The Relationship Between Pennsylvania Career and Technical Instructors' Demographic Characteristics and Program Expectations for Students With and Without Disabilities

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Abstract

This study investigated the relationship between demographic characteristics of Pennsylvania career and technical education (CTE) instructors and program expectations for secondary students with and without disabilities. Respondents' gender, age, level of education, years in current position, years in education, and training in special needs (i.e. university coursework, continuing education credits, in-service) are reported. A quasi-experimental design using student case studies and non-random survey methods was used to explore instructors' perceptions of students' social integration, academic and occupational skill attainment, and postschool occupational employability. Significant effects were found for gender, age, and years in current position concerning students' fit socially, having similar academic attainment compared to others, and having the potential to be employed in the full range of jobs in the occupational area. Implications for future research and CTE training are discussed.

Transition has been a central theme in secondary special education for years. It has been specifically focused since the IDEA 1997 (P.L. 105-17), which extended the original transition mandate (IDEA 1990, P.L. 101-476) to include program planning and course of study considerations beginning at age 14, or earlier if appropriate, in individualized education plans (IEP) for all students with disabilities. While no stakeholder would argue the necessity and appropriateness of the transition mandate in the IDEA, there are several differing views concerning specifically what transition planning should involve (Phelps & Hanley-Maxwell, 1997). Equally, there are many opinions as to which educational curriculum offering is most appropriate for secondary students with disabilities (e.g. college prep, Tech Prep, or career and technical education [CTE] in occupational programming). Johnson, Stodden, Emanuel, Luecking, and Mack (2002) indicate that students with disabilities need to have access to a full complement of general education curriculum options, including access to career and technical education.

Career and technical education that focuses on occupationally specific training is an important course of study for students with disabilities (Harvey, 2001; Masters, Mori, & Mori, 1993; Schalock, Holl, Elliott, & Ross, 1992). Employment, quality of life, and school "staying power" concerning high school completion are benefits of CTE (Wagner, 1991). Research has shown that secondary level CTE provides students with disabilities relevant education; positive school experiences; limits dropout; and promotes success in postschool outcomes, including employment (Sarkees-Wircenski & Scott, 2003).

Career and technical education programs are serving a diverse student population in today's schools (Gray & Herr, 1995; NAVE, 2002). This diverse student population has challenged CTE educators concerning instruction (Clark & Kolstoe, 1995; Rojewski, 1991). Teaching to meet the needs of all students enrolled in CTE has been a major challenge facing the field (Kraska, 1996; Meers & Towne, 1997). Effective instruction encompasses adequate teacher preparation and a positive attitude to foster appropriate teaching-learning experiences for all students. This is essential in delivering effective occupational training in today's multifaceted CTE programs. Attitudes shape instructor's behavior which in turn translates into teacher interactions in the classroom.

Instructors' attitudes concerning students with disabilities have a direct relationship to the students' success in CTE occupational programs (McDaniel, 1982; Rowjewski, Pollard, & Meers, 1990). Good (1987) found teacher expectations were negatively affected by various student characteristics, including "various diagnostic or special education labels" (p. 34). Teachers were reported to have lower expectations for students labeled with disabilities than students who were not labeled (Gillung & Rucker, 1977). Recent studies concerning inclusion, teacher attitudes,

and effectiveness have concluded that significant differences still exist concerning students with disabilities and teachers' attitudes and perceptions of providing effective instruction (Cook, Tankersley, & Landrum, 2000; Treder, Morse, & Ferron, 2000). These findings validate the concern for effective instruction for students with disabilities in accessing general education.

Several studies have explored CTE educators' attitudes and expectations toward students with disabilities (Custer & Panagos, 1996; Harvey, 1999, 2000; Kleinle, 1988; Kraska, 1997; Minner, 1982; Rowjewski, Pollard, & Meers, 1990; Trott & Holton, 1996; Walters, 1986). Most researchers have reported a bias toward students with disabilities in relationship to instructional needs and CTE teachers' lack of preparation to meet those needs (Custer & Panagos, 1996; Harvey, 1999, 2000; Kleinle, 1988; Minner, 1982; Walters, 1986). Additionally, teacher demographic characteristics have been the subject of research as they relate to CTE teachers' attitudes and effectiveness. Walters (1986) reported that the demographic variables of years of occupational experience, coursework in special needs, years of teaching, and education level were significant factors influencing health occupational instructors' attitudes toward students with disabilities. Conversely, Okolo and Sitlington (1988) reported no significant effects on Iowa's CTE teachers' attitudes by demographic variables (i.e. occupational program area taught, level of education, training experiences, years teaching). Rowjewski, Pollard, and Meers (1990) reported that age, experience with special needs students, education level, and years of teaching experience were not factors in CTE teachers' attitudes toward students with disabilities.

Trott and Holton (1996) explored demographic variables of age, gender, and education level for postsecondary level technical educators. They concluded that only gender significantly influenced attitude, with females having a more positive attitude toward students with disabilities. Age, years of teaching, and education level were not found to be significant demographic variables as reported by Kraska (1997) in influencing CTE attitudes toward special needs students in Alabama CTE programs. Kraska (1997) recommended further research concerning CTE educators' attitudes toward special needs students. Other researchers share this opinion (Custer & Panagos, 1996; Harvey, 1999, 2000; Kleinle, 1988; Trott & Holton, 1996). More research is needed to fully understand the relationship between CTE teacher perceptions and attitudes as they relate to expectations of special needs students in secondary CTE. Further research is essential given the transition services mandate, the importance of curriculum choice, and the call for scientifically-based research in the field of education. Understanding CTE instructors' attitudes and perceptions of students with disabilities enrolled in secondary CTE occupational programs will assist in developing best practices for teacher education preservice and inservice programs.

Purpose of the Study

The purpose of this study was to explore the relationship between Pennsylvania career and technical educators' demographic characteristics and program expectations for students with and without disabilities. The influence of demographic characteristics on program expectations and postschool outcomes for secondary CTE participants was the focus. Respondents' gender; age; level of education; years in current position; years in education; and special needs training involving university coursework, continuing education credits (CEC), and in-service were explored. This study used a quasi-experimental design with student case studies with non-random survey methods. The student cases included specific educational labels, behaviors, and learning characteristics. Student cases were used to explore instructors' views of students' social integration, academic and occupational skill attainment, and postschool employability in the occupational area related to the respondent's CTE program. Differences among CTE educators' perceptions toward students with and without disabilities were explored. The student case studies included a student without a disability (control case) and five student cases with specified disabilities (comparison group). The disabilities cases included students with a: a) physical disability, b) specific learning disability, c) behavior disorder, d) mental retardation, and e) visual impairment (Harvey & Pellock, 2003). The following questions guided this investigation.

1. Are there differences between CTE educators' perceptions of secondary CTE program socialization, academic and occupational skill attainment, and employability of students with and without disabilities as identified by respondents' gender?
2. Are there differences between CTE educators' perceptions of secondary CTE program socialization, academic and occupational skill attainment, and employability of students with and without disabilities as identified by respondents' ages?

3. Are there differences between CTE educators' perceptions of secondary CTE program socialization, academic and occupational skill attainment, and employability of students with and without disabilities as identified by respondents' education level?
4. Are there differences between CTE educators' perceptions of secondary CTE program socialization, academic and occupational skill attainment, and employability of students with and without disabilities as identified by respondents' years in current positions?
5. Are there differences between CTE educators' perceptions of secondary CTE program socialization, academic and occupational skill attainment, and employability of students with and without disabilities as identified by respondents' years in education?
6. Are there differences between CTE educators' perceptions of secondary CTE program socialization, academic and occupational skill attainment, and employability of students with and without disabilities as identified by respondents' special needs training through university coursework?
7. Are there differences between CTE educators' perceptions of secondary CTE program socialization, academic and occupational skill attainment, and employability of students with and without disabilities as identified by respondents' special needs training through continuing education credits?
8. Are there differences between CTE educators' perceptions of secondary CTE program socialization, academic and occupational skill attainment, and employability of students with and without disabilities as identified by respondents' special needs training through in-service programs?

Methodology

Population and Sample

The Pennsylvania Department of Education's (DOE) *Pennsylvania Education Directory 2000* was used to randomly select seven secondary CTE sites in eastern and central Pennsylvania (PA) for this study. Sites were selected from all those listed (386 secondary schools) by the PA DOE. The population of interest included all secondary level CTE educators serving students in eastern and central PA in secondary occupational programs. Secondary level CTE occupational program areas identified by the PA DOE Bureau of Career and Technical Education used to identify CTE instructors included:

(a) Agriculture Education; (b) Business Education; (c) Health Occupations Education; (d) Marketing and Distributive Education; (e) Occupational Home Economics Education; (f) Trade and Industrial Education; and (g) Not Elsewhere Classified. The seven sites offered CTE occupational programs in eastern and central PA for students in grades 9-12. Four schools were located in central PA and three schools were located in eastern PA. One hundred twenty-seven CTE occupational instructors participated in the study. The participation rate for this study was 77% (eastern PA 82%; central PA 74%). Sixty-one respondents were CTE educators in eastern PA (48%) and 66 (52%) were CTE educators in central PA.

Instrumentation

The assessment instrument, *Student Characteristics and Career and Technical Education Instructional Expectations Assessment Survey,* consisted of four sections. Section I explained the research project. Section II included demographics questions (i.e. age, gender, etc.). Section III asked respondents to rate items based on case students' involvement in CTE using three subsections: Program Expectations, Program Modifications and Accommodations, and Youth Outcomes. This study focuses on four specific questions in Section III concerning respondents' perceptions of students' social fit in CTE, academic skill and occupational skill attainment, and postschool occupational employability. A 5-point Likert-type scale (1=strongly disagree with statement; 5=strongly agree with statement) was used to rate survey items. Section IV provided a comment section.

Case study vignettes were developed for the research project using case-based research methods. A case study for a student without a disability (control case) and five specific disability case studies (comparison group) were developed. All cases included background information with basic academic profiles and narrative descriptors of the students, including disability classifications and a statement of special needs. The cases for students with disabilities included: mobility limitation; legally blind; low reading comprehension; impulse control and hyperactivity; limited academic and behavior skills; and low IQ. The disability cases were grouped for comparison purposes in this study.

A two step validation process was used for the research instrument and methods. First, a jury panel of subject matter experts reviewed the instrument and all case study vignettes for content validation. Revisions were made based on feedback from the jury panel members. Secondly, a pilot test of the study was conducted with a CTE site in Pennsylvania willing to field test. The researchers revised the instrument and case study vignettes based on feed-

back from the pilot group (n=15). Reliability of the instrument was established with a Cronbach's alpha internal consistency coefficient of .67. Sylvia and Ysseldyke (1985) suggest a conservative minimum reliability coefficient of .60 for group data.

Procedure

The researchers sought permission and developed procedures with the seven sites' CTE administrators to conduct this study. Staff meetings and/or in-service sessions at each site were used to present and complete the study. The researchers presented the study, answered faculty questions, and asked that consent forms be signed by participating CTE instructors. Study participants completed two case studies, the control case study and a preassigned case for a student with a specified disability. Data were analyzed using both descriptive and inferential statistical procedures. Kruskal-Wallis tests were used to explore the effects of specified demographic variables concerning respondents' ratings for CTE program social fit, academic and occupational skill attainment, and postschool employability in the occupational area. All significant effects were set at the $p < .05$ significance level. The variables explored included respondents' gender, age, level of education, years in current position, years in education, and special needs training (i.e. university coursework, continuing education credits, in-service training). Mean, standard deviation, totals, Chi-square, and level of significance are reported (see tables 2-9).

Results

The results are reported by section addressing the findings for each research question posed in this study. Additionally, table 1 presents the demographic variable information by region for the study participants.

Question 1. CTE educators' perceptions by respondents' gender

Gender was found to be a significant factor concerning respondents' perceptions of students by disability label in three of the four areas. Significant effects were reported for social fit in CTE programming (x^2 = 35.552), academic attainment (x^2 = 10.213), and postschool employability in the full range of jobs in the occupational area (x^2 = 59.184). Female respondents perceived students with disabilities would have more difficulty fitting in socially in CTE and with academic attainment compared to male respondents. Males felt that students with disabilities would have more difficulty in postschool employability in the full range of jobs in the occupational area than females (see table 2).

Question 2. CTE educators' perceptions by respondents' ages

Significant effects were reported for respondents' ages concerning social fit in CTE (x^2 = 33.848), gaining occupational skill competencies (x^2 = 16.870), and postschool employability in the full range of jobs in the occupational area (x^2 = 60.954) (see table 3). Older respondents generally gave students without a disability higher ratings compared to students with disabilities. Older respondents also rated students with disabilities lower by comparison than younger age groups with the exception of social fit. The 41-50-year-old respondents felt students with disabilities would have the most difficulty in the areas of CTE occupational skill competencies and postschool employability. The 51-year-old and older group also felt students with disabilities would have difficulty in gaining CTE occupational skill competencies. Respondents in the 31-40-year-old age group rated students with disabilities lowest in social fit in CTE.

Question 3. CTE educators' perceptions by respondents' education level

Respondents' level of education had significant effects concerning ratings for students' social fit in CTE (x^2 = 32.808) and postschool full range of employment in the occupational area (x^2 = 64.565). No significant effects were found concerning academic or occupational skills attainment by respondents' level of education (see table 4). Respondents with a 4-year degree perceived the student without a disability most able concerning CTE social fit and postschool employability. Respondents with a high school diploma felt students with disabilities would have the most difficulty concerning social fit in CTE. Respondents with advanced degrees generally rated students with disabilities lowest concerning their postschool emplomen potential.

Question 4. CTE educators' perceptions by respondents' years in current position

Significant effects were reported concerning respondents' years in their current position concerning CTE social fit (x^2 = 41.395), gaining occupational skill competencies (x^2 = 18.547), and postschool employability in the full range of jobs in the occupational area (x^2 = 69.179). No significant effects were found concerning respondents' years in current position and their academic attainment ratings by student label. Respondents who had been in their current position for 16-20 years rated the student without a disability the highest in CTE social fit, while rating students with disabilities lowest concerning CTE social fit. This group also perceived students with disabilities would have the most difficulty gaining occupa-

Table 1

Demographic Variable Information by Region for the Study Participants

	PA Eastern Region		PA Central Region		Total	
	n	%	*n*	%	*n*	%
Participants' Gender						
Male	43	34.1	42	33.3	85	67.5
Female	18	14.3	23	18.3	41	32.5
Total	61	48.4	65	51.6	126	100
Participants' Age						
20-30 yrs.	1	0.8	5	3.9	6	4.8
31-40 yrs.	16	12.7	14	11.1	30	23.8
41-50 yrs.	24	19.0	32	25.5	56	44.4
51+ yrs.	20	15.9	14	11.1	34	27.0
Total	61	48.4	65	51.6	126	100
Educational Level						
HS Diploma	13	10.4	13	10.4	26	20.8
2 yr. Associate	14	11.2	25	20.0	39	31.3
4 yr. Bachelors	19	15.2	15	12.0	34	27.2
Graduate	15	12.0	11	8.8	26	20.8
Total	61	48.8	64	51.2	125	100
Years in Current Position						
1-5 years	34	26.8	20	15.7	54	42.5
6-10 years	8	6.3	15	11.8	23	18.1
11-15 years	9	7.1	11	8.7	20	15.7
16-20 years	3	2.4	10	7.9	13	10.2
21+ years	7	5.5	10	7.9	17	13.4
Total	61	48.0	66	52.0	127	100
Years in Education						
1-5 years	21	16.7	13	10.3	34	27.0
6-10 years	8	6.3	14	11.1	22	17.5
11-15 years	7	5.6	16	12.7	23	18.3
16-20 years	5	4.0	7	5.6	12	9.5
21+ years	19	15.1	16	12.7	35	27.8
Total	60	47.6	66	52.4	126	100
University Coursework						
None	14	11.1	10	7.9	24	19.0
Within 6 months	9	7.2	6	4.7	15	11.9
Within 1 year	10	7.9	8	6.3	18	14.3
Within 2 years	7	5.6	14	11.1	21	16.7
More than 2 years	21	16.6	27	21.5	48	38.1
Total	61	48.4	65	51.6	126	100
Continuing Education Credits						
None	16	12.9	11	8.9	27	21.8
Within 6 months	12	9.7	19	15.3	31	25.0
Within 1 year	13	10.5	11	8.9	24	19.4
Within 2 years	10	8.1	8	6.4	18	14.5
More than 2 years	8	6.4	16	12.9	24	19.4
Total	59	47.6	65	52.4	124	100
In-Service Training						
None	6	4.8	4	3.2	10	8.0
Within 6 months	21	16.8	24	19.2	45	36.0
Within 1 year	16	12.8	23	18.4	39	31.2
Within 2 years	12	9.6	6	4.8	18	14.4
More than 2 years	6	4.8	7	5.6	13	10.4
Total	61	48.8	64	51.2	125	100

Table 2

Pennsylvania CTE Instructors' Expectations and Outcome Ratings by Gender and Disability Label

Career and Technical Program Expectations and Outcomes	Male Respondents				Female Respondents					
	Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Total	
This student will:	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*n*	χ^2
fit socially with others in my program.	3.92	0.87	3.35	1.00	4.22	0.82	3.15	1.25	254	35.552***
have similar academic attainment compared to others in my program.	3.07	1.21	3.22	1.04	3.58	1.10	2.78	1.19	253	10.213*
gain occupational skill competencies at the same level as others in my program.	3.38	2.36	2.76	1.24	3.18	1.33	2.77	1.25	251	6.635
have the potential to be employed in the full range of employment in the occupational trade area.	4.33	0.841	2.92	1.42	4.37	0.91	3.13	1.43	249	59.184***

Note: *p<.05, **p<.01, ***p<.001

Table 3

Pennsylvania CTE Instructors' Expectations and Outcome Ratings by Age and Disability Label

Career and Technical Program Expectations and Outcomes	Respondents Ages 20-30				Respondents Ages 31-40				Respondents Ages 41-50				Respondents Ages 51+					
	Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Total	
This student will:	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*n*	χ^2
fit socially with others in my program.	3.83	0.75	3.33	0.51	3.97	1.04	3.16	1.15	4.02	0.82	3.32	1.13	4.09	0.79	3.32	1.06	254	33.848***
have similar academic attainment compared to others in my program.	3.17	1.47	3.33	0.81	3.29	1.13	3.06	0.96	3.15	1.19	3.04	1.22	3.32	1.27	3.12	1.12	253	2.415
gain occupational skill competencies at the same level as others in my program.	3.50	1.22	3.83	0.40	3.39	1.14	2.74	1.18	2.89	1.21	2.70	1.27	3.97	3.55	2.70	1.28	251	16.870*
have the potential to be employed in the full range of employment in the occupational trade area.	4.33	0.51	3.17	0.98	4.19	0.74	3.00	1.52	4.48	0.86	2.94	1.45	4.26	0.99	3.00	1.39	249	60.954***

*Note: *p<.05, **p,.01, ***p<.001*

Table 4

Pennsylvania CTE Instructors' Expectations and Outcome Ratings by Level of Education and Disability Label

Career and Technical Program Expectations and Outcomes	Respondents with High School Diploma				Respondents with 2 yr. Associate's Degree				Respondents with 4 yr. Bachelor's Degree				Respondents with Graduate Degrees					
	Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Total	
This student will:	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*n*	χ^2
fit socially with others in my program.	3.92	0.79	3.27	1.25	3.92	0.95	3.33	0.95	4.21	0.72	3.29	1.14	4.00	0.98	3.37	1.16	250	32.808***
have similar academic attainment compared to others in my program.	3.35	1.05	3.08	0.97	3.03	1.13	3.38	1.09	3.48	1.39	2.82	1.21	3.12	1.17	3.00	1.09	249	9.628
gain occupational skill competencies at the same level as others in my program.	3.08	1.19	2.62	1.20	3.55	3.29	2.89	1.18	3.30	1.38	2.88	1.17	3.27	1.25	2.65	1.46	247	7.894
have the potential to be employed in the full range of employment in the occupational trade area.	4.31	0.788	2.73	1.53	4.16	1.00	3.03	1.34	4.58	0.70	3.52	1.31	4.38	0.89	2.62	1.47	245	64.565***

*Note: *p*<.05, ***p*,.01, ****p*<.001

tional skills and postschool employment in the full-range of jobs in the CTE program area (see table 5).

Question 5. CTE educators' perceptions by respondents' years in education

Respondents' years in education was a factor in perception ratings for students with disabilities concerning social fit in CTE (x^2=32.181) and postschool employment in the full range of jobs in the occupational area (x^2 = 66.262). No significant differences were found for respondents' ratings for academic attainment and gaining occupational skill competencies by student labels (see table 6). Respondents who had been in education for 16-20 years rated students with disabilities lowest concerning CTE social fit. Respondents who had been in education for 21+years or more felt students with disabilities would have the most difficulty in the area of postschool employability.

Question 6. CTE educators' perceptions by respondents' university coursework

Significant effects were found concerning training in special needs through university coursework for social fit in CTE (x^2 = 44.129) and postschool employment in a full range of jobs in the occupational area (x^2 = 58.298). No significant effects were reported for university coursework in special needs for academic attainment or gaining occupational skill competencies (see table 7). Respondents who had taken a university course in special needs within the last year most strongly agreed that the student without a disability would most easily fit in socially in CTE. Those who had taken a university course in special needs within the last 2 years rated students with disabilities lowest concerning CTE social fit. Respondents who had taken a special needs university course within the last 2 years felt strongest that the student without a disability would have the greatest potential for full range employment in the occupational area, whereas respondents with no university credits in special needs rated students with disabilities lowest in this area.

Question 7. CTE educators' perceptions by respondents' continuing education credits

Respondents' special needs training through continuing education credits (CEC) was reported to have significant effects concerning students' social fit in CTE (x^2 = 37.990) and postschool employment in the full range of jobs in the occupational area (x^2 = 66.027). No significant effects were found concerning academic attainment and gaining occupational skill competencies. Respondents who took continuing education credits within the last 6 months rated students with disabilities lowest in the area of CTE social fit and postschool employability in the full range of jobs in the occupational area (see table 8).

Table 5

Pennsylvania CTE Instructors' Expectations and Outcome Ratings by Years in Current Position and Disability Label

Career and Technical Program Expectations and Outcomes	Respondents' Years in Current Position 1-5 Years				Respondents' Years in Current Position 6-10 Years				Respondents' Years in Current Position 11-15 Years				Respondents' Years in Current Position 16-20 Years				Respondents' Years in Current Position 20+ Years					
	Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Total	
This student will:	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*n*	χ^2
fit socially with others in my program.	4.15	0.81	3.33	1.16	3.65	1.07	3.09	0.84	4.00	1.07	3.40	1.09	4.15	0.37	2.85	1.28	4.00	0.61	3.59	0.93	254	41.395***
have similar academic attainment compared to others in my program.	3.36	1.25	3.00	1.08	3.00	1.16	3.13	1.05	2.80	1.24	3.25	1.07	3.54	1.05	3.00	1.41	3.41	1.06	3.12	1.16	253	7.715
gain occupational skill competencies at the same level as others in my program.	3.26	1.24	2.75	1.22	2.96	1.10	3.17	1.19	3.84	1.64	3.00	1.25	3.31	0.94	1.85	1.14	3.41	1.32	2.65	1.16	251	18.547*
have the potential to be employed in the full range of employment in the occupational trade area.	4.26	0.92	3.00	1.48	4.14	1.08	2.91	1.31	4.70	0.57	3.70	1.21	4.23	0.92	2.33	1.37	4.53	0.51	2.63	1.45	249	69.179***

Note: *p<.05, **p,.01, ***p<.001

Table 6

Pennsylvania CTE Instructors' Expectations and Outcome Ratings by Years in Education and Disability Label

Career and Technical Program Expectations and Outcomes	Respondents' Years in Education 1-5 Years				Respondents' Years in Education 6-10 Years				Respondents' Years in Education 11-15 Years				Respondents' Years in Education 16-20 Years				Respondents' Years in Education 20+ Years					
	Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Total	
This student will:	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*n*	χ^2
fit socially with others in my program.	4.18	0.83	3.29	1.21	3.73	1.03	3.23	0.97	4.00	1.00	3.39	1.07	4.17	0.57	2.92	1.16	4.00	0.76	3.43	0.97	252	37.181***
have similar academic attainment compared to others in my program.	3.36	1.24	3.09	1.08	3.05	1.29	3.05	1.09	3.09	1.16	2.91	0.99	3.50	1.24	2.92	1.44	3.20	1.15	3.31	1.07	251	5.289
gain occupational skill competencies at the same level as others in my program.	3.18	1.19	2.68	1.24	3.27	1.12	3.18	1.22	3.57	1.23	2.70	1.14	3.67	0.98	2.25	1.35	3.18	1.38	2.85	1.23	249	14.294
have the potential to be employed in the full range of employment in the occupational trade area.	4.27	0.94	2.82	1.50	4.05	1.16	3.14	1.39	4.61	0.49	3.57	1.37	4.08	0.90	2.82	1.32	4.51	0.70	2.76	1.37	247	66.262***

Note: *p<.05, **p,.01, ***p<.001

Question 8. CTE educators' perceptions by respondents' in-service programs

Significant effects were reported for in-service training in special needs concerning CTE social fit (x^2 = 39.576), academic attainment (x^2=18.283), and postschool employability (x^2 = 66.308). No significant effects were found concerning in-service training in special needs for occupational skill competencies (see table 9). Respondents who had no in-service training in special needs and those who reported in-service training within the last 6 months rated students with disabilities lowest concerning social fit in CTE. Respondents who had in-service training in special needs within the last 6 months also rated students with disabilities lowest concerning academic attain-

Table 7

Pennsylvania CTE Instructors' Expectations and Outcome Ratings by University Coursework and Disability Label

Career and Technical Program Expectations and Outcomes	Respondents' University Coursework - None				Respondents' University Coursework - Within 6 Months				Respondents' University Coursework - Within 1 Year				Respondents' University Coursework - Within 2 Years				Respondents' University Coursework - More than 2 Years					
	Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Total	
This student will:	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*n*	χ^2
fit socially with others in my program.	4.08	0.71	3.33	1.07	4.20	1.08	3.73	0.96	4.28	0.66	3.67	1.13	4.10	0.83	2.95	1.24	3.79	0.92	3.15	1.03	252	44.129***
have similar academic attainment compared to others in my program.	3.52	1.16	2.92	1.13	3.47	1.24	3.73	0.88	3.33	1.02	3.11	1.13	3.19	1.07	2.76	1.13	3.02	1.31	3.08	1.10	251	11.585
gain occupational skill competencies at the same level as others in my program.	2.91	1.24	2.88	1.22	3.57	1.22	3.00	1.30	3.33	1.23	2.78	1.35	2.86	1.06	2.76	1.33	3.67	1.00	2.67	1.17	249	11.988
have the potential to be employed in the full range of employment in the occupational trade area.	4.33	0.91	2.87	1.66	4.14	1.16	3.07	1.20	4.41	0.93	2.94	1.43	4.43	0.67	3.14	1.38	4.35	0.81	2.98	1.43	247	58.298***

Note: *p<.05, **p,.01, ***p<.001

ment and postschool employment in the full range of jobs in the occupational area.

Discussion

This study investigated the effects of demographic variables of secondary CTE instructors' in central and eastern Pennsylvania concerning students with and without disabilities. Respondents' ratings focused on student participation in secondary CTE occupational programs concerning social fit, academic attainment, gaining occupational skill competencies, and postschool employability in the full range of jobs in the occupational area. The researchers wanted to identify demographic variables that influenced respondents' perceptions of students with disabilities participating in CTE.

The results are a snapshot of perceptions based on respondents' experiences and knowledge that form attitudes which shape teaching behaviors and student interactions in CTE programming. The results should be viewed in light of the following limitations: a) the sample represented central and eastern Pennsylvania; b) the sample was limited to 7 CTE sites within this region; c) the sample consisted of 127 secondary CTE educators who participated in the study from the seven selected CTE sites. Caution should be used in generalizing results beyond Pennsylvania. The reader should view the results in light of sampling limitations, research methodology, and data analysis decisions.

The results indicate that demographic characteristics of Pennsylvania CTE instructors had significant effects concerning student perceptions and ratings. Twenty of the thirty-two items analyzed had significant effects at the $p < .05$ level. The results indicate that demographic characteristics are a significant factor in CTE educators' perceptions of students with disabilities concerning CTE program expectations and outcomes in central and eastern Pennsylvania. These findings differ markedly from the majority reported in previous literature concerning CTE educators' attitudes toward students with disabilities. Based on the results reported here, demographic characteristics are important considerations in teacher training and best practice in secondary CTE.

Gender was found to have significant effects concerning CTE social fit, academic attainment, and postschool employability. Trott and Holton (1996) reported gender as significant concerning postsecondary vocational educators. They reported females had more positive attitudes toward students with disabilities. Female respondents in this study had less positive ratings of students with disabilities compared to males, except for perceived potential for postschool employability. No differences were found by gender for occupational skill ratings.

Significant effects were reported for age concerning social fit in CTE, gaining occupational skill competencies, and postschool employability. The findings reported here contradict several reported in the literature (Kraska, 1997; Rowjewski et al., 1990; Trott & Holton, 1996). Generally, older respondents rated students with disabilities lower by comparison across all areas. Respondents between the ages of 31-40 rated students with disabilities lowest

Table 8

Pennsylvania CTE Instructors' Expectations and Outcome Ratings by Continuing Education and Disability Label

Career and Technical Program Expectations and Outcomes	Respondents' Continuing Education Credits - None				Respondents' Continuing Education Credits - Within 6 Months				Respondents' Continuing Education Credits - Within 1 Year				Respondents' Continuing Education Credits - Within 2 Years				Respondents' Continuing Education Credits - More than 2 Years					
	Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Total	
This student will:	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*n*	χ^2
fit socially with others in my program.	4.11	0.93	3.37	1.07	4.00	0.81	2.81	1.25	4.00	1.02	3.50	1.02	4.11	0.58	3.33	1.02	3.92	0.92	3.58	0.88	248	37.990***
have similar academic attainment compared to others in my program.	3.35	1.29	3.00	1.24	3.03	1.14	2.90	1.22	3.29	1.30	3.13	0.90	3.06	1.10	3.22	1.06	3.54	1.17	3.25	1.13	247	7.030
gain occupational skill competencies at the same level as others in my program.	3.26	1.19	2.78	1.25	3.23	1.33	2.23	1.17	3.04	1.30	3.13	1.11	4.00	1.62	3.00	1.13	3.39	1.27	3.00	1.35	247	16.396
have the potential to be employed in the full range of employment in the occupational trade area.	4.23	1.03	2.84	1.54	4.45	0.81	2.42	1.38	4.50	0.59	3.25	1.29	4.39	0.85	3.61	1.14	4.26	0.91	3.22	1.53	243	66.027***

Note: *p<.05, **p,.01, ***p<.001

Table 9

Pennsylvania CTE Instructors' Expectations and Outcome Ratings by In-Service Training and Disability Label

Career and Technical Program Expectations and Outcomes	Respondents' In-Service Training - None				Respondents' In-Service Training - Within 6 Months				Respondents' In-Service Training - Within 1 Year				Respondents' In-Service Training - Within 2 Years				Respondents' In-Service Training - More than 2 Years					
	Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Ratings for Nondisabled		Ratings for Disabled		Total	
This student will:	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*n*	χ^2
fit socially with others in my program.	4.40	0.51	3.10	1.10	4.09	0.87	3.09	1.16	3.79	1.05	3.28	1.12	4.06	0.63	3.72	0.75	4.00	0.57	3.62	1.04	250	39.576***
have similar academic attainment compared to others in my program.	3.44	1.23	3.00	1.24	3.00	1.24	2.96	1.14	3.10	1.25	3.00	1.14	3.28	1.07	3.67	0.84	4.15	0.37	3.00	1.08	249	18.283*
gain occupational skill competencies at the same level as others in my program.	3.30	1.05	2.90	1.28	3.07	1.33	2.64	1.36	3.15	1.30	2.79	1.23	4.17	1.59	3.17	0.92	3.69	1.03	2.69	1.10	247	11.261
have the potential to be employed in the full range of employment in the occupational trade area.	4.33	0.70	4.00	1.41	4.29	0.99	2.73	1.32	4.33	0.86	2.87	1.47	4.50	0.78	3.50	1.29	4.42	0.66	3.00	1.54	245	66.308***

Note: *p<.05, **p,.01, ***p<.001

regarding CTE social fit. Respondents between the ages of 41-50 rated students with disabilities lowest on gaining occupational skills and postschool employability. Respondents 51+ years old also felt that students with disabilities would have difficulty in finding postschool employment in the occupational area. These findings suggest that older CTE respondents may have more experience with needed trade skills and the demand for skilled workers in the economy. Respondents' experiences and knowledge base may be a factor. The results suggest the challenges facing CTE educators in training diverse student learners as suggested by Clark and Kolstoe (1995) and Rojewski (1991) is a reality in today's CTE programs.

Respondents' education level was a factor concerning CTE social fit and postschool employability. This finding is not supported by most researchers (Kraska, 1997; Okolo & Sitlington, 1988; Rowjewski et al., 1990; Trott & Holton, 1996). This study found respondents who earned a high school diploma rated students with disabilities lower regarding CTE social fit. Respondents with an advanced degree rated students with disabilities lower on postschool employability. No significant effects were found for students' academic or occupational skill attainment by respondents' education level.

The number of years respondents were in their current positions had significant effects concerning CTE social fit, gaining occupational skills, and postschool employment. Respondents who had been in their current positions for 16-20 years had lower ratings of students with disabilities concerning CTE social fit, gaining occupational skill competencies, and postschool employability in the occupational area. Years in education also had significant effects concerning CTE social fit and postschool employment ratings. Respondents who had been in education for 16-20 years had lower ratings for students with disabilities concerning CTE social fit, while respondents who had been in education for 21+ years rated students academic and occupational skills attainment is the thrust of CTE under the Perkins Act and a major emphasis in current educational reform. The results indicate there are continued and on-going training needs concerning perceptions and attitudes toward students with disabilities in secondary CTE. The data suggest a need for redoubling education and training efforts in the area of special needs for CTE preservice and in-service teacher education.

Training should center on behavior modification, social integration, and classroom management techniques that will assist CTE instructors in helping students with special needs to fully participate in occupational programs. Emphasis should also include disability characteristics and individual differences and as they relate to inclusion, academic achievement, and postschool employment for students with disabilities. Training efforts through university coursework, continuing education credits, and in-service professional development activities must reflect best practices in meeting students' needs. It is important for training institutions to recognize that CTE instructors' demographic characteristics factor into individual training needs. Training efforts at all levels need to address these concerns to facilitate best practice and effectively meet the needs of students with disabilities who participate in CTE occupational programs.

Recommendations

1. Secondary CTE educators need to have the ability to serve all students enrolled in CTE, including serving students with disabilities. Professional development in special needs should be emphasized at all levels (university, continuing education, and in-service professional development).
2. University coursework has historically emphasized theory based instruction linked to practice. In-service training has focused on changes in the field, policy issues, and program improvement. Continuing education has been viewed as consumer driven based on local needs. Training efforts across the training spectrum need to provide comprehensive professional development for secondary CTE instructors leading to skills that support all students, including those with disabilities, through best practices.
3. CTE training efforts should be ongoing and provide sustainable professional development that directly impacts CTE programming concerning special needs students.
4. Secondary CTE training efforts should include:

a) CTE mandates and program expectations;
b) characteristics and learning needs of students with disabilities;
c) appropriate modifications/accommodations to meet individual student needs;
d) student-centered occupational skill development that supports CTE program goals and realistic postsecondary outcomes for students with disabilities.

References

Clark, G. M., & Kolstoe, O. P. (1995). *Career development and transition education for adolescents with disabilities* (2nd ed.). Boston: Allyn and Bacon.

Cook, B. G., Tankersley, M., Cook, L., & Landrum, T. J. (2000). Teachers' attitudes toward their included students with disabilities. *Exceptional Children, 67*, 115-135.

Custer, R. L., & Panagos, R. J. (1996). Effectiveness of vocational educators: Perceptions of training needs and barriers for working with students with special needs. *The Journal for Vocational Special Needs Education, 19*(1), 17-25.

Gillung, T. B., & Rucker, C. N. (1977). Labels and teacher expectations. *Exceptional Children, 43,* 464-465.

Good, T. L. (1987). Two decades of research on teacher expectations: Findings and future directions. *Journal of Teacher Education, 38,* 32-47.

Gray, K. C., & Herr, E. L. (1995). *Other ways to win: Creating alternatives for high school graduates.* Thousand Oaks, CA: Corwin Press, Inc.

Individuals with Disabilities Education Act of 1990, Pub. L. 101-476, 1104 Stat. 1103 (1990).

Individuals with Disabilities Education Act Amendments of 1997, Pub. L. 105-17, 20 U.S.C. Chapter 33 (1997).

Johnson, D. R., Stodden, R. A., Emanuel, E. J., Luecking, R., & Mack, M. (2002). Current challenges facing secondary education and transition services: What research tells us. *Exceptional Children, 68,* 519-531.

Kleinle, M. P. (1988). *An examination of the perceptions of vocational administrators and instructors of the instructional needs of special needs students* (Paper presented at the American Vocational Association Convention, St. Louis MO, December, 1988). (ERIC Document Reproduction Service No. ED303643)

Kraska, M. F. (1996). Trade and industrial teachers' knowledge related to special populations. *Journal of Industrial Teacher Eduation, 33*, 47-59.

Kraska, M. F. (1997). T & I teachers and inclusion: Attitudes of trade and industrial education teachers toward inclusion. *The Journal for Vocational Special Needs Education, 20*(1), 9-21.

Harvey, M. W. (1999). Perceptions of vocational special needs: Concerns and comparisons from area vocational technical center and comprehensive high school educators. *Workforce Education Forum, 26*, 40-57.

Harvey, M. W. (2000). How do vocational educators fare in working with students with special needs: Perceptions from the field. *The Journal for Vocational Special Needs Education, 22*(3), 25-37.

Harvey, M. W. (2001). Vocational-technical education: A logical approach to dropout prevention for secondary special education. *Preventing School Failure, 45*, 108-113.

Harvey, M. W., & Pellock, C. (2003). Influences of student educational labels, behaviors, and learning characteristics as perceived by Pennsylvania's secondary career and technical educators. *The Journal for Vocational Special Needs Education, 25*(3), 30-41.

Masters, L. F., Mori, B. A., Mori, A. A. (1993). *Teaching secondary students with mild learning and behavior problems: Methods, materials, strategies* (2nd ed.). Austin: ProEd.

McDaniel, L. (1982). Changing vocational teacher's attitudes toward the handicapped. *Exceptional Children, 48*, 337-378.

Meers, G. D., & Towne, V. A. (1997). Missions and milestones: Yesterday, today, and tomorrow in vocational special needs education. *The Journal of Vocational Special Needs Education, 19*(3), 94-98.

Minner, S. (1982). The influence of educational labels and behavioral descriptors on secondary vocational educators. *The Journal for Vocational Special Needs Education, 4*(2), 4,7.

Okolo, C. M. & Sitlington, P. L. (1988). Mildly handicapped learners in vocational education: A statewide study. *Journal of Special education, 22,* 220-230.

Phelps, L. A., & Hanley-Maxwell, C. (1997). School-to-work transition for youth with disabilities: A review of outcomes and practices. *Review of Educational Research, 67,* 197-226.

Rojewski, J. W. (1991). National perspectives on future directions for research in vocational special needs education. *Journal of Vocational Education Research, 16*, 53-73.

Rojewski, J. W., Pollard, R. R., & Meers, G. D. (1990). Practices and attitudes of secondary industrial education teachers toward students with special needs. (ERIC Document Reproduction Services No. 357 535).

Salvia, J. & Ysseldyke, J. (1985). *Assessment in Special and Remedial Education,* (3rd ed.). Boston, MA: Houghton Mifflin Company.

Sarkees-Wircenski, M., & Scott, J. L. (2003). *Special Populations in Career and Technical Education,* (3rd ed.). Homewood, IL: American Technical Publishers, Inc.

Schalock, R. L., Holl, C., Elliott, B., & Ross, I. (1992). A longitudinal follow-up of graduates from a rural special education program. *Learning Disabilities Quarterly, 15,* 29-38.

Treder, D. W., Morse, W. C., & Ferron, J. M. (2000). The relationship between teacher effectiveness and teacher attitudes toward issues related to inclusion. *Teacher Education and Special Education, 23,* 202-210.

Trott, J. W. & Holton, E. F. (1996). Attitudes of postsecondary vocational instructors toward persons with disabilities: Implications for inservice training. *The Journal for Vocational Special Needs Education, 18*(2), 51-56.

U.S. Department of Education, (2002). *National assessment of vocational education: Interim report to Congress.* Retrieved August 23, 2003, from http://www.ed.gov/offices/OUS/PES/NAVE/interim_report.pdf

Wagner, M. (1991). *The benefit of secondary vocational education for young people with disabilities: Findings from the national longitudinal transition study of special education students* (Report No. EC 300 485). Menlo Park, CA: SRI International, Contract 300-87-0054. (ERIC Document Reproduction No. ED 334 739)

Walter, N. J. (1986). *Attitudes toward disabled persons as perceived by health occupations classroom teachers* (ERIC Document Reproduction No. ED 267 290)

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Appendix A

Summary of Pennsylvania CTE Instructors' Expectations and Outcome Ratings by Demographic Characteristics and Student Disability Label

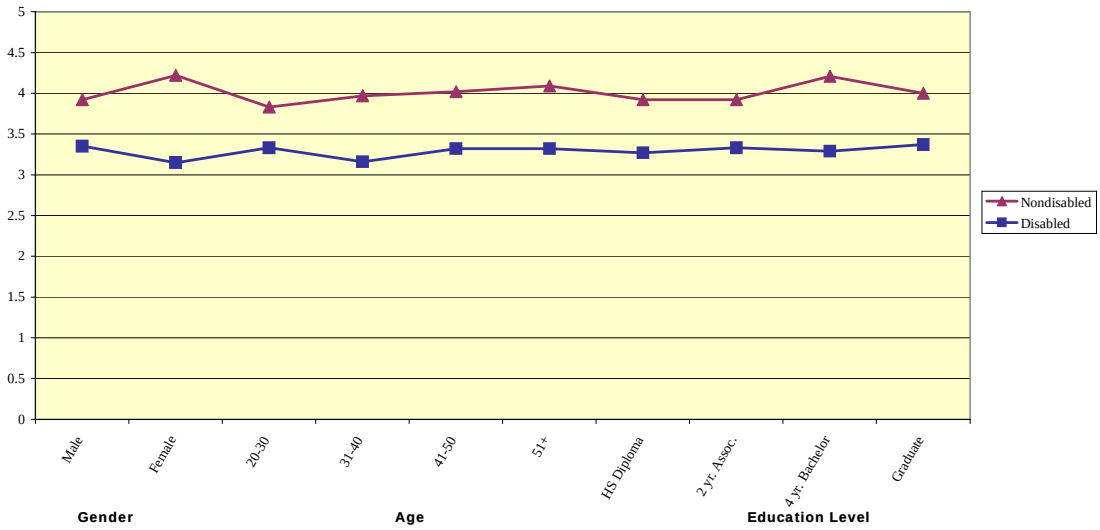
Career and Technical Program Expectations and Outcomes	Gender	Age	Education Level	Years in Current Position	Years in Education	University Coursework	Continuing Education	In-Service Training
This student will:	χ^2	χ^2	χ^2	χ^2	χ^2	χ^2	χ^2	χ^2
fit socially with others in my program.	35.552***	33.848***	32.808***	41.395***	37.181***	44.129***	37.990***	39.576***
have similar academic attainment compared to others in my program.	10.213*	2.415	9.628	7.715	5.289	11.585	7.030	18.283*
gain occupational skill competencies at the same level as others in my program.	6.635	16.870*	7.894	18.547*	14.294	11.988	16.396	11.261
have the potential to be employed in the full range of employment in the occupational trade area.	59.184***	60.954***	64.565***	69.179***	66.262***	58.298***	66.027***	66.308***

Note: *p<.05, **p,.01, ***p<.001

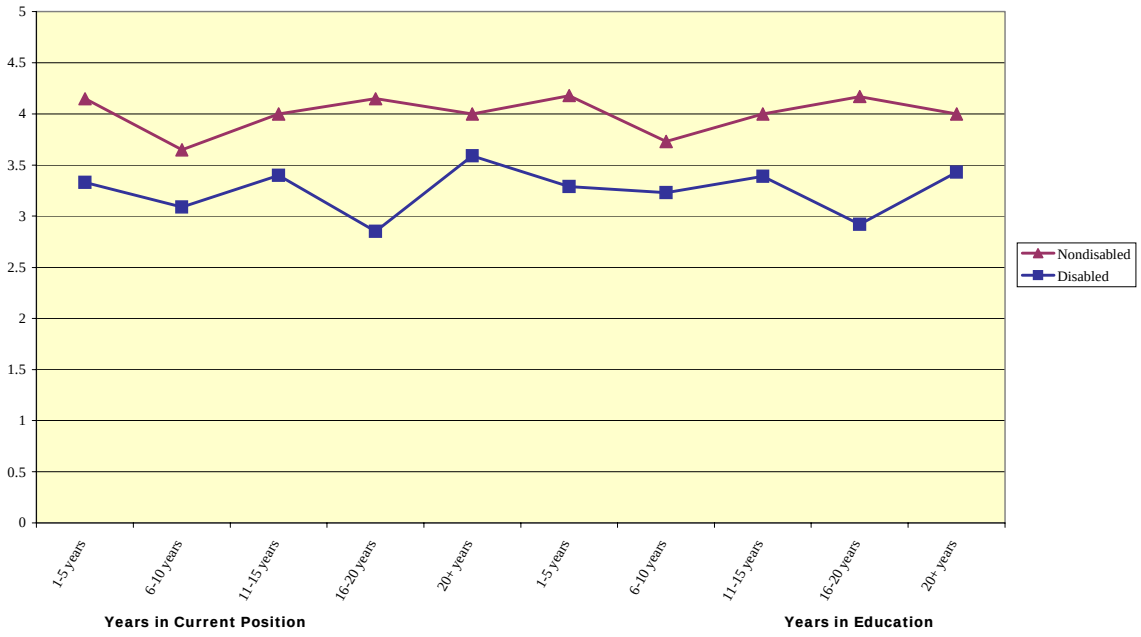
Appendix B

Graphic Summary of Means for Pennsylvania CTE Instructors' Perception Ratings of Students With and Without Disabilities by Demographic Characteristic

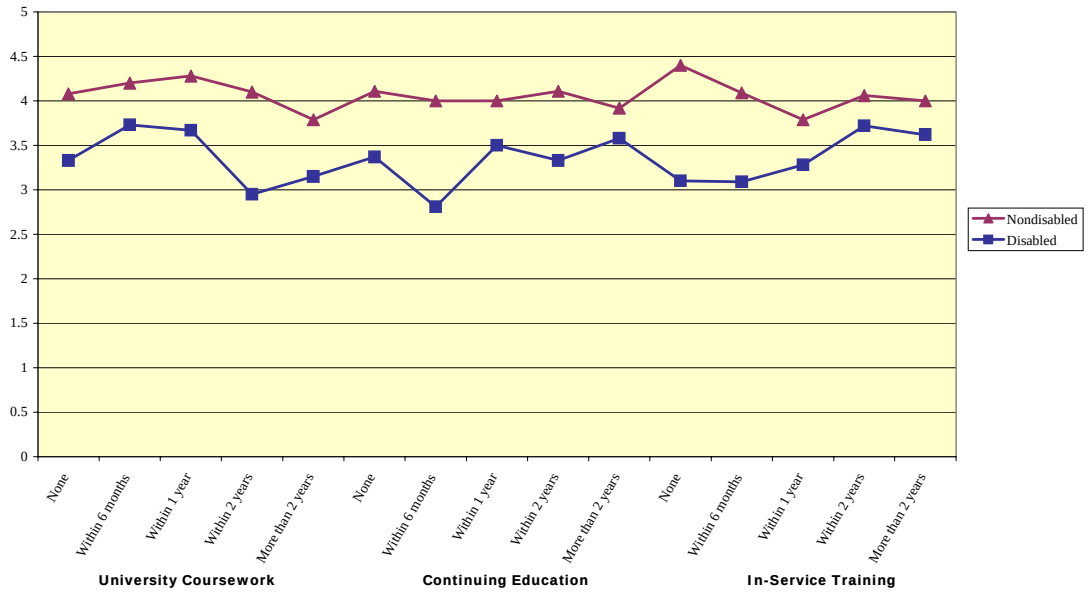
Summary of Pennsylvania CTE Instructors' Ratings of Social Fit by Gender, Age, and Education Level



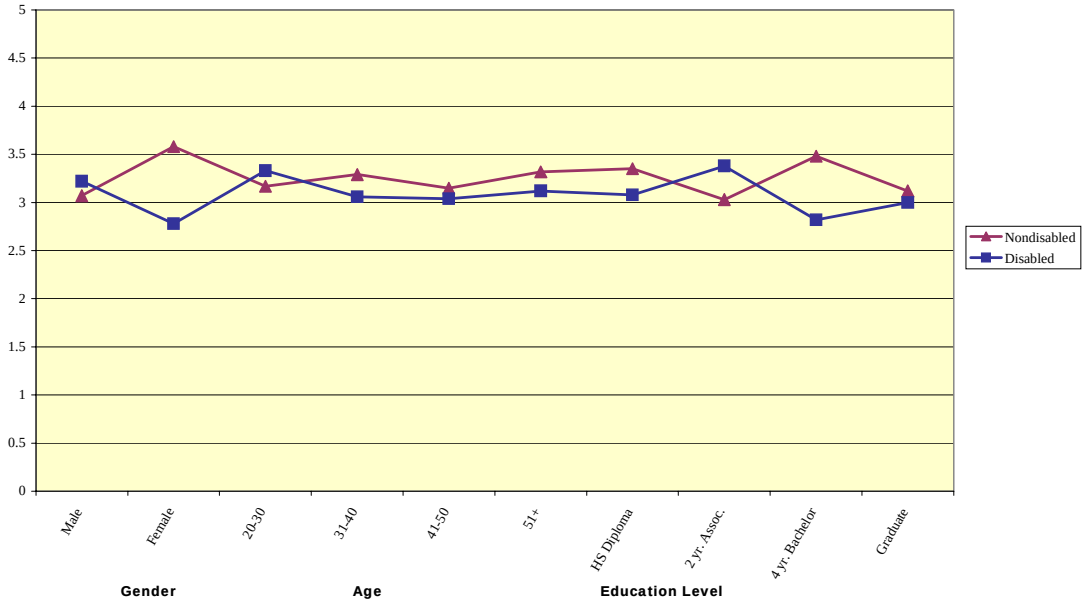
Summary of Pennsylvania CTE Instructors' Ratings of Social Fit by Years in Current Position and Years in Education



Summary of Pennsylvania CTE Instructors' Ratings of Social Fit by University Coursework, Continuing Education, and In-Service Training



Summary of Pennsylvania CTE Instructors' Ratings of Similar Academic Attainment by Gender, Age, and Educational Level



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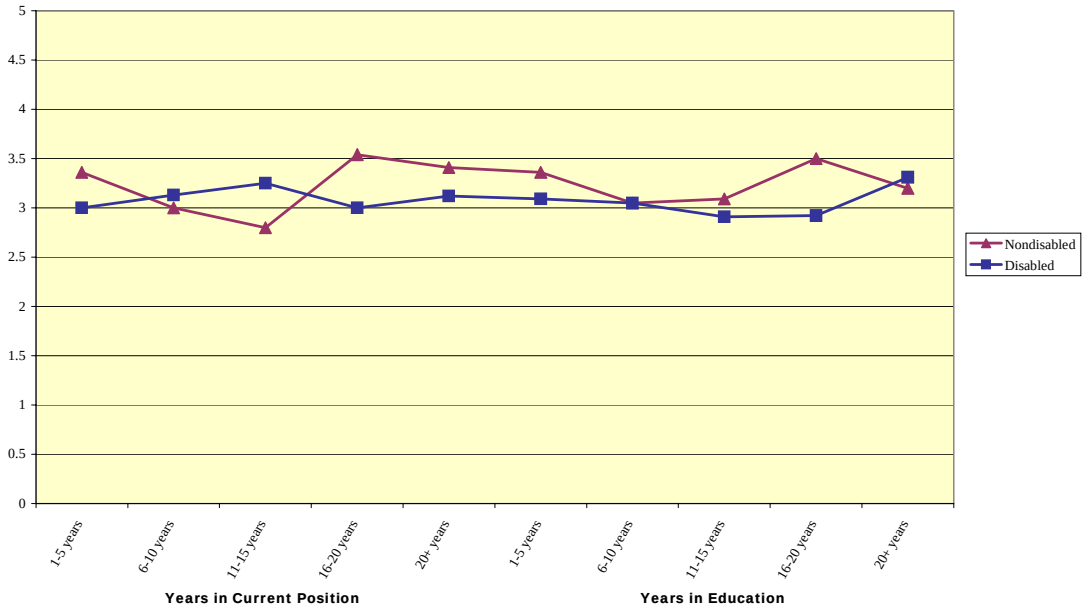
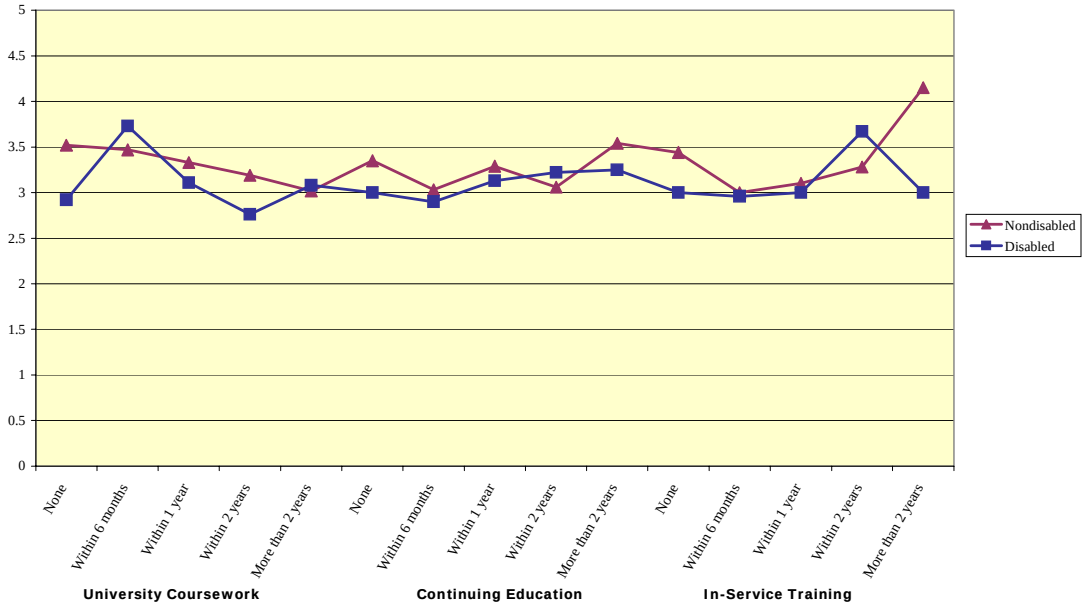
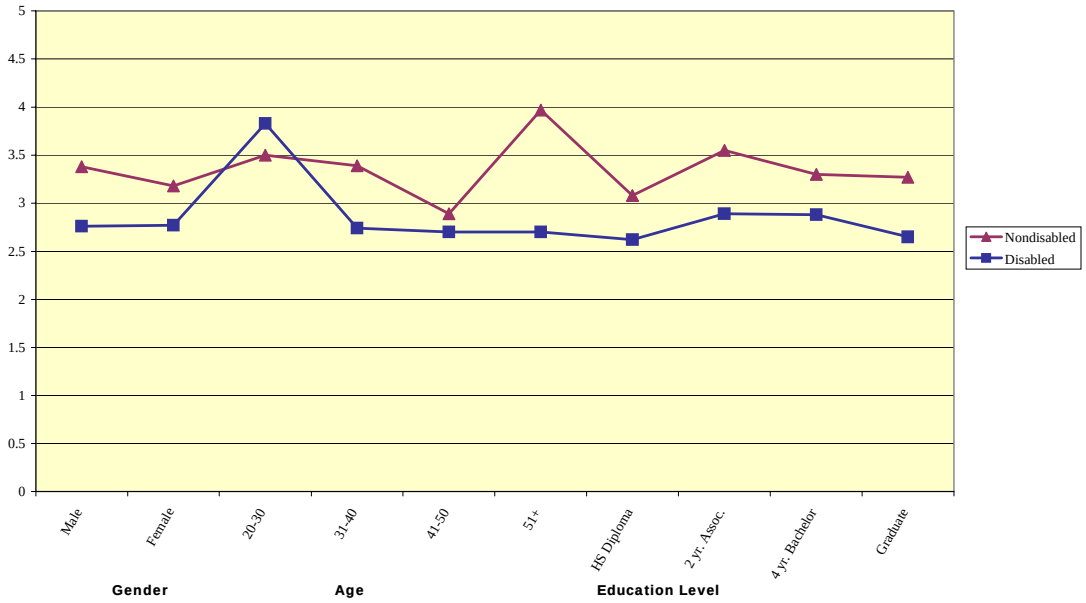


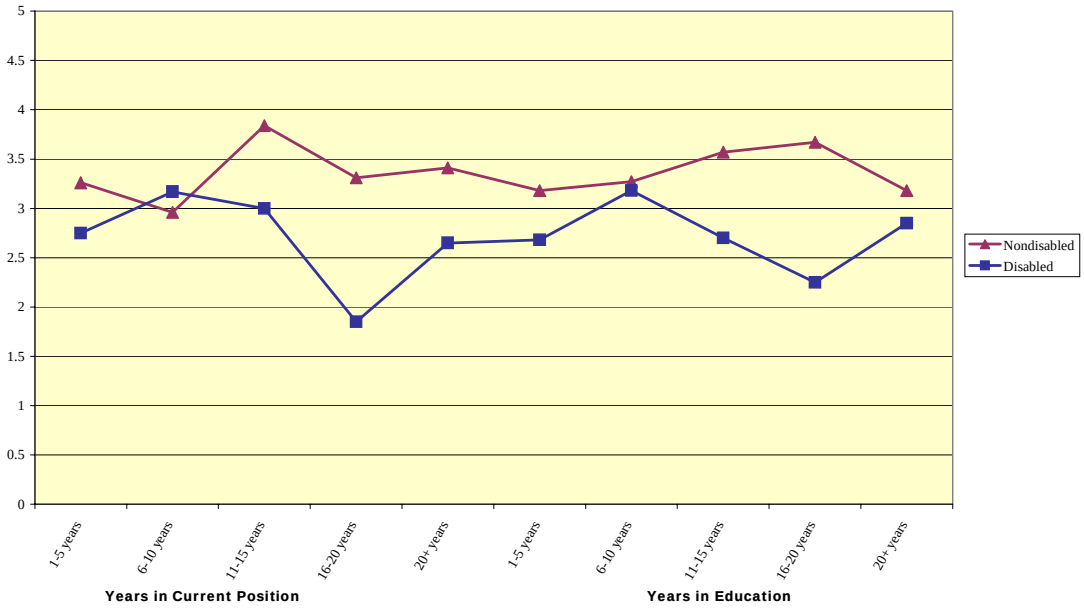
Summary of Pennsylvania CTE Instructors' Ratings of Similar Academic Attainment by University Coursework, Continuing Education, and In-Service Training



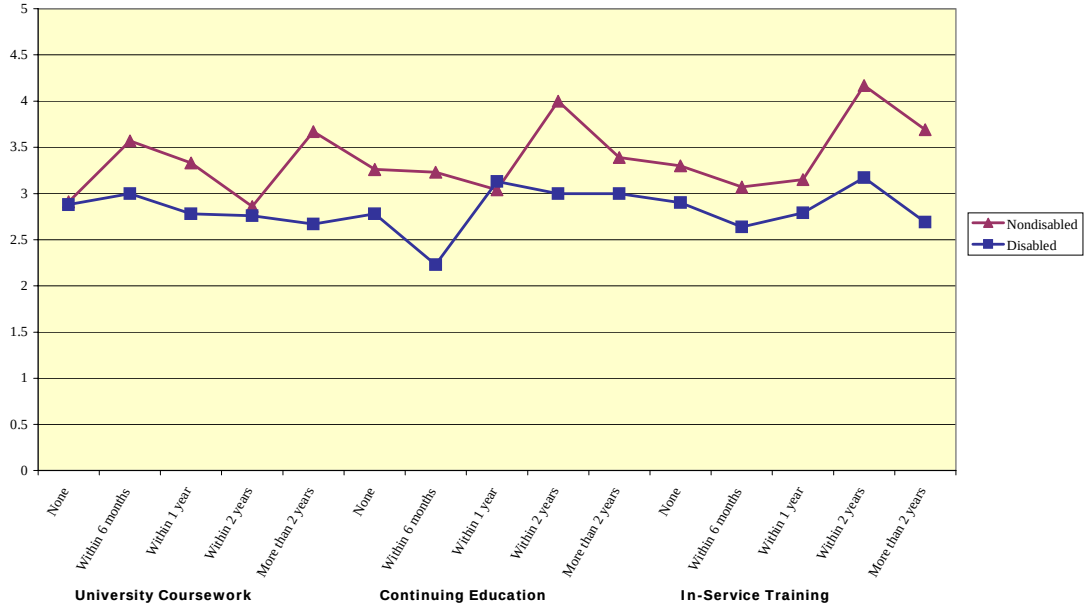
Summary of Pennsylvania CTE Instructors' Ratings of Occupational Skill Competencies by Gender, Age, and Education Level



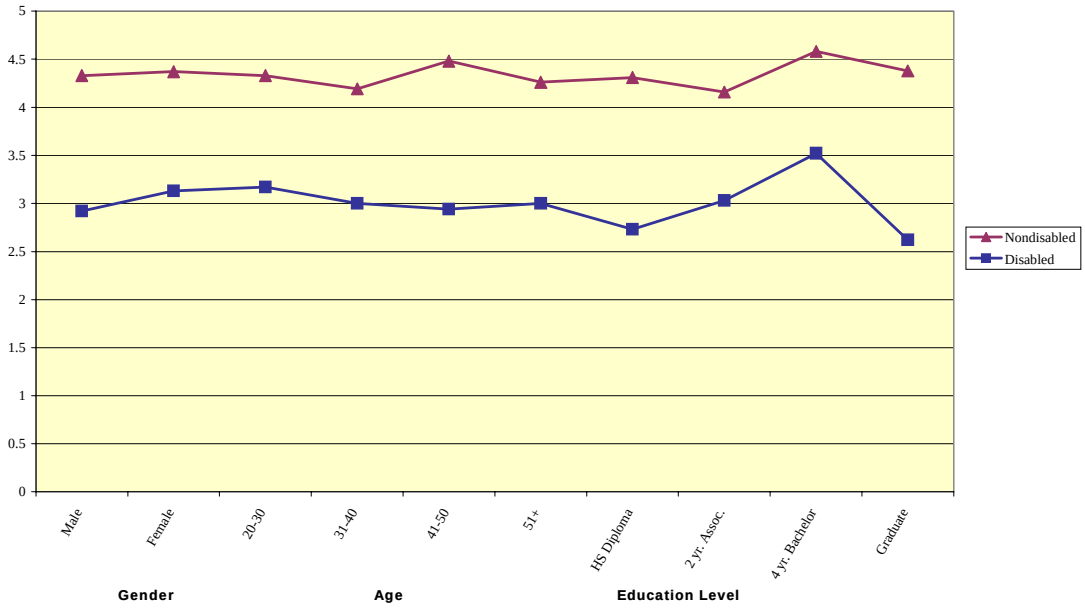
Summary of Pennsylvania CTE Instructors' Ratings of Occupational Skill Competencies by Years in Current Position and Years in Education



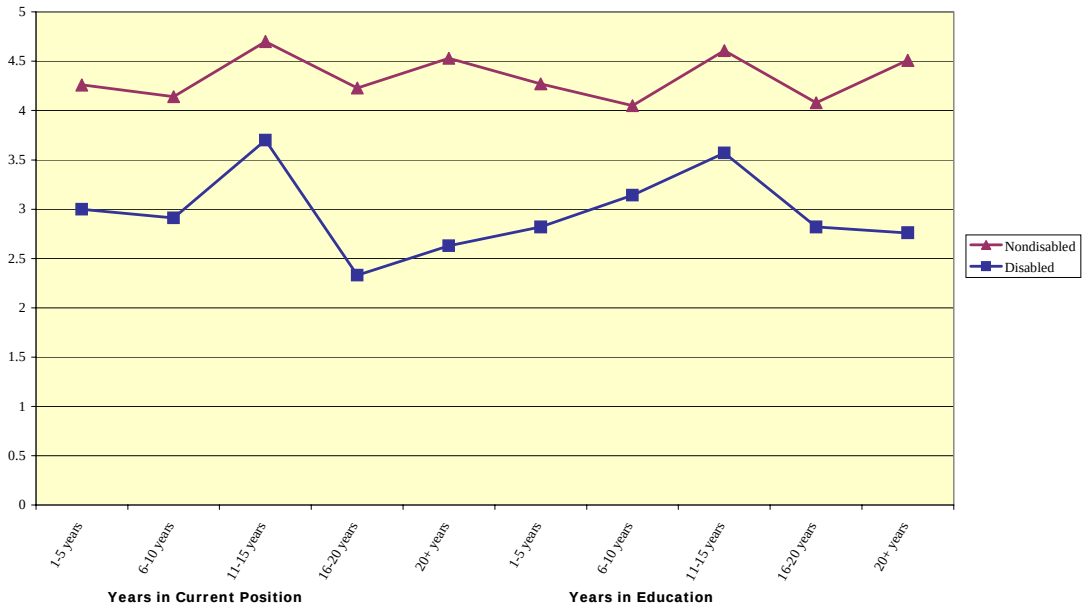
Summary of Pennsylvania CTE Instructors' Ratings of Occupational Skill Competencies by University Coursework, Continuing Education, and In-Service Training



Summary of Pennsylvania CTE Instructors' Ratings of Post-School Employability by Gender, Age, and Education Level



Summary of Pennsylvania CTE Instructors' Ratings of Post-School Employability by Years in Current Position and Years in Education



Summary of Pennsylvania CTE Instructors' Ratings of Post-School Employability by University Coursework, Continuing Education, and In-Service Training