PROFESSIONAL DEVELOPMENT SUPPORT FOR ALTERNATIVELY CERTIFIED
AND TRADITIONALLY CERTIFIED CAREER AND TECHNICAL EDUCATION
TEACHERS

A dissertation presented to the faculty of the Graduate School of Western Carolina
University in partial fulfillment of the requirements for the degree of
Doctor of Education.

By

Wendy Frye Edney

Director: Dr. Meagan Karvonen
Department Head and Associate Professor
Department of Educational Leadership and Foundations

Committee Members:
Dr. Sandra Tonnsen, Educational Leadership and Foundations,
Dr. Jessica Cunningham, Educational Leadership and Foundations, and
Dr. Jeff McDaris, Transylvania County Schools

October 2010

ACKNOWLEDGMENTS

I am grateful to all of the individuals who have encouraged me along this journey. Dr. Meagan Karvonen, chairperson of my dissertation committee, has been a solid source of support and encouragement. I extend my sincere appreciation to her for specific, timely feedback and her attention to detail. To my committee members, Dr. Sandra Tonnsen, Dr. Jessica Cunningham, and Dr. Jeff McDaris, I am grateful for your thoughtful feedback, constructive suggestions, and for your encouragement.

In preparing for my study, many have assisted me. To Greg Gift, assistant state director for North Carolina Career and Technical Education, thank you for providing your never-ending support. To the North Carolina Career and Technical Education Regional Coordinators, thank you for serving as my experts. To the North Carolina Career and Technical Education district administrators, thank you for helping to make my data collection possible. The North Carolina Career and Technical Education family is one in which I am proud to be a member.

Finally, my deepest appreciation is for my family. My parents, Bill and Linda Frye, instilled within me a desire to learn and a compassionate understanding that all work has worth. I learned respect for all individuals from my mother. I learned the value of Career and Technical Education from my father, a former drafting teacher and Career and Technical Education administrator. For those things I am thankful because they have defined my life's work. My husband, Frank, supported my pursuit of this degree and championed me through the entire process. When I grew tired, he was my strength. My twin boys, Sam and Luke, encouraged me as I worked to meet deadlines and reminded me of what is most important in life. I extend my love and gratitude to my family.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS

AC	Alternative Certification or Alternatively Certified
ACTE	Association for Career and Technical Education
AWE	Alternative Work Experience
AYP	Adequate Yearly Progress
CTE	Career and Technical Education
ESEA	Elementary and Secondary Education Act
LE	Lateral Entry
LEA	Local Education Agency
NCDPI	North Carolina Department of Public Instruction
NCLB	No Child Left Behind
NCPTS	North Carolina Professional Teaching Standards
NOCTI	National Occupational Competency Testing Institute
NSDC	National Staff Development Council
SERVE	South Eastern Regional Vision for Education
TC	Traditional Certification or Traditionally Certified
USDE	United States Department of Education

ABSTRACT

PROFESSIONAL DEVELOPMENT SUPPORT FOR ALTERNATIVELY CERTIFIED AND TRADITIONALLY CERTIFIED CAREER AND TECHNICAL EDUCATION TEACHERS

Wendy Edney, Ed.D.

Western Carolina University (October 2010)

Director: Dr. Meagan Karvonen

The first five years of teaching are important because 30% of all beginning teachers leave the profession during that time (Darling-Hammond, 2001). The purpose of this study was to examine professional development for beginning career and technical education (CTE) teachers during their first five years with respect to three licensure routes: traditional certification (TC), alternative certification - alternative work experience (AC-AWE), and alternative certification – lateral entry (AC-LE). This study was unique because of the focus on CTE. Approximately 25% of high school teachers are CTE teachers (Walter & Gray, 2002). CTE has associated issues that distinguish it from other content areas including its potential to profoundly effect the economy (Camp & Heath-Camp, 2007).

This study used a comparative, descriptive design. The questions addressed were: What professional development content was provided to CTE beginning teachers during their first five years, and of content received, which were most needed and unneeeded? What professional development content do CTE beginning teachers desire during their first five years? Are there differences in provided and needed professional development between the three groups: TC, AC-AWE, and AC-LE? The sampling frame was CTE teachers in 112 North Carolina public school districts with up to five years of full-time

teaching experience. Ninety-three percent (N = 581) of beginning CTE teachers in North Carolina responded to the survey (TC = 140, AC-AWE = 307, AC-LE = 134).

Differences were noted in the content provided to the three groups. AC teachers indicated the highest frequency of receipt of professional development for all standards, with AC-AWE indicating highest frequency of professional development related to diversity, content knowledge, facilitation of learning, reflection, technology, and legal, social and specific CTE issues. AC-LE teachers indicated the highest frequency of receipt of professional development relating to teacher leadership. TC teachers received significantly less professional development than AC-AWE teachers for facilitation of learning. Districts were identified as the most frequent provider and delivery methods indicated most were workshops, job-embedded training, and mentors.

AC-LE teachers indicated the highest rate of receipt for 50 professional development descriptors with TC and AC-AWE indicating the highest receipt for 32 and 27 descriptors respectively. TC teachers had a statistically significant lower mean need than AC-AWE and AC-LE teachers for professional development relating to facilitation of instruction.

In most standards, AC teachers indicated a higher frequency of receipt than TC teachers for professional development that was not provided. TC teachers had significantly lower mean desire than AC-LE teachers for professional development related to teacher leadership. Additionally, TC teachers had significantly lower mean desire than AC-AWE teachers for the standards dealing with facilitation of instruction and technology, legal, social, and CTE issues.

Further research should be conducted at both the district and state level to examine the needs of all beginning teachers and align their professional development support accordingly. Coursework providers should also align their topics to the needs of beginning AC teachers.

CHAPTER ONE: INTRODUCTION

On a national scale, 30% of all beginning teachers leave their positions in the first five years (Darling-Hammond, 2001). Of beginning teachers who complete an alternative route to certification, 30% leave the profession within the first *three* years (Ingersoll, 2002). Attrition rates are higher for certain groups, including middle and high school teachers (Cochran & Reese, 2007) and teachers in schools with more challenging populations (Darling-Hammond, 2001). The number of new public school teachers is projected to increase 26% between 2006 and 2018 (National Center for Education Statistics, 2009). Because new teachers are at a greater risk of leaving education, districts are encouraged to examine the level of support they provide to new educators (Darling-Hammond, 2001; Ingersoll & Smith, 2001).

Teachers who stay in the profession do so because they receive adequate professional development and support ("Improving Teacher Retention," 2007). The attrition rate for beginning teachers who participate in an induction program is 5.5 percentage points lower than those who do not (National Center for Education Statistics, 2001). While the research clearly points to the importance of providing support, districts may not have resources to provide adequate support or may choose to redirect their resources to other areas. In a survey of North Carolina teachers, researchers found that "…only about half of teachers agree that sufficient funds and resources are available to take advantage of professional development opportunities" (Hirsch, Emerick, Church & Fuller, 2006, p. 3). While it may be costly for districts to provide support to beginning teachers, the cost to replace them is likely greater. Nationally, the amount spent on

teacher turnover is estimated at $2.2 billion a year (Alliance for Excellent Education, 2005).

In 2006-07, North Carolina had 9,021 first-year teachers. Of those beginning teachers, 2,811 or 31% were alternatively certified (AC) and did not complete a traditional route to teaching (Holloman, 2007). Most likely, they chose teaching as a second career (Chambers, 2002). Of the AC first-year teachers, 24% did not return to the local educational agency (LEA) the following year. In the same year, 16% of the traditionally certified (TC) first-year teachers did not return to the LEA the next year (Holloman, 2007). The attrition rate was 50% higher among AC than TC teachers. Why did more TC teachers return the following year? What caused fewer of the AC teachers to return?

One widely used approach to promote retention is professional development targeting the support needs of first year teachers. The state school board of North Carolina requires school districts to provide a beginning teacher support program for all new teachers (North Carolina Department of Public Instruction [NCDPI], 2006b). Teachers are required to participate in the program throughout their first three years of employment. According to Board Policy TCP-A-004, districts must promote and provide to new teachers professional development opportunities within the district that are appropriate to their needs as novice teachers. However, districts determine the specific nature of the opportunities as well as who will present material and how it will be presented. Nationally, most districts offer an induction program for beginning teachers but do not tailor the program to the needs of AC teachers (Nagy & Wang, 2006). The primary goal of beginning teacher support programs is retention. However, a recent South

Eastern Regional Vision for Education (SERVE) report reminds district leaders, "The issue of retaining teachers is really one of retaining quality teachers who positively influence student learning, not just retaining all teachers" (SERVE, 2006, p. 2). Therefore, professional development must target those skills that make teachers effective and encourage those teachers to remain.

Background of the Problem

Nationally, 30% of all beginning teachers leave the profession within the first five years (Darling-Hammond, 2001) and 30% of AC teachers leave within the first *three* years (Ingersoll, 2002). Middle and high school teachers are at greater risk of leaving (Cochran & Reese, 2007). Professional development support is critical in the retention of beginning teachers. One unique group of new teachers who receive support after entering the profession is career and technical education teachers.

Career and Technical Education (CTE) is the current administrative name that encompasses vocational and technical education in North Carolina. In state and federal laws, the terms vocational and technical education are used. However, the American Vocational Association changed their association name to the Association for Career and Technical Education (ACTE) and has moved the nation toward the use of the term Career and Technical Education to describe the former vocational education field. (NCDPI, 2009a, p. 3)

The eight CTE program areas in North Carolina include agriculture, business and information technology, career development, family and consumer sciences, health occupations, marketing, technology, and trade and industrial education. Within these eight program areas are courses specifically designed for students in grades 6 - 12. Many

of the 142 high school courses within CTE are eligible for honors level implementation (NCDPI, 2007).

In North Carolina, teachers of CTE courses may enter the profession in multiple ways. Some teachers complete a teacher education program at a four-year university and, upon passing the licensure exam, are prepared to teach. Teachers who enter through this type of route are referred to as TC. CTE teachers may also receive certification in other ways known as alternative routes. Those alternative routes include lateral entry (LE) and alternative work experience (AWE). AWE is a unique option for CTE teachers; AC teachers of core academic subjects do not have this option. Because an increasing number of teachers are entering the profession via alternative routes, it is important to understand the similarities and differences of TC and AC teachers so that they can be adequately supported by the district.

While funds continue to decrease and accountability increases, CTE teachers may receive less professional development support because student performance in CTE courses is not a part of state or federal accountability in North Carolina (Camp & Heath-Camp, 2007). Two major forms of accountability have been established for North Carolina's schools. No Child Left Behind (NCLB) is the federal Elementary and Secondary Education Act (ESEA) legislation that attempts "…to ensure that all children have a fair, equal, and significant opportunity to obtain a high-quality education and reach, at a minimum, proficiency on challenging State academic achievement standards and state academic assessments" (United States Department of Education [USDE], 2002, p. 15). Upon authorization of NCLB, states were required to report Adequate Yearly

Progress (AYP). North Carolina's state model of accountability, referred to as the ABCs, is a growth and performance model that began in school year 1996-97.

Although students in North Carolina CTE courses take standardized achievement tests, scores on these tests do not factor into AYP or ABC calculations. Instead, AYP is calculated based on reading and mathematics performance (grades 3-8) and high school algebra, English, and writing tests. ABC performance is based upon growth in reading and mathematics (grades 3-8) and nine high school academic assessments. Because neither the federal NCLB nor state accountability ABC model measures the performance of students in CTE courses, district funds are rarely appropriated for targeted professional development of CTE teachers (Berry et al., 2003). Furthermore, it is difficult to find studies that have been conducted to better understand CTE teachers when most federal and state research dollars have been directed toward teachers of tested subjects.

Although CTE test scores are excluded from accountability formulas, high school graduation rate is a component of both state and federal accountability. CTE plays a significant role in keeping students in school. In 2007-2008, North Carolina's student graduation rate for all students, as calculated by the method approved for AYP, was 70%. However, for CTE concentrators, students who completed at least four CTE credits with one being an advanced-level credit, the graduation rate was 87% (NCDPI, 2009c). Teachers of CTE courses play a crucial role in the vitality of the state's economy by keeping students in school to earn a high school diploma. This is another important reason to understand the needs of these teachers in order to provide them with the professional development and support they need.

Statement of Purpose

This study specifically examined professional development as it related to beginning CTE teachers. Teachers come to CTE from three different licensure routes with different levels of preparation and background experience. Thus, it is important to understand the professional development needs of teachers from all three routes. The purpose of this study was to describe the professional development content provided to and needed by CTE beginning teachers during their first five years. Another purpose was to determine if there are differences in the professional development content provided to AC and TC beginning CTE teachers during their first five years. The first five years are important because Darling-Hammond (2001) found that 30% of all beginning teachers leave their positions in that time frame. Additionally, this study sought to determine if there are differences in the professional development needs of the three types of beginning CTE teachers, TC, AC-LE, and AC-AWE, during their first five years.

Rationale for the Study

Teacher quality matters. Darling-Hammond (2000) found that teacher quality is more influential in predicting student achievement than demographic characteristics of the student. Additionally, she reported that "…states interested in improving student achievement may be well-advised to attend, at least in part, to the preparation and qualifications of the teachers they hire and retain in the profession" (p. 37). It is imperative that educational administrators strive for teacher quality, regardless of the path their teachers chose for certification. Because 30% of new teachers leave the profession within their first five years (Darling-Hammond, 2001) and AC teachers leave sooner than TC teachers (Ingersoll, 2002), it is important that districts provide the appropriate types

of support to these beginning teachers so that they can develop those qualities that positively influence student achievement and prevent attrition.

While other studies have examined professional development needs of new teachers, this study was unique because of the focus on CTE. Approximately 25% of high school teachers are CTE teachers (Walter & Gray, 2002). CTE has associated issues which distinguish it from other content areas. CTE can have a profound effect on local, state, and national economies (Camp & Heath-Camp, 2007). CTE courses are taught using "hands-on" instructional strategies (Twomey, 2002) which often include safety concerns due to the nature of the tools such as drills, saws, welding machines, knives, and other technology being used. Another factor that distinguishes CTE from other content areas is the strong emphasis on student organizations and expectation of teacher involvement and leadership (Joerger & Bremer, 2001; Smith, 2007).

Other issues unique to CTE are related to the large percentage of teachers who are AC (Walter & Gray, 2002). AC CTE teachers typically have less formal education and more on-the-job experience than their TC counterparts. AC CTE teachers are often overlooked for professional development support because of the national emphasis on NCLB. One such example is lack of support with regard to students with disabilities. AC teachers may be unprepared to support the varying needs of students with disabilities enrolled in CTE courses (Gray & Walter, 2001).While AC CTE teachers possess many similarities, there are two distinct groups. There are two routes to AC in the CTE field. AC-LE and AC-AWE differ with regard to their route to certification and previous education.

A beginning teacher support program is required in North Carolina (NCDPI, 2006b). Understanding the needs of *all* teachers, including CTE, would allow district administrators to tailor the program design and implementation. Teachers are required to participate in the program throughout their first three years of employment. If specific needs of TC, AC-LE, and AC-AWE CTE teachers can be defined, teachers can receive the professional development and support they require and be spared the time spent with those activities not needed for their professional growth and retention in the field.

Time is a limited resource for AC CTE teachers. While they are participating in their districts' beginning teacher support programs, they are also completing licensure coursework. The licensure coursework is provided in the form of face-to-face, online, or hybrid classes taught by community college or university faculty. The NCDPI sends AC teachers a letter that outlines the higher education courses to be completed within three years. It would be valuable for districts to know what information is being provided through AC licensure courses so that information is not repeated by district support programs. Additionally, it would be important for districts to know where the gaps remain so that support may be provided in those areas. Gaps could exist between what the AC CTE teachers need but were not provided. That information could be crucial for district administration to know in terms of teacher retention and support. This study also identified what is being provided but is possibly unneeded. The findings of this study could prompt districts to redesign beginning teacher support programs to areas most crucial to the success of beginning AC CTE teachers and allow them to use their professional development funds more efficiently. Authors have recommended that more research be conducted to compare needs and preparation of AC and TC CTE teachers

(Ruhland & Bremer, 2002a, 2002b) and this study attempted to respond to those recommendations.

Research Questions

The purpose of this study was to describe professional development provided to and needed by beginning CTE teachers during their first five years. Additionally, it sought to determine if there are differences in content provided to and needed by the groups. The first five years are important because Darling-Hammond (2001) found that 30% of all beginning teachers leave their positions during this time. Additionally, this study sought to determine if there were differences in the professional development needs of the three types of beginning CTE teachers, TC, AC-LE, and AC-AWE, during their first five years. The questions this study addressed appear below:

1. What professional development content was provided to CTE beginning teachers during their first five years?

    a. Are there differences in the content provided to the three groups?

    b. Who provided those supports?

    c. What were the methods of delivery?

2. Of professional development content received by CTE beginning teachers during their first five years, which were most needed and unneeded?

    Are there differences in needed and unneeded professional development content between the three groups?

3. What professional development content do CTE beginning teachers desire to have received during their first five years?

Are there differences in desired professional development between the three

groups?

I used a web-hosted program, Qualtrics, to survey all beginning CTE teachers in

North Carolina with up to five years of full-time teaching experience. Prior to deploying

the survey, I asked an expert group to review the survey and then I piloted the survey

with a small group of beginning CTE teachers. I incorporated the North Carolina

Professional Teaching Standards (NCPTS) (2007), along with other skills referenced in

the literature, into the survey to determine content that was provided to the beginning

teachers as well as provider and method of delivery. Additionally, the survey asked the

teachers to rank the provided content according to their level of need and to report

professional development they would like to have received but did not.

Significance of Study

As referenced earlier, Darling-Hammond (2001) found that 30% of all beginning

teachers leave their positions in the first five years. In support of Darling-Hammond's

finding, Thornton (2004) reviewed research regarding teacher certification and found that

when looking nationally at all areas of teaching, there is not a shortage of licensed

teachers. The problem is an inability to keep teachers in the classroom. If CTE teachers

become dissatisfied with the profession, they are sometimes tempted to leave the

classroom for another career in business and industry (Twomey, 2002). As was also

referenced earlier, Darling-Hammond (2001) reported that the retention of new teachers

decreases when they are assigned to schools with particular challenges. Jorissen (2003)

researched AC teachers who decided to remain in urban schools and found that those

teachers have particular needs. Those teachers who remained cited the following as some

of the factors that influenced their decisions to stay: a cohort model, developing new

relationships, and reinforcement of successful experiences. Jorissen wrote:

> Designing programs that will ensure the longevity of alternatively prepared
>
> teachers becomes, then, an important consideration for those advocates of this
>
> strategy for increasing the teaching force, especially for urban schools. Investing
>
> scarce resources in alternative route programs is futile, if the newly prepared
>
> teachers abandon teaching. For policy makers and teacher educators, increasing
>
> the probability that effective alternate route teachers will remain in the schools
>
> that hired them is a primary goal. (2003, p. 41)

Implications. Researchers have recommended the need for additional research

regarding the professional development needs of AC teachers (Camp & Heath-Camp,

2007; Joerger & Bremer, 2001; Sander, 2007; Thompson, 2003). If it is found that AC-

LE, AC-AWE, and TC CTE teachers have different needs, educators will see that a "one

size fits all" approach to professional development is not appropriate. Additionally,

educational administrators will better understand the nature and needs of AC-LE, AC-

AWE, and TC CTE teachers and recognize their strengths and could tap those strengths

in order to provide staff development to others in their areas of expertise. Ultimately,

administrators will better understand areas of weakness that most AC CTE teachers

possess and can proactively address those areas by providing support.

Applications. North Carolina's state school board policy TCP-A-004 (NCDPI,

2006b) requires that all school districts provide a beginning teacher program. If this study

finds that AC CTE and TC CTE teachers have different professional development needs

from TC teachers, the districts can tailor the programs to the specific needs of the

teachers. Additionally, institutions of higher education that also provide coursework to AC and TC teachers can use this study to better provide the specific content and support needed by both groups.

Delimitations

There are delimitations to this study. The generalizability of the findings is limited to the extent that I did not have access to those teachers who left the profession within the last five years. It is possible that they left due to lack of professional development support. Additionally, I did not have access to those with up to five years' experience who left the classroom to become CTE support services staff such as special populations' coordinators, career development coordinators, instructional management coordinators, or administrators. Because teachers with up to five years' experience were surveyed, accuracy of recall was a concern. Additionally, teachers were asked about perceived needs and actual needs were not determined.

CTE administrators were the middle link between my broadcast email and teachers. It was possible that human error prevented the administrators from forwarding my email either at all or in a timely manner. Because CTE administrators were the middle link, socially desirable responses were a concern. Another delimiting factor was the time of year in which the survey was deployed. Spring is the busiest time of year for teachers and students and it is possible that they were distracted during completion of the survey.

Because CTE licensure routes and requirements are defined by states, the three groups used in this study (TC, AC-AWE, and AC-LE) may have different attributes in other states. Additionally, postsecondary course provider content may not be comparable in some states.

Definitions

Technical terms appear throughout this proposal. It is important that the reader understand what is meant by these terms. Their definitions, as applied in North Carolina, are presented below.

Career and technical education (CTE) refers to programs delivered in middle and high school in grades six through twelve that fall within the following areas: agriculture, business, family and consumer science, health occupations, marketing, technology, and trade and industry (NCDPI, 2009a).

CTE beginning teachers refers to those with up to five years of full-time CTE teaching experience.

Alternative certification (AC) is a nontraditional route to licensure and can be completed either through the LE or the AWE route. Teaching is often the second career of AC teachers. They did not initially complete a traditional teacher preparation program (Hoepfl, 2001).

Lateral entry (LE), a type of AC, is the route to licensure taken by prospective teachers who possess a bachelor's degree in something other than education and have returned to school in order to "add-on" a degree in education (NCDPI, 2009d). Reference Appendix A for North Carolina's requirements to qualify for LE.

Alternative work experience (AWE), a type of AC, is the route that CTE teachers may take if they have significant work experience in the field in which they wish to teach. These teachers may or may not possess an undergraduate degree. Some of the CTE licensure areas do not require an undergraduate degree. AC-AWE teachers are required to take 18 hours of education coursework which may include curriculum, pedagogy,

assessments, classroom management, and exceptionalities. Additionally, licensure requirements for some program areas mandate that teachers obtain industry certifications and pass academic assessments (NCDPI, 2006a). Reference Appendix B for North Carolina's CTE licensure requirements for AC-AWE teachers.

Traditional certification (TC) refers to the typical requirements for a bachelor's (or higher) degree in education. After these requirements are met, teachers are eligible to take a teaching licensure exam.

District-sponsored professional development refers to support provided by district personnel or through district funds.

CHAPTER TWO: REVIEW OF LITERATURE

In this chapter, I will review current literature relating to CTE, AC, and professional development. The scope and purpose of CTE will be presented. Within the AC section, general research related to AC and information specific to AC CTE teachers will be covered. The professional development section will explore general information as well as that which is specific to AC and AC CTE teachers. The chapter concludes with the conceptual framework for the study.

Career and Technical Education

CTE, formerly called Vocational Education and Workforce Development Education, has been one component of high school curricula in the United States since the Smith-Hughes Act was passed in 1917. Federal legislation has continued to support CTE through the Vocational Education Act of 1963 and the Carl D. Perkins act of 1984. Preparing students for a career and inclusion of all students have been a common thread throughout the existence of CTE (Threeton, 2007). Still a viable option for students, 97% of United States students take at least one CTE course while in high school (USDE, 2004). The ACTE (2010) reports that "CTE provides students:

- academic subject matter taught with relevance to the real world;

- employability skills, from job-related skills to workplace ethics;

- career pathways that link secondary and postsecondary education;

- second-chance education and training; and

- education for additional training and degrees, especially related to workplace training, skills upgrades and career advancement." (¶ 2)

CTE provides students with middle-level job skills. The 2005 Skills Gap Report found a shortage of workers with 90% of respondents reporting a "moderate to severe shortage of qualified skills production employees" (Glassroth, Mistretta, Reynolds, Rea, & Rizzo, 2005, p. 5). Middle-level jobs "…are those that generally require some significant education and training beyond high school but less than a bachelor's degree. These postsecondary education or training requirements can include associate's degrees, vocational certificates, and significant on-the-job training…" (Holzer & Lerman, 2007, p. 8). The need for these skills is not projected to decrease. Forty-five percent of new jobs between 2004 and 2014 will be in occupations that require middle level skills (Kirby et al., 2006). As the need continues to increase, so does the pay for middle-level jobs. Holzer and Lerman (2007) report that pay increases for middle-level jobs are commensurate with bachelor degree positions. In fact, many middle-level jobs have seen sharp increases in annual pay including many from the health science career cluster. Between 1997 and 2005, the average annual pay increase for registered nurses was 18%, speech and respiratory therapists' increase was 10%, and radiological technicians' increase was 23%. They also argue that "…researchers are underestimating middle-skill job prospects in the labor market and policymakers are paying too little attention to strengthening skills development for these positions" (p. 6). In response to this economic need, Camp and Heath-Camp (2007) predict that CTE enrollment will increase and therefore more teachers will be needed in all CTE program areas. Students who take four related high school CTE courses, referred to as concentrators, earn $1,800 more annually than their peers seven years after graduation (USDE, 2004).

