is a very real concern.

Demographically, the CTE teacher educators seemed similar to the larger population of higher education faculty. Cockrell, Mitchell, Middleton, and Campbell (1999), summarized studies of The American Association of Colleges for Teacher Education, which has sponsored the Research About Teacher Education (RATE) studies since 1987. These studies have reported that teacher educators are at least 90% white and mostly male. In 1990, Goodlad noted that teacher preparation programs seemed to have problems with both minority recruitment and teacher preparation for the multicultural classrooms. Statistics from National Center on Education Statistics (NCES) in 1992 reported that the higher education faculty were 89% white, 4.9% African American, and 2.5% Hispanic. The current study finds CTE teacher educators are 90% white, 4% African American, and 3% Hispanic.

Fewer CTE teacher preparation faculty in the present sample had tenure and fewer held the doctorate compared with 10 years ago. In 1992, NCES reported that 57.4% of all higher-education faculty were tenured and 52% of all higher education faculty held doctoral degrees. In the present study, 54% of the responding CTE teacher educators reported that they held tenure and 81% held the doctoral degree. This is in contrast to 1990, when 86% of the CTE teacher educators held a doctorate and 68% held tenure (Lynch, 1990). Today's CTE teacher educators' jobs may not be as stable as in the past.

In an earlier study, Bruening, et al. (2001) showed an average of two Full Time Equivalent (FTE) faculty and three adjuncts per CTE teacher preparation program. Figure 5 in the present study indicated that there are almost three tenure-track faculty for each non-tenure-track faculty member. Presently, about 23% of the CTE teacher educators were non-tenure-track. Ten years ago, only 13% of the CTE teacher educators had similar appointments (Lynch, 1990). The reported overall percentages of non-tenure-track faculty vary but, nationwide, an increasing proportion of higher education faculty are not being hired in tenure-track positions. In comparison, Leatherman (2001) found that about 40% of the faculty were non-tenure-track.

Townsend (2000) surveyed various departments in the humanities and found that the range of full-time non-tenure-track faculty ranged from 4.3-12%, depending on the department. American Association of University Professors (1993) stated that about one-half of the nation's higher education faculty are non-tenure-track. A U.S. Department of Education survey from 1987 found that 38% of higher education faculty were non-tenure-track (Mooney, 1992). In addition, Goodlad (1990) noted a general trend that faculty members who work more closely with student teachers are more likely to be at the lower end of the faculty ranks. The CTE teacher preparation

programs did not seem to use more non-tenure-track faculty than other academic areas. Non-tenure-track faculty may be more transient than regular faculty and not invested in the goals of the program. Some concern exists that an increasing reliance on faculty outside the tenure track is detrimental to teacher preparation programs over the long term (Mooney, 1992).

Professional Development

The present study suggests that the traditional models for pre-service professional development remain strong. The favored approaches by teacher educators at both the pre-service and in-service levels are those that involve traditional face-to-face teaching or learning in a school-based setting. In contrast, Goodlad (1999) warned that presently used semester-long student teaching is ineffective when developing new teachers.

Although the percentage of this country's colleges and universities offering distance education courses increased 33% between 1995 and 2000 (Carnevale, 2000), the teacher educators surveyed in this study did not seem convinced that the technology-based delivery models (i.e., Web-based) could be used effectively. In fact, the American Association of University Professors (2000) noted that technology use and distance education have added to the workload of faculty, and have also been a factor in the increased reliance on non-tenure-track faculty. Thus, professional development strategies and approaches need to be focused on providing teacher educators with the skills needed to integrate effective Web-based technology into their teaching. The use of new technologies could provide the catalyst to initiate other teacher education reforms.

When planning this study, there was a general concern that all teacher educators did not have access to professional development. For example, the non-tenure-track faculty might not have the same opportunities as their tenure-track colleagues, or they may lack a long-term commitment to their programs. The data presented in this study suggest that CTE teacher education faculty at all levels participate in professional development activities. Non-tenure-track faculty appeared to be in the mainstream of professional activity, even though they spent less time in traditional scholarly activity. Non-tenure-track faculty seemed to bring more workplace connections and collaborative work to their institutions.

