Professional Development: Implications for Illinois Career and Technical Education Teachers

Karen Drage, Ph.D.
Eastern Illinois University

ABSTRACT

Teacher turnover inhibits student achievement, and professional development can reduce the onset of teachers leaving the profession (The Center for Comprehensive School, 2007). No Child Left Behind and the new Perkins Act have redefined teacher professional development. In Illinois, according to the Illinois State Board of Education (n.d.), meaningful professional development must be standards led and research based. This study provides research based professional development needs of Career and Technical Education (CTE) teachers in Illinois based upon the Illinois Professional Teaching Standards. The study provides answers to the following questions:

1) *What are the professional development needs of CTE teachers?*
2) *What motivates CTE teachers to participate in professional development?*
3) *What barriers exist for CTE teachers in professional development?*

Introduction

Teacher turnover is costly and spiraling out of control according to a 2003 report from the National Commission on Teaching and America‘s Future (NCTAF). The Commission compares the task of keeping our schools supplied with qualified teachers to trying to fill a bucket with a huge hole in the bottom (NCTAF, 2003). Teacher turnover will continue to drain our public tax dollars, it will undermine teaching quality, and it will most certainly hinder our ability to close student achievement gaps (NCTAF, 2007, 21).

Research shows a factor with significant influence on teacher retention is meaningful professional development. Fullan & Steigelbauer (1991) believe professional development is the ―sum of formal and informal learning experiences throughout one‘s career from preservice teacher education to retirement‖ (p. 326). The Center for Comprehensive School Reform and Improvements (2007) concurs stating teachers need continued opportunities to develop skills that meet the diverse needs of learners. Maurer (2000) states the primary focus of professional development should be ultimately improving students‘ learning and that only through ongoing education and development can one become a more effective professional. Wong (2004) believes the ultimate purpose of any school is the success and achievement of its students and improving student achievement begins with the teachers. The difference between ―professional development‖ and ―meaningful professional development‖ is that in order for the professional development to have meaning, it must be ongoing, diverse, and focused on improving student achievement.

An additional challenge for the development of quality professional development opportunities for Career and Technical Education (CTE) teachers is the magnitude and depth of the discipline. In Illinois, CTE encompasses five occupational areas:

Agricultural Education
Business, Marketing and Computer Education
Family and Consumer Sciences
Health Science Technology
Technology and Engineering Education (Industrial)

In each occupational area, CTE teachers must be able to teach occupational skills, meet the needs of specific populations, integrate academic and occupational instruction, coordinate school- and work-based learning, manage work-based programs, and prepare students for both the workplace and postsecondary education (ISBE, n.d.).

Despite the constant challenges, CTE must use research-driven data to be proactive in the development of professional development opportunities. With the increased emphasis on English/language arts, math, and science in the secondary school curriculum and many CTE courses being squeezed out of the curriculum as a result, the development of meaningful professional development is vital to continued success of CTE.

Objective of the Study

The objective of this study was to determine the professional development needs of CTE teachers in Illinois. Specifically, this study sought to determine (a) What are the professional development needs of CTE teachers? (b) What motivates CTE teachers to participate in professional development? and (c) What barriers exist for CTE teachers in professional development?

Literature Review

Legislation and Certification

Recent changes to No Child Left Behind (NCLB) legislation have included specific details regarding what is deemed appropriate professional development. Activities that qualify as professional development according to NCLB include those that:

- improve and increase teachers‘ knowledge of the academic subjects the teachers teach;
- give teachers the knowledge and skills to provide students with the opportunity to meet challenging State academic content standards and student academic achievement standards;
- improve classroom management skills;
- are high quality, sustained, intensive, and classroom-focused in order to have a positive and lasting impact on classroom instruction and the teacher‘s performance in the classroom;

- are not one-day or short-term workshops or conferences;
- advance teacher understanding of effective instructional strategies that are based on scientifically based research and improve student academic achievement or substantially increase the knowledge and teaching skills of teachers;
- provide training for teachers in the use of technology so that technology and technology applications are effectively used in the classroom to improve teaching and learning;
- provide instruction in methods of teaching children with special needs (United States Department of Education, n.d.).