In training students for technical careers in middle-level jobs, CTE teachers have unique instructional needs and challenges. Most CTE programs are predominantly hands-on courses and require that teachers understand appropriate instructional strategies which go beyond traditional lecture methods. Additionally, CTE teachers must continually update their skills so that they can teach the newest software or type of machinery. Keeping current with technical skills is a professional development challenge in itself (Twomey, 2002). With regard to machinery, CTE teachers train students on the use of potentially dangerous items such as construction tools, car lifts, kitchen knives, and ovens. In addition, CTE health occupations teachers take students into hospitals and long-term care facilities so that they may practice their clinical skills. These students learn proper techniques for bathing patients, taking vital signs, and lifting patients.

In addition to instructional and technical challenges faced by CTE teachers, they typically are asked to sponsor a student organization such as Future Business Leaders of America or Future Farmers of America. Because CTE teachers are often the only teacher at a school in a specific program area, this extra-curricular responsibility cannot be shared. For example, in an average-sized high school there is typically only one agriculture teacher, one health occupations teacher, and one marketing teacher. These clubs require after school meetings, leadership conferences, competitive events and, if students place high enough, national events (Joerger & Bremer, 2001; Smith, 2007).

In addition to the specific responsibilities teachers have to their local districts, in North Carolina they are also expected to support the statewide mission, vision, and purpose for CTE as displayed in Table 1. One additional responsibility is that CTE teachers are expected to partner with business and industry. Examples include

establishing advisory councils, placing students in work-based opportunities such as

shadowing, internships, and apprenticeships. These types of collaboration call for time

and effort that exceed expectations for a typical teacher.

Table 1

Mission, Vision, and Purpose of CTE in North Carolina

Mission	To empower all students to be successful citizens, workers, and leaders in a global economy.
Vision	When students participate in Career and Technical Education as an integral part of the total school experience, and when parents recognize that Career and Technical Education impacts achievement of educational and career goals, and when partnerships impact the educational community to provide a seamless transition to educational and career goals, then North Carolina will develop a more talented workforce that successfully recruits and retains new business and industry and students will be empowered for success.
Purpose	Career and technical education fulfills this mission by: • Preparing students for postsecondary education in career and technical fields and lifelong learning. • Preparing students for initial and continued employment. • Assisting students in making educational and career decisions. • Applying and reinforcing related learning from other disciplines. • Assisting students in developing decision-making, communication, problem-solving, leadership, and citizenship skills. • Preparing students to make informed consumer decisions and apply practical life skills. • Making appropriate provisions for students with special needs to succeed in career and technical education programs.

Note. From "A Guide for Administering Career and Technical Education in the Public

Schools of North Carolina," North Carolina Department of Public Instruction, 2009a,

 p. 4.

CTE is a major contributor to education in North Carolina. In 2007-2008,

duplicated course enrollment for North Carolina CTE courses was 896,176 with 72% of

all high school students enrolled in at least one CTE course. In a duplicated course

enrollment, the student who takes two CTE classes is counted twice. With that many

students enrolled in CTE courses, it is not surprising to find that in 2009-2010, more than

4,500 CTE teachers were employed in North Carolina schools (Cash, 2009). Enrollment

in CTE courses provides occupational opportunity because only 7% of CTE

concentrators reported unemployment as compared to a statewide 24% youth 16-19

unemployment rate (NCDPI, 2008). In addition to working, CTE students are

participating in career-related clubs. In school year 2007-2008, total North Carolina CTE

student organization membership was 46,893 (NCDPI, 2008).

Alternative Certification

Many teachers enter education through nontraditional routes, also called AC

routes. This particular strategy of adding on a teaching license called "alternative

certification" is a relatively new one to *all* areas of licensure. The first AC programs were

established in New Jersey and Texas in the 1980s (Sander, 2007). The establishment of

AC programs was and continues to be an effort to address teacher shortages across the

nation. Because teacher preparation and licensing are determined at the state level, the

types and lengths of AC programs vary from state to state (Gray & Walter, 2001).

Zeichner and Schulte (2001) wrote that differences in AC programs have confused

educators over the past 20 years. Causing some of the confusion is the variance in

standards for AC programs across states with regard to length and rigor of program, as

well as qualifications required prior to enrollment (Zirkle, Martin, & McCaslin, 2007).

While the purpose of the AC programs across the nation remains the same, the delivery

of AC programs continues to differ and no two programs are the same.

Characteristics of AC teachers. AC teachers typically enter teaching as a second career. According to Chambers (2002), individuals decide to pursue teaching as a second career because they have a desire to give of themselves in order to benefit society. Additionally, second career teachers believe they will benefit personally by helping students. Also, these AC teachers believe they have technical skills to offer students based upon their real-life experiences. They can answer the question students often ask: "Why do I need to know this?" (Chambers, 2002). In addition to their technical skills, "midcareer individuals bring many strengths to teaching, including maturity, life experience, and good work habits" (Resta, Huling & Rainwater, 2002, p. 61).

In many cases, because this is their second career, the typical new AC teacher may be older and more mature than the new TC teacher (Chesley, Wood & Zepeda, 1997). AC teachers may have made a career change due to being out of work or because of a work-related injury (Rotman & Messelaar, 2005). Perhaps the typical AC teacher entered the teaching field because of a desire for a job with benefits including health insurance and retirement.

Because of their backgrounds and experiences, typical AC teachers bring unique qualities and perspectives to the profession. Graduates of AC programs are often teachers of color and are recruited to teach in urban schools (Sander, 2007; Zeichner & Schulte, 2001). They also differ from TC teachers in the classroom. After studying novice teachers in urban schools, Stoddart (1993) discovered that the AC teachers held the minority students with low family income to a higher standard than did the TC teachers. Additionally, the AC teachers were more responsive to the needs of those students. These AC teachers may also be more assertive and willing to express their viewpoints. AC

teachers may be less patient with the slow pace of federal and state action (Resta et al., 2002). Watkins (2005) suggested that second career teachers are accustomed to collaboration from their business/industry experience and need to feel included on a team. This need makes them invaluable members of school-based committees such as school improvement teams and professional learning communities.

While many AC teachers are older and transitioning into a second career, there are some who have obtained a bachelor's degree in an area other than education and decide, after graduation, to pursue a career in teaching. These individuals may also explore this option through AC programs (Tell, 2001). For example, an individual could graduate in May with a bachelor's degree in business administration. While lacking workplace experience, this person could decide to seek teacher certification. He could begin teaching three months later, the following August, while taking prescribed education courses over the next three years. While education is the second career for most AC teachers, it is possible to approach teaching as a first career through an AC program.

Regardless of their work experience or lack thereof, Thornton (2004) found that AC teachers felt that their colleagues assumed they lacked skills in pedagogy. Even though the AC teachers may perform successfully in the classroom, executing effective instructional strategies resulting in student achievement, their perception was that other teachers doubted their abilities. While Thornton's (2004) study found that AC teachers fear that others doubt their abilities, Chesley (1997) found that AC teachers' belief in what others perceived about them did not coincide with what their colleagues actually believed. Chesley et al. (1997) found that AC teachers were "…perceived by others as

mature adults who already are able to function as teachers" (p. 28). So, is it possible that AC teachers think others view their skills as lacking when, in reality, other teachers actually view them as competent? While perceived characteristics can influence AC teachers as well as others' opinions of and interaction with them, the actual characteristics of AC teachers matter most. As will be explored later in this section, with regard to teacher effectiveness and student achievement, AC teachers who receive proper support fare quite well.

Converse to Chesley's 1997 study, others have found evidence that TC teachers look negatively upon AC teachers. Thornton (2004) revealed one veteran teacher expressing her frustration regarding pressures of the job and prepackaged, "teacher-proofed" materials. The veteran teacher said about AC teachers:

> This isn't real teaching. Maybe it's like this because of the teacher shortage; they want to get anyone with a degree, as long as they know content, to teach. This way they can "teach" without having the skills and knowledge we do. It's frustrating to those of us who know how to teach and can't do what we need to do. (p. 8)

In addition to dealing with skepticism from colleagues, AC teachers may also face resistance from their assigned mentors, individuals who should be among their greatest supporters. Stafford (2006) revealed that mentors assigned to AC teachers felt that their time was wasted on this group of teachers "…who went through a shortcut or back door to teaching" (p. 500).

Do TC teachers come into the profession more academically prepared than AC teachers? With regard to their academic performance, Zeichner and Schulte (2001)

reported, "Research that has examined the academic qualifications of teachers in terms of grade point averages and content examination scores has not found any major differences between [AC and TC] teachers…" (p. 278). While the knowledge bases of AC and TC teachers may be similar, based upon her interviews with AC teachers, Chambers (2002) posited that support needed by this group of teachers differs from TC teachers. However, this support was only loosely defined to include "…in-service training workshops, and peer mentoring…to make use of their previously learned skills and to reflect on connections between the first and second career. If invited to create these linkages, second-career teachers can be not only effective but also innovative teachers" (p. 216).

While AC teachers may require additional support, they seem to enjoy their careers and find success. Regarding job satisfaction and performance, Tutterow (2000) found that on a six-point scale, with six being the most positive, AC teachers' average rating was 4.73. In addition to rating themselves as higher than the midpoint on the job satisfaction scale, the majority of the AC teachers who participated in the study reported above-average performance as indicated in the following quote. "Over 75% of [LE] teachers perceived themselves to be 'better than average' and above as teachers" (p. 128). However, Onderi and Croll (2009) surveyed 109 English and mathematics secondary education teachers with nonspecific certification routes and found that the teachers overwhelmingly reported strength in pedagogical skills. So, perhaps a confident attitude regarding professional skills among teachers regardless of certification route is not surprising.

Thompson (2003) surveyed AC and TC teachers and found that with regard to perception of preparedness to teach, there was no statistically significant difference in the

two groups' responses. All of the teachers who were surveyed were graduates of the same university program. In addition to the aforementioned results, the study also found there were no statistically significant differences in the two groups regarding self-efficacy related to teaching or their ability to pass the state licensure exam. So, perhaps their level of perceived preparedness had more to do with the effectiveness of the program than with the differences the two groups bring to the profession.

Regarding actual preparedness, Miller, McKenna and McKenna (1998) found that there was not a significant difference between AC and TC teachers' classroom instruction as measured by observation. An additional finding was that the achievement of both student groups was similar. While a typical AC teacher has had jobs prior to teaching, Tutterow (2000) found that administrative evaluations using the North Carolina's Teacher Performance Appraisal Instrument indicated no relationship between current teaching performance and previously held jobs. However, he found that there is a relationship between AC teachers' years of service and the quality of their administrative evaluations.

Alternatively certified CTE teachers. AC is a route chosen by many CTE teachers. McCaslin and Parks (2002) researched the history of CTE teaching preparation. While often thought of as a "current" issue, for hundreds of years many CTE teachers have first become masters of their trade and later transitioned into the role of teacher which required them to integrate moral and academic concepts into their skill instruction. Consequently, they were required to further their own education in the areas of language arts and mathematics. They were expected to take evening courses because of daytime teaching responsibilities. So, taking additional courses to qualify an individual to teach is

not a new process. However, this particular strategy of adding on a teaching license called "alternative certification" is a relatively new one to all areas of licensure including CTE.

AC CTE refers to a specific group of AC teachers. They teach in the fields of agriculture, business and information technology, career development, family and consumer sciences, health occupations, marketing, technology, and trade and industrial education. Summer Rotman, director of UMass Boston's Center for Technical Education wrote in support of encouraging individuals to transition from business and industry into teaching. She wrote, "It only makes sense to have technical skills taught by those who have made a career using them" (2005, p. 30). Bruening and Scanlon (2001), working with the National Research Center for Career and Technical Education, suggested that research has not found TC CTE teachers to be adequately training students for current workplace skills. However, AC CTE teachers, because of their previous work experience, are able to connect the course content with real-world applications (Chambers, 2002).

Because of the added pressures associated with transitioning into a new career and often extended hours required of CTE teachers, it is tempting for AC CTE teachers to return to business and industry during summer break or periods of teacher salary freezes. Most likely, these teachers could make more money in business and industry. The combination of inadequate professional support and less money may cause AC CTE teachers to reconsider their decision to leave business and industry (Twomey, 2002).

Because their time is limited, flexibility is helpful to AC CTE teachers. Some universities offer training for AC teachers to enter the field of CTE and strive to meet their needs through flexible scheduling. This option is often to the detriment of full-time

degree-seeking students who would prefer to take classes during the day rather than late into the evening or on weekends (Hoepfl, 2002). While some universities continue to support CTE teacher preparation for both TC and AC teachers, many other university CTE preparation programs are closing (Bruening & Scanlon, 2001) due to low enrollment and decreased budgets. Gray and Walter (2001) reported that one-third of CTE teacher education preparation programs, open in the 1980s for both traditional and second career candidates, closed during the 1990s.

North Carolina is experiencing a shortage of CTE teachers and AC programs are one solution to this crisis (Cleveland, 2003). In school years 2007-08, 2008-09, and 2009-10, 50% of CTE teachers have been AC, 42% TC, and 7% not specifically identified (Cash, 2009). The two routes to AC CTE certification in North Carolina are AC-LE and AC-AWE. The AC-LE route to CTE holds the same requirements as for academic disciplines. See Appendix A for AC-LE requirements. However, the AC-AWE is a different route to AC and available only to CTE AC teacher candidates. See Appendix B for an example of those requirements. The AC-AWE route is designed to give credit to those with related work experience and reduce the number of courses they must take to earn a teaching license. The AC-AWE route recognizes the value of related work experience and requires, for those with a bachelor's degree, two years of related work experience within the past five years. The scale is graduated and requires more work experience for those with less than a bachelor's degree.

In North Carolina, at the beginning of school year 2009-2010, the CTE regional coordinator responsible for licensure reported that a Health Occupations licensure program for AC teachers at East Carolina University had closed (J. Kirkman, personal

communication, September 1, 2009). Assuming that a limited number of universities will continue to support AC CTE programs, retention of these teachers becomes increasingly important. Ruhland and Bremer (2002b) reported that when beginning CTE teachers who had up to five years of experience felt their teaching experience had been positive, they were more likely to continue in the profession while their type of certification, AC or TC, made no difference in their decision to leave or to remain. Therefore, providing programs for AC teachers to complete licensure requirements while providing them with the support, both through coursework and within the district, is a necessary combination for increased retention.

Support can be tailored to recognize AC CTE teachers' prior educational and work experiences. Unlike requirements for teachers in core academic areas, AC CTE teachers may have less than a bachelor's degree and often only a high school degree. Additionally, they may have no formal training in lesson planning, pedagogy, or classroom management (Chesley et. al, 1997) which are crucial for teaching success.

CTE draws a diverse group of students. Within a single class, both the senior class valedictorian and a low-achieving freshman could be enrolled. There has been an increased enrollment of students with disabilities and disadvantages in CTE courses due to Perkins legislation requiring CTE programs to support these groups (Joerger & Bremer, 2001). Gray and Walter (2001) reported that students with disabilities earned almost half of the CTE credits that are earned nationally. While students with disabilities often cannot be distinguished from their classmates, they sometimes require additional support such as teacher notes, previewing, scaffolding of material, reteaching, and extended time on tests. Most new AC teachers are unaware of specific strategies they can

use with these students. The challenge of teaching students with disabilities and disadvantages alongside students in mainstream education programs place CTE teachers in extremely difficult situations.

CTE routes to certification vary among states. Nationally, Zirkle, Martin, and McCaslin (2007) determined the average number of routes to CTE certification is 2.06 per state with 105 different alternate pathways reported. The alternate pathways were grouped into four broad categories: trade and industry program area certification, combinations of degree and experience certification, general certification to be used by any teachers, and a category designed for business, marketing, health occupations, and agriculture certification. Of the 105 alternative pathways, 22 required, as a minimum enrollment requirement, a high school diploma, or GED. A requirement that teachers must have related work experience was reported in 54 of the alternate pathways. With regard to testing, most of the alternative programs utilize the National Occupational Competency Testing Institute (NOCTI) or the Praxis series (Zirkle et al., 2007).

In North Carolina, there is two types of AC CTE certification. AC-LE is the route to licensure taken by prospective teachers who possess a bachelor's degree in something other than education and have returned to school in order to "add on" a degree in education (NCDPI, 2009d). The other route to AC, AC-AWE, is the route that CTE teachers may take if they have significant work experience in the field they wish to teach. These teachers may or may not possess an undergraduate degree. Some of the North Carolina CTE licensure areas do not require an undergraduate degree and only require an associate's degree or high school diploma. These AC-AWE teacher candidates are required to take eighteen hours of course work which may include curriculum, pedagogy,

assessments, classroom management, and exceptionalities. Additionally, some North Carolina CTE program areas require teachers to obtain industry certifications and pass academic assessments (NCDPI, 2006a).

Some major differences between CTE AC-LE, and AC-AWE in North Carolina are:

1. LE requires a bachelor's degree and AWE does not for all areas. Marketing and Technology Education are the only two CTE areas that require a bachelor's degree for AWE. CTE Trade and Industry teachers who enter the profession through AWE might only possess a high school diploma.

2. AWE is only for those with previous related work experience but requires less experience if the candidate possesses a bachelor's degree.

    a. For those with bachelor's degrees, two years of related work experience within the past five years are required.

    b. For those with associate's degrees, four years of related work experience within the past eight years are required.

    c. For those with a high school diploma, six years of related work experience within the past ten years are required.

3. AWE allows teachers to be paid according to their years of related work experience. For example, a mason with 25 years of documented and related work experience will initially be paid the same as a teacher with 25 years of teaching experience.

4. The Praxis II exam is required for all LE teachers. Praxis II is only required for some AWE teachers. It is not required for agriculture, family and

consumer sciences (specialized licenses), health occupations, and trade and industry. AWE teachers in these disciplines with only a high school diploma may take the Asset, Accuplacer, or Work Keys in lieu of the Praxis II.

5. LE teachers may or may not have related work experience. AWE is specifically designed for those with significant and related work experience. (NCDPI, 2006a, 2009d)

In North Carolina, the two routes to AC in CTE, AC-LE, and AC-AWE, are vastly different and designed for those teacher candidates with different backgrounds. Because the AC-AWE route brings many to the teaching profession who may have only a high school diploma, there may be need for additional layers of support. For example, the AC-LE teachers will most likely have taken higher-level mathematics and language arts courses while pursuing their bachelor degrees (Blue Ridge Community College, 2009). Because Perkins IV performance indicators require CTE courses to support algebra I and literacy achievement and to report concentrators' achievement in those areas, AC-LE teachers could have an advantage over AC-AWE teachers because of the college level mathematics and English courses taken. While AC-AWE teachers may possess that advanced mathematics and English knowledge, AC-LE teachers will have taken those college level courses. Additionally, trade and industry AC-AWE teachers will likely have spent most of their careers laying brick or building houses and may have limited computer skills that are now required in schools to perform daily tasks such as submitting attendance and recording grades. Even receiving communication from the school's and district's administration via email may be daunting for some AC-AWE teachers with

limited computer skills. It would help districts to know if the support required by these two groups, AC-LE, and AC-AWE, is different and, if so, in what ways.

Professional Development

> Derisive stories about the worst professional development encountered are easy to come by in education circles. The day everybody was made to do the macarena in between writing their school's mission statement or the afternoon spent coloring in a diagram of a brain to illustrate their personal characteristics are the kinds of silly activities that make teachers beg for less time mandated for "development." (Scherer, 2002, p. 5)

In this section, I will explore professional development and teaching standards. Purposes of, methods of planning for and delivery of professional development will be presented. More specifically, this section will cover professional development with regard to new teachers, AC, and AC CTE teachers. "If we are to keep quality teachers, those newest to the profession must be given the support system of pedagogical knowledge that they need to succeed in the classroom" (Frieberg, 2002, p. 56). Teachers who stay in the profession do so because they receive adequate professional development and support ("Improving Teacher Retention," 2007).

The National Staff Development Council's (NSDC) Standards for Staff Development (2001) outline the general principles for quality professional development. There are twelve standards organized into three categories which are context, process, and content. The context category includes standards about learning communities, resources, quality teaching, and leadership. The process category, the largest of the three,

includes standards about design, data, collaboration, evaluation, research, and learning. Finally, the content category includes standards about equity and family involvement.

It is possible for a professional development activity to cover more than one NSDC standard (2001). For example, a professional development activity that helps teachers to better understand equity (Content Standard 1) may also incorporate ways to design lesson plans appropriate for diverse students (Content Standard 2). Multiple types of professional development methods of delivery are available to support teachers. Teachers have different learning styles, as well, and appreciate a menu of programs from which to choose.

In addition to national staff development standards, state teaching standards are also a factor when planning professional development. Knowledge of these research-based national staff development standards combined with an understanding of state teaching expectations can inform district administrators who plan local professional development activities. In North Carolina, professional development also aligns to the standards used to assess teacher performance. The North Carolina Teaching Standards Commission was established by the legislature to ensure this alignment. See Figure 1 for an illustration of the national standards to North Carolina state standards. The five areas covered by the North Carolina standards, which are also a part of the teacher evaluation instrument, are teacher leadership, respect for student diversity, content knowledge, learning facilitation, and reflection (NCPTS Commission, 2007). Levels of support can be based upon identified needs of the new teachers in the district. For example, some teachers may report a high level of content knowledge and will require less support in that area. Some teachers may report a low level of experience and/or knowledge of

learning facilitation and will require more support with that area. Both the NSDC

standards (2001) and North Carolina state standards (NCPTS Commission, 2007) can

inform the work of district administrators responsible for professional development.

Figure 1

North Carolina Standards for Teachers and National Standards for Professional Development

North Carolina Standards for Teachers	National Standards for Professional Development
Standard 1 - Teachers demonstrate leadership.	**Alignment: Context Standard #2 and Process Standard #6**
Teachers lead in their classrooms.	Requires skillful school leaders who guide continuous instructional improvement. (Leadership) Context Standard #2
Teachers demonstrate leadership in the school.	
Teachers lead the teaching profession.	
Teachers advocate for schools and students.	Provides educators with the knowledge and skills to collaborate. (Collaboration) Process Standard #6
Teachers demonstrate high ethical standards.	
Standard 2 - Teachers establish a respectful environment for a diverse population of students.	**Alignment: Content Standard #1 and #3**
Teachers provide an environment in which each child has a positive, nurturing relationship with caring adults.	Prepares educators to understand and appreciate all students, create safe, orderly and supportive learning environments, and hold high expectations for their academic achievement. (Equity) Content Standard #1
Teachers embrace diversity in the school community and in the world.	
Teachers treat students as individuals.	
Teachers adapt their teaching for the benefit of students with special needs.	
Teachers work collaboratively with the families and significant adults in the lives of their students	Provides educators with knowledge and skills to involve families and other stakeholders appropriately. (Family Involvement) Content Standard #3

Figure 1 *(continued).*

North Carolina Standards for Teachers	National Standards for Professional Development
Standards 3 and 4	**Alignment: Content Standard #2, Process Standard #2 and #3**
Standard 3 - Teachers know the content they teach	Deepens educators' content knowledge, provides them with research-based instructional strategies to assist students in meeting rigorous academic standards, and prepares them to use various types of classroom assessments appropriately. (Quality Teaching) Content Standard #2 **and** Uses multiple sources of information to guide improvement and demonstrate its impact (Evaluation) Process Standard #2; **and** Prepares educators to apply research to decision making (Research-Based) Process Standard #3
Teachers align their instruction with the North Carolina Standard Course of Study	
Teachers know the content appropriate to their teaching specialty.	
Teachers recognize the interconnectedness of content areas/disciplines.	
Teachers make instruction relevant to students.	
Standard 4 - Teachers facilitate learning for their students	
Teachers know the ways in which learning takes place, and the appropriate levels of intellectual, physical, social, and emotional development of their students.	
Teachers plan instruction appropriate for their students	
Teachers use a variety of instructional methods.	
Teachers use a variety of methods to assess what each student has learned.	
Teachers integrate and utilize technology in instruction.	
Teachers help students develop critical thinking and problem-solving skills.	
Teachers help students work in teams and develop leadership qualities.	
Teachers communicate effectively.	
Standard 5 - Teachers reflect on their practice	**Alignment: Process Standard #1 and Context Standards #1 and #3**
Teachers analyze student learning.	Uses disaggregated student data to determine adult learning priorities, monitor progress, and help sustain continuous improvement. (Data Driven) Process Standard #1
Teachers link professional growth to their professional goals.	Requires resources to support adult learning and collaboration. (Resources) Context Standard #3
Teachers function effectively in a complex, dynamic environment.	Organizes adults into learning communities whose goals are aligned with those of the school and district. (Learning Communities) Context Standard #1

Figure 1. NSDC includes two other standards that are not addressed in NC standards.