Non-tenure tenure-track faculty members in the present study spent the most time engaged in scholarly activity, whereas the non-tenure-track faculty (i.e., adjunct faculty) spent the least. Although deep divisions along gender lines did not exist, male teacher educators spent more time on traditional scholarly activity, while females spent slightly more time in service to their institutions—a pattern supported by earlier research (U.S. Department of Education, 1991).

Teacher educators in this study spent little time collaborating professionally with industry, but spent more time collaborating with other educators. Although an optimal level of collaboration has not been identified, collaboration—especially that which is designed to bring about fundamental change to teacher preparation—can be difficult to accept by teaching professionals, since they are traditionally isolated as a profession (Cuban, 1999; Goodlad, 1990; Trubowitz, 2000).

Professional Activity

In 1990, Lynch reported an average workweek of 50 hours. In December of 1993, the American Association of University Professors stated that the average faculty workload ranged from 45 to 55 hours per week, which included all activities related to teaching and scholarship. The teacher educators in the present study reported (Table 6) an average workload of about 58 hours per week for all job-related activities, with an average of 42 hours devoted to teaching, clinical supervision, service to the university and scholarship. The 58-hour workweek represents a 16% increase over the previous 10 years. The CTE teacher educators in this study seem to be at the high end of the faculty workload to support their programs. When time and energy are spread over more activities, the proportion given to any one area declines (Goodlad, 1990).

Activities associated with teaching and students seemed to occupy the highest proportion of a teacher educator's time. The pattern noted by Goodlad (1990) holds true, with the faculty at higher ranks spending the least time working directly with student teachers. Although the current study did not document the course load of CTE teacher educators or their family responsibilities, the amount of time spent supporting instruction was similar for male and female teacher educators regardless of academic rank or tenure status. This major commitment to teaching often is not as heavily weighted in tenure decisions as scholarship, since its results are not as easily quantifiable (Cuban, 1999; Park, 1996). Some evidence exists in the literature that tenure models are changing (Chang, 2001) and that the traditional scholarship, teaching, and service may be joined by activities classified as "outreach" that will occupy an increasing proportion of a faculty member's time.

SUMMARY

With such a large proportion of CTE teacher educators reaching retirement age within 10 years, attention must be paid not only to preserving CTE teacher preparation programs, but also to ensuring that the programs are updated and viable. This challenge is compounded by the increasingly heavy workload of the CTE teacher educators, compared with national averages for other teacher educators. If plans are not put into place to replace these teacher educators in a more systematic way, a lack of doctoral-degree-holding professors could accelerate the reduction of CTE programs.

Teacher educators are 90% white—a statistic that has been unchanged for over 10 years. The lack of qualified minority teachers in the public schools has been cited as a problem for many years (Colford, 2000; Goodlad, 1990; National Education Association, 1997). The lack of a pipeline for minorities into academia is a concern. While minority students comprise 36 percent of our nation's K-12 student population overall, only 13 percent of our present K-12 teachers are minorities. It is conceivable that more minority teacher educators could lead to recruitment of more minorities into CTE teacher preparation programs.

At this point, the teacher educators who responded to this study spent relatively small proportions of their time collaborating with industry or on topics revolving around school change. The non-tenure-track faculty seemed to bring a good portion of this collaborative activity to their institutions. It is unclear how the non-tenure-track faculty influences the CTE teacher preparation curriculum to reflect the skills currently important to the workplace (Copa & Ammentorp, 1998; National Board for Professional Teaching Standards, 1997; Naylor, 1997; Phelps, 1998; Sargent & Ettinger, 1998; U.S. Department of Education, 1997).