Even though CTE is not specifically mentioned in the NCLB legislation, it is imperative CTE teachers continue to incorporate the content areas mentioned in the legislation into their specific areas and accentuate the role CTE plays in achieving the high standards mandated by NCLB legislation. Career and Technical Education is centered on teaching academic content in an applied setting.

On the other hand, the Career and Technical Education Improvement Act of 2006, better known as the new Perkins Act, addresses the professional development needs of CTE teachers. The Act includes six purposes with one being, promoting the development of services and activities that integrate rigorous and challenging academic and career and technical instruction. Changes to professional development in this legislation were extensive. Additions to the professional development requirements include:

- provide in-service and pre-service training to career and technical teachers in the integration and use of rigorous academics with technical subjects;
- provided jointly with academic teachers to the extent practical, and on effective use of scientifically based research and data to improve instruction;
- be high quality, sustained, intensive, and classroom-focused in order to have a positive and lasting impact on classroom instruction and the teacher‘s performance in the classroom,
- not be one-day or short-term workshops or conferences;
- help ensure teachers and personnel can effectively develop rigorous and challenging, integrated academic and CTE education curricula jointly with academic teachers;
- develop a higher level of academic and industry knowledge and skills in CTE;
- ensure teachers can effectively use applied learning that contributes to the academic and career and technical knowledge of the student (Hess-Grabill & Bueno, 2000, p. 1)

In response to federal legislation calling for changes to professional development, many states have identified professional development as a priority. In Illinois, teachers must complete professional development activities during the four years they hold an Initial Certificate in order to apply for a Standard-Level Certificate. Professional development options include: earning an advanced education-related degree; participating in an approved induction and mentoring program; completing the National Board for Professional Teaching Standards process; completing 12 semester hours of graduate level coursework towards an advanced, education-related degree; completing a 12-hour, post-baccalaureate, education-related professional development certificate issued by an Illinois institution of higher education; acquire a subsequent

Illinois certificate or endorsement; meeting the requirements for becoming ―highly qualified" in another teaching area for NCLB purposes; and earning continuing professional development units. Creditable CPDU activities are varied but include: action research and inquiry projects; business, school or community partnerships; curriculum development or assessment activities; mentoring; observing programs or teaching in schools, business or industry; and presenting at or attending workshops, seminars, conferences, institutes, symposiums (Illinois State Board of Education, n.d.).

Professional Development Topics of Interest

With the variety of formats for professional development, teachers must feel the topic is worthwhile for them to truly become involved. Many studies have investigated what teachers are interested in learning more about in order to become better prepared. One research study (Ruhland & Bremer, 2002) revealed professional development needs included dealing with students with special needs, designing curriculum, unit planning, managing budgets, purchasing, dealing with school administration, and managing the classroom. While another study revealed beginning teachers need help in the areas of emotional support, instructional strategy support, information on where to obtain resources, classroom management, and how to work with parents (Odell, 1992). According to Daresh (2003), major concerns of beginning teachers fall into three categories: management concerns (how to plan classes, manage student behavior, work within district rules), personal concerns (how to start a new career), and instructional concerns (what methodologies to use). Another research study identified the needs of beginning business and marketing teachers. Yohon (2005) found new teachers identified their top five challenges as: assessment tools, student motivation, curriculum development, lesson planning, and state standards documentation.

Motivation for Professional Development

Even when teachers are able to identify topics that fit their professional development needs, they sometimes do not actively participate in those professional development opportunities. There have been few studies focusing on the motivators and barriers that exist regarding teachers seeking professional development opportunities.

A study by Yamagata-Lynch and Haudenschild (n.d.) revealed both intrinsic and extrinsic motivators. Teachers desire to be lifelong learners and better teachers for their students, but the pressure from the state teacher licensing system for retention, promotion, and annual salaries was also a significant reason to pursue professional development. The findings of this study identified motivators as: individual teachers‘ initiative for wanting to change, principals‘ devotion to support teacher change, collegial work environments that nurture teacher professional growth, and structured reward systems that encourage teacher growth.

Barriers to Professional Development

Yamagata-Lynch and Haudenschild‘s (n.d.) study also revealed barriers to professional development. The barriers are identified as: lack of time, lack of money, and opportunities not meeting teachers‘ needs. Teachers‘ time sheets revealed many of them began teaching-related

activities early in the morning and did not finish until late in the evening, and many worked at least one day during the weekend. The registration fees or tuition required to attend professional development events was also a barrier. One teacher commented on the noted discrepancies of professional development in relation to the teaching profession compared to the business sector stating that when businesses send their employees to training, they send them out during their work hours and pay their regular salary and costs associated with the training. Participants also felt professional development activities were ideological and quickly discarded or topics that had been covered previously. There is no doubt the in light of the changes in legislation and certification, the task of developing and implementing a professional development plan that not only meets the needs and interests of the teachers but falls within the school districts minimal professional development budget is one of the most challenging obstacles a school administrator faces today. Determining how all the pieces to the puzzle fit together begins by examining the results of focused, meaningful professional development research.

Research Method

Instrumentation and Data Gathering

After researching the subject of professional development and reviewing several existing surveys, the researchers designed a survey to specifically address the needs of career and technical education teachers in Illinois. Eight subject matter experts reviewed the survey. The subject matter experts consisted of one college professor, one education specialist from the Illinois Office of Educational Services, two pre-service teachers, two new teachers (less than 5 years of teaching experience) and two experienced teachers (more than 5 years teaching experience). The survey was also tested for internal consistency using SPSS and resulted in a Cronbach‘s alpa of .945. The survey was formatted for online delivery by the Center for Academic Technology Support department at Eastern Illinois University and tested by the researchers.

Subjects

A population of 3,969 career and technical education teachers was generated from two sources. The Illinois Board of Education (n.d.) published a list of all 2005-2006 teachers throughout the state of Illinois. The names of all teachers in the area of agriculture (48); business, marketing and computer education (1,592); family and consumer sciences (1,752); health science technology (77); and technology and engineering (industrial) education (1,770) were extracted from this source and collapsed into one list. It was then determined that the generated list excluded newly hired teachers. Therefore, the members of the Illinois University Council were contacted and asked to supply the names of all graduates from the career and technical teacher education programs within the last five years. This list was then cross checked with the list generated from the Illinois Board of Education Web site. From this list, all non-comprehensive and private schools as well as all elementary and middle schools were eliminated from the study. The total population of the study was 3,969 career and technical education teachers. From the list, 1,125 teachers were randomly selected using the RandomZ program to participate in the study. Email addresses were collected from school Web sites and postcards were sent to participants that could not be reached by email.

A link to the survey was sent to 1,125 potential respondents of which 265 completed the survey. The 23.5% response rate is comparable to the industry average response rate. The breakdown of responses within the specific CTE areas were: agriculture (n=15); family and consumer sciences (n=76); technical and engineering education (industrial) (n=65); and business, marketing and computer education (n=103).

Data Analysis

Several statistical tests were conducted to determine current average ratings for all teachers in relation to the knowledge and performance levels of teaching professionals. The teachers were subdivided into content area, age, gender, and number of years in the teaching profession so that a comparison in responses could be determined. In addition, frequencies for all respondents for motivating factors and barriers preventing professional development opportunities were computed.

Research Results

Introduction

The objective of this study was to determine the professional development needs of CTE teachers in Illinois. Specifically, this study sought to determine (a) What are the professional development needs of CTE teachers? (b) What motivates CTE teachers to participate in professional development? and (c) What barriers exist for CTE teachers in professional development? This section presents research data as it relates to the objective of the study and CTE teachers in Illinois and also in the specific content areas of CTE.

Respondent Data

The CTE teachers in the study taught in school districts that ranged from 60 students to 400,000 students, with a mean of 5,562 students. The age of the teachers ranged from 22 to 67, with a mean age of 45. The number of years in the teaching profession ranged from 1 to 36 years with a mean of 17 years. The respondents included 104 male teachers, 150 female teachers and 11 with no responses. In addition, 89.8% of the respondents were White/Caucasian. The area of CTE in which the respondents were teaching included: (a) agricultural education (n=15), (b) business, marketing and computer education (n=103), (c) family and consumer sciences (n=76), (d) health science technology (n=1), (3)technology and engineering education (industrial) (n=65), and no responses (n=5)

Results According to Research Questions

Research Question 1: What are the professional development needs of CTE teachers? The results of this question are presented in relation to the professional development need of all CTE teachers‘ and also in relation to the professional development needs of the different subsets within CTE. Descriptive results are reported from two sections of the survey which included the Illinois Professional Teaching Standard 10: The teacher is a reflective practitioner who

continually evaluates how choices and actions affect students, parents, and other professionals in the learning community and actively seeks opportunities to grow professionally. Given the Illinois Professional Teaching Standard 10 descriptions, the participants were asked to rate their level of knowledge and performance with the lowest level ranked 1 and the highest level ranked 3. The responses are presented in Table 1. The mean scores are grouped by content areas and also presented as an overall mean. There was only one respondent in the area of health science technology and five respondents did not indicate a content area; therefore, the ratings of these six respondents were included in the overall ratings but not represented in the content areas, which may result in some discrepancies in the total and the categorical statistics.

Table 1.

Item Number		CTE Mean n=265	Agriculture Mean n=15*	Business Mean n=103*	FCS Mean n=76*	Technology Mean n=65*
	Knowledge (10A-10D)					
10A	Level of knowledge/understanding of the use of reflection in professional growth and improvement of instruction	2.48	2.20	2.56	2.55	2.43
10B	Level of knowledge/understanding of methods of inquiry	2.26	2.13	2.32	2.30	2.20
10C	Level of knowledge/understanding of major areas of research	2.03	1.73	2.08	2.03	2.05
10D	Level of knowledge/understanding of teacher's attitudes and behaviors	2.36	2.20	2.29	2.39	2.48
	Performance (10E-10I)					
10E	Level able to use classroom observation as sources for active reflection	2.38	2.13	2.47	2.33	2.34
10F	Level able to collaborate with other professionals as a resource	2.39	2.33	2.30	2.51	2.38
10G	Level able to participate in professional dialogue to support own development	2.38	2.20	2.43	2.36	2.35
10H	Level able to actively seek and collaboratively share instructional resources	2.25	2.13	2.20	2.32	2.25
10I	Level able to access your own needs for knowledge and skills related to teaching	2.18	2.27	2.21	2.22	2.11

*Note: Table did not equal 100% due to health science technology only having one response and therefore not included in the specific areas and five respondents not indicating a specific area of CTE.

Knowledge and Performance Comparison of Means

An ANOVA was also used to test for differences among the groups using demographics groups as the independent variable. In regards to the Level of Knowledge in means based on age, the results indicated no difference in mean responses ($p=<.05$) based on age. When the responses were grouped by number of years in the teaching profession, there was no significant difference in the mean responses.

However, as shown in Table 2 below, when the responses were grouped by gender, there was a significant difference in mean responses based on gender for Level of

knowledge/understanding of the use of reflection in professional growth and improvement of instruction."

Table 2.
Equality of Variances and Means

		Levene's Test Equality of Variances		T-test for Equality of Means						
									95% confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2 tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Level of knowledge/understanding of the use of reflection in professional growth and improvement of instruction	Equal variances assumed	7.011	.009	-2.558	252	.011	-.198	.078	-.351	-.046*
	Equal variances not assumed			-2.476	195.004	.014	-.198	.080	-.356	-.040
Level of knowledge/understanding of methods of inquiry	Equal variances assumed	.915	.340	-1.311	252	.191	-.108	.083	-.271	.055
	Equal variances not assumed			-1.311	221.603	.191	-.108	.083	.272	.055
Level of knowledge/understanding of major areas of research	Equal variances assumed	.056	.813	.288	252	.773	.024	.084	.142	.191
	Equal variances not assumed			.286	214.970	.775	.024	.085	-.144	.192
Level of knowledge/understanding of teacher's attitudes and behaviors	Equal variances assumed	1.872	.172	-.172	252	.863	-.015	.085	-.182	.153
	Equal variances not assumed			-.169	204.080	.866	-.015	.087	-.186	.156

In regards to the Level of Performance in means based on gender (10E-10I), showed no difference in mean responses (p=<.05) based on gender. However, the ANOVA did show a difference in mean responses based on number of years in the teaching profession and "Level able to participate in professional dialogue to support own development." A Duncan's post-hoc test revealed the breakdown of the mean responses into subsets. As shown in Table 3 below, the new teachers (=<5 years) did not score the lowest in this category as many may have expected. The teachers with 21-25 years in the teaching profession received the lowest mean (2.08), but still in the medium-level range.

Table 3.

Means for Groups in Homogeneous Subsets for Level able to participate in professional dialogue to support own development

Number of Years In the Teaching Profession	N	Subset for alpha=.05	
		1	2
21-25	25	2.08	
16-20	27	2.19	
6-10	42	2.39	2.39
1-5	44	2.39	2.39
11-15	42	2.45	2.45
31-35	31	2.55	2.55
36-40	2		3.00
Sig.		.090	.065

Note: The group sizes are unequal. The harmonic Mean of the group size (9.824) is used

In addition, the ANOVA also showed a difference in mean responses (p=<.05) based on age and "Level able to actively seek and collaboratively share instructional resources." Duncan's post hoc test did not show a significant breakdown, however.

Table 4.
Analysis of Variance

Performance Level	F	Sig.
Level able to use classroom observation as sources for active reflection	1.156	.325
Level able to collaborate with other professionals as a resource	1.251	.265
Level able to participate in professional dialogue to support own development	1.106	.359
Level able to actively seek and collaboratively share instructional resources	1.992	.041*
Level able to access your own needs for knowledge and skills related to teaching	1.166	.318

As noted in the literature review, the Career and Technical Education Improvement Act of 2006, better known as the new Perkins Act, addresses the needs of professional development. Using this legislation as a guide for determining professional development opportunities, participants were also asked to rate their likeliness to participate in various professional development opportunities addressed in the Career and Technical Education Improvement Act of 2006. A rating scale of 1=Not Likely, 2=Somewhat Likely and 3=Very Likely was used for this section of the survey. The ratings in this section ranged from the low to high level. CTE teachers ranked the following professional development opportunities as the most likely to participate:

- Developing, improving, and expanding the use of technology for instruction (2.73)
- Developing critical thinking and problem solving skills in students (2.69)
- Developing teamwork skills in the classroom and beyond (2.65)
- Developing meaningful work-based learning (2.61)
- Developing and sharing methods of teaching in your subject field (2.54).

When divided into content area, agriculture education; business, marketing and computer education; and technology and engineering education all rated likeliness of attending a professional development opportunity for ―developing, improving, and expanding the use of technology for instruction" the highest; while family and consumer sciences teachers rated ―developing critical thinking and problem solving skills in students" the highest. Business, marketing and computer education and technology and engineering education rated ―likeliness of attending the grant writing process and locating grant opportunities" the lowest. Agriculture education rated ―in-depth study in the subject field" the lowest and family and consumer sciences teachers rated likeliness of attending a ―collecting data, using basic statistics, and using database software" professional development opportunity the lowest.

In addition to the calculating the mean for each question in section 2, an ANOVA was used to test for differences in mean responses. The results indicated no significant difference in the responses.

The second question addressed in this study was: What motivates CTE teachers to participate in professional development? The findings of this study related to the motivation of CTE teachers to participate in professional development opportunities were derived from the descriptive results in Section 4 of the survey. Participants were asked to select the motivators for participation in professional development opportunities. They were asked to check all motivators in no particular order. All CTE teachers' responses represented in frequencies and percentages are indicated in Table 5.

Table 5.
Motivators

	n	%
My individual need for waning to become a better teacher	255	96.2
My commitment to lifelong learning	215	81.1

My colleagues and a collegial work environment that nurtures teacher professional growth and collaboration	122	46.0
My school's structured reward system that encourages teacher growth	117	44.2
My principal's devotion and support for teacher professional development	77	29.1
The encouragement and support I receive from my family and friends	73	27.5
The recognition provided by my colleagues at local, state, national and international levels	38	14.3

This section also included an "other" option whereby participants were asked to specify what motivates them to participate in professional development. The responses to this option include:

- Students
- Advancement
- Pay Increase/Financial Incentives
- Certification
- CPDUs

Section 4 also asked CTE teachers to rank order of types of support that would motivate them to participate in professional development opportunities. The three top rankings included: (1) release time, (2) scheduled time, and (3) travel expenses.

The third question addressed in this study was: What barriers exist for CTE teachers in professional development? The findings of this study related to the barriers for CTE teachers in professional development were derived from the descriptive results also from Section 4. Participants were asked to identify barriers to participating in professional development opportunities. The respondents indicated they had no time in their schedule to participate in professional development opportunities as the top barrier for professional development. "My school's budget lacks funding for professional development opportunities" was rated second and "The professional development related opportunities I have attended in the past did not meet my needs" was rated the third highest barrier preventing CTE teachers from participating in professional development opportunities.

Conclusions

CTE teachers are in need of professional development to increase their understanding of major areas of research and their ability to access their own needs for knowledge and skills related to teaching students with disabilities. In the specific content areas of CTE, agriculture education and business, marketing and computer education teachers are in need of professional development to increase their ability to actively seek and collaboratively share instructional resources, and family and consumer sciences and technology and engineering education teachers are in need of professional development to increase their ability to access own need for knowledge and skills related to teaching. The results of this study also seem to indicate a specialized professional opportunity should be developed to increase the knowledge/understanding level of male teachers in the use of reflection as an integral part of professional growth and improvement of instruction. The study found that number of years in the teaching profession may need to be considered when developing a professional development opportunity which requires the teachers to participate in professional dialogue and continuous

learning to support their development as a learner and a teacher. In addition, the age of the teacher should also be considered when developing a professional development opportunity which requires teachers to actively seek and collaboratively share instructional resources. Professional organizations such as the Illinois Association for Career and Technical Education should offer conference session emphasizing developing, improving and expanding the use of technology for instruction and developing critical thinking and problem solving skills in students to increase the likeliness of attendance.

It can also be concluded that CTE teachers are intrinsically motivated to attend professional development. They are motivated by their individual need for wanting to become better teachers and their commitment to lifelong learning. Time is the most prevalent barrier preventing teachers from participating in professional development with school funding being the second most prevalent barrier. CTE teachers feel release time for teaching and time built into their schedule for professional development and collaboration would motivate them to participate in professional development opportunities.

Peter Barnes (2006) asks "What is your worst memory from a teacher workshop?" He states that the disengagement of teachers is the result of "All Bran" workshops with dense content and painful presentations and "Cotton Candy" workshops taught by comedians and storytellers that are sometimes fun, but rarely provide meaningful content or strategies. He concludes his article by stating, "Our time is much too valuable to be wasted by bad professional development" (p. 32). Mr. Barnes' comments are reiterated in the findings of this study. Time is a barrier, but the stakes are too high to just concede. The old saying, "instead of working harder, work smarter" can also be associated to the dilemma of how to make time for meaningful professional development for teachers. Even though it is impossible to extend a day beyond the current 24-hour time frame it is possible to make good use of the time that is available. In the area of Career and Technical Education, the stakes have never been higher. It is through the result of this study and further studies in the area of professional development opportunities for CTE teachers that lead us to work smarter to secure the continued success of CTE and thus the success of the students in this generation and many more generations to come.

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