Note. From North Carolina Professional Teaching Standards Commission, 2007, *North Carolina Professional Teaching Standards* and National Staff Development Council, 2001, *NSDC's Standards for Staff Development.*

Professional development is associated with positive outcomes. On the most basic level, professional development fosters friendships among teachers (Nieto, 2009) which can lead to organized groups of educators collaborating together in professional learning communities called PLCs (Smith, Wilson & Corbett, 2009). Increasing student achievement by focusing more on learning rather than teaching is a goal of PLCs (DuFour, 2004). PLCs move quickly to identify areas of student need and intervene on behalf of students. Additionally, they do not wait until students need remediation to act on their behalf. In addition, these groups of educators do not ask if students would like additional help but rather demand that they receive it (DuFour, 2004).

Effective professional development increases student learning (Darling-Hammond & Richardson, 2009; Joyce, Showers & Rolheiser-Bennett, 1987). One middle school that implemented a quality professional development program saw improvement from 30% of students meeting standards of promotion the first year to 72% and 94% the following years (Joyce, Murphy, Showers & Murphy, 1989). "The effects of well-prepared teachers on student achievement can be stronger than the influences of student background factors, such as poverty, language background, and minority status" (Darling-Hammond, 2000, p. 38). Well-prepared teachers have a strong understanding of their content. Guskey (2003) reviewed national professional development providers and found that the most frequently cited professional development characteristic was "enhancement of teachers' content and pedagogical knowledge. Helping teachers to understand more deeply the content they teach…appears to be a vital dimension of effective professional development" (p. 749).

Professional development also promotes teacher retention (Darling-Hammond, 2000; Levine & Haselkorn, 2008; Nieto, 2009). Three "dispositions to actions" (Nieto, 2009, p. 11) that can be fostered by professional development influence teachers' decisions to remain in the profession (Nieto, 2009). By understanding themselves and their students and developing a network, teachers can move from "simply surviving to actively thriving" (Nieto, 2009, p. 8). Sharing and receiving knowledge from colleagues during professional development keeps teachers energized about what they do. Additionally, it causes many of them to consider ways they can assume leadership positions within their schools and districts (Anderson & Olsen, 2006).

Teachers absorb professional development in different ways called *sensemaking* (Coburn, 2001). This term refers to the whole process of what happens after they receive the new knowledge and why they make the decision to act or not. On a continuum, teachers may reject the new information and refuse to apply it. Or, they may apply it in word only; giving the appearance of applying but not. At the other end of the continuum, teachers may completely embrace the new concept. The movement of teachers across the continuum is due to reflection, collaboration, and repeated attempts to incorporate the new information (Coburn, 2001). It cannot be assumed that professional development activities will directly transfer to the classroom. "Transfer of training to the learning environment requires skillful decision-making…and redirection of behavior until the new skill is operating comfortably within the flow of activities…" (Joyce & Showers, 1981, p. 167).

While time is a critical factor in the process of transfer, it must be used wisely. Guskey (2009) found that at least 30 hours were needed for professional development

activities to produce positive results. However, time that is used wisely is the key to effective professional development. "Doing ineffective things longer does not make them any better," (Guskey, 2009, p. 497). Job-embedded support, timely coaching, and follow-up are all crucial to the transfer and application of knowledge (Guskey, 2009).

As there are stages teachers may pass through when applying knowledge from a professional development activity, there are also career stages that teachers pass through. According to Huberman, Grounauer, and Marti (1993), the first three years are referred to as survival and discovery and are the time in which teachers are learning how to manage the classroom and developing their confidence. The next three years are the stabilization period in which they become more independent and become more student-focused. Additionally, during this period they truly commit to the teaching profession (Huberman, Brounauer, & Marti, 1993). These first two stages in a teacher's career are crucial times for support in order to build self-efficacy to provide the teacher with tools necessary for success.

To address the different career phases and general professional development needs of teachers, there are tools that districts can use. One such tool is provided by the National School Boards Association (2009) that suggests districts consider the current knowledge level of their staff members, equipment and supplies readily available, budget, and other items crucial to staff development. The Association presents lists of questions districts can ask in order to guide their thinking. Another resource for districts is by the State of New Jersey Department of Education (2009) and is a formal planning process including templates, district profiles, rubrics, and webinars. While some resources such as these are available for districts, the literature falls short of what the field needs to know

about planning for professional development and is even more limited about planning for new teachers.

With regard to new teachers, effective professional development strategies include three strands: organizing, instructing, and assessing (Frieberg, 2002). Within those strands are topics such as lesson planning and design, time management, classroom management, student-centered instructional strategies, and student assessment. Additionally, self-assessment is a topic to explore with new teachers (Frieberg, 2002). These strands and topics provide a full menu of choices for new teachers to support their individual needs.

In addition to the importance of covering specific topics with new teachers, method of delivery is a factor. "Professional development should be site-based, long-term, grounded in teachers' practice, and an ongoing part of teachers' workweek, rather than something 'tacked on'" (Perkins-Gough, 2002, ¶3). Effective professional development is relevant and meets the needs of the teachers (Rock, 2002; Sherin, Drake & Fuson, 2002). The four ways in which professional development can be job-embedded and a part of the workday are: in-class, planning periods, common planning periods, and restructured days (Rock, 2002). Many districts are now employing instructional coaches to provide job-embedded support that teachers desire. Instructional coaches can model instructional strategies, co-teach lessons, meet with teachers during planning periods, and observe teachers in order to help improve their instructional delivery methods (Saphier & West, 2009). If teachers receive job-embedded coaching by an expert or peer while implementing new strategies, they are more likely to retain and continue using those strategies (Showers, Joyce & Bennett, 1987). Other researchers found that teachers prefer

professional development activities that are voluntary, allow the participants ownership in the direction of the program, and provide for follow-up activities (Berry et al., 2003).

Reflection is a piece of professional development that is often overlooked. Hay (2000) reported that "…a critical weakness still remains because teachers are missing a basic component of the change process: time to think" (¶3). He said that this time should not be after school when teachers are exhausted. Rather, it should be a scheduled time when teachers can have collegial discussions as they had when taking graduate courses (Hay, 2000). Ongoing reflection while participating in professional development opportunities can help teachers self-assess their growth as a professional educator.

Another type of support often provided to beginning teachers is assignment of a mentor. Mentoring is a professional development opportunity that matches a veteran teacher with a beginning teacher to provide support in areas such as pedagogy, classroom management, grading procedures, and dealing with parents. Mentoring is an umbrella term that is used to describe many types of personal support programs (Wayman, Foster, Mantle-Bromley, & Wilson, 2003). Mentoring programs range from those that are very prescriptive to those that are loosely defined.

There are many factors to consider when planning professional development for teachers. National and state standards present general principles to use as a guide. Professional development that produces positive outcomes such as increased student learning, increased teacher retention, and teacher collaboration are goals for which to strive. Helping teachers transfer their newly acquired skills into the classroom is integral to the success of professional development because it may not happen automatically for all teachers. Using time wisely, carefully considering methods of delivery, allowing time

for reflection and assignment of a mentor are all factors to keep in mind when planning effective professional development.

Professional development for AC teachers. Cleveland (2003) reported that subject matter knowledge, in fact, does not equate to knowledge of instructional strategies. While AC teachers may be experts in their technical knowledge, they may be novices in regards to pedagogy. The point of emphasis is that AC teachers, regardless of their experience in the work world, will have professional development needs and will need the continued support of their administrators and fellow faculty members. Watkins (2005) said,

> A novice just joining the teaching staff after years in an earlier career presents no less of a challenge than a novice fresh from a university program…In fact, these novices must overcome a radical shift in workplace culture in dealing with isolation from colleagues and the diversity they must manage in the classroom. (p. 84)

Regarding needs of the typical beginning AC teacher, Chesley et al. (1997) found that they need support in lesson planning, instructional strategies, scaffolding, differentiation, classroom management, and educational law. These specific, focused needs differ from what is typically provided to a beginning TC teacher. Common induction programs for TC teachers include supports such as interpreting student data, using collaborative models of instruction, expansion of content knowledge, and strategies to increase literacy and mathematics achievement (Strumbos, 2004). Many beginning AC teachers will need the basic support such as with simple lesson planning techniques before they are ready to implement literacy strategies with students. Beginning AC teachers also need encouragement. "The [AC] novice teachers are slow to recover their

sense of efficacy following failures or setbacks. Because the [AC] novice teachers view insufficient performance as deficient aptitude, it does not require much failure for them to lose faith in their capabilities" (Anthony & Kritsonis, 2006, p. 6).

While AC teachers have specific support needs, there are conflicting reports with regard to their content knowledge. Natriello and Zumwalt (1992) found that English, mathematics, and elementary AC teachers scored higher on the National Teacher Examination than TC teachers. This finding contrasts with a previously mentioned study by Zeichner and Schulte (2001) that reported no major differences between AC and TC teachers' content knowledge.

While observations of AC and TC teachers yielded no significant differences in content knowledge, Wayman et al. (2003) found that when AC and TC teachers were asked to rank their professional concerns, they identified the same needs but the AC teachers were more concerned than TC teachers about the areas that both groups ranked. The AC teachers in the study reported much higher concerns in the areas of lesson planning and classroom management than did the TC teachers. One of the recommendations by the authors to address this finding was that more attention be given to the professional development needs of AC teachers in an effort to combat some of those concerns. The authors also suggested that AC programs evaluate their graduates' level of preparedness to determine if they are ready to enter the classroom. Assessing beginning AC teachers to determine their levels of concern and preparedness is a way in which school districts can tailor professional development opportunities to fit the specific needs of this group of teachers. According to Jorissen (2003), AC teachers who choose to

remain in the profession can be valuable resources by sharing their specific needs with educators who plan district professional development.

While AC teachers may report higher levels of concern in most professional development areas, Cline (2002) found that the support needs of AC and TC beginning teachers are similar in many ways. He researched the different types and levels of professional development support desired by beginning AC and TC teachers in western North Carolina. He found that most of the support provided to these new teachers was in the area of curriculum and instruction. In contrast to the findings of Wayman et al. (2003), Cline also found that AC and TC teachers desired similar levels of support in the same areas. He found no statistically significant difference in the responses of AC and TC teachers regarding types or levels of support desired except for a few areas in AC and TC teachers' first year. Those areas included working with mentors and managing classroom activities with AC teachers indicating a greater need for support in these areas. However, Cline included all beginning teachers and did not target CTE teachers for his study. According to his findings, Cline suggested that western North Carolina schools were not providing new teachers with the levels and types of support they desired. He also found that some of the support that was being provided was not highly desired by the teachers and suggested that districts need to redirect their efforts. Some support areas that teachers reported as having received but with little desire for included "Administering standardized achievement tests, developing a working relationship with their mentors, understanding the curriculum and understanding the school system's teacher evaluation process" (p. 143).

Professional development for AC CTE teachers. While content knowledge will likely be strong among AC CTE teachers, opportunities for growth will be evident. Because many AC CTE teachers come to the profession as a second career, their ability to make connections to the world of work will be strong. However, other skills necessary to be an effective teacher such as lesson planning, development and implementation of instructional strategies may be lacking. Research has discovered that AC CTE teachers need professional development in pedagogy. Ruhland and Bremer (2002b), working with the National Dissemination Center for Career and Technical Education, surveyed all fifty states and found that TC CTE teachers felt more prepared in pedagogy and knowledge of subject matter than did the AC teachers. Because offering professional development that is specific to all of the career cluster areas is cost-prohibitive, collaborative programs on pedagogy can be offered to AC CTE teachers. The different program areas in CTE include agriculture, business, family and consumer sciences, health occupations, marketing, technology, and trade and industry. However, if needed, professional development on, for example, effective instructional strategies or methods to use with students with disabilities, could be provided to a combined group of AC CTE teachers. Because all professional development is not content-specific, group instruction can be provided. If additional or advanced technical skills specific to the content are needed, those can be pursued through the local community college or technical school (Bartlett, 2002). However, as is most often the case with AC CTE teachers, their technical skills are more than adequate (Sander, 2007).

Not only do AC CTE teachers need to know academics and workplace skills, they need to know how to teach them in tandem.

The goal of the education system should be to enable the delivery of achievement, not just in academics, but in overall career-readiness. That means more learning environments based on every day, real-world, project-based learning that effectively prepares all students for success in both college and careers… the principles of CTE must be aligned with our expectations of high academic achievement. The ability of teachers to achieve this is essential. But most teachers are not prepared to deliver on this promise, because many academic teachers do not have a current understanding of how their subjects relate to the world of work. Most CTE teachers are technical experts but may not have formal training in a specific academic field. Issues of teacher training, certification, and ongoing professional development must be addressed in order to realize the benefits promised by CTE. (Institute for a Competitive Workforce, 2008, p. 3)

Bruening and Scanlon (2001) found that an average of six credit hours of instruction in how to integrate academics and workplace skills in the classroom is now required by AC programs but barely mentioned before the early 1990s. In addition to understanding methods for integrating the curriculum, AC CTE teachers generally need knowledge of both lab and lecture methods so they can use whichever is most appropriate to the particular objective. For example, it is more appropriate to demonstrate to health occupations students how to take a patient's blood pressure than to lecture to them about the proper procedures. Conversely, it is more appropriate for a family and consumer science teacher to talk about family planning options rather than demonstrate them.

Ruhland and Bremer (2002a), after interviewing both AC and TC CTE teachers, found that many current professional development programs are not meeting the needs of

beginning CTE teachers. Because of the national emphasis Perkins IV provides in requiring CTE courses to support algebra I and literacy, teachers need to be taught ways in which they can best engage students in the learning process. Ruhland and Bremer (2002a) suggested that districts ask CTE beginning teachers what types of professional development they need and be offered a menu from which to choose. Additionally, they recommended that a study be conducted to further examine these needs. Rotman and Messelaar (2005) posited that the challenges presented by modern day students could be perplexing for AC CTE teachers.

Watkins (2005) explained that the ideal new teacher professional development, regardless of certification route, includes a strong induction program with a supportive mentor, research-based strategies, and professional learning communities. Reese (2009) and Brown (2003) both support the idea of mentoring as being crucial to retention of AC CTE teachers. In an article by Brown (2003), it is suggested that AC CTE teachers be assigned mentors "…outside of their area of expertise. This way, the focus is on basic classroom issues, rather than on subject matter and content" (p. 21) and focuses on the "…process of teaching" (p. 21). In another example, other supports are given to the AC CTE teachers such as basic reviews of school policies, how to access needed items and personnel (Lynch, DeRose, & Kleindienst, 2006). Regarding effectiveness of mentoring programs for AC CTE teachers, Ruhland and Bremer's (2002a) study found that most of the CTE teachers who were interviewed reported a positive experience with a mentoring program.

While AC CTE teachers share some of the same professional development needs of TC CTE teachers, AC teachers need higher levels of support (Joerger & Bremer,

2001). An older study limited to a focus group of 33 AC teachers found that they needed

a mentor, help with curriculum and how to locate curricular resources, information on

career and technical student organizations, extra preparation time before the school year

began, a menu of workshops from which to choose, and an ongoing orientation program

(Heath-Camp, Camp, Adams-Casmus, Talbert, & Barber, 1992). Many of these are topics

which are typically covered in TC CTE preparation programs and crucial to the success

of the new AC CTE teachers. Another topic covered in TC CTE pre-service programs is

pedagogy and is a specific and crucial need for AC CTE teachers entering the field.

Content knowledge, which AC CTE teachers bring to the field, is important but the

ability to deliver the information to the student requires an understanding of pedagogical

skills that will meet the needs of diverse learners.

Working with students with special needs is typically a course TC CTE students

must take in their preparation courses. Ruhland and Bremer (2002a) conducted interviews

with AC CTE teachers and found that they needed additional professional development

support regarding how to work with students with special needs. In the same study, these

AC CTE teachers also indicated need for classroom observation opportunities and

knowledge of how to build student rapport which TC CTE teachers would have

experienced in their pre-service programs.

Unlike TC CTE teachers, educational jargon presents an obstacle to AC CTE

teachers. District induction programs gear support toward TC teachers and generally use

terms and acronyms unfamiliar to AC CTE teachers (Szuminski, 2003). Simple CTE

terms such as Perkins indicators, concentrators, completers, academic attainment,

technical attainment, college tech prep, and career development plan are foreign to most

AC CTE teachers but familiar to TC CTE teachers because of their pre-service courses and student teaching experience. Szuminski proposes the use of the term *teacher development* in lieu of professional or staff development when referencing support provided to AC CTE teachers because it is more comprehensive with regard to the myriad needs of the AC CTE teacher.

Within the AC CTE group in North Carolina, AC-LE and AC-AWE teachers may require different types and levels of support. As mentioned previously, AC-AWE certification in North Carolina does not require a bachelor's degree for all program areas. Those AC-AWE teachers without a bachelor's degree, especially those with only a high school diploma, will likely require more support than AC-LE teachers with regard to incorporating mathematics and literacy strategies into their lessons because they will have little or no postsecondary mathematics or literacy coursework. In addition, some AC-AWE teachers may need extra support with passing Praxis II or other subject area assessment, certification, or credentialing because they likely have less postsecondary training than AC-LE teachers possess. Converse to AC-LE teachers who are most likely recent college graduates, AC-AWE teachers may need more support with basic computer skills such as composing and sending emails, attaching files and receiving files via email, preparing tests using a word processing program, and creating basic spreadsheets. AC-LE teachers, who most likely have less related work experience than AC-AWE teachers, will need more professional development support with strategies for connecting their content to the workplace and making learning meaningful. They will lack the experiences and related stories that AC-AWE teachers can draw upon. However, all of these differences are speculative as research does not currently exist in this specific area.

Conceptual Framework and Chapter Summary

In this chapter, I reported current national and state literature relating to CTE, professional development, and AC. CTE teachers have unique instructional needs and challenges. Most CTE programs are predominantly hands-on courses and require that teachers understand appropriate instructional strategies which go beyond traditional lecture methods. In some LEAs, CTE teachers are given fewer professional development resources because CTE courses are excluded from accountability models.

National and state standards prescribe quality professional development for LEAs. The NSDC's Standards for Staff Development outline the general principles for quality professional development (NSDC, 2001). In North Carolina, professional development is also expected to align to the standards used to assess teacher performance. The NCPTS Commission (2007) was established by the legislature to ensure this alignment.

When planning quality professional development, teachers' routes to licensure matter. In North Carolina, there is a dual route to AC CTE certification. LE is the route to licensure taken by prospective teachers who possess a bachelor's degree in something other than education and have returned to school in order to "add on" a degree in education (NCDPI, 2009d). The other route to AC, AC-AWE, is the route that CTE teachers may take if they have significant work experience in the field they wish to teach. These teachers may or may not possess an undergraduate degree. In North Carolina, the two routes to AC in CTE, AC-LE, and AC-AWE, are vastly different and designed for those teacher candidates with different backgrounds.

While AC CTE teachers share some of the same professional development needs of TC CTE teachers, AC teachers need higher levels of support (Joerger & Bremer,

2001). My hypothesis was that AC CTE teachers also have needs uniquely different from those desired by TC CTE teachers. Additionally, I hypothesized that within the AC strand in North Carolina, AC-LE and AC-AWE teachers require different types and levels of support. An understanding of the uniqueness of CTE teachers with regard to their different backgrounds combined with an awareness of their specific support needs will allow states and districts to most effectively retain quality teachers. Figure 2 is an illustration of the conceptual framework for the study.

Figure 2

Conceptual Framework

Routes to CTE Licensure

Traditional Certification

Alternative Certification

Lateral Entry

Alternative Work Experience

Initial Employment

Beginning Teacher Needs

NC Professional Teaching Standards

NSDC Staff Development Standards
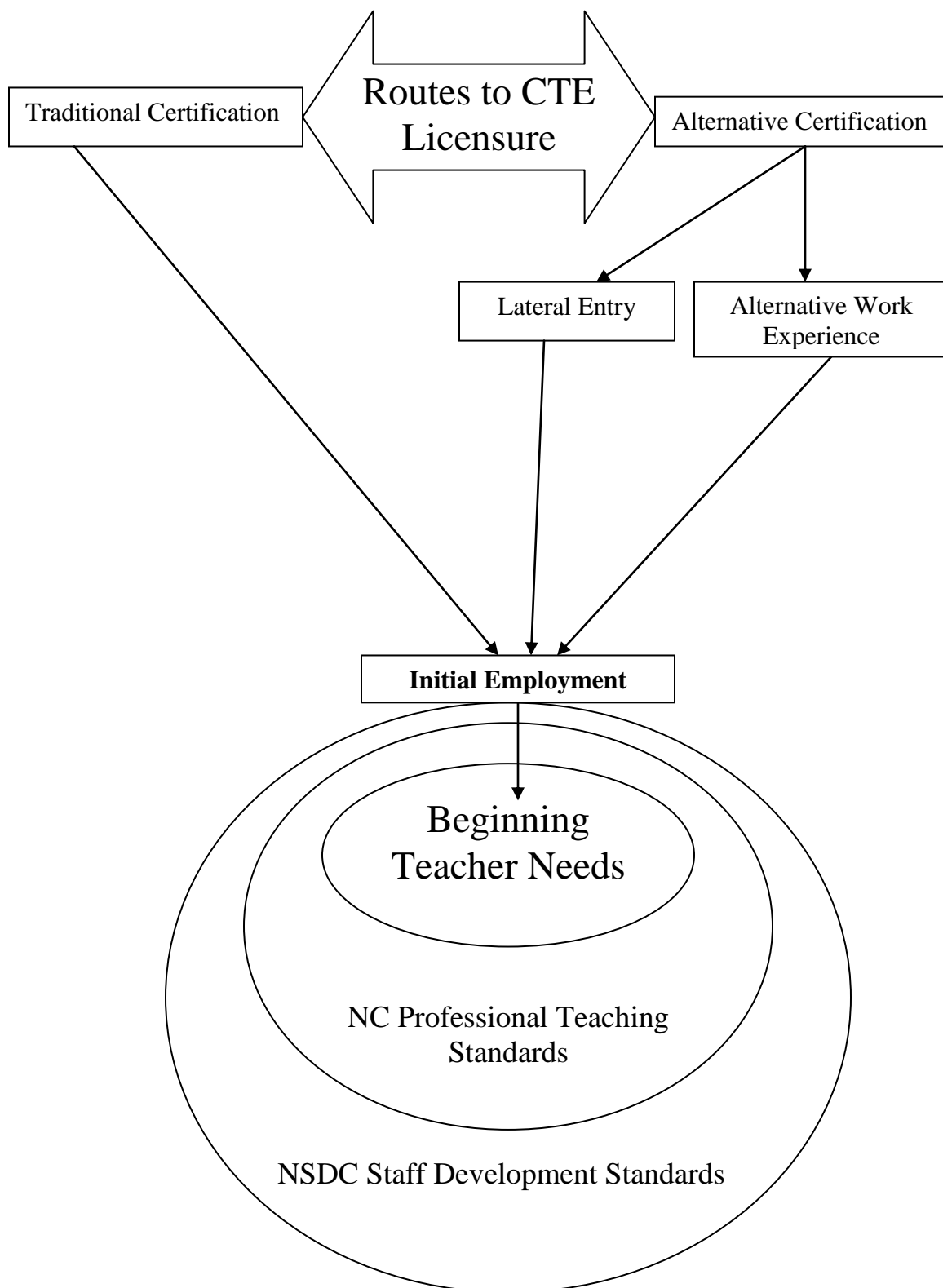
CHAPTER THREE: METHODOLOGY

This chapter will provide an overview of the methodology as well as specific information regarding population and sample, instrument, data collection, and data analysis procedures. This study used a comparative, descriptive design. It was not a true experimental design because I lacked control over the independent variable, routes to certification. The study described professional development support provided to and desired by AC and TC teachers. Additionally, it described professional development support for the two different types of AC beginning teachers: AC-LE and AC-AWE. The characteristic that was explored and defined was professional development support of the aforementioned groups. Potential differences in responses across subgroups (TC, AC-AWE, AC-LE) were also explored. The questions this study addressed appear below:

1. What professional development content was provided to CTE beginning teachers during their first five years?

    a. Are there differences in the content provided to the three groups?

    b. Who provided those supports?

    c. What were the methods of delivery?

2. Of professional development content received by CTE beginning teachers during their first five years, which were most needed and unneeded?

    Are there differences in needed and unneeded professional development content between the three groups?

3. What professional development content do CTE beginning teachers desire to have received during their first five years?

Are there differences in desired professional development between the three

groups?

In this study, professional development was limited to that which was delivered,

sponsored, or funded by the district. The research hypotheses for this study were that

there are no differences in content currently provided to the three groups by districts but

that there are differences between the three groups with regard to professional

development needs and desires.

<div align="center">Study Context</div>

On a broad level, the NSDC (2001) provides standards for professional

development. The three major categories include context, process, and content standards

with the overall goal of improving student achievement (NSDC, 2001). In North

Carolina, a General Statute (Article 20, Chapter 115C, 295.1) directs a commission to

recommend professional standards for teachers. Figure 1 in chapter two maps the NSDC

standards to the NCPTS that they support.