Although contrary to findings reported by educational reformers such as Goodlad (1990), the responding teacher educators perceived traditional approaches, such as university coursework and seminars, to be "effective" or "most effective," and as those most used in their practice. School-based professional development was considered an important approach in preparation of new teachers at both the graduate and undergraduate levels. Whether or not these approaches best serve the needs of new teachers will be the driving force behind any change that needs to occur.

Important questions still must be answered. What curricular elements should comprise a CTE teacher preparation program? How will professional development of CTE faculty support education reform? What are the most beneficial collaborations for CTE faculty? What kind of professional development is best for CTE faculty in higher education over their careers? What is the long-term impact of increasing the proportion of non-tenure-track faculty? How can the proportion of minority CTE teacher educators be increased? How can we preserve existing CTE teacher preparation programs? Answers to these questions will help improve understanding of CTE teacher educator's status and will serve as a foundation for planning and strengthening CTE teacher education programs in the future.

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APPENDIX A

Characteristics of CTE Teacher Educators

Professional Development Approaches

A 1. What professional development delivery models do you believe are most effective for pre-service teachers? *Please* place a check **(X)** mark on whether it is Most Effective (**ME**), Effective (**E**), Undecided (**UD**), Marginally Effective (**ME**), Not effective **(NE**) Don't Know (**DK**), or Not Applicable (**NA**).

Professional Development Delivery Model	ME (5)	E (4)	UD (3)	ME (2)	NE (1)	DK (8)	NA (9)
1. Developing extensive school and university partnership beyond student-teaching relationships (such as Tech Prep, School-to-Work)	5	4	3	2	1	8	9
2. Establishing professional development schools (more than 50% of course work taught in field-based settings)	5	4	3	2	1	8	9
3. Development of collaborative teacher teams that foster change at the local level by utilizing more release time	5	4	3	2	1	8	9
4. Collaborative inquiry of teachers and student teacher working together to solve student learning problems	5	4	3	2	1	8	9
5. Increase standards and expectations of pre-service certification programs	5	4	3	2	1	8	9
6. Web-based courses that meet state certification standards	5	4	3	2	1	8	9
7. Application of theory in practice at a real school settings under supervision (such as internship)	5	4	3	2	1	8	9
8. Others (Please specify) _____	5	4	3	2	1	8	9

A 2. What professional development approaches do you believe are most effective for pre-service education? *Please* place a check **(X)** mark on whether it is Most Effective (**ME**), Effective (**E**), Undecided (**UD**), Marginally Effective (**ME**), Not effective **(NE**) Don't Know (**DK**), or Not Applicable (**NA**)

Teaching and Learning Approach	ME (5)	E (4)	UD (3)	ME (2)	NE (1)	DK (8)	NA (9)
1. Workshops	5	4	3	2	1	8	9
2. Seminars	5	4	3	2	1	8	9
3. External consultants	5	4	3	2	1	8	9
4. Learning academy	5	4	3	2	1	8	9
5. Traditional university course work	5	4	3	2	1	8	9
6. Solution-oriented investigations, such as action research	5	4	3	2	1	8	9
7. Local school-based teaching/learning centers	5	4	3	2	1	8	9
8. Web-based courses	5	4	3	2	1	8	9
9. Computer-based instruction	5	4	3	2	1	8	9
10. Video courses (Satellite or Pictel™)	5	4	3	2	1	8	9
11. Other (Please Specify) _____	5	4	3	2	1	8	9

A 3. What professional development approaches do you believe are most effective for in-service education? *Please* place a check **(X)** mark on whether it is Most Effective (**ME**), Effective (**E**), Undecided (**UD**), Marginally Effective (**ME**), Not effective **(NE**) Don't Know (**DK**), or Not Applicable (**NA**)

Teaching and Learning Approach	ME (5)	E (4)	UD (3)	ME (2)	NE (1)	DK (8)	NA (9)
1. Workshops	5	4	3	2	1	8	9
2. Seminars	5	4	3	2	1	8	9
3. External consultants	5	4	3	2	1	8	9
4. Learning academy	5	4	3	2	1	8	9
5. Traditional university course work	5	4	3	2	1	8	9
6. Action research	5	4	3	2	1	8	9
7. Sabbaticals	5	4	3	2	1	8	9
8. Local school-based teaching/ learning centers	5	4	3	2	1	8	9
9. Web-based courses	5	4	3	2	1	8	9
10. Computer-based instruction	5	4	3	2	1	8	9
11. Video courses (Satellite or Pictel™)	5	4	3	2	1	8	9
12. Other (Please Specify) _____	5	4	3	2	1	8	9

B. To what extent does your university curricula and philosophies incorporate the following activities and practices in your pre-service program? Do you believe it is *Nearly All of the Time* (**NAT**), *Most of the Time* (**MT**), *Some of the Time* (**ST**), *Rarely* (**R**), or *Not Used* (**N**)?

Activity and Practice	NAT	MT	ST	R	N
1. Provide examples of academic and technical integration	5	4	3	2	1
2. Provide examples of community-based learning	5	4	3	2	1
3. Show models of institutional partnerships with business and industry	5	4	3	2	1
4. Involve business and industry in the certification process	5	4	3	2	1
5. Work with business and industry to set standards and competencies	5	4	3	2	1
6. Provide alternative strategies for certification	5	4	3	2	1
7. Involve students in academic and technical integration	5	4	3	2	1
8. Develop new strategies to reshape teacher education programs	5	4	3	2	1

(*Continued from page 4)*

Activity and Practice	NAT	MT	ST	R	N
9. Use a standards-based education model	5	4	3	2	1
10. Involve students in community-based learning	5	4	3	2	1
11. Establish measurable outcomes for courses taught	5	4	3	2	1
12. Work individually with students to develop their personal goals and outcomes	5	4	3	2	1
13. Involve students and teachers in learning partnerships with business and industry	5	4	3	2	1
14. Involve students in collaborative inquiry	5	4	3	2	1
15. Involve students in authentic contextual assessment	5	4	3	2	1
16. Develop student cooperative learning groups	5	4	3	2	1
17. Others (_____)	5	4	3	2	1

Comments:_____

_____

_____

Professional Activities of Teacher Educators

C. Keeping Current. One of the important things for a teacher educator is keeping current in academics and other related activities in his/her field of expertise. **In the past year,** how frequently have you been involved in keeping current in the following areas of academic activities? ***Please indicate*** your closest approximation.

Activity	Number
1. *Number of professional articles* you have read in the past year	
2. *Number of days* you have worked in industry to gain experience	
3. *Number of projects* in teaching or research you have been involved with as a consultant	
4. *Number of times* you have collaborated with other educators	
5. *Number of workshops and seminars* you have attended	
6. *Number of professional conferences* you have attended	
7. *Number of times* you have collaborated with industry experts	
8. Other (_____)	

D. Professional Activities : For the past year*, please estimate* the time (to the nearest half hour) spent weekly on:

Professional Activity	Time spent (*hour/s*)
1. Instruction (include class preparation, advising, grading)	
2. Providing in-service education (i.e. workshops)	
3. Clinical supervision (on-site with student teachers)	
4. Scholarships (research, writing)	
5. Consulting or commercial publication	
6. Other service to college/university (committees)	
7. Other (_____)	

E. Teaching Skill Expertise

E. 1. *Please place* an **(X)** in the box next to the **graduate** and **undergraduate** course you most often teach (*we realize that the content could vary considerably from these brief titles*).

Course	Graduate	Undergraduate
	Please Check **ONLY ONE BOX** in each column:	
1. Pedagogy/methods	1	1
2. Program planning	2	2
3. Curriculum development	3	3
4. Leadership	4	4
5. Communication	5	5
6. Educational Philosophy	6	6
7. Technical skills	7	7
8. Computer skills	8	8
9. Seminar	9	9
10. Introduction to major	10	10
11. History	11	11
12. None	12	12
13. Others (_____)	13	13

E.2. From the course/s indicated in the previous question (Section E1), identify the percentage of time you spend teaching the following subject matter/skills in the course/s you teach most frequently. *Please estimate the* ***percentage of time*** spent on the subject matter/skills **for your one graduate** and **one undergraduate course**.

Subject matter/skills	% of Course time for Pre-service (graduate)	% of Course time for In-service (undergraduate)
1. Integration of academic and technical skills	%	%
2. School and university partnerships	%	%
3. Standards	%	%
4. Community-based learning	%	%
5. Evaluation of learning/teaching	%	%
6. School change process	%	%
7. Computer application	%	%
8. Student verbal and written presentations	%	%
9. Cooperative learning	%	%
10. Mathematics (basic)	%	%
11. Collaborative inquiry	%	%

Totals should not exceed 100%

Demographic Information

F1. Please provide the following demographic information by either checking the box or writing the requested information in the space provided.

1. *Gender* (*Please* check **one**)

- ☐ Male
- ☐ Female

2. Age (yrs.) ☐

3. Ethnic Identity (*Please* check **one**)

- ☐ African American
- ☐ Asian American
- ☐ Hispanic
- ☐ Native American/Alaskan
- ☐ Pacific Islander
- ☐ White
- ☐ Other _____

4. Professional Rank (*Please* check **one**)

- ☐ Professor
- ☐ Associate Professor
- ☐ Assistant professor
- ☐ Instructor/lecturer
- ☐ Adjunct

5. Tenure (*Please* check **one**)

- ☐ Tenured
- ☐ Not tenured, but tenure track
- ☐ Not tenure track

6. Highest degree earned (*Please* check **one**)

- ☐ Ph.D.
- ☐ EdD/DEd
- ☐ MA, MS, MBA, MAT
- ☐ BA, BS, BEd

7. Please indicate the approximate proportion (%) of time you spend in outreach, residential instruction, and research.

Outreach (% of time) ☐

Residential Instruction (% of time) ☐

Research (% of time) ☐

Service to college/university (% of time) ☐

8. In which ***year*** did you receive your highest degree?

☐

9. What is ***the title of the program*** from which you received your highest degree?

☐

10. What is the ***total years of your employment*** in higher education? ☐

11. What is the ***total number of years of employment*** at present institution ☐

Thank you very much for taking time to complete this important study.

The information you have provided will be of immense value to us as we frame new models for career and technical education.

Follow-up Code: _____

Please return the form to 323 Ag Admn Bldg, University Park,

PA 16802, Attn: C. Hodes, or Fax to 814-863-4753

APPENDIX B

Participation of Respondents by Areas of Highest Degree Earned

Area in which highest degree earned	Number of respondents	Percent
Agricultural Education/Extension Education	55	15.9
Vocational Education/Continuing Vocational Education	36	10.4
Adult and Technical Education/Vocational Technical Education	26	7.5
Education Administration/Education Management	25	7.2
Curriculum & Instruction/Administration, Curriculum	24	6.9
Industrial Science/Industrial Education/Industrial Art Education/Industrial Technical Education	22	6.4
Education/Psychology & Education/Education Psychology/Education Leadership	22	6.4
Vocational FCS	18	5.2
Business Education	18	5.2
Home Economics/Home Economics Education	14	4.0
Technology Education	11	3.2
Human Resource	11	3.2
Occupational Education	8	2.3
Extension Education/Adult Education	6	1.7
Vocational Industrial Education	5	1.4
Human Ecology/Educational Human Resource Development	5	1.4
Agriculture and Occupational Education	3	0.9
Computer-based Multi media/Computer and Information Science	3	0.9

Appendix B (Continued)

Area in which highest degree earned	Number of respondents	Percent
Counselor Education/Counseling Education	3	0.9
Family Study/Individual & Child Development	3	0.9
Nutrition	2	0.6
Nutrition and Bio-diversity	2	0.6
General Curriculum/Curriculum Development	2	0.6
Cultural Studies	2	0.6
Interdisciplinary Education	2	0.6
Elementary Education (28)	2	0.6
Workforce Education (32)	2	0.6
Child Development & Nursery Education (33)	2	0.6
English/Elementary Education (36)	2	0.6
Humanities/Sociology (37)	2	0.6
Educational Policy	1	0.3
Science Education (29)	1	0.3
Clothing & Textile (30)	1	0.3
Landscape Horticulture (31)	1	0.3
Political Science (34)	1	0.3
Research/Statistics (35)	1	0.3
Community College Leadership	1	0.3
Civil Engineering	1	0.3

APPENDIX C
Respondents by State, Institution, and College/Department

State	Institution	College/Department	Number Respondents
Alabama			
	Auburn University	Curriculum & Teaching	1
		Curriculum & Instruction	2
Arkansas			
	Harding University	Family & Consumer Sciences	1
	Southern Arkansas University	Agriculture	2
	University of Central Arkansas	Academic Technologies	1
	Henderson State	Family & Consumer Sciences	2
	University of Arkansas	Vocational & Adult Education	3
	Arkansas State University – Jonesboro	Management, Marketing & Business Systems	1
Arizona			
	University of Arizona	Family & Consumer Sciences	1
California			
	The Masters University	Home Economics	1
	California State University, Fresno	Child, Family & Consumer Sciences	1
	San Francisco State University	Consumer & Family Studies	1
Colorado			
	Colorado State University	School of Education	5
		Manufacturing Technology & Construction	2
Connecticut			
	University of Connecticut	Curriculum & Instruction	1
	Central Connecticut State University	Technology Education	2

Appendix C (Continued)

State	Institution	College/Department	Number Respondents
Delaware			
	University of Delaware	Individual & Family Studies	7
Florida			
	University of Florida	Agricultural Education, Communication & 4-H Development	2
Georgia			
	University of Georgia	Occupational Studies	9
	Fort Valley State University	Agricultural Instruction	1
	Georgia Southern University	Family & Consumer Sciences	1
Hawaii			
	University of Hawaii – Manoa	Teacher Education & Curriculum Studies	1
Idaho			
	Idaho State University	School of Human Resource Training & Development	3
	University of Idaho	Division of Adult, Counselor & Technology	4
		School of Family & Consumer Sciences	1
Illinois			
	Northern Illinois	School of Family, Consumer & Nutrition	1
	Western Illinois University	Agriculture	1
	Eastern Illinois University	School of Technology	2
	Illinois State University	Marketing/Business Teacher Education	2
		Family & Consumer Sciences	1
	Southern Illinois University	Agriculture Education	3

Appendix C (Continued)

State	Institution	College/Department	Number Respondents
Indiana			
	Indiana State University	Family & Consumer Sciences	1
		Industrial Technology Education	1
	Ball State University	Business & Marketing Education	1
		Industry & Technology.	1
	Purdue University - Lafayette	Industrial Technology	1
		Agricultural Education	3
Kansas			
	Kansas State University	Secondary Education	2
	Fort Hays State University	Technology Studies	5
Kentucky			
	Eastern Kentucky	Technology	1
		Family & Consumer Sciences	1
		Business	1
	Western Kentucky University	Agriculture	1
		Industrial Technologies	1
	University of Kentucky	Curriculum & Instruction	1
Louisiana			
	Louisiana State University	School of Vocational Education	4
	Nichous S. U.	Family & Consumer Sciences	2
	Northwestern S. U. of LA	Family & Consumer Sciences	1
	Grambling State University	Industrial & Engineering Technology	1
	Louisiana Tech. University	College of Applied & Natural Sciences	2
	University of Louisiana	Family & Consumer Sciences	1

Appendix C (Continued)

State	Institution	College/Department	Number Respondents
Massachusetts			
	Framingham State University	Family & Consumer Sciences	1
Maine			
	University of Southern Maine	Technology Department	1
Michigan			
	Northern Michigan University	Industrial Technologies	1
		College of Business	1
	Eastern Michigan University	Business & Technology Education	1
Minnesota			
	Minnesota State University	Family & Consumer Sciences	1
	Winona State University	Administrative Information Systems	2
	Bemidji State University	Industrial Technology	3
Missouri			
	College of the Missouri	Agriculture	1
	University of Missouri- Columbia	Council for CTE	1
		Agricultural Education	4
	Lindenwood University	Education	2
	North West Missouri State University	Family & Consumer Sciences	1
	Evangel University	Business & Economics	2
	Central Missouri State University	Computer & Office Information Systems	1
		Technology & Occupational Education	3
	Southwest Missouri State University	Bachelor of Science Education (BSE)	1
		Agriculture	1

Appendix C (Continued)

State	Institution	College/Department	Number Respondents
Mississippi			
	The University of Southern Mississippi	Technology Education	3
	Mississippi State University	Agricultural Information Science & Education	3
Montana			
	Montana State University	Agricultural Education	4
		Health & Human Development	1
North Carolina			
	North Carolina A & T State	Business Education	6
		Agricultural Education, Economics & Rural	2
	North Carolina State University	Agricultural & Extension Education	8
		Mathematics, Science & Technology Education	1
	Appalachian State University	Technology	1
	East Carolina University	Business, Vocational & Technical Education	3
North Dakota			
	North Dakota State University	School of Education	1
Nebraska			
	University of Nebraska	Agricultural Leadership, Education & Communication	3
	University of Nebraska – Kearney	Family and Consumer Sciences	2
	Chadron State College	Agricultural & Industrial Technology	1

Appendix C (Continued)

State	Institution	College/Department	Number Respondents
New Hampshire			
	Keene State College	Technology Design & Safety	1
	New Hampshire College	Business Education	1
	University of New Hampshire	Education	1
New Mexico			
	New Mexico State University	Agricultural & Extension Education	3
	Eastern New Mexico University	Family & Consumer Sciences & Agriculture	2
Nevada			
	University of Nevada, Reno	Curriculum & Instruction	1
New York			
	Marymount College	Human Ecology & Education	1
	Queens College of CUNY	Family, Nutrition & Exercise Sciences	1
	Syracuse University, NY-Oswego	Vocational Teacher Preparation	11
Ohio			
	The Ohio State University	Human Development & Family Science School of Physical Activity & Educational Services/Agricultural Education	1 2
	Ohio Northern University	Technology	3
	University of Akron	Family and Consumer Sciences Curricular and Instructional Studies	1 1
	University of Toledo	Career and Technical Education	2
	Mount Vernon Nazarene College	Business Administration, Family & Consumer Sciences	1

Appendix C (Continued)

State	Institution	College/Department	Number Respondents
Ohio			
	Youngstown State University	Computer Science & Information Systems	1
	Bluffton College	Family & Consumer Sciences	1
	Wright State University	Workforce Education Center	4
	Ashland University	Teacher Education	1
	Bowling Green State University	Visual Communication & Technology Education	1
Oklahoma			
	University of Central Oklahoma	Occupational & Technology Education	3
	Oklahoma Panhandle State	Agricultural Education	1
	East Central University, OK	Family and Consumer Sciences	1
	Northeastern State University, OK	Department of Industry	3
	Southwestern Oklahoma State	Technology	3
	Oklahoma State University	Agricultural Education, Communication, 4-H & Youth Development	1
		Curriculum, Education & Leadership	1
Oregon			
	Oregon State University	Agricultural Education	2
Pennsylvania			
	Penn State University – University Park	Workforce Education and Development	5
		Agricultural & Extension Education	1
	Bloomsburg University	Business Education & Office Information Systems	1
	Delaware Valley College	Education	1
	Gwynedd Mercy College	School of Business & Computer Sciences	1

Appendix C (Continued)

State	Institution	College/Department	Number Respondents
Pennsylvania			
	Robert Morris College	Education and Computer Information Systems	4
	Millersville University of PA	Department of Industry & Technology	7
	Indiana University of PA	Center for Vocational Personnel Preparation	5
	Marywood University	Nutrition and Dietetics	1
South Carolina			
	Clemson University	Biology Instruction & Agricultural Education	4
	South Carolina State University	Family & Consumer Sciences	3
	Winthrop University	Curriculum & Instruction	2
South Dakota			
	South Dakota State University	Human Development, Consumer & Family Studies	2
Tennessee			
	Middle Tennessee State	Engineering Tech. & Industrial Studies	1
		School of Agribusiness & Agrisciences	1
		Human Sciences Department	1
	The University of Tennessee	Agricultural & Extension Education	3
		Human Resource Development	2
		Family & Consumer Sciences	1
		Agriculture & Natural Resources	1
	University of Memphis	Consumer Science & Education	1
	Tennessee Technological University	School of Human Ecology	1
	East Tennessee State University	Applied Human Sciences	1

Appendix C (Continued)

State	Institution	College/Department	Number Respondents
Texas			
	Texas Tech University	Agricultural Education & Communication	3
		Education, Nutrition & Rest/Hotel Mgt.	4
		Human Sciences	1
	Lamar University	Family & Consumer Science	2
	Sam Houston State University	Agricultural Sciences & Technology	1
	Stephen F. Austin State University	Human Sciences	1
	Texas Woman's University	Family Sciences	1
	Tarleton State University	Agricultural Services & Development	4
	Southwest Texas State University	Human Sciences	1
		Family & Consumer Science, Agriculture & Occupational Education	6
	Texas A & M University	Occupational Training & Development	1
	The University of Texas at Tyler	Technology	2
Utah			
	Utah State University	Business Information Systems	2
		Human Environments Department	1
		Agricultural Systems Technology & Education	1
	Brigham Young University	School of Technology	5
		Family Life & Home Economics Education	5

Appendix C (Continued)

State	Institution	College/Department	Number Respondents
Virginia			
	Virginia Tech	Agricultural Education	2
		Teaching & Learning	6
	Bridge Water College	Family & Consumer Sciences	2
	Old Dominion University	Occupational & Technical Studies	2
	Liberty University	Family & Consumer Sciences	1
Washington			
	Seattle Pacific University	Family & Consumer Sciences	1
	Central Washington	Family & Consumer Sciences	2
Wisconsin			
	University of Wisconsin	Business Education	1
		Department of Agricultural Education	1
West Virginia			
	Concord College	Division of Business & Economics	1
	Marshall University	Adult and Technical Education	1
	Shepherd College	Business Administration & Family & Consumer Sciences	1
	Fairmont State College	Office Administration/Business Education	2
		Family & Consumer Sciences	1
	WVU, Institute of Technology	Vocational Education	1
	Glenville State College	Division of Business	4
Puerto Rico			
	University of Puerto Rico – Mayaguez	Agricultural Education	2
		College of Industrial & Vocational Education	3

Note. Institution and Department could not be ascertained for 7 cases.

APPENDIX D

Reliability Coefficients for Scale for Selected Variables

Variable Scale	Variance	Cronbah's Alpha	Number of Items in Scale
1. Effectiveness of professional development delivery model	12.49	0.52	7
2. Effectiveness of teaching and learning approach (Pre-service)	22.93	0.66	10
3. Effectiveness of teaching and learning approach (In-service)	32.09	0.71	11
4. Frequency activities and practices in pre-service program	77.53	0.86	16

Note: Mean value of item scale could range from 1 through 5.