One form of professional development in North Carolina is beginning teacher

support. The state school board of North Carolina requires local school districts to

provide a beginning teacher support program for all new teachers (NCDPI, 2006b).

Teachers are required to participate in the program throughout their first three years of

employment. According to Board Policy TCP-A-004, districts must promote and provide

to new teachers professional development opportunities within the district that are

appropriate to their needs as novice teachers (NCDPI, 2006b). District administrators are

provided the NCPTS but their programs are not monitored to ensure that they align to the

standards. The Board Policy, TCP-A-004, outlines data that districts should submit

relative to the support they provided specifically to LE teachers. Information requested includes types of services provided specifically for LE teachers and in what areas those teachers experienced difficulty.

Participants

The population for this study was beginning CTE teachers in the United States with up to five years of full-time teaching experience. The sampling frame for this study was CTE teachers in 112 of North Carolina's public school districts with up to five years of full-time teaching experience. These were beginning teachers who began teaching full-time school year 2005-06. The actual number of CTE teachers in North Carolina's 115 school districts with up to five years of full-time teaching experience was 769 in school year 2007-08. In school 2008-09, there were 725 CTE teachers with up to five years of full-time experience and 627 in school year 2009-10 (Cash, 2009). Table 2 displays the licensure category for these teachers. While the number of teachers according to years of experience is not available, a recent study in western North Carolina of beginning teachers produced responses with 33.3% having one year of experience, 32.3% two years, 21.1%, three years, 5.9% four years, and 6.8% with five or more years of experience (Cline, 2002).

Table 2

CTE Beginning Teachers by School Year

Route to licensure	2007-08	2008-09	2009-10
AC	461	402	312
TC	287	297	287
Unable to determine	21	26	28
Total	769	725	627

Note. From "CTE licensure report" by M. Cash (2009).

Initially, 1,012 CTE teachers responded to the survey but 431 had to be excluded because they began teaching before June 2005 or were not full-time CTE teachers. While the email that was forwarded to them explicitly asked that teachers with up to five years of experience take the survey, many mistakenly attempted the survey. The response rate was 93% (N = 581). Details regarding the sample will be provided in chapter four.

<center>Instrument</center>

I created a survey that incorporated the teaching standards developed by the NCPTS Commission (2007). The previous standards, the Core Standards for the Teaching Profession, were approved in 1999 and had been the measure for all of North Carolina's professional development activities for teachers. I believed the language used in the 1999 standards was similar to that which was used in the 2007 standards and that teachers could easily interpret the new standards. In addition to the Professional Teaching Standards, I included a section on skills that did not specifically align to the standards but

were indicated by the related literature (Joerger & Bremer, 2001; Ruhland & Bremer,

2002a; Sander, 2007; Smith, 2007; Twomey, 2002) as being areas of need.

The survey was divided into two sections: Demographic Information and

Professional Development Information. Within the first section, questions were asked

about full-time CTE status, date of initial employment, licensure, and teaching

responsibilities. I also included questions to determine which licensure route was taken

by the respondent. Because the licensure terms used were not familiar to all teachers, a

series of factual questions were used to determine route to licensure. See Appendix C for

the survey. I was able to use responses from this section to make sure I captured the

desired participants. Additionally, the demographic information section allowed me to

accurately classify participants for group comparisons.

Section two was divided into six parts: NCPTS or Other Skills, Level of Need,

Provider, Method of Delivery, Desired Professional Development, and Additional

Information. In part one of section two, teachers were asked, for each standard, if

professional development aligned to that standard was provided during their first five

years. If the skill was provided, teachers were asked to indicate their level of need at the

time it was provided. Level of need choices were on a four-point scale ranging from not

needed to needed very much. Next, teachers were asked to indicate the provider(s) and

method(s) of delivery that were used for each skill. Then, teachers were asked about the

standards that were not addressed through professional development in the first five years

and if they desired support in those areas. They were asked to indicate degree of desire on

a four-point scale ranging from no desire to very strong desire. Additionally, they were

asked to indicate areas of desired professional development that were not on the list of

standards. Finally, teachers were asked to share any additional information about their personal professional development experiences and to provide their email address if they would like to receive a summary of study results and to participate in the incentive drawing.

Validity and Reliability

I evaluated the instrument for validity and reliability evidence. Regarding construct–related validity evidence, I asked an expert panel, a group of CTE professionals who were knowledgeable about licensure and professional development, to review the survey. Comprising this panel were six representatives from the CTE state staff. They determined if the questions were appropriate and aligned to the research questions. They determined if appropriate terms relating to both licensure and professional development were used. They critiqued the translation of the professional development standards into question items. Additionally, they advised with regard to ways I could make the survey most understandable to beginning teachers. I provided the expert panel with a Word version of the survey in addition to a link to the online version. See Appendix D for a copy of the email and feedback form that were used with this group.

Next, I piloted the survey with plans to establish reliability evidence using the test-retest method (Creswell, 2005). I administered the survey to a small, demographically diverse group of 30 CTE teachers who had between 6 and 10 years of teaching experience. I recruited this group from teachers in the western region. I waited approximately two weeks and then readministered the survey to the same group of teachers. I compared the survey results from both administrations. Due to extreme length

of the survey and timing of distribution, only twelve teachers completed both assessments.

Table 3 displays reliability data from the pilot group study that includes dichotomous and ordinal item agreement. One hundred percent of the pilot group had exact agreement for 42 of the dichotomous survey items and 50 of the ordinal items. The largest number of exact agreement items in the dichotomous group was 105 and the largest number of exact agreement items in the ordinal group was 50. Some items in which the descriptors were extremely long had lower reliability. After the first test administration to the pilot group, I asked them to complete a feedback form to help with further refinement of the instrument. As a result of their feedback, some descriptors were shortened and reworded to assist with readability. See Appendix E for the pilot study group email and feedback form.

Table 3

Pilot Group Study of Survey Item Reliability

	Dichotomous Items	Ordinal Items	
Pilot Group	Exact agreement	Exact agreement	Adjacent agreement
100%	42	50	2
90-99%	105	0	0
80-89%	63	12	0
70-79%	67	19	3
60-69%	35	19	12
50-59%	27	30	19
40-49%	2	14	18
30-39%	3	11	17
0-30%	0	6	90

Design of Online Survey

I used the work of Dillman, Smyth and Christian (2009) to design and deliver the

survey. Because web surveys had already been used with CTE teachers statewide, I

believed this venue would allow the most appropriate access to this group. As Dillman et

al. (2009) recommended, because the survey was short, whenever possible I placed only

one question per page. Other recommendations they provided regarding the survey design

that I incorporated included: maintaining a friendly, nonthreatening manner, using a

graphic, maintaining a consistent layout for each screen page, using color to help

organize and emphasize parts of the survey, requiring responses to questions only when

necessary, and branching responses appropriately. I closely referenced the set of

guidelines on pages 230 – 233 when placing the survey into the web-hosted program

(Dillman et al., 2009).

<div align="center">Data Collection Procedures</div>

I sent a recruitment email to all CTE teachers in North Carolina via their CTE

administrators (see Appendix F). This approach helped to prevent the loss of teachers

from the sampling frame because CTE administrators typically maintain the most up-to-

date email list and thus all teachers should have received this email. In the email, I asked

those teachers who began in the fall of school year 2005-06 or after to complete the

survey. The survey was prepared via a web-hosted survey instrument, Qualtrics. Survey

results remained anonymous because I did not collect personally identifiable information.

I attempted to personalize the process as much as possible. I conveyed to the

participants why their input was crucial to the future of the profession. I used a three-

contact strategy suggested by Dillman et al. (2009). This process involved three emails.

The first one gave a brief description of the survey and solicited their response. The

second email thanked those who had already completed the survey and, again, solicited

the response of those who had yet to do so. The third email, while still non-threatening,

shared with the potential respondents that the window of opportunity would soon close

and reminded them why their response was desired. As recommended by Dillman et al.

(2009), the emails to the directors of teachers in the sampling frame were sent early in the

morning each time so that the likelihood of response would be increased. Also, as

recommended by Dillman et al. (2009), emails to the sampling frame were separated by

eight days. See Appendix F for email scripts that were used.

Participants in this study were protected from harm. No personally identifiable information was associated with their responses in any data reports. They were told that their participation was voluntary and that their responses would be confidential. An incentive was given for eight, $25 gift cards. A drawing from all respondents was conducted.

One hundred-twelve of 115 districts allowed teachers to participate in the study. One district, in the extra-extra large affinity group and the Northwest region, required that an application be submitted. The application was submitted and subsequently approved. A small LEA in the Central Region required an application that was submitted and denied because of the time of year in which teachers would be surveyed. Two other districts (one extra-extra large and one extra large) per district policy were not allowed to participate.

Because the expert and pilot groups expressed concern about the survey length, a matrix sampling approach was used. Four survey groups were formed by using existing affinity groupings. Based on LEA average daily membership, affinity groups are used routinely within North Carolina CTE for performance indicator comparisons and collaboration. Beginning with the largest affinity group, LEAs were assigned to one of four survey groups attempting to have an equal number of large, medium, and small LEAs in each group (see Table 4).

Table 4

Districts Allowed to Participate (N = 112)

Affinity group	Group one (n = 28)		Group two (n = 29)		Group three (n = 27)		Group four (n = 28)	
	n	%	n	%	n	%	n	%
Extra-extra large	2	7.0	2	6.9	1	3.7	1[a]	3.6
Extra large	3	10.7	4	13.8	4	14.9	4	14.3
Large	5	17.9	5	17.2	4	14.9	5	17.9
Medium	4	14.3	4	13.8	5	18.5	5	17.9
Small	5	17.9	5	17.2	3	11.1	4	14.3
Extra small	4	14.3	4	13.8	5	18.5	5	17.9
Extra-extra small	5	17.9	5	17.2	5	18.5	4	14.3

[a] This district was approved at the end of the survey window.

Group One (n = 181) responded to questions about Standard Four, Group Two (n = 125) to Standard One, Group Three (n = 138) to Standards Two and Three and Group Four (n = 137) to Standard Five and Other Skills.

Data Analysis Procedures

I downloaded the survey responses from Qualtrics. Teachers who were not full time and those who began prior to school year 2005-06 were excluded because the survey instrument was programmed to automatically exit them if they met one of these conditions. Their responses to the first two questions were recorded in the database but I manually deleted those records.

The survey instrument allowed respondents to skip questions. For example, a participant could respond that a professional development skill was provided and then skip the screens in which they were asked about the method and provider. Additionally, for skills that were not provided, the participant could skip the screen that asked about their desire to have received professional development on those skills. These partial responses were used in the data analysis. I followed the recommendation of Dillman et al. (2009) and had very few forced response questions.

For research question one, frequencies and percents were determined for professional development content provided, providers of support, and methods of delivery. One-way ANOVA and Tukey's HSD were the inferential statistics that were calculated for differences in content provided to the three groups. ANOVA was used because it tests the means of three or more groups and reduces the chance of committing a type I error as compared to multiple two-sample t-tests. When statistical significance was found using ANOVA, Tukey's HSD was applied because it compares the means of the group to find which are significantly different.

For research questions two and three, the independent variable, route to licensure, was categorical and the dependent variable, levels of needed and desired professional development, was continuous. Means for need and desire were determined for overall need and overall desire in each standard. Means were calculated for each respondent by adding the values of the responses and dividing total by number of items. Values were assigned that aligned with four-point scale options with four indicating most need or desire. A one-way ANOVA and Tukey's HSD procedure were used to analyze group differences for need and group differences for desire. Partial eta-squared effect sizes were

calculated for need and desire in all standards to describe the strength of the relationship. Confidence intervals for means were reported when differences were statistically significant. A summary of data analysis methods appears in Table 5.

Table 5

Data Analysis Information for the Study

| | Variables | | | |
| | Independent | Dependent | | |
Research questions	Independent	Dependent	Descriptive statistic	Inferential statistic
1: What professional development content was provided to CTE beginning teachers during their first five years?			Frequency, Percent	
1a:Are there differences in the content provided to the three groups?	Licensure Status (3 levels)	Professional Development Content Provided to Three Groups	Frequency, Percent	ANOVA, Tukey, Confidence Interval for the Mean, Partial eta-squared for effect size
1b: Who provided those supports?			Frequency, Percent	
1c: What were the methods of delivery?			Frequency, Percent	
2: Of professional development content received by beginning teachers, which were most needed and unneeded?			Frequency, Percent	
2a. Are there differences in most needed and unneeded content between the three groups?	Licensure Status (3 levels)	Levels of Professional Development	Mean, Percent	ANOVA, Tukey, Confidence Interval for the Mean, Partial eta-squared for effect size
3: What professional development do CTE beginning teachers desire to have received?			Frequency, Percent	
3a: Are there differences in the desired professional development between the three groups?	Licensure Status (3 levels)	Levels of Professional Development Desired	Mean, Percent	ANOVA, Tukey, Confidence Interval for the Mean; Partial eta-squared for effect size

CHAPTER FOUR: RESULTS

The purpose of this study was to describe professional development for beginning CTE teachers and determine if there were differences in the professional development content provided to AC and TC beginning CTE teachers during their first five years. Specifically, three groups of teachers were studied. In North Carolina, teachers of CTE courses may enter the profession in multiple ways. Some teachers complete a teacher education program at a four-year university and, upon passing the licensure exam, are prepared to teach. Teachers who enter through this type of route are referred to as TC. CTE teachers may also receive certification in other ways known as alternative routes. Those alternative routes include LE and AWE.

Chapter Four will present the data collected from CTE teachers, including respondents' demographic information as well as responses to survey items that addressed the three research questions. The questions are as follows:

1. What professional development content was provided to CTE beginning teachers during their first five years?

   a. Are there differences in the content provided to the three groups?

   b. Who provided those supports?

   c. What were the methods of delivery?

2. Of professional development content received by CTE beginning teachers during their first five years, which were most needed and unneeded?

   Are there differences in needed and unneeded professional development content between the three groups?

3. What professional development content do CTE beginning teachers desire to have received during their first five years?

Are there differences in desired professional development between the three groups?

Demographic Information of the Sample

The original projected response rate for the survey was 65% but the actual response rate was 93%. Of the 627 beginning CTE teachers in NC, 581 responded to the survey. Of those respondents, all had up to five years of experience, were full-time CTE teachers, and approximately 75% (n = 441) were AC. Of the AC teachers, 70% (n = 307) were AC-AWE and 30% (n = 134) were AC-LE. All of the respondents who chose "other" licensure route (n = 37) provided enough information in the text box to be assigned to one of the three groups.

All six CTE regions were represented. The Southwestern Region had the largest percentage of respondents (see Table 6). Different levels of participation by LEAs with the largest membership (called the extra-extra large affinity group) may explain the distribution of the sample across regions. None of the extra-extra large affinity groups were in the Northeast or Western Regions. A district in the extra-extra large affinity group and the Central Region was not allowed per district policy to participate. Also prohibited from participating was a district in the extra-large affinity group and the Southeast Region.

Table 6

LEAs Surveyed and Respondents by Region

		Respondents	
Region	Number of LEAs surveyed	n	%
Central	19	97	16.7
Northeast	19	46	7.9
Northwest	21	99	17.0
Southeast	18	98	16.9
Southwest	17	167	28.7
Western	19	74	12.7

All respondents were asked about their areas of certification. Table 7 shows the areas of CTE certification for the entire sample as well as by route to licensure. It is important to note that the areas of certification do not total 581 because some teachers have more than one area of certification. The total number of areas of certification represented by the sample is 737 with most from business and family and consumer sciences. Most respondents with a certification to teach agriculture are TC. Additionally, most survey participants certified to teach family and consumer sciences are also TC. However, most respondents certified to teach business, career exploration, health occupations, marketing, technology, and trade and industry entered the profession through an alternate route, AC-AWE.

Table 7

CTE Certifications and Route to Licensure for Respondents (N = 737)

License	N	%	TC (n = 179)		AC-AWE (n = 383)		AC-LE (n = 174)	
			n	%	n	%	n	%
Agriculture	34	4.6	26	14.5	4	1.0	4	2.3
Business	239	34.4	50	27.9	130	33.9	59	33.9
Career Exploration	52	7.1	15	8.4	24	6.3	12	6.9
Family and Consumer Sciences	120	16.3	42	23.5	37	9.7	41	23.6
Health Occupations	47	6.4	0	0	41	10.7	6	3.5
Marketing	73	9.9	15	8.4	34	8.9	24	13.8
Technology	77	10.5	20	11.2	36	9.4	21	12.1
Trade and Industry	95	12.9	11	6.2	77	20.1	7	4.0

Respondents were also asked if they held teaching certifications outside of CTE. Of the 737 participants, 89 (12%) other areas were reported. Table 8 displays those areas. Middle grades science was indicated most often with elementary a close second. Areas indicated least were K-12 reading, music, dance, English as a second language, secondary English and mathematics.

Table 8

Teaching Areas Outside of CTE (N = 89)

Areas of certification outside of CTE	n
Middle Grades Science	14
Elementary	10
Middle Grades Social Studies	9
Secondary Social Studies	8
K-12 Health Education	7
Middle Grades Language Arts	6
Middle Grades Mathematics	6
Secondary Science	6
Exceptional Children	6
K-12 Physical Education	5
Secondary Foreign Language	2
K-12 Safety and Driver Education	2
K-12 Art	2
Secondary English	1
Secondary Mathematics	1
K-12 English as a Second Language	1
K-12 Reading	1
K-12 Music	1
K-12 Dance	1

Table 9 displays the teaching experience of survey participants. Forty percent had between four and five years of experience. For the sample as a whole, the percentage of respondents increased as teaching experience increased. AC-AWE categories followed the same pattern of increase with years of experience. However, TC and AC-LE did not follow that pattern. For AC-LE teachers, twice a decrease is followed by an increase.

Table 9

Teaching Experience and Licensure Route (N = 581)

Years of experience	N	%	TC (n = 140)		AC-AWE (n = 307)		AC-LE (n = 134)	
			n	%	n	%	n	%
4+ to 5	231	39.8	59	42.1	127	41.4	44	32.8
3+ to 4	104	17.9	27	19.3	52	16.9	25	18.7
2+ to 3	104	17.9	24	17.1	51	16.6	29	21.6
1+ to 2	78	13.4	14	10.0	47	15.3	17	12.7
Up to 1	64	11.0	17	12.1	28	9.1	19	14.2

Respondents were asked about the grade level they currently teach (see Table 10). Most of them (77%) taught only grades nine through twelve. In looking at the same data by route to licensure, the pattern is fairly consistent in all three groups.

Table 10

Grade Levels Taught and Licensure Route (N = 581)

			TC (n = 140)		AC-AWE (n = 307)		AC-LE (n = 134)	
Levels	N	%	n	%	N	%	n	%
Both 6-8 and 9-12	10	1.7	2	1.4	4	1.3	4	3.0
Only 6-8	123	21.2	31	22.1	59	19.2	33	24.6
Only 9-12	448	77.1	107	76.4	244	79.5	97	72.4

A matrix sampling approach was used to assign LEAs to groups that received survey items related to a subset of standards. As shown in Table 11, the Southwest Region comprised over half (56%) of Group One. Group Two was more evenly distributed among the regions. The Central Region had the highest percentage of respondents (30%) for Group Three and the Southeast Region had the highest representation (29%) in Group Four. The percent representation of regions within the sample was fairly consistent across the groups in most cases. However, the Southwest and Southeast Regions were not.

As shown in Table 11, most respondents in all four groups had an AC-AWE licensure route with the largest percentage, 62%, in Group Two. In Groups One and Three, AC-LE had the second largest percentage of respondents with TC being second largest for Groups Two and Four. For all groups, the AC-AWE and AC-LE combined to comprise approximately three-fourths of the group's total respondents. The percent representation of licensure route from the sample was fairly consistent across all groups.

Table 11

Completions by Group, Region, and Licensure Route (N = 581)

			Group 1 (n = 181)		Group 2 (n = 125)		Group 3 (n = 138)		Group 4 (n = 137)	
	N	%	n	%	n	%	n	%	n	%
Region										
Central	97	16.7	15	8.3	17	13.6	42	30.4	23	16.8
Northeast	46	7.9	5	2.8	22	17.6	16	11.6	3	2.2
Northwest	99	17.0	31	17.1	17	13.6	32	23.2	19	13.9
Southeast	98	16.9	8	4.4	16	12.8	34	24.6	40	29.2
Southwest	167	28.7	101	55.8	26	20.8	0	0	30	21.9
Western	74	12.7	21	11.6	17	13.6	14	10.1	22	16.1
Licensure Route										
TC	140	24.1	40	22.1	27	21.6	35	25.4	38	27.7
AC-AWE	307	52.8	93	51.4	77	61.6	67	48.6	70	51.1
AC-LE	134	23.1	48	26.5	21	16.8	36	26.1	29	21.2

In subsequent sections, information will be presented by standard as appears in the NCPTS (2007) followed by other skills that are supported by the literature. Descriptive statistics will be presented for all standards and research questions. Group differences will be evaluated using inferential statistics with an alpha level of .05.

Question One: Professional Development Content, Providers, and Delivery Methods

This section will answer research question one with regard to professional development content provided to beginning CTE teachers. Additionally, the provider of the professional development and method of delivery will be presented.

Professional Development Received

Respondents were asked about professional development received during their first five years of teaching. Standard One dealt specifically with teacher leadership, advocacy, and ethics. Overall, the standard that received the highest rate of receipt by the group as shown in Table 12, was "Grow professionally" [1.3(4), 83%]. A close second at 82% were "Take responsibility for all students' learning" [1.1(1)] and "Use a variety of assessment data throughout the year to evaluate progress" [1.1(4)]. When disaggregated by route to licensure, AC-LE had the highest rate of receipt for 9 of the 19 descriptors. The highest rate of receipt for AC-LE teachers was also for "Use a variety of assessment data throughout the year to evaluate progress" [1.1(4), 95%]. AC-AWE had the highest rate of receipt for eight descriptors with the highest for "Work collaboratively with all school personnel to create a professional learning community" [1.2(1), 78%]. TC teachers had the highest rate of receipt for only two descriptors and both were in Standard 1.3: Teacher leadership in the profession.

Table 12

Standard One Professional Development Received (N = 125)

Descriptors	N	%	TC (n = 27)		AC-AWE (n = 77)		AC-LE (n = 21)	
			n	%	n	%	n	%

Standard 1.1: Teacher leadership in the classroom.

Descriptors	N	%	n	%	n	%	n	%
(1) Take responsibility for all students' learning.	103	82.4	22	81.5	62	80.5	19	90.5
(2) Communicate my vision to students.	68	54.4	17	63.0	37	48.1	14	66.7
(3) Use data to organize, plan, and set goals.	102	81.6	23	85.2	60	77.9	19	90.5
(4) Use a variety of assessment data throughout the year to evaluate progress.	103	82.4	23	85.2	60	77.9	20	95.2
(5) Establish a safe and orderly environment.	98	78.4	20	74.1	61	79.2	17	81.0
(6) Empower students.	83	66.4	18	66.7	52	67.5	13	61.9

Standard 1.2: Teacher leadership in the school.

Descriptors	N	%	n	%	n	%	n	%
(1) Work collaboratively with all school personnel to create a professional learning community.	93	74.4	17	63.0	60	77.9	16	76.2
(2) Analyze data.	68	54.4	15	55.6	43	55.8	10	47.6
(3) Develop goals and strategies through the school improvement plan.	91	72.8	17	63.0	58	75.3	16	76.2
(4) Assist in determining school budget and professional development.	27	21.6	5	18.5	18	23.4	4	19.0
(5) Participate in the hiring process.	20	16.0	4	14.8	13	16.9	3	14.3

Table 12 *(continued).*

Standard One Professional Development Received

Descriptors	N	%	TC (n = 27)		AC-AWE (n = 77)		AC-LE (n = 21)	
			n	%	n	%	n	%
(6) Collaborate with colleagues to mentor and support teachers to improve effectiveness.	83	66.4	15	55.6	55	71.4	13	61.9

Standard 1.3: Teacher leadership in the profession.

Descriptors	N	%	n	%	n	%	n	%
(1) Strive to improve the profession.	81	64.8	19	70.4	48	62.3	14	66.7
(2) Contribute to the establishment of positive working conditions.	83	66.4	16	59.3	52	67.5	15	71.4
(3) Participate in decision-making structures.	64	51.2	15	55.6	37	48.1	12	57.1
(4) Grow professionally.	104	83.2	23	85.2	65	84.4	16	76.2

Standard 1.4: Teacher advocacy for school and students.

Descriptors	N	%	n	%	n	%	n	%
(1) Advocate for positive change in policies and practices affecting student learning.	47	37.6	10	37.0	31	40.3	6	28.6
(2) Participate in the implementation of initiatives to improve education.	73	58.4	13	48.1	46	59.7	14	66.7

Standard 1.5: Teacher ethics.

Descriptors	N	%	n	%	n	%	n	%
(1) Uphold the Code of Ethics and Standards for Professional Conduct.	89	71.2	18	66.7	56	72.7	15	71.4

Mean percents of Standard One professional development received for TC, AC-AWE, and AC-LE were 60.43, 62.47, and 64.16 (SDs = 23.51, 23.87, 19.09) respectively.

The effect of route to licensure for Standard One professional development received was not statistically significant, $F(2, 122) = .16$, $p = .85$, $\eta^2 < .01$.

Standard Two focused on teachers establishing a respectful environment for students from all backgrounds. The most frequently endorsed descriptor for Standard Two, as shown in Table 13, was "Create an environment that is inviting, respectful, supportive, inclusive, and flexible" [2.1(1), 75%]. The lowest percentage for the group was for "Seek solutions to overcome obstacles that prevent family and community involvement" [2.5(3), 45%] followed by "Collaborate with specialists" [2.4(2), 46%]. AC-AWE teachers had the highest rate of endorsement for 10 of 13 Standard Two items with the highest for "Create an environment that is inviting, respectful, supportive, inclusive, and flexible" [2.1(1), 82%]. AC-LE teachers had the highest rate of endorsement for the remaining three, the highest being "Appreciate differences and value contributions by building positive, appropriate relationships" [2.3(2), 72%].

Table 13

Standard Two Professional Development Received (N = 138)

Descriptors	N	%	TC (n = 35) n	TC (n = 35) %	AC-AWE (n = 67) n	AC-AWE (n = 67) %	AC-LE (n = 36) n	AC-LE (n = 36) %
Standard 2.1: Teacher-created environment.								
(1) Create an environment that is inviting, respectful, supportive, inclusive, and flexible.	104	75.4	23	65.7	55	82.1	26	72.2
Standard 2.2: Teacher embraces diversity.								
(1) Demonstrate knowledge of diverse cultures.	97	70.3	24	66.7	50	74.6	23	65.7

Table 13 *(continued).*

Standard Two Professional Development Received

Descriptors	N	%	TC (n = 35)		AC-AWE (n = 67)		AC-LE (n = 36)	
			n	%	n	%	n	%
(2) Select materials and develop lessons that counteract stereotypes and incorporate contributions.	70	50.7	12	34.3	37	55.2	21	58.3
(3) Recognize the influences of diversity on a child's development, personality, and performance.	96	69.6	19	54.3	52	77.6	25	69.4
(4) Consider and incorporate different points of view.	87	63.0	20	57.1	46	68.7	21	58.3

Standard 2.3: Teacher treatment of students.

(1) Maintain high expectations for all students.	95	68.8	23	65.7	48	71.6	24	66.7
(2) Appreciate differences and value contributions by building positive, appropriate relationships.	96	69.6	24	68.6	46	68.7	26	72.2

Standard 2.4: Teacher adaptation for students with special needs.

(1) Collaborate with specialists.	63	45.7	15	41.7	33	49.3	15	42.9
(2) Engage students.	100	72.5	25	71.4	53	79.1	22	61.1
(3) Utilize inclusion and other models of effective practice.	79	57.2	17	48.6	41	61.2	21	58.3

Standard 2.5: Teacher collaboration with families and community.

(1) Improve communication and collaboration between the school and the home and community.	75	54.3	14	40.0	38	56.7	23	63.9
(2) Promote trust and understanding and build partnerships.	71	51.4	15	42.9	38	56.7	18	50.0

Table 13 *(continued).*

Standard Two Professional Development Received

Descriptors	N	%	TC (n = 35)		AC-AWE (n = 67)		AC-LE (n = 36)	
			n	%	n	%	n	%
(3) Seek solutions to overcome obstacles that prevent family and community involvement.	62	44.9	10	28.6	35	52.2	17	47.2

Mean percents of Standard Two professional development received for TC, AC-AWE, and AC-LE were 52.75, 65.67, and 60.47 (*SDs* = 29.09, 30.98, 35.62) respectively. The effect of route to licensure for Standard Two professional development received was not statistically significant, $F(2, 135) = 1.91$, $p = .15$, $\eta^2 = .03$.

Standard Three focused on teachers' understanding of the content that they teach. Overall rates of receipt for descriptors within elements were similar. However, the difference was noted when comparing elements. While descriptors within the second element, Standard 3.2, "Teacher knowledge of content" were similar (47% and 42%), they were considerably lower than Standard 3.1, "Teacher alignment of instruction" (78%, 76%, and 78%). The overall highest frequency of receipt as shown in Table 14 was for "Develop literacy skills appropriate to specialty area" [3.1(3), 78%] followed by "Teach the NC Standard Course of Study" [3.1(1), 77%]. The lowest overall percentage was for "Direct students' curiosity into an interest in learning" [3.2(2), 42%]. For the 10 descriptors in Standard Three, AC-AWE had the highest rate of receipt for eight with the highest for "Teach the North Carolina Standard Course of Study" [3.1(1), 84%].

Table 14

Standard Three Professional Development Received (N = 138)

Descriptors	N	%	TC (n = 35)		AC-AWE (n = 67)		AC-LE (n = 36)	
			n	%	N	%	n	%
Standard 3.1: Teacher alignment of instruction.								
(1) Teach the North Carolina Standard Course of Study.	107	77.5	23	65.7	56	83.6	28	77.8
(2) Develop and apply strategies to make the curriculum rigorous and relevant.	105	76.1	23	65.7	54	80.6	28	77.8
(3) Develop literacy skills appropriate to specialty area.	108	78.3	28	80.0	54	80.6	26	72.2
Standard 3.2: Teacher knowledge of content.								
(1) Know subject beyond the content I teach.	65	47.1	15	42.9	34	50.0	16	45.7
(2) Direct students' curiosity into an interest in learning.	58	42.0	12	34.3	32	47.1	14	40.0
Standard 3.3: Teacher recognition of linkages to other disciplines.								
(1) Know links between grade/subject and the North Carolina Standard Course of Study.	65	47.1	9	25.7	35	52.2	21	58.3
(2) Relate content to other disciplines.	77	55.8	16	45.7	43	64.2	18	50.0
(3) Promote global awareness and its relevance.	64	46.4	12	34.3	33	49.3	19	52.8
Standard 3.4: Teacher makes instruction relevant.								
(1) Incorporate life skills.	73	52.9	12	34.3	40	59.7	21	58.3

Table 14 *(continued).*

Standard Three Professional Development Received

		TC (n = 35)		AC-AWE (n = 67)		AC-LE (n = 36)	
Descriptors	N	%	n	%	N	%	n	%
(2) Demonstrate the relationship between the core content and 21st Century content.	79	57.2	16	45.7	41	61.2	22	61.1

Mean percents of Standard Three professional development received for TC, AC-AWE, and AC-LE were 47.43, 62.69, and 59.72 (*SDs* = 31.66, 31.12, and 35.82) respectively. The effect of route to licensure for Standard Three professional development received was not statistically significant, $F(2, 135)$, 2.59, $p = .08$, $\eta^2 = .04$.

Standard Four focused on teacher facilitation of learning. "Employ a wide range of techniques" [4.3(1), 86%] received the highest rate of receipt (see Table 15) followed by "Understand the influences on student learning and differentiate instruction" [4.1(1), 86%]. The overall lowest percentage was for "Assist students in articulating thoughts and ideas clearly and effectively" [4.7(2), 48%].

For Standard Four, AC teachers reported higher rates of receipt for more descriptors than TC teachers. Of the 21 descriptors in Standard Four, AC-AWE had the highest rate of receipt for 17 descriptors. For the remaining four, AC-LE had the highest rate. "Understand the influences on student learning and differentiate instruction" [4.2(1), 90%] had the highest rate of receipt by AC-AWE teachers who indicated they had received professional development on this skill. The highest frequency of receipt for AC-LE teachers was "Engage students in the learning process" [4.2(1), 88%]. Indicated most by TC teachers were two skills: "Understand the influences on student learning and

differentiate instruction" [4.1(1), 80%] and "Employ a wide range of techniques" [4.3(1), 80%].

Table 15

Standard Four Professional Development Received (N = 181)

			TC (n = 40)		AC-AWE (n = 93)		AC-LE (n = 48)	
Descriptors	N	%	n	%	n	%	N	%
Standard 4.1: Teacher understanding of how students think and learn.								
(1) Understand the influences on student learning and differentiate instruction.	155	85.6	32	80.0	84	90.3	39	81.3
(2) Know how students think and learn.	130	71.8	23	57.5	72	77.4	35	72.9
(3) Adapt resources to address the strengths and weaknesses of students.	126	69.6	22	55.0	67	72.0	37	77.1
(4) Keep abreast of evolving research.	94	51.9	19	47.5	53	57.0	22	45.8
Standard 4.2: Teacher instructional planning.								
(1) Engage students in the learning process.	148	81.8	24	60.0	82	88.2	42	87.5
(2) Monitor and modify plans to enhance student learning.	130	71.8	26	65.0	69	74.2	35	72.9

Table 15 *(continued).*

Standard Four Professional Development Received

			TC (n = 40)		AC-AWE (n = 93)		AC-LE (n = 48)	
Descriptors	N	%	n	%	n	%	N	%
(3) Respond to cultural diversity and learning needs of students	129	71.3	24	60.0	72	77.4	33	68.8
(4) Use data for short and long range planning.	111	61.3	23	57.5	59	63.4	29	60.4

Standard 4.3: Teacher use of instructional methods.

(1) Employ a wide range of techniques.	156	86.2	32	80.0	83	89.2	41	85.4
(2) Choose methods and materials as they strive to eliminate achievement gaps.	90	49.7	15	37.5	51	54.8	24	50.0

Standard 4.4: Teacher use of technology with students.

(1) Appropriately use technology.	141	77.9	29	72.5	76	81.7	36	75.0
(2) Help students use technology to learn.	127	70.2	22	55.0	70	75.3	35	72.9

Standard 4.5: Teach critical thinking and problem-solving skills.

(1) Teach students to ask questions, think creatively, develop and test innovative ideas, synthesize knowledge	105	58.0	19	47.5	57	61.3	29	60.4

Table 15 *(continued).*

Standard Four Professional Development Received

	TC (n = 40)		AC-AWE (n = 93)		AC-LE (n = 48)	
Descriptors	N	%	n	%	n	%	N	%

Descriptors	N	%	n	%	n	%	N	%
(2) Help students exercise and communicate sound reasoning; understand connections; make complex choices; and frame, analyze, and solve problems.	102	56.4	18	45.0	58	62.4	26	54.2

Standard 4.6: Teacher facilitation of teamwork and leadership.

(1) Teach the importance of cooperation and collaboration.	110	60.8	18	45.0	63	67.7	29	60.4
(2) Organize learning teams in order to help students define roles, strengthen social ties, improve communication and collaborative skills, interact with people from different cultures and backgrounds, and develop leadership qualities.	103	56.9	17	42.5	58	62.4	28	58.3

Standard 4.7: Teacher communication.

(1) Communicate clearly with students in a variety of ways.	114	63.0	19	47.5	61	65.6	34	70.8
(2) Assist students in articulating thoughts and ideas clearly.	87	48.1	13	32.5	50	53.8	24	50.0

Table 15 *(continued).*

Standard Four Professional Development Received

	TC (n = 40)		AC-AWE (n = 93)		AC-LE (n = 48)	
Descriptors	N	%	n	%	n	%	N	%

Standard 4.8: Teacher use of assessment.								
(1) Use multiple indicators, both formative (interim) and summative (end of course), to evaluate student progress.	127	70.2	22	55.0	68	73.1	37	77.1
(2) Use assessment systems to inform instruction and demonstrate evidence of students' 21st Century knowledge, skills, performance, and dispositions.	114	63.0	19	47.5	64	68.8	31	64.6
(3) Provide opportunities for the student to self-assess.	102	56.4	18	45.0	53	57.0	31	64.6

Mean percents of Standard Four professional development received for TC, AC-AWE, and AC-LE were 54.05, 70.15, and 67.16 (*SDs* = 32.75, 26.18, and 26.56) respectively. The effect of route to licensure for Standard Four was statistically significant, $F(2, 178) = 4.75$, $p = .01$, $\eta^2 = .05$. Tukey's HSD procedure indicated that TC teachers had a significantly lower professional development received mean than AC-AWE teachers (95% CI: 3.66 – 28.55).

Standard Five focused on teacher reflection. As shown in Table 16, Standard Five had only one element. Overall, the highest rate of receipt was "Actively investigate and

consider new ideas that improve teaching and learning" [5.0(3), 85%]. The lowest

percentage was for "Adapt practice based on data" [5.0(4), 56%]. AC-AWE had the

highest rate of receipt for three of four descriptors with the highest being for "Actively

investigate and consider new ideas that improve teaching and learning" [5.0(3), 89%].

Table 16

Standard Five Professional Development Received (N = 137)

			TC (n = 38)		AC-AWE (n = 70)		AC-LE (n = 29)	
Descriptors		N	%	n	%	N	%	n	%

Standard 5: Teacher reflection.								
(1) Think systematically and critically about learning in their classroom.	106	77.4	29	76.3	55	78.6	22	75.9
(2) Collect and analyze student performance data to improve effectiveness.	92	67.2	24	63.2	49	70.0	19	65.5
(3) Actively investigate and consider new ideas that improve teaching and learning.	117	85.4	30	78.9	62	88.6	25	86.2
(4) Adapt practice based on data.	76	55.5	19	50.0	40	57.1	17	58.2

Mean percents of Standard Five professional development received for TC, AC-

AWE, and AC-LE were 67.11, 73.57, and 71.55 (*SDs* = 35.41, 29.76, and 32.54)

respectively. The effect of route to licensure for Standard Five was not statistically

significant, $F(2, 134) = .50$, $p = .61$, $\eta^2 = .01$.

Other Skills focused on areas that did not specifically align to the NCPTS:

teachers' use of technology, understanding of legal and social issues, and knowledge of

CTE issues. As shown in Table 17 for Other Skills, the highest overall rate of receipt was

"Set up a grading system" [Other.1(7), 75%] followed by "Understand laws related to

special education" [Other.2(4), 61%]. The lowest overall percentage was for "Establish or

maintain a CTE advisory committee" [Other.3(2), 22%] followed by "Use a database

program" [Other.1(2), 23%]. Of the 18 descriptors, AC-AWE reported the highest rate of

receipt for 9 with the highest being for "Understand laws related to special education"

[Other.2(4), 63%]. TC teachers had the highest rate of receipt for seven descriptors with

the highest for "Set up a grading system" [Other.1(7), 79%].

Table 17

Professional Development Received—Other Skills (N = 137)

Descriptors	N	%	TC (n = 38) n	TC (n = 38) %	AC-AWE (n = 70) n	AC-AWE (n = 70) %	AC-LE (n = 29) n	AC-LE (n = 29) %
Other Skills.1: Teacher use of technology.								
(1) Use a word processing program.	43	31.4	14	36.8	23	32.9	6	20.7
(2) Use a spreadsheet program.	36	26.3	8	21.1	21	30.0	7	24.1
(3) Use a database program.	32	23.4	9	23.7	16	22.9	7	24.1
(4) Use email to communicate with people.	46	33.6	13	34.2	24	34.3	9	31.0
(5) Use the internet to locate resources and gather information.	53	38.7	20	52.6	25	35.7	8	27.6
(6) Use multimedia combining text, video, graphics, and sound to convey ideas and information.	69	50.4	15	39.5	39	55.7	15	51.7
(7) Set up a grading system.	103	75.2	30	78.9	52	74.3	21	72.4

Table 17 *(continued).*

Professional Development Received—Other Skills

			TC (n = 38)		AC-AWE (n = 70)		AC-LE (n = 29)	
Descriptors	N	%	n	%	n	%	n	%

Other Skills.2: Teacher understanding of legal and social issues.

(1) Locate and use employment materials.	64	46.7	19	50.0	34	48.6	11	37.9
(2) Understand major legislation which impacts CTE.	72	52.6	18	47.4	40	57.1	14	48.3
(3) Understand teacher liability and laws relating to teaching.	73	53.3	18	47.4	38	54.3	17	58.6
(4) Understand laws related to special education.	84	61.3	23	60.5	44	62.9	17	58.6
(5) Understand social issues such as substance abuse, teen pregnancy, child abuse, and homelessness.	54	39.4	14	36.8	31	44.3	9	31.0

Other Skills.3: Teacher knowledge of CTE issues.

(1) Understand the articulation process between secondary and post secondary schools.	50	36.5	17	44.7	26	37.1	7	24.1
(2) Establish or maintain a CTE advisory committee.	30	21.9	10	26.3	15	21.4	5	17.2
(3) Establish or maintain a CTE student organization.	64	46.7	15	39.5	38	54.3	11	37.9
(4) Understand the functions of CTE professional organizations.	51	37.2	13	34.2	29	41.4	9	31.0
(5) Organize the physical setting of the classroom.	53	38.7	9	23.7	33	47.1	11	37.9
(6) Control and maintain equipment, and supplies in a class/laboratory.	60	43.8	12	31.6	37	52.9	11	37.9

Mean percents of professional development for Other Skills received for TC, AC-AWE, and AC-LE were 40.50, 44.84, and 37.36 (SDs = 29.65, 26.69, and 27.45) respectively. The effect of route to licensure for Other Skills professional development received was not statistically significant, $F(2, 134) = .83$, $p = .44$, $\eta^2 = .01$.

Professional Development Provider

Beginning CTE teachers were asked about the provider of the professional development they received during their first five years. As shown in Table 18, the respondents indicated their districts were the most frequent provider of professional development for all standards. Percentages do not sum to 100% because participants were allowed to choose more than one provider for each element. Standard 5.0, "Teacher reflection," had the highest rate of receipt for licensure coursework (47%) followed by Standard 4.2, "Teacher instructional planning," (39%). Self-funded was selected least in all standards.

Table 18

Professional Development Provider

Standard	District sponsored		Licensure coursework		Self-funded	
	n	%	n	%	n	%
Standard One: Teachers demonstrate leadership. (n = 125)						
1.1: Teacher leadership in the classroom.	99	79.2	45	36.0	29	23.2
1.2: Teacher leadership in the school.	103	82.4	29	23.2	19	15.2
1.3: Teacher leadership in the profession.	93	74.4	36	28.8	20	16.0

Table 18 *(continued).*

Professional Development Provider

Standard	District sponsored		Licensure coursework		Self-funded	
	n	%	n	%	n	%
1.4: Teacher advocacy for school and students.	67	53.6	19	15.2	9	7.2
1.5: Teacher ethics.	78	62.4	13	10.4	11	8.8
Standard Two: Teachers establish a respectful environment for a diverse population of students. (n = 138)						
2.1: Teacher-created environment.	73	52.9	46	33.3	12	8.7
2.2: Teacher embraces diversity.	88	63.8	50	36.2	16	11.6
2.3: Teacher treatment of students.	91	65.9	35	25.4	11	8.0
2.4: Teacher adaptation for students with special needs.	92	66.7	40	29.0	14	10.1
2.5: Teacher collaboration with families and community.	71	51.4	30	21.7	6	4.3
Standard Three: Teachers know the content they teach. (n = 138)						
3.1: Teacher alignment of instruction.	109	79.0	50	36.2	16	11.6
3.2: Teacher knowledge of content.	58	42.0	26	18.8	10	7.2
3.3: Teacher recognition of linkages.	74	53.6	35	25.4	11	8.0
3.4: Teacher makes instruction relevant.	64	46.4	32	23.2	10	7.2
Standard Four: Teachers facilitate learning for their students. (n = 181)						
4.1 Teacher understanding of how students think and learn.	144	79.6	69	38.1	42	23.2

Table 18 *(continued).*

Professional Development Provider

Standard	District sponsored		Licensure coursework		Self-funded	
	n	%	n	%	n	%
4.2 Teacher instructional planning.	146	80.7	71	39.2	33	18.2
4.3 Teacher use of instructional methods.	133	73.5	57	31.5	29	16.0
4.4 Teacher use of technology with students.	136	75.1	40	22.1	22	12.2
4.5 Teach critical thinking and problem-solving skills.	93	51.4	41	22.7	19	10.5
4.6 Teacher facilitation of teamwork and leadership.	96	53.0	36	19.9	22	12.2
4.7 Teacher communication.	89	49.2	38	21.0	25	13.8
4.8 Teacher use of assessment.	119	65.7	38	21.0	27	14.9
Standard Five: Teachers reflect on their practice. (n = 137)						
5: Teacher Reflection	105	76.6	64	46.7	32	23.4
Other Skills: Teacher use of technology, understanding of legal and social issues, and knowledge of CTE issues. (n = 137)						
Other.1: Teacher use of technology.	110	80.3	24	17.5	12	8.8
Other.2: Teacher understanding of legal and social issues.	90	65.7	43	31.4	18	13.1
Other.3: Teacher knowledge of CTE.	77	56.2	34	24.8	15	10.9

Professional Development Delivery Methods

Beginning CTE teachers were asked about the methods of delivery for the professional development they received. Respondents were allowed to choose more than

one method. For all standard elements, the delivery method percentages were ranked in descending order with the rank number "1" indicating the highest percentage. A mean rank was determined for the standards. Table 19 displays the mean ranks for all standards. The most consistent mean rank was for delivery method "other" which had the lowest mean rank across all standards. "Book study" was second lowest for five standards. "Job-embedded" and "one day workshops" tied for highest mean rank for Standard One with "one day workshops" being highest for Other Skills. "Mentor" received the highest mean rank for Standard Two and tied with "more than one day workshops" for Standard Three. While "job-embedded" received the highest mean rank for Standard Four, it received one of the lowest mean ranks for Standard Five. "More than one day workshops" was the highest mean rank for Standard Five. No particular delivery method was consistently highest ranked across standards.

Table 19

Delivery Method Mean Rank by Standard

	Standard					
	1	2	3	4	5	Other
Book Study	8.0	8.0	6.0	8.0	8.0	8.0
College/University Course	5.8	2.4	3.0	4.9	3.0	4.3
Job-embedded	1.8	3.0	6.3	2.1	7.0	2.0
Mentor	3.2	1.6	2.5	6.4	4.0	4.0
Online	7.0	6.8	5.8	6.3	6.0	7.0
Professional Learning Community	4.8	4.0	5.8	3.5	5.0	5.0
Workshop - more than one day	3.4	6.0	2.5	2.3	1.0	3.3

Table 19 *(continued).*

Delivery Method Mean Rank by Standard

	Standard					
	1	2	3	4	5	Other
Workshop - one day	1.8	3.6	3.8	2.7	2.0	1.0
Other	9.0	9.0	9.0	9.0	9.0	9.0

Question Two: Professional Development Needs

After teachers were asked about the professional development provided to them, they were asked to respond to the following statement: "My level of need for this skill at the time I received it was…" Only those who indicated that they received professional development on the skill were asked to rate their need. This section presents their responses by standard and will answer research question two. When referencing need in this section, I have combined the needed very little, somewhat and very much columns for ease in referring to an overall amount of need for a given item.

For Standard One as shown in Table 20, the overall highest response rate for need was "Participate in the implementation of initiatives to improve education" [1.4(2), 97%] followed by "Grow professionally" [1.3(4), 96%]. The lowest rate of response was for "Establish a safe and orderly environment" [1.1(5), 78%] followed by "Communicate my vision to students" [1.1(2), 82%]. By route to licensure, the lowest response rate for need was by AC-LE teachers for "Empower students" [1.1(6), 31%]. Of the 19 descriptors for Standard One, AC-LE teachers had the highest rate of response for needed at least very little for 12 descriptors with four of those being the same as AWE or TC.

Table 20

Standard One Professional Development Needs

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
1.1(1) Take responsibility for all students' learning.	103	12	11.7	31	30.1	37	35.9	23	22.3
TC	22	4	18.2	4	18.2	12	54.5	2	9.1
AC-AWE	62	8	12.9	20	32.3	19	30.6	15	24.2
AC-LE	19	0	0.0	7	36.8	6	31.6	6	31.6
1.1(2) Communicate my vision to students.	68	12	17.6	19	27.6	24	35.3	13	19.1
TC	17	3	17.6	3	17.6	10	58.8	1	5.9
AC-AWE	37	8	21.6	13	35.1	9	24.3	7	18.9
AC-LE	14	1	7.1	3	21.4	5	35.7	5	35.7
1.1(3) Use data to organize, plan, and set goals.	101	7	6.9	26	25.7	36	35.6	32	31.7
TC	23	4	17.4	5	21.7	10	43.5	4	17.4
AC-AWE	59	3	5.1	16	27.1	20	33.9	20	33.9
AC-LE	19	0	.0	5	26.3	6	31.6	8	42.1
1.1(4) Use a variety of assessment data throughout the year to evaluate progress.	103	6	5.8	17	16.5	43	41.7	37	35.9
TC	23	2	8.7	6	26.1	11	47.8	4	17.4
AC-AWE	60	3	5.0	9	15.0	25	41.7	23	38.3
AC-LE	20	1	5.0	2	10.0	7	35.0	10	50.0
1.1(5) Establish a safe and orderly environment.	96	21	21.9	27	28.1	24	25.0	24	25.0
TC	19	5	26.3	4	21.1	7	36.8	3	15.8
AC-AWE	60	12	20.0	19	31.7	13	21.7	16	26.7
AC-LE	17	4	23.5	4	23.5	4	23.5	5	29.4
1.1(6) Empower students.	83	13	15.7	21	25.3	28	33.7	21	25.3
TC	18	2	11.1	5	27.8	9	50.0	2	11.1
AC-AWE	52	7	13.5	15	28.8	16	30.8	4	26.9
AC-LE	13	4	30.8	1	7.7	3	23.1	5	38.5

Table 20 *(continued).*

Standard One Professional Development Needs

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
1.2(1) Work collaboratively with all school personnel to create a professional learning community.	93	8	8.6	17	18.3	48	51.6	20	21.5
TC	17	3	17.6	1	5.9	12	70.6	1	5.9
AC-AWE	60	4	6.7	14	23.3	30	50.0	12	20.0
AC-LE	16	1	6.3	2	12.5	6	37.5	7	43.8
1.2(2) Analyze data.	67	3	4.5	15	22.4	29	43.3	20	29.9
TC	15	1	6.7	4	26.7	9	60.0	1	6.7
AC-AWE	42	2	4.8	9	21.4	18	42.9	13	31.0
AC-LE	10	0	0	2	20.0	2	20.0	6	60.0
1.2(3) Develop goals and strategies through the school improvement plan.	89	5	5.6	22	24.7	38	42.7	24	27.0
TC	17	2	11.8	4	23.5	7	41.2	4	23.5
AC-AWE	56	3	5.4	13	23.2	25	44.6	15	26.8
AC-LE	16	0	.0	5	31.3	6	37.5	5	31.3
1.2(4) Assist in determining school budget.	25	2	8.0	7	28.0	12	48.0	4	16.0
TC	4	0	.0	1	25.0	2	50.0	1	25.0
AC-AWE	17	2	11.8	4	23.5	8	47.1	3	17.6
AC-LE	4	0	.0	2	50.0	2	50.0	0	.0
1.2(5) Participate in the hiring process.	19	3	15.8	6	31.6	9	47.4	1	5.3
TC	4	0	.0	0	.0	3	75.0	1	25.0
AC-AWE	12	3	25.0	3	25.0	6	50.0	0	.0
AC-LE	3	0	.0	3	100	0	.0	0	.0
1.2(6) Collaborate with colleagues to mentor and support teachers.	82	7	8.5	15	18.3	32	39.0	28	34.1
TC	15	0	.0	4	26.7	8	53.3	3	20.0
AC-AWE	54	6	11.1	10	18.5	17	31.5	21	38.9
AC-LE	13	1	7.7	1	7.7	7	53.8	4	30.8

Table 20 *(continued).*

Standard One Professional Development Needs

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
1.3(1) Strive to improve the profession.	80	5	6.3	21	26.3	40	50.0	14	17.5
TC	19	2	10.5	4	21.1	13	68.4	0	.0
AC-AWE	47	2	4.3	14	29.8	22	46.8	9	19.1
AC-LE	14	1	7.1	3	21.4	5	35.7	5	35.7
1.3(2) Contribute to the establishment of positive working conditions.	82	4	4.9	26	31.7	38	46.3	14	17.1
TC	15	1	6.7	6	40.0	8	53.3	0	.0
AC-AWE	52	2	3.8	16	30.8	24	46.2	10	19.2
AC-LE	15	1	6.7	4	26.7	6	40.0	4	26.7
1.3(3) Participate in decision-making structures.	64	3	4.7	16	25.0	32	50.0	13	20.3
TC	15	1	6.7	3	20.0	10	66.7	1	6.7
AC-AWE	37	1	2.7	11	29.7	17	45.9	8	21.6
AC-LE	12	1	8.3	2	16.7	5	41.7	4	33.3
1.3(4) Grow professionally.	102	4	3.9	21	20.6	51	50.0	26	25.5
TC	23	0	.0	7	30.4	14	60.9	2	8.7
AC-AWE	63	3	4.8	14	22.2	30	47.6	16	25.4
AC-LE	16	1	6.3	0	.0	7	43.8	8	50.0
1.4(1) Advocate for positive change in policies and practices affecting student learning.	46	2	4.3	13	28.3	21	45.7	10	21.7
TC	9	1	11.1	3	33.3	5	55.6	0	.0
AC-AWE	31	1	3.2	8	25.8	16	51.6	6	19.4
AC-LE	6	0	.0	2	33.3	0	.0	4	66.7
1.4(2) Participate in implementation of improvement initiatives.	70	2	2.9	16	22.9	36	51.4	16	22.9
TC	13	1	7.7	3	23.1	8	61.5	1	7.7
AC-AWE	44	1	2.3	9	20.5	22	50.0	12	27.3
AC-LE	13	0	.0	4	30.8	6	46.2	3	23.1

Table 20 *(continued).*

Standard One Professional Development Needs

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
1.5(1) Uphold the code of Ethics and Standards for Professional Conduct.	85	14	16.5	27	31.8	28	32.9	16	18.8
TC	15	1	6.7	9	60.0	5	33.3	0	.0
AC-AWE	55	12	21.8	15	27.3	17	30.9	11	20
AC-LE	15	1	6.7	3	20.0	6	40.0	5	33.3

Average Standard One need means for TC, AC-AWE, and AC-LE teachers were 2.61, 2.86, and 2.99 (*SDs* = 0.49, 0.66, and 0.68) respectively. The effect of route to licensure for Standard One professional development needed was not statistically significant, $F(2, 120) = 2.32$, $p = .10$, $\eta^2 = .04$.

Table 21 displays the professional development needs for Standard Two. When combining the needed very little, somewhat, and very much columns, the overall highest rate of endorsement was for "Seek solutions to overcome obstacles that prevent family and community involvement" [2.5(3), 97%]. The lowest overall percentage (87%) was for "Maintain high expectations" [2.3(1)] and "Appreciate differences and value contributions by building positive, appropriate relationships" [2.3(2)]. By route to licensure, the highest rate of endorsement for "needed very much" was by AC-AWE teachers for "Utilize inclusion and other models of effective practice" [2.4(3), 44%]. One hundred percent of TC teachers indicated need for four descriptors and AC-LE for two. The lowest rate of endorsement was by TC teachers for "Recognize the influences of diversity on a child's development, personality, and performance" [2.2(3), 79%].

Table 21

Standard Two Professional Development Needs

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
2.1(1) Create an environment that is inviting, respectful, supportive, inclusive, and flexible.	101	11	10.9	32	31.7	38	37.6	20	19.8
TC	23	2	8.7	6	26.1	11	47.8	4	17.4
AC-AWE	53	7	13.2	18	34.0	19	35.8	9	17.0
AC-LE	25	2	8.0	8	32.0	8	32.0	7	28.0
2.2(1) Demonstrate knowledge of diverse cultures.	97	9	9.3	24	24.7	43	44.3	21	21.6
TC	23	2	8.7	7	30.4	11	47.8	3	13.0
AC-AWE	50	5	10.0	12	24.0	22	44.0	11	22.0
AC-LE	24	2	8.3	5	20.8	10	41.7	7	29.2
2.2(2) Select materials and develop lessons that counteract stereotypes and incorporate contributions.	69	5	7.2	17	24.6	29	42.0	18	26.1
TC	12	1	8.3	5	41.7	5	41.7	1	8.3
AC-AWE	36	3	8.3	7	19.4	16	44.4	10	27.8
AC-LE	21	1	4.8	5	23.8	8	38.1	7	33.3
2.2(3) Recognize the influences of diversity on a child's development, personality, and performance.	95	9	9.5	21	22.1	42	44.2	33	24.2
TC	19	4	21.1	4	21.1	9	47.4	2	10.5
AC-AWE	51	4	7.8	11	21.6	23	45.1	13	25.5
AC-LE	25	1	4.0	6	24.0	10	40.0	8	32.0

Table 21 *(continued).*

Standard Two Professional Development Needs

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
2.2(4) Consider and incorporate different points of view.	86	9	10.5	25	29.1	37	43.0	15	17.4
TC	20	3	15.0	6	30.0	10	50.0	1	5.0
AC-AWE	45	5	11.1	13	29.9	18	40.0	9	20.0
AC-LE	21	1	4.8	6	28.6	9	42.9	5	23.8
2.3(1) Maintain high expectations.	91	12	13.2	26	28.6	36	39.6	17	18.7
TC	23	4	17.4	8	34.8	8	34.8	3	13.0
AC-AWE	44	6	13.6	12	27.3	17	38.6	9	20.5
AC-LE	24	2	8.3	6	25.0	11	45.8	5	20.8
2.3(2) Appreciate differences and value contributions by building positive, appropriate relationships.	94	12	12.8	31	33.0	35	37.2	16	17.0
TC	24	3	12.5	10	41.7	8	33.3	3	12.5
AC-AWE	44	7	15.9	12	27.3	16	36.4	9	20.5
AC-LE	26	2	7.7	9	34.6	11	42.3	4	15.4
2.4(1) Collaborate with specialists.	61	4	6.6	11	18.0	29	47.5	17	27.9
TC	15	1	6.7	2	13.3	9	60.0	3	20.0
AC-AWE	31	2	6.5	6	19.4	14	45.2	9	29.0
AC-LE	15	1	6.7	3	20.0	6	40.0	5	33.3
2.4(2) Engage students.	90	4	4.4	20	22.2	39	43.3	27	30.0
TC	22	0	.0	7	31.8	9	40.9	6	27.3
AC-AWE	47	4	8.5	9	19.1	19	40.4	15	31.9
AC-LE	21	0	.0	4	19.0	11	52.4	6	28.6
2.4(3) Utilize inclusion and other models of practice.	72	3	4.2	10	13.9	33	45.8	26	36.1
TC	16	0	.0	2	12.5	12	75.0	2	12.5
AC-AWE	36	2	5.6	6	16.7	12	33.3	16	44.4
AC-LE	20	1	5.0	2	10.0	9	45.0	8	40.0

Table 21 *(continued).*

Standard Two Professional Development Needs

Descriptor	N	Not needed n	Not needed %	Needed very little n	Needed very little %	Needed somewhat n	Needed somewhat %	Needed very much n	Needed very much %
2.5(1) Improve communication and collaboration between the school and the home and community.	72	3	4.2	3	21.4	9	64.3	2	14.3
TC	14	0	.0	6	17.1	18	51.4	9	25.7
AC-AWE	35	2	5.7	4	17.4	9	39.1	9	39.1
AC-LE	23	1	4.3	13	18.1	36	50.0	20	27.8
2.5(2) Promote trust and understanding and build partnerships with school community.	68	5	7.4	16	23.5	25	36.8	22	32.4
TC	14	1	7.1	2	14.3	7	50.0	4	28.6
AC-AWE	36	3	8.3	10	27.8	12	33.3	11	30.6
AC-LE	18	1	5.6	4	22.2	6	33.3	7	38.9
2.5(3) Seek solutions to overcome obstacles that prevent family and community involvement.	58	2	3.4	12	20.7	27	46.6	17	29.3
TC	10	0	.0	2	20.0	5	50.0	3	30.0
AC-AWE	32	2	6.3	6	18.8	16	50.0	8	25.0
AC-LE	16	0	.0	4	25.0	6	37.5	6	37.5

Average Standard Two need means for TC, AC-AWE, and AC-LE teachers were 2.70, 2.88, and 2.97 (*SDs* = 0.71, 0.72, and 0.68) respectively. The effect of route to licensure for Standard Two professional development need was not statistically significant, $F(2, 127) = 1.23$, $p = .30$, $\eta^2 = .02$.

As shown in Table 22, when combining needed very little, somewhat, and very much, the overall highest rate of response was for "Promote global awareness and its

relevance" [3.3(3), 97%]. The lowest percentage was for "Develop and apply strategies to make the curriculum rigorous and relevant" [3.1(2), 85%]. By route to licensure, TC teachers had the highest rate of response for 6 of the 10 descriptors. The highest rate of response for "needed very much" was indicated by AC-LE teachers for "Develop and apply strategies to make the curriculum rigorous and relevant" [3.1(2), 50%]. The lowest percentage of at least some need was by TC teachers for "Develop literacy skills appropriate to specialty area" [3.1(3), 67%].

Table 22

Standard Three Professional Development Needs

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
3.1(1) Teach the North Carolina Standard Course of Study.	32	4	12.5	9	28.1	8	25.0	11	34.4
TC	13	3	23.1	3	23.1	2	15.4	5	38.5
AC-AWE	11	1	9.1	4	36.4	3	27.3	3	27.3
AC-LE	8	0	.0	2	25.0	3	37.5	3	37.5
3.1(2) Develop and apply strategies to make the curriculum rigorous.	33	5	15.2	8	24.2	8	24.2	12	36.4
TC	12	2	16.7	4	33.3	2	16.7	4	33.3
AC-AWE	13	3	23.1	2	15.4	4	30.8	4	30.8
AC-LE	8	0	.0	2	25.0	2	25.0	4	50.0
3.1(3) Develop literacy skills appropriate to specialty area.	29	3	10.3	10	34.5	8	27.6	8	27.6
TC	6	2	33.3	3	50	0	.0	1	16.7
AC-AWE	13	0	.0	4	30.8	6	46.2	3	23.1
AC-LE	10	1	10.0	3	30.0	2	20.0	4	40.0
3.2(1) Know subject beyond content I teach.	61	7	11.5	15	24.6	24	39.3	15	24.6
TC	13	0	.0	1	7.7	10	76.9	2	15.4
AC-AWE	33	5	15.2	12	36.4	9	27.3	7	21.2
AC-LE	15	2	13.3	2	13.3	5	33.3	6	40.0

Table 22 *(continued).*

Standard Three Professional Development Needs

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
3.2(2) Direct students' curiosity into an interest in learning.	56	5	8.9	13	23.2	24	42.9	14	25.0
TC	11	0	.0	1	9.1	9	81.8	1	9.1
AC-AWE	31	3	9.7	11	35.5	9	29.0	8	25.8
AC-LE	14	2	14.3	1	7.1	6	42.9	5	35.7
3.3(1) Know links between grade/subject and the North Carolina Standard Course of Study.	62	4	6.5	11	17.7	29	46.8	18	29.0
TC	9	1	11.1	2	22.2	4	44.4	2	22.2
AC-AWE	32	1	3.1	8	25.0	14	43.8	9	28.1
AC-LE	21	2	9.5	1	4.8	11	52.4	7	33.3
3.3(2) Relate content to other disciplines.	75	4	5.3	13	17.3	4	53.3	18	24.0
TC	16	0	.0	5	31.3	8	50.0	3	18.8
AC-AWE	41	2	4.9	7	17.1	25	61.0	7	17.1
AC-LE	18	2	11.1	1	5.6	7	38.9	8	44.4
3.3(3) Promote global awareness and its relevance.	62	2	3.2	16	25.8	26	41.9	18	29.0
TC	12	0	.0	6	50.0	3	25.0	3	25.0
AC-AWE	31	1	3.2	8	25.8	15	48.4	7	22.6
AC-LE	19	1	5.3	2	10.5	8	42.1	8	42.1
3.4(1) Incorporate life skills.	71	7	9.9	11	15.5	35	49.3	18	25.4
TC	12	0	.0	1	8.3	8	66.7	3	25.0
AC-AWE	39	6	15.4	6	15.4	18	46.2	9	23.1
AC-LE	20	1	5.0	4	20.0	9	45.0	6	30.0
3.4(2) Demonstrate the relationship between the core content and 21st Century.	76	4	5.3	13	17.1	38	50.0	21	27.6
TC	16	0	.0	4	25.0	6	37.5	6	37.5
AC-AWE	39	3	7.7	7	17.9	22	56.4	7	17.9
AC-LE	21	1	4.8	2	9.5	10	47.6	8	38.1

Average Standard Three need means for TC, AC-AWE, and AC-LE teachers

were 2.93, 2.92, and 3.26 (*SDs* = 0.82, 0.72, and 0.70) respectively. The effect of route to

licensure for Standard Three professional development need was not statistically

significant, $F(2, 120) = 2.32$, $p = .10$, $\eta^2 = .04$.

Table 23 displays responses for the entire group and by licensure route for

Standard Four. There were 21 total descriptors for this standard. When needed very little,

somewhat and very much were combined, "Choose methods and materials to eliminate

achievement gaps" [4.3(1)] and "Employ a wide range of techniques" [4.3(2)] were

indicated by the overall group as having the highest rate of endorsement for need (99%).

By route to licensure, the greatest rate of endorsement for need was indicated by AC-LE

for 10 of 21 descriptors including three ties with AC-AWE teachers. There were 18

instances of 100% of licensure group indicating need. The lowest rate of endorsement for

need was reported by TC teachers for "Appropriately use technology" [4.4(1), 85%].

Table 23

Standard Four Professional Development Needs

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
4.1(1) Know how students think and learn.	129	9	7.0	13	10.1	59	45.7	48	37.2
TC	23	3	13.0	4	17.4	10	43.5	6	26.1
AC-AWE	71	5	7.0	7	9.9	29	40.8	30	42.3
AC-LE	35	1	2.9	2	5.7	20	57.1	12	34.3

Table 23 *(continued).*

Standard Four Professional Development Needs

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
4.1(2) Understand the influences on student learning and differential instruction.	154	4	2.6	17	11.0	62	40.3	71	46.1
TC	32	3	9.4	3	9.4	13	40.6	13	40.6
AC-AWE	83	1	1.2	11	13.3	33	39.8	38	45.8
AC-LE	39	0	0	3	7.7	16	41.0	20	51.3
4.1(3) Keep abreast of evolving research.	93	8	8.6	13	14.0	49	52.7	23	24.7
TC	19	2	10.5	4	21.1	6	31.6	7	36.8
AC-AWE	52	3	5.8	5	9.6	32	61.5	12	23.1
AC-LE	22	3	13.6	4	18.2	11	50.0	4	18.2
4.1(4) Adapt resources to address the strengths and weakness of students.	123	6	4.9	8	6.5	59	48.0	50	40.7
TC	22	1	4.5	3	13.6	13	59.1	5	22.7
AC-AWE	65	4	6.2	3	4.6	31	47.7	27	41.5
AC-LE	36	1	2.8	2	5.6	15	41.7	18	50.0
4.2(1) Use data for short and long range planning.	110	3	2.7	16	14.5	62	56.4	29	26.4
TC	23	1	4.3	5	21.7	13	56.5	4	17.4
AC-AWE	58	1	1.7	7	12.1	33	56.9	17	29.3
AC-LE	29	1	3.4	4	13.8	16	55.2	8	27.6
4.2(2) Engage students in the learning process.	148	4	2.7	17	11.5	80	54.1	47	31.8
TC	24	0	0	6	25.0	15	62.5	3	12.5
AC-AWE	82	3	3.7	7	8.5	44	53.7	28	34.1
AC-LE	42	1	2.4	4	9.5	21	50.0	16	38.1
4.2(3) Monitor and modify plans to enhance learning.	130	5	3.8	13	10.0	71	54.6	41	31.5
TC	26	2	7.7	2	7.7	18	69.2	4	15.4
AC-AWE	69	2	2.9	6	8.7	40	58.0	21	30.4
AC-LE	35	1	2.9	5	14.3	13	37.1	16	45.7

Table 23 *(continued).*

Standard Four Professional Development Needs

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
4.2(4) Respond to cultural diversity and learning needs.	128	5	3.9	23	18.0	58	45.3	42	32.8
TC	24	3	12.5	6	25.0	7	29.2	8	33.3
AC-AWE	71	2	2.8	11	15.5	32	45.1	26	36.6
AC-LE	33	0	0	6	18.2	19	57.6	8	24.2
4.3(1) Choose methods and materials to eliminate gaps.	88	1	1.1	11	12.5	54	61.4	22	25.0
TC	14	1	7.1	3	21.4	8	57.1	2	14.3
AC-AWE	51	0	0	6	11.8	30	58.8	15	29.4
AC-LE	23	0	0	2	8.7	16	69.6	5	21.7
4.3(2) Employ a wide range of techniques.	152	1	.7	15	9.9	79	52.0	57	37.5
TC	31	1	3.2	6	19.4	16	51.6	8	25.8
AC-AWE	80	0	0	6	7.5	41	51.3	33	41.3
AC-LE	41	0	0	3	7.3	22	53.7	16	39.0
4.4(1) Appropriately use technology.	137	12	8.8	20	14.6	53	38.7	52	38.0
TC	27	4	14.8	3	11.1	9	33.3	11	40.7
AC-AWE	74	5	6.8	10	13.5	34	45.9	25	33.8
AC-LE	36	3	8.3	7	19.4	10	27.8	16	44.4
4.4(2) Help students use technology to learn.	127	3	2.4	18	14.2	48	37.8	58	45.7
TC	22	0	0	6	27.3	5	22.7	11	50.0
AC-AWE	70	2	2.9	6	8.6	30	42.9	32	45.7
AC-LE	35	1	2.9	6	17.1	13	37.1	15	42.9
4.5(1) Teach students to ask questions, think creatively, develop and test innovative ideas, synthesize knowledge and draw conclusions.	105	2	1.9	14	13.3	56	53.3	33	31.4
TC	19	0	0	4	21.1	8	42.1	7	36.8
AC-AWE	57	2	3.5	7	12.3	31	54.4	17	29.8
AC-LE	29	0	0	3	10.3	17	58.6	9	31.0

Table 23 *(continued).*

Standard Four Professional Development Needs

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
4.5(2) Help students exercise and communicate sound reasoning; understand connections; make complex choices; and frame, analyze, and solve problems.	101	4	4.0	13	12.9	53	52.5	31	30.7
TC	18	0	0	4	22.2	10	55.6	4	22.2
AC-AWE	57	3	5.3	6	10.5	30	52.6	18	31.6
AC-LE	26	1	3.8	3	11.5	13	50.0	9	34.6
4.6(1) Teach the importance of cooperation and collaboration.	108	6	5.6	19	11.8	59	54.6	24	22.2
TC	17	0	0	2	11.8	12	70.6	3	17.6
AC-AWE	62	4	6.5	11	17.7	35	56.5	12	19.4
AC-LE	29	2	6.9	6	20.7	12	41.4	9	31.0
4.6(2) Organize learning teams in order to help students define roles, strengthen social ties, improve communication and collaborative skills, interact with people from different cultures and backgrounds, and develop leadership qualities.	101	3	3.0	17	16.8	52	51.5	29	28.7
TC	17	0	0	3	17.6	7	41.2	7	41.2
AC-AWE	56	2	3.6	10	17.9	31	55.4	13	23.2
AC-LE	28	1	3.6	4	14.3	14	50	9	32.1
4.7(1) Communicate clearly with students in a variety of ways.	106	7	6.6	12	11.3	64	60.4	23	21.7
TC	18	0	0	4	22.2	12	66.7	2	11.1
AC-AWE	54	4	7.4	6	11.1	32	59.3	12	22.2
AC-LE	34	3	8.8	2	5.9	20	58.8	9	26.5

Table 23 *(continued).*

Standard Four Professional Development Needs

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
4.7(2) Assist students in articulating thoughts and ideas clearly and effectively.	81	4	4.9	11	13.6	47	58.0	19	23.5
TC	12	0	0	4	33.3	6	50.0	2	16.7
AC-AWE	45	3	6.7	4	8.9	29	64.4	9	20.0
AC-LE	24	1	4.2	3	12.5	12	50.0	8	33.3
4.8(1) Use multiple indicators to evaluate student progress.	127	4	3.1	14	11.0	68	53.5	41	32.3
TC	22	1	4.5	5	22.7	11	50.0	5	22.7
AC-AWE	68	2	2.9	6	8.8	38	55.9	22	32.4
AC-LE	37	1	2.7	3	8.1	19	51.4	14	37.8
4.8(2) Provide opportunities for the students to self-assess.	99	2	2.0	15	15.2	47	47.5	35	35.4
TC	18	0	0	4	22.2	11	61.1	3	16.7
AC-AWE	52	2	3.8	6	11.5	26	50.0	18	34.6
AC-LE	29	0	0	5	17.2	10	34.5	14	48.3
4.8(3) Use assessment systems to inform instruction and demonstrate evidence of students' 21st Century knowledge, skills, performance, and dispositions.	113	2	1.8	12	10.6	63	55.8	36	31.9
TC	19	1	5.3	4	21.1	10	52.6	4	21.1
AC-AWE	63	1	1.6	7	11.1	34	54.0	21	33.3
AC-LE	31	0	0	1	3.2	19	61.3	11	35.5

Average Standard Four need means for TC, AC-AWE, and AC-LE teachers were 2.89, 3.16, and 3.22 (*SDs* = 0.66, 0.59, and 0.54) respectively. The effect of route to licensure for Standard Four professional development need was statistically significant,

$F(2, 176) = 3.81$, $p = .02$, $\eta^2 = .04$. Tukey's HSD procedure indicated that TC teachers

had significantly lower mean need than AC-AWE (95% CI: .00 - .54) and AC-LE (95%

CI: .03 - .64) teachers.

For Standard Five, "Think systematically and critically about learning in the

classroom" [5.0(1), 99%] received the overall highest rate of response for need (see Table

24). The lowest rate of response was "Collect and analyze student performance data to

improve effectiveness" [5.0(2), 96%]. By route to licensure, AC teachers indicated the

highest rate of response for need for all of the descriptors. There were six instances of

100% of AC teachers indicating need. The lowest rate of response was by TC teachers for

"Collect and analyze student performance data to improve effectiveness" [5.0(2), 83%].

Table 24

Standard Five Professional Development Needs

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
5.0(1) Think systematically and critically about learning in the classroom.	105	1	1.0	17	16.2	46	43.8	41	39.0
TC	29	1	3.4	9	31.0	12	41.4	7	24.1
AC-AWE	54	0	.0	5	9.3	27	50.0	22	40.7
AC-LE	22	0	.0	3	13.6	7	31.8	12	54.5
5.0(2) Collect and analyze student performance data to improve effectiveness.	91	4	4.4	12	13.2	41	45.1	34	37.4
TC	24	4	16.7	3	12.5	10	41.7	7	29.2
AC-AWE	48	0	.0	6	12.5	24	50.0	18	37.5
AC-LE	19	0	.0	3	15.8	7	36.8	9	47.4

Table 24 *(continued).*

Standard Five Professional Development Needs

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
5.0(3) Actively investigate and consider new ideas that improve teaching and learning.	115	4	3.5	16	13.9	49	42.6	46	40.0
TC	29	1	3.4	9	31.0	12	41.4	7	24.1
AC-AWE	61	2	3.3	6	9.8	28	45.9	25	41.0
AC-LE	25	1	4.0	1	4.0	9	36.0	14	56.0
5.0(4) Adapt practice based on data.	75	2	2.7	12	16.0	36	48.0	25	33.3
TC	19	2	10.5	5	26.3	7	36.8	5	26.3
AC-AWE	39	0	.0	6	15.4	22	56.4	11	28.2
AC-LE	17	0	.0	1	5.9	7	41.2	9	52.9

Average Standard Five need means for TC, AC-AWE, and AC-LE teachers were .93, 1.02, and 1.08 (*SDs* = 0.81, 0.62, and 0.65) respectively. The effect of route to licensure for Standard Five professional development need was not statistically significant, $F(2, 127) = 1.07, p = .35, \eta^2 = .02$.

For Other Skills, as shown in Table 25, 100% of respondents overall indicated need for three descriptors relating to legal knowledge. The lowest overall combined percentage of need was for "Use email to communicate with people" [Other.1(4), 66%]. By route to licensure, there were 22 instances of 100% of teachers indicating need. The lowest rate of response for need was by AC-AWE teachers for "Use email to communicate with people" [Other.1(4), 60%].

Table 25

Professional Development Needs—Other Skills

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
Other.1(1) Use a word processing program.	42	12	28.6	11	26.2	9	21.4	10	23.8
TC	14	3	21.4	1	7.1	5	35.7	5	35.7
AC-AWE	22	7	31.8	9	40.9	4	18.2	2	9.1
AC-LE	6	2	33.3	1	16.7	0	0.0	3	50.0
Other.1(2) Use a spreadsheet program.	34	6	17.6	13	38.2	7	20.6	8	23.5
TC	8	1	12.5	1	12.5	3	37.5	3	37.5
AC-AWE	19	3	15.8	11	57.9	3	15.8	2	10.5
AC-LE	7	2	28.6	1	14.3	1	14.3	3	42.9
Other.1(3) Use a database program.	31	5	16.1	9	29.0	7	22.6	10	32.3
TC	9	1	11.1	0	.0	4	44.4	4	44.4
AC-AWE	16	2	12.5	8	50.0	2	12.5	4	25.0
AC-LE	6	2	33.3	1	16.7	1	16.7	2	33.3
Other.1(4) Use email to communicate with people.	44	15	34.1	15	34.1	5	11.4	9	20.5
TC	13	4	30.8	2	15.4	5	38.5	2	15.4
AC-AWE	23	9	39.1	10	43.5	0	.0	4	17.4
AC-LE	8	2	25.0	3	37.5	0	.0	3	37.5
Other.1(5) Use the Internet to locate resources and gather information.	52	13	25.0	19	36.5	7	13.5	13	25.0
TC	20	5	25.0	5	25.0	4	20.0	6	30.0
AC-AWE	24	7	29.2	11	45.8	3	12.5	3	12.5
AC-LE	8	1	12.5	3	37.5	0	.0	4	50.0

Table 25 *(continued).*

Professional Development Needs—Other Skills

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
Other.1(6) Use multimedia combining text, video, graphics, and sound to convey ideas and information.	68	4	5.9	13	19.1	30	44.1	21	30.9
TC	15	0	.0	3	20.0	4	26.7	8	53.3
AC-AWE	38	2	5.3	6	15.8	23	60.5	7	18.4
AC-LE	15	2	13.3	4	26.7	3	20.0	6	40.0
Other.1(7) Set up a grading system.	101	5	5.0	15	14.9	33	32.7	48	47.5
TC	29	2	6.9	6	20.7	5	17.2	16	55.2
AC-AWE	51	2	3.9	5	9.8	20	39.2	24	47.1
AC-LE	21	1	4.8	4	19.0	8	38.1	8	38.1
Other.2(1) Locate and use employment materials.	64	2	3.1	15	23.4	30	46.9	17	26.6
TC	19	2	10.5	5	26.3	10	52.6	2	10.5
AC-AWE	34	0	.0	7	20.6	16	47.1	11	32.4
AC-LE	11	0	.0	3	27.3	4	36.4	4	36.4
Other.2(2) Understand major legislation which impacts CTE.	72	0	.0	1	5.6	10	55.6	7	38.9
TC	18	0	.0	5	12.5	21	52.5	14	35.0
AC-AWE	40	0	.0	2	14.3	7	50.0	5	35.7
AC-LE	14	0	.0	8	11.1	38	52.8	26	36.1
Other.2(3) Understand teacher liability and laws relating to teaching.	73	0	.0	7	9.6	35	47.9	31	42.5
TC	18	0	.0	2	11.1	12	66.7	4	22.2
AC-AWE	38	0	.0	4	10.5	17	44.7	17	44.7
AC-LE	17	0	.0	1	5.9	6	35.3	10	58.8

Table 25 *(continued).*

Professional Development Needs—Other Skills

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
Other.2(4) Understand laws related to special education.	83	0	.0	6	7.2	39	47.0	38	45.8
TC	23	0	.0	4	17.4	12	52.2	7	30.4
AC-AWE	43	0	.0	2	4.7	20	46.5	21	48.8
AC-LE	17	0	.0	0	.0	7	41.2	10	58.8
Other.2(5) Understand social issues such as substance abuse, teen pregnancy, child abuse, and homelessness.	54	2	3.7	8	14.8	30	55.6	14	25.9
TC	14	1	7.1	2	14.3	10	71.4	1	7.1
AC-AWE	31	1	3.2	5	16.1	15	48.4	10	32.3
AC-LE	9	0	.0	1	11.1	5	55.6	3	33.3
Other.3(1) Understand the articulation process between secondary and post secondary schools.	50	2	4.0	7	14.0	24	48.0	17	34.0
TC	17	2	11.8	2	11.8	9	52.9	4	23.5
AC-AWE	26	0	.0	4	15.4	13	50.0	9	34.6
AC-LE	7	2	4.0	1	14.3	2	28.6	4	57.1
Other.3(2) Establish or maintain a CTE advisory committee.	30	2	6.7	6	20.0	12	40.0	10	33.3
TC	10	2	20.0	5	50.0	2	20.0	1	10.0
AC-AWE	15	0	.0	1	6.7	9	60.0	5	33.3
AC-LE	5	0	.0	0	.0	1	20.0	4	80.0
Other.3(3) Establish or maintain a CTE student organization.	64	2	3.1	8	12.5	26	40.6	28	43.8
TC	15	2	13.3	4	26.7	5	33.3	4	26.7
AC-AWE	38	0	.0	3	7.9	17	44.7	18	47.4
AC-LE	11	0	.0	1	9.1	4	36.4	6	54.5

Table 25 *(continued).*

Professional Development Needs—Other Skills

Descriptor	N	Not needed		Needed very little		Needed somewhat		Needed very much	
		n	%	n	%	n	%	n	%
Other.3(4) Understand the roles and functions of CTE professional organizations.	51	3	5.9	10	19.6	22	43.1	16	31.4
TC	13	3	23.1	6	46.2	1	7.7	3	23.1
AC-AWE	29	0	.0	3	10.3	17	58.6	9	31.0
AC-LE	9	0	.0	1	11.1	4	44.4	4	44.4
Other.3(5) Organize the physical setting of the classroom.	52	4	7.7	15	28.8	12	23.1	21	40.4
TC	9	3	33.3	4	44.4	1	11.1	1	11.1
AC-AWE	32	1	3.1	9	28.1	6	18.8	16	50.0
AC-LE	11	0	.0	2	18.2	5	45.5	4	36.4
Other.3(6) Control and maintain equipment, tools, and supplies in a class/laboratory.	60	6	10.0	16	26.7	20	33.3	18	30.0
TC	12	3	25.0	3	25.0	3	25.0	3	25.0
AC-AWE	37	3	8.1	10	27.0	13	35.1	11	29.7
AC-LE	11	0	.0	3	27.3	4	36.4	4	36.4

Average Other Skills need means for TC, AC-AWE, and AC-LE teachers were 2.88, 3.00, and 3.06 (*SDs* = 0.75, 0.54, and 0.57) respectively. The effect of route to licensure for Other Skills professional development need was not statistically significant, $F(2, 129) = .71$, $p = .49$, $\eta^2 = .01$.

Question Three: Professional Development Desired

The survey asked teachers about their desire for the professional development that they did not receive. This section will present their responses by standard and will address research question three. When referencing desire in this section, I have combined

the some desire, strong desire, and very strong desire columns for ease in referring to an overall amount of desire for a given item.

For Standard One as shown in Table 26, 95% of respondents indicated at least some desire for "Use data to organize, plan, and set goals," [1.1(3)] "Use a variety of assessment data throughout the year to evaluate progress," [1.1(4)] and "Collaborate with colleagues to mentor and support teachers to improve effectiveness" [1.2(6)]. The lowest rate of response was for "Participate in the hiring process" [1.2(5), 63%]. All responding AC-LE teachers reported at least some desire for 11 of 19 descriptors with AC-AWE and TC both indicating at least some desire for two descriptors. The greatest rate of response (50%) of "Very strong desire" was by AC-LE teachers for "Use data to organize, plan, and set goals," [1.1(3)] "Collaborate with colleagues to mentor and support teachers to improve effectiveness," [1.2(6)] and "Contribute to the establishment of strong working conditions" [1.3(2)].

Table 26

Standard One Professional Development Desired

Descriptor	N	No Desire		Some Desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
1.1(1) Take responsibility for all students' learning.	19	4	21.1	6	31.6	7	36.8	2	10.5
TC	5	2	40.0	2	40.0	1	20.0	0	0.0
AC-AWE	12	1	8.3	3	25.0	6	50.0	2	16.7
AC-LE	2	1	50.0	1	50.0	0	0.0	0	0.0
1.1(2) Communicate my vision to students.	54	6	11.1	23	42.6	21	38.9	4	7.4
TC	10	2	20.0	5	50.0	3	30.0	0	.0
AC-AWE	38	4	10.5	15	39.5	15	39.5	4	10.5
AC-LE	6	0	.0	3	50.0	3	50.0	0	.0

Table 26 *(continued).*

Standard One Professional Development Desired

Descriptor	N	No desire		Some Desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
1.1(3) Use data to organize, plan, and set goals.	20	1	5.0	9	45.0	8	40.0	2	10.0
TC	4	0	.0	2	50.0	2	50.0	0	.0
AC-AWE	14	1	7.1	7	50.0	5	35.7	1	7.1
AC-LE	2	0	.0	0	.0	1	50.0	1	50.0
1.1(4) Use a variety of assessment data throughout the year to evaluate progress.	20	1	5.0	7	35.0	10	50.0	2	10.0
TC	4	1	25.0	2	50.0	1	25.0	0	.0
AC-AWE	15	0	.0	4	26.7	9	60.0	2	13.3
AC-LE	1	0	.0	1	100.0	0	.0	0	.0
1.1(5) Establish a safe and orderly environment.	25	5	20.0	7	28.0	10	40.0	3	12.0
TC	7	2	28.6	3	42.9	2	28.6	0	.0
AC-AWE	14	2	14.3	4	28.6	5	35.7	3	21.4
AC-LE	4	1	25.0	0	.0	3	75.0	0	.0
1.1(6) Empower students.	40	3	7.5	13	32.5	18	45.0	6	15.0
TC	9	1	11.1	5	55.6	3	33.3	0	.0
AC-AWE	23	2	8.7	4	17.4	14	60.9	3	13.0
AC-LE	8	0	.0	4	50.0	1	12.5	3	37.5
1.2(1) Work collaboratively with all school personnel to create a professional learning community.	30	2	6.7	9	30.0	16	53.3	3	10.0
TC	10	1	10.0	4	40.0	5	50.0	0	.0
AC-AWE	15	1	6.7	4	26.7	8	53.3	2	13.3
AC-LE	5	0	.0	1	20.0	3	60.0	1	20.0
1.2(2) Analyze data.	54	13	24.1	23	42.6	14	25.9	4	7.4
TC	11	3	27.3	6	54.5	2	18.2	0	.0
AC-AWE	32	9	28.1	12	37.5	9	28.1	2	6.3
AC-LE	11	1	9.1	5	45.5	3	27.3	2	18.2

Table 26 *(continued).*

Standard One Professional Development Desired

		No desire		Some Desire		Strong desire		Very strong desire	
Descriptor	N	n	%	n	%	n	%	n	%
1.2(3) Develop goals and strategies through the school improvement plan.	31	4	12.9	11	35.5	12	38.7	4	12.9
TC	9	3	33.3	3	33.3	3	33.3	0	.0
AC-AWE	17	1	5.9	8	47.1	6	35.3	2	11.8
AC-LE	5	0	.0	0	.0	3	60.0	2	40.0
1.2(4) Assist in determining school budget and professional development.	95	21	22.1	35	36.8	35	36.8	4	4.2
TC	21	7	33.3	7	33.3	6	28.6	1	4.8
AC-AWE	57	12	21.1	21	36.8	23	40.4	1	1.8
AC-LE	17	2	11.8	7	41.2	6	35.3	2	11.8
1.2(5) Participate in the hiring process.	99	37	37.4	36	36.4	19	19.2	7	7.1
TC	21	6	28.6	9	42.9	4	19.0	2	9.5
AC-AWE	60	25	41.7	22	36.7	12	20.0	1	1.7
AC-LE	18	6	33.3	5	27.8	3	16.7	4	22.2
1.2(6) Collaborate with colleagues to mentor and support teachers.	40	2	5.0	18	45.0	12	30.0	8	20.0
TC	12	2	16.7	8	66.7	2	16.7	0	.0
AC-AWE	20	0	.0	8	40.0	8	40.0	4	20.0
AC-LE	8	0	.0	2	25.0	2	25.0	4	50.0
1.3(1) Strive to improve the profession.	42	1	2.4	17	40.5	17	40.5	7	16.7
TC	8	0	.0	6	75.0	1	12.5	1	12.5
AC-AWE	27	1	3.7	8	29.6	14	51.5	4	14.8
AC-LE	7	0	.0	3	42.9	2	28.6	2	28.6
1.3(2) Contribute to positive working conditions.	39	2	5.1	10	25.6	19	48.7	8	20.5
TC	11	1	9.1	4	36.4	4	36.4	2	18.2
AC-AWE	22	1	4.5	5	22.7	13	59.1	3	13.6
AC-LE	6	0	.0	1	16.7	2	33.3	3	50.0

Table 26 *(continued).*

Standard One Professional Development Desired

Descriptor	N	No desire		Some desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
1.3(3) Participate in decision-making structures.	59	6	10.2	24	40.7	22	37.3	7	11.9
TC	12	1	8.3	8	66.7	3	25.0	0	.0
AC-AWE	38	4	10.5	15	39.5	13	34.2	6	15.8
AC-LE	9	1	11.1	1	11.1	6	66.7	1	11.1
1.3(4) Grow professionally.	17	2	11.8	4	23.5	7	41.2	4	23.5
TC	4	1	25.0	0	.0	2	50.0	1	25.0
AC-AWE	8	1	12.5	3	37.5	3	37.5	1	12.5
AC-LE	5	0	.0	1	20.0	2	40.0	2	40.0
1.4(1) Advocate for positive change in policies and practices affecting student learning.	73	9	12.3	29	39.7	29	39.7	6	8.2
TC	17	4	23.5	6	35.3	5	29.4	2	11.8
AC-AWE	41	4	9.8	18	43.9	17	41.5	2	4.9
AC-LE	15	1	6.7	5	33.3	7	46.7	2	13.3
1.4(2) Participate in the implementation of initiatives to improve education.	47	5	10.6	22	46.8	17	36.2	3	6.4
TC	14	3	21.4	8	57.1	3	21.4	0	.0
AC-AWE	26	2	7.7	11	42.3	11	42.3	2	7.7
AC-LE	7	0	.0	3	42.9	3	42.9	1	14.3
1.5(1) Uphold the code of Ethics and Standards for Professional Conduct.	32	8	25.0	12	37.5	6	18.8	6	18.8
TC	8	4	50.0	2	25.0	1	12.5	1	12.5
AC-AWE	18	2	11.1	8	44.4	3	16.7	5	27.8
AC-LE	6	2	33.3	2	33.3	2	33.3	0	.0

Average Standard One desire means for TC, AC-AWE, and AC-LE teachers were 2.10, 2.31, and 2.65 (*SDs* = 0.46, 0.69, and 0.70) respectively. The effect of route to

licensure for Standard One professional development desire was statistically significant, $F(2, 114) = 3.96, p = .02, \eta^2 = .06$. Tukey's HSD procedure indicated that TC teachers had significantly lower mean desire than AC-LE teachers (95% CI: .08 − 1.01).

Table 27 displays the desire of teachers who did not receive professional development for elements of Standard Two. Overall, the greatest rate of response was shown for "Recognize the influences of diversity on a child's development, personality, and performance" [2.2(3), 95%] when combining some, strong, and very strong desire columns. The least rate of response for desire was shown for "Appreciate differences and value contributions by building positive, appropriate relationships" [2.3(2), 82%]. AC-LE teachers expressed the highest rate of response for 7 of the 13 descriptors. All AC-AWE teachers noted at least some desire on four items including "Create an environment that is inviting, respectful, supportive, inclusive, and flexible" [2.1(1)]; by TC and AC-LE teachers for "Recognize the influences of diversity on a child's development, personality, and performance" [2.2(3)] and by AC-AWE teachers in "Engage students" [2.4(2)].

Table 27

Standard Two Professional Development Desired

Descriptor	N	No Desire		Some desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
2.1(1) Create an environment that is inviting, respectful, supportive, inclusive, and flexible.	34	5	14.7	15	44.1	11	32.4	3	8.8
TC	12	4	33.3	4	33.3	3	25.0	1	8.3
AC-AWE	12	0	.0	7	58.3	3	25.0	2	16.7
AC-LE	10	1	10.0	4	40.0	5	50.0	0	.0

Table 27 *(continued).*

Standard Two Professional Development Desired

Descriptor	N	No Desire		Some desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
2.2(1) Demonstrate knowledge of diverse cultures.	40	6	15.0	13	32.5	15	37.5	6	15.0
TC	11	2	18.2	4	36.4	2	18.2	3	27.3
AC-AWE	17	3	17.6	7	41.2	6	35.3	1	5.9
AC-LE	12	1	8.3	2	16.7	7	58.3	2	16.7
2.2(2) Select materials and develop lessons that counteract stereotypes and incorporate contributions.	67	6	9.0	34	50.7	17	25.4	10	14.9
TC	21	1	4.8	10	47.6	4	19.0	6	28.6
AC-AWE	30	5	16.7	16	53.3	7	23.3	2	6.7
AC-LE	16	0	.0	8	50.0	6	37.5	2	12.5
2.2(3) Recognize the influences of diversity on a child's development, personality, and performance.	41	2	4.9	16	39.0	14	34.1	9	22.0
TC	14	0	.0	5	35.7	4	28.6	5	35.7
AC-AWE	16	2	12.5	6	37.5	6	37.5	2	12.5
AC-LE	11	0	.0	5	45.5	4	36.4	2	18.2
2.2(4) Consider and incorporate different points of view.	52	9	17.3	22	42.3	12	23.1	9	17.3
TC	14	1	7.1	7	50	3	21.4	3	21.4
AC-AWE	22	7	31.8	9	40.9	3	13.6	3	13.6
AC-LE	16	1	6.3	6	37.5	6	37.5	3	18.8
2.3(1) Maintain high expectations.	41	3	7.3	15	36.6	14	34.1	9	22.0
TC	10	1	10.0	6	60.0	3	30.0	0	.0
AC-AWE	19	1	5.3	7	36.8	8	42.1	3	15.8
AC-LE	12	1	8.3	2	16.7	3	25.0	6	50.0

Table 27 *(continued).*

Standard Two Professional Development Desired

Descriptor	N	No Desire		Some desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
2.3(2) Appreciate differences and value contributions by building positive, appropriate relationships.	41	8	19.5	16	39.0	12	29.3	5	12.2
TC	10	2	20.0	5	50.0	2	20.0	1	10.0
AC-AWE	21	4	19.0	9	42.9	5	23.8	3	14.3
AC-LE	10	8	19.5	2	20.0	5	50.0	1	10.0
2.4(1) Collaborate with specialists.	74	9	12.2	38	51.4	19	25.7	8	10.8
TC	20	3	15.0	13	65.0	2	10.0	2	10.0
AC-AWE	33	4	12.1	15	45.5	11	33.3	3	9.1
AC-LE	21	2	9.5	10	47.6	6	28.6	3	14.3
2.4(2) Engage students.	37	2	5.4	12	32.4	15	40.5	8	21.6
TC	10	1	10.0	6	60.0	2	20.0	1	10.0
AC-AWE	13	0	.0	3	23.1	9	69.2	1	7.7
AC-LE	14	1	7.1	3	21.4	4	28.6	6	42.9
2.4(3) Utilize inclusion and other models of effective practice.	57	9	15.8	25	43.9	16	28.1	7	12.3
TC	17	3	17.6	8	47.1	4	23.5	2	11.8
AC-AWE	25	4	16.0	12	48.0	8	32.0	1	4.0
AC-LE	15	2	13.3	5	33.3	4	26.7	4	26.7
2.5(1) Improve communication and collaboration between the school and the home and community.	62	4	6.5	22	35.5	24	38.7	12	19.4
TC	20	2	10.0	7	35.0	5	25.0	6	30.0
AC-AWE	29	1	3.4	11	37.9	13	44.8	4	13.8
AC-LE	13	1	7.7	4	30.8	6	46.2	2	15.4

Table 27 *(continued).*

Standard Two Professional Development Desired

Descriptor	N	No Desire		Some desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
2.5(2) Promote trust and understanding and build partnerships with school community.	64	7	10.9	24	37.5	25	39.1	8	12.5
TC	18	2	11.1	7	38.9	6	33.3	3	16.7
AC-AWE	29	4	13.8	12	41.4	10	34.5	3	10.3
AC-LE	17	1	5.9	5	29.4	9	52.9	2	11.8
2.5(3) Seek solutions to overcome obstacles that prevent family and community involvement.	73	7	9.6	27	37.0	27	37.0	12	16.4
TC	23	3	13.0	6	26.1	9	39.1	5	21.7
AC-AWE	32	3	9.4	15	46.9	11	34.4	3	9.4
AC-LE	18	1	5.6	6	33.3	7	38.9	4	22.2

Average Standard Two desire means for TC, AC-AWE, and AC-LE teachers were 2.45, 2.41, and 2.64 (*SDs* = 0.84, 0.67, and 0.66) respectively. The effect of route to licensure for Standard Two professional development desire was not statistically significant, $F(2, 106) = .86$, $p = .43$, $\eta^2 = .02$.

As shown in Table 28, the overall highest percentage when combining some, strong, and very strong desire for Standard Three was for "Direct students' curiosity into an interest in learning" [3.2(2), 91%]. The lowest overall combined percentage was for "Promote global awareness and its relevance" [3.3(3), 74%]. Of the 10 descriptors, AC-LE teachers had the highest combined rate of response for seven descriptors. When disaggregated by route to licensure, there were four items with no "no desire" ratings.

The highest rate of response of "very strong desire" was by AC-LE teachers for "Develop and apply strategies to make the curriculum rigorous and relevant" [3.1(2), 50%].

Table 28

Standard Three Professional Development Desired

Descriptor	N	No desire		Some desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
3.1(1) Teach the North Carolina Standard Course of Study.	32	4	12.5	9	28.1	8	25.0	11	34.4
TC	13	3	23.1	3	23.1	2	15.4	5	38.5
AC-AWE	11	1	9.1	4	36.4	3	27.3	3	27.3
AC-LE	8	0	.0	2	25.0	3	37.5	3	37.5
3.1(2) Develop and apply strategies to make the curriculum rigorous and relevant.	33	5	15.2	8	24.2	8	24.2	12	36.4
TC	12	2	16.7	4	33.3	2	16.7	4	33.3
AC-AWE	13	3	23.1	2	15.4	4	30.8	4	30.8
AC-LE	8	0	.0	2	25.0	2	25.0	4	50.0
3.1(3) Develop literacy skills appropriate to specialty area.	29	3	10.3	10	34.5	8	27.6	8	27.6
TC	6	2	33.3	3	50.0	0	.0	1	16.7
AC-AWE	13	0	.0	4	30.8	6	46.2	3	23.1
AC-LE	10	1	10.0	3	30.0	2	20.0	4	40.0
3.2(1) Know subject beyond content I teach.	69	10	14.5	25	36.2	23	33.3	11	15.9
TC	17	3	17.6	5	29.4	7	41.2	2	11.8
AC-AWE	34	6	17.6	14	41.2	9	26.5	5	14.7
AC-LE	18	1	5.7	6	33.3	7	38.9	4	22.2

Table 28 *(continued).*

Standard Three Professional Development Desired

Descriptor	N	No desire		Some desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
3.2(2) Direct students' curiosity into an interest in learning.	76	7	9.2	24	31.6	30	39.5	15	19.7
TC	20	3	15.0	4	20.0	8	40.0	5	25.0
AC-AWE	36	3	8.3	12	33.3	16	44.4	5	13.9
AC-LE	20	1	5.0	8	40.0	6	30.0	5	25.0
3.3(1) Know links between grade/subject and the North Carolina Standard Course of Study.	69	12	17.4	28	40.6	19	27.5	10	14.5
TC	24	4	16.7	12	50.0	4	16.7	4	16.7
AC-AWE	31	5	16.1	13	41.9	10	32.3	3	9.7
AC-LE	14	3	21.4	3	21.4	5	35.7	3	21.4
3.3(2) Relate content to other disciplines.	57	6	10.5	21	36.8	19	33.3	11	19.3
TC	17	2	11.8	8	47.1	3	17.6	4	23.5
AC-AWE	23	2	8.7	7	30.4	11	47.8	3	13.0
AC-LE	17	2	11.8	6	35.3	5	29.4	4	23.5
3.3(3) Promote global awareness and its relevance.	67	16	23.9	15	22.4	24	35.8	12	17.9
TC	20	4	20.0	7	35.0	7	35.0	2	10.0
AC-AWE	31	9	29.0	6	19.4	10	32.3	6	19.4
AC-LE	16	3	18.8	2	12.5	7	43.8	4	25.0
3.4(1) Incorporate life skills.	62	8	12.9	14	22.6	21	33.9	19	30.6
TC	20	3	15.0	5	25.0	6	30.0	6	30.0
AC-AWE	27	4	14.8	5	18.5	11	40.7	7	25.9
AC-LE	15	1	6.7	4	26.7	4	26.7	6	40.0
3.4(2) Demonstrate the relationship between the core content and 21st Century.	56	7	12.5	17	30.4	16	28.6	16	28.6
TC	16	3	18.8	6	37.5	4	25.0	3	18.8
AC-AWE	26	4	15.4	7	26.9	7	26.9	8	30.8
AC-LE	14	0	.0	4	28.6	5	35.7	5	35.7

Average Standard Three desire means for TC, AC-AWE, and AC-LE teachers

were 2.47, 2.44, and 2.69 ($SDs = 0.83, 0.82$, and 0.69) respectively. The effect of route to

licensure for Standard Three professional development desire was not statistically

significant, $F(2, 105) = .07, p = .38, \eta^2 = .02$.

As shown in Table 29, all teachers who did not receive professional development

in "Understand the influences on student learning and differential instruction" [4.1(2)]

indicated that they had at least some desire for it. Conversely, the standard receiving the

lowest rate of response (18%) was "Use multiple indicators to evaluate student progress"

[4.8(1)]. Of the 21 descriptors in Standard Four, AC teachers had a higher rate of

response for all descriptors except for "Know how students think and learn" [4.1(1)] in

which TC teachers and AC-AWE teachers all reported at least some desire. The highest

rate of response for very strong desire was by TC teachers for "Engage students in the

learning process" [4.2(2), 47%].

Table 29

Standard Four Professional Development Desired

Descriptor	N	No desire		Some desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
4.1(1) Know how students think and learn.	50	1	2.0	9	18.0	30	60.0	10	20.0
TC	17	0	0.0	3	17.6	9	52.9	5	29.4
AC-AWE	21	0	0.0	4	19.0	15	71.4	2	9.5
AC-LE	12	1	8.3	2	16.7	6	50.0	3	25.0

Table 29 *(continued).*

Standard Four Professional Development Desired

Descriptor	N	No desire		Some desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
4.1(2) Understand the influences on student learning and differential instruction.	25	0	0.0	10	40.0	12	48.0	3	12.0
TC	7	0	0.0	5	71.4	2	28.6	0	0.0
AC-AWE	9	0	0.0	4	44.4	4	44.4	1	11.1
AC-LE	9	0	0.0	1	11.1	6	66.7	2	22.2
4.1(3) Keep abreast of evolving research.	86	4	4.7	33	38.4	25	29.1	24	27.9
TC	20	2	10.0	7	35.0	4	20.0	7	35.0
AC-AWE	40	1	2.5	15	37.5	14	35.0	10	25.0
AC-LE	26	1	3.8	11	42.3	7	26.9	7	26.9
4.1(4) Adapt resources to address the strengths and weakness of students.	55	2	3.6	13	23.6	25	45.5	15	27.3
TC	18	2	11.1	5	27.8	7	38.9	4	22.2
AC-AWE	26	0	0.0	5	19.2	14	53.8	7	26.9
AC-LE	11	0	0.0	3	27.3	4	36.4	4	36.4
4.2(1) Use data for short and long range planning.	70	8	11.4	29	41.4	25	35.7	8	11.4
TC	17	4	23.5	7	41.2	3	17.6	3	17.6
AC-AWE	34	3	8.8	11	32.4	15	44.1	5	14.7
AC-LE	19	1	5.3	11	57.9	7	36.8	0	0.0
4.2(2) Engage students in the learning process.	32	4	12.5	6	18.8	11	34.4	11	34.4
TC	15	3	20.0	4	26.7	1	6.7	7	46.7
AC-AWE	11	1	9.1	1	9.1	7	63.6	2	18.0
AC-LE	6	0	0.0	1	16.7	3	50.0	2	33.3
4.2(3) Monitor and modify plans to enhance learning.	50	2	4.0	17	34.0	20	40.0	11	22.0
TC	14	2	14.3	4	28.6	5	35.7	3	21.4
AC-AWE	24	0	0.0	9	37.5	8	33.3	7	29.2
AC-LE	12	0	0.0	4	33.3	7	58.3	1	8.3

Table 29 *(continued).*

Standard Four Professional Development Desired

Descriptor	N	No desire		Some desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
4.2(4) Respond to cultural diversity and learning needs.	52	4	7.7	18	34.6	18	34.6	12	23.1
TC	16	2	12.5	5	31.3	3	18.8	6	37.5
AC-AWE	21	0	0.0	8	38.1	8	38.1	5	23.8
AC-LE	15	2	13.3	5	33.3	7	46.7	1	6.7
4.3(1) Choose methods and materials as they arrive to eliminate achievement gaps.	88	4	4.5	34	38.6	29	33.0	21	23.9
TC	24	2	8.3	13	54.2	4	16.7	5	20.8
AC-AWE	40	2	5.0	13	32.5	18	45.0	7	17.5
AC-LE	24	0	0.0	8	33.3	7	29.2	9	37.5
4.3(2) Employ a wide range of techniques.	25	3	12.0	7	28.0	9	36.0	6	24.0
TC	8	2	25.0	2	25.0	3	37.5	1	12.5
AC-AWE	10	1	10.0	4	40.0	3	30.0	2	20.0
AC-LE	7	0	0.0	1	14.3	3	42.9	3	42.9
4.4(1) Appropriately use technology.	38	4	10.5	11	28.9	16	42.1	7	18.4
TC	11	1	9.1	4	36.4	2	18.2	4	36.4
AC-AWE	16	1	6.3	3	18.8	10	62.5	2	12.5
AC-LE	11	2	18.2	4	36.4	4	36.4	1	9.1
4.4(2) Help students use technology to learn.	53	6	11.3	14	26.4	20	37.7	13	24.5
TC	18	5	27.8	6	33.3	2	11.1	5	27.8
AC-AWE	22	0	0.0	5	22.7	13	59.1	4	18.2
AC-LE	13	1	7.7	3	23.1	5	38.5	4	30.8
4.5(1) Teach students to ask questions, think creatively, develop and test innovative ideas, and draw conclusions.	72	3	4.2	22	30.6	33	45.8	14	19.4
TC	20	3	15.0	8	40.0	5	25.0	4	20.0
AC-AWE	34	0	0.0	8	23.5	18	52.9	8	23.5
AC-LE	18	0	0.0	6	33.3	10	55.6	2	11.1

Table 29 *(continued).*

Standard Four Professional Development Desired

Descriptor	N	No desire		Some desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
4.5(2) Help students exercise and communicate sound reasoning; understand connections; make complex choices; and frame, analyze, and solve problems.	75	3	4.0	25	33.3	31	41.3	16	21.3
TC	21	3	14.3	7	33.3	7	33.3	4	19.0
AC-AWE	33	0	0.0	10	30.3	15	45.5	8	24.2
AC-LE	21	0	0.0	8	38.1	9	42.9	4	19.0
4.6(1) Teach the importance of cooperation and collaboration.	68	10	14.7	25	36.8	22	32.4	11	16.2
TC	21	6	28.6	8	38.1	5	23.8	2	9.5
AC-AWE	29	2	6.9	10	34.5	10	34.5	7	24.1
AC-LE	18	2	11.1	7	38.9	7	38.9	13	11.1
4.6(2) Organize learning teams in order to help students define roles, strengthen social ties, improve communication and collaborative skills, interact with people from different cultures and backgrounds, and develop leadership qualities.	75	9	12.0	28	37.3	25	33.3	13	17.3
TC	22	6	27.3	8	36.4	6	27.3	2	9.1
AC-AWE	34	1	2.9	12	35.3	13	38.2	8	23.5
AC-LE	19	2	10.5	8	42.1	6	31.6	3	15.8
4.7(1) Communicate clearly with students in a variety of ways.	61	10	16.4	23	37.7	21	34.4	7	11.5
TC	20	7	35.0	9	45.0	2	10.0	2	10.0
AC-AWE	28	2	7.1	9	32.1	12	42.9	5	17.9
AC-LE	13	1	7.7	5	38.5	7	53.8	0	0.0

Table 29 *(continued).*

Standard Four Professional Development Desired

Descriptor	N	No desire		Some desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
4.7(2) Assist students in articulating thoughts and ideas clearly and effectively.	86	9	10.5	39	45.3	29	33.7	9	10.5
TC	25	7	28.0	10	40.0	6	24.0	2	8.0
AC-AWE	39	1	2.6	18	46.2	13	33.3	7	17.9
AC-LE	22	1	4.5	11	50.0	10	45.5	0	0
4.8(1) Use multiple indicators to evaluate student progress.	51	9	17.6	22	43.1	15	29.4	5	9.8
TC	17	6	35.3	5	29.4	3	17.6	3	17.6
AC-AWE	23	2	8.7	10	43.5	9	39.1	2	8.7
AC-LE	11	1	9.1	7	63.6	3	27.3	0	0.0
4.8(2) Provide opportunities for the students to self-assess.	76	7	9.2	31	40.8	29	38.2	9	11.8
TC	21	4	19.0	8	38.1	6	28.6	3	14.3
AC-AWE	38	2	5.3	16	42.1	14	36.8	6	15.8
AC-LE	17	1	5.9	7	41.2	9	52.9	0	0.0
4.8(3) Use assessment systems to inform instruction and demonstrate evidence of students' 21st Century knowledge, skills, performance, and dispositions.	63	10	15.9	24	38.1	17	27.0	12	19.0
TC	20	5	25.0	7	35.0	5	25.0	3	15.0
AC-AWE	26	3	11.5	9	34.6	8	30.8	6	23.1
AC-LE	17	2	11.8	8	47.1	4	23.5	3	17.6

Average Standard Four desire means for TC, AC-AWE, and AC-LE teachers were 2.45, 2.80, and 2.61 (*SDs* = 0.77, 0.66, and 0.53) respectively. The effect of route to licensure for Standard Four professional development desire was statistically significant,

$F(2, 150) = 3.66$, $p = .03$, $\eta^2 = .05$. Tukey's HSD procedure indicated that TC teachers

had significantly lower mean desire than AC-AWE teachers (95% CI: .03 - .67).

For Standard Five as shown in Table 30, 98% of respondents indicated at least

some desire for "Collect and analyze student performance data to improve effectiveness"

[5.0(2)]. By route to licensure, there were seven instances of 100% of respondents having

at least some desire: TC [5.0(2), 5.0(3), and 5.0(4)], AC-AWE [5.0(1)], and AC-LE

[5.0(1), 5.0(2), and 5.0(3)]. The highest rate of response for very strong desire was

indicated by AC-AWE teachers for "Actively investigate and consider new ideas that

improve teaching and learning" [5.0(3), 29%].

Table 30

Standard Five Professional Development Desired

Descriptor	N	No desire N	No desire %	Some desire n	Some desire %	Strong desire n	Strong desire %	Very strong desire n	Very strong desire %
5.0(1) Think systematically and critically about learning in the classroom.	30	1	3.3	13	43.3	12	40.0	4	13.3
TC	9	1	11.1	6	66.7	1	11.1	1	11.1
AC-AWE	14	0	.0	5	35.7	7	50.0	2	14.3
AC-LE	7	0	.0	2	26.8	4	57.1	1	14.3
5.0(2) Collect and analyze student performance data to improve effectiveness.	43	1	2.3	20	46.5	18	41.9	4	9.3
TC	14	0	.0	9	64.3	3	21.4	2	14.3
AC-AWE	19	1	5.3	8	42.1	9	47.4	1	5.3
AC-LE	10	0	.0	3	30.0	6	60.0	1	10.0

Table 30 *(continued).*

Standard Five Professional Development Desired

Descriptor	N	No desire		Some desire		Strong desire		Very strong desire	
		N	%	n	%	n	%	n	%
5.0(3) Actively investigate and consider new ideas that improve teaching and learning.	19	1	5.3	3	15.8	11	57.9	4	21.1
TC	8	0	.0	2	25.0	4	50.0	2	25.0
AC-AWE	7	1	14.3	1	14.3	3	42.9	2	28.6
AC-LE	4	0	.0	0	.0	4	100	0	.0
5.0(4) Adapt practice based on data.	58	6	10.3	26	44.8	16	27.6	10	17.2
TC	19	0	.0	12	63.2	5	26.3	2	10.5
AC-AWE	27	4	14.8	9	33.3	8	29.6	6	22.2
AC-LE	12	2	16.7	5	41.7	3	25.0	2	16.7

Average Standard Five desire means for TC, AC-AWE, and AC-LE teachers were 2.47, 2.73, and 2.73 (*SDs* = 0.76, 0.86, and 0.87) respectively. The effect of route to licensure for Standard Five professional development desire was not statistically significant, $F(2, 70) = .73$, $p = .49$, $\eta^2 = .02$.

For the final standard, Other Skills, the overall highest percentage (93%) when combining some, strong, and very strong desire was for "Understand teacher liability and laws relating to teaching" [Other.2(3)]. As shown in Table 31, only 22% indicated at least some desire for "Use email to communicate with people" [Other.1(4)]. TC teachers had the highest percentage for nine of the descriptors, four of which were in Element 1: Teacher use of technology. All AC-LE teachers had at least some desire for "Understand laws related to special education" [Other.2(4)] and "Understand teacher liability and laws relating to teaching" [Other.2(3)]. The highest rate of response for very strong desire was

by TC teachers for "Understand teacher liability and laws relating to teaching"

[Other.2(3), 35%] followed closely by "Understand social issues such as substance abuse,

teen pregnancy, child abuse, and homelessness" [Other.2(5), 32%].

Table 31

Professional Development Desired—Other Skills

Descriptor	N	No desire N	No desire %	Some desire n	Some desire %	Strong desire n	Strong desire %	Very strong desire n	Very strong desire %
Other.1(1) Use a word processing program.	84	60	71.4	12	14.3	6	7.1	6	7.1
TC	23	15	65.2	6	23.1	0	.0	2	8.7
AC-AWE	41	31	75.6	5	12.2	3	7.3	2	4.9
AC-LE	20	14	70.0	1	5.0	3	15.0	2	10.0
Other.1(2) Use a spreadsheet program.	94	47	50.0	20	21.3	17	18.1	10	10.6
TC	29	11	37.9	6	20.7	8	27.6	4	13.8
AC-AWE	45	26	57.8	10	22.2	6	13.3	3	6.7
AC-LE	20	10	50.0	4	20.0	3	15.0	3	15.0
Other.1(3) Use a database program.	99	43	43.4	24	24.2	19	19.2	13	13.1
TC	28	12	42.9	5	17.9	6	21.4	5	17.9
AC-AWE	51	22	43.1	15	29.4	9	17.6	5	9.8
AC-LE	20	9	45.0	4	20.0	4	20.0	3	15.0
Other.1(4) Use email to communicate with people.	80	62	77.5	9	11.3	4	5.0	5	6.3
TC	23	14	60.9	5	21.7	2	8.7	2	8.7
AC-AWE	40	34	85.0	4	10.0	1	2.5	1	2.5
AC-LE	17	14	82.4	0	.0	1	5.9	2	11.8
Other.1(5) Use the Internet to locate resources and gather information.	77	46	59.7	19	24.7	6	7.8	6	7.8
TC	16	8	50.0	6	37.5	0	.0	2	12.5
AC-AWE	42	29	69.0	8	19.0	3	7.1	2	4.8
AC-LE	19	9	47.4	5	26.3	3	15.8	2	10.5

Table 31 *(continued).*

Professional Development Desired—Other Skills

Descriptor	N	No desire		Some desire		Strong desire		Very strong desire	
		N	%	n	%	n	%	n	%
Other.1(6) Use multimedia combining text, video, graphics, and sound to convey ideas.	64	21	32.8	15	23.4	14	21.9	14	21.9
TC	21	8	38.1	4	19.0	3	14.3	6	28.6
AC-AWE	30	10	33.3	8	26.7	8	26.7	4	13.3
AC-LE	13	3	23.1	3	23.1	3	23.1	4	30.8
Other.1(7) Set up grading system.	31	12	38.7	11	35.5	3	9.7	5	16.1
TC	8	3	37.5	2	25.0	2	25.0	1	12.5
AC-AWE	16	6	37.5	8	50.0	0	.0	2	12.5
AC-LE	7	3	42.9	1	14.3	1	14.3	2	28.6
Other.2(1) Locate and use employment materials.	70	14	20.0	32	45.7	19	27.1	5	7.1
TC	19	1	5.3	10	52.6	5	26.3	3	15.8
AC-AWE	34	8	23.5	13	38.2	12	35.3	1	2.9
AC-LE	17	5	29.4	9	52.9	2	11.8	1	5.9
Other.2(2) Understand major legislation which impacts CTE.	63	6	9.5	23	36.5	24	38.1	10	15.9
TC	20	3	15.0	6	30.0	8	40.0	3	15.0
AC-AWE	28	2	7.1	12	42.9	10	35.7	4	14.3
AC-LE	15	1	6.7	5	33.3	6	40.0	3	20.0
Other.2(3) Understand teacher liability and laws.	62	4	6.5	21	33.9	23	37.1	14	22.6
TC	20	2	10.0	6	30.0	5	25.0	7	35.0
AC-AWE	30	2	6.7	11	36.7	12	40.0	5	16.7
AC-LE	12	0	.0	4	33.3	6	50.0	2	16.7
Other.2(4) Understand laws related to special education.	51	4	7.8	18	35.3	19	37.3	10	19.6
TC	14	1	7.1	4	28.6	6	42.9	3	21.4
AC-AWE	25	3	12.0	10	40.0	8	32.0	4	16.0
AC-LE	12	0	.0	4	33.3	5	41.7	3	25.0

Table 31 *(continued).*

Professional Development Desired—Other Skills

Descriptor	N	No desire		Some desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
Other.2(5) Understand social issues such as substance abuse, teen pregnancy, child abuse, and homelessness.	78	8	10.3	32	41.0	22	28.2	16	20.5
TC	24	3	12.5	9	37.5	6	25.0	6	25.0
AC-AWE	35	4	11.4	16	45.7	11	31.4	4	11.4
AC-LE	19	1	5.3	7	36.8	5	26.3	6	31.6
Other.3(1) Understand the articulation process between secondary and post secondary schools.	78	16	20.5	43	55.1	13	16.7	6	7.7
TC	20	4	20.0	11	55.0	2	10.0	3	15.0
AC-AWE	38	7	18.4	23	60.5	5	13.2	3	7.9
AC-LE	20	5	25.0	9	45.0	6	30.0	0	.0
Other.3(2) Establish or maintain a CTE advisory committee.	100	26	26.0	48	48.0	15	15.0	11	11.0
TC	28	5	17.9	14	50.0	3	10.7	6	21.4
AC-AWE	49	15	30.6	26	53.1	4	8.2	4	8.2
AC-LE	23	6	26.1	8	34.8	15	15.0	1	4.3
Other.3(3) Establish or maintain a CTE student organization.	69	15	21.7	29	42.0	14	20.3	11	15.9
TC	23	3	13.0	12	52.2	3	13.0	5	21.7
AC-AWE	28	8	28.6	13	46.4	4	14.3	3	10.7
AC-LE	18	4	22.2	4	22.2	7	38.9	3	16.7
Other.3(4) Understand the roles and functions of CTE professional organizations.	81	8	9.9	43	53.1	22	27.2	8	9.9
TC	24	2	8.3	13	54.2	6	25.0	3	12.5
AC-AWE	37	4	10.8	23	62.2	7	18.9	3	8.1
AC-LE	20	2	10.0	7	35.0	9	45.0	2	10.0

Table 31 *(continued).*

Professional Development Desired—Other Skills

Descriptor	N	No desire		Some desire		Strong desire		Very strong desire	
		n	%	n	%	n	%	n	%
Other.3(5) Organize the physical setting of the classroom.	78	25	32.1	28	35.9	18	23.1	7	9.0
TC	28	6	21.4	10	35.7	8	28.6	4	14.3
AC-AWE	33	14	42.4	12	36.4	5	15.2	2	6.1
AC-LE	17	5	29.4	6	35.3	5	29.4	1	5.9
Other.3(6) Control and maintain equipment, tools, and supplies in a class/laboratory.	71	22	31.0	28	39.4	12	16.9	9	12.7
TC	25	7	28.0	9	36.0	5	20.0	4	16.0
AC-AWE	28	11	39.3	13	46.4	1	3.6	3	10.7
AC-LE	18	4	22.2	6	33.3	6	33.3	2	11.1

Average Other Skills desire means for TC, AC-AWE, and AC-LE teachers were 2.34, 1.99, and 2.34 (*SDs* = 0.63, 0.67, and 0.76) respectively. The effect of route to licensure for Other Skills professional development desire was statistically significant, $F(2, 132) = 4.37, p = .01, \eta^2 = .06$. Tukey's HSD procedure indicated that AC-AWE had significantly lower mean desire than TC teachers (95% CI: .02 - .69).

Summary of Findings

This study produced many interesting findings. With regard to research question one, the professional development skills with the highest rate of receipt by standard were ways to grow professionally, methods to create an inviting and respectful classroom environment, strategies to align instruction, implementation of a variety of instructional techniques, ways to investigate new ideas for teaching, and how to set up a grading

system. AC-AWE had the highest rate of receipt for all standards with the exception of Standard One in which AC-LE was highest. When asked about provider of professional development, the respondents indicated district sponsored as the most frequent provider. With regard to delivery methods, one-day and more than one-day workshops, job embedded, and mentor ranked highest for most standards with college/university courses being highest for Standard Two which dealt with teacher created environment.

For research question two, respondents indicated their level of need for the professional development at the time it was provided. Participating in the implementation of improvement initiatives, seeking community involvement, promoting global awareness, eliminating achievement gaps, thinking systematically about learning, and understanding major education legislation were, by overall standard, the most endorsed skills.

For research question three, respondents were asked about professional development they did not receive and their level of desire for it. By standard, the most endorsed skills were how to use a variety of assessment data, methods for collaboration, how to recognize the influences of diversity, strategies to direct students' curiosity into an interest in learning, how to understand instructional influences and differentiation, ways to analyze student performance data, and how to better understand teacher liability and laws relating to teaching.

By route to licensure, a higher percentage of AC-LE teachers received professional development on teacher leadership, advocacy, and ethics. A higher percentage of AC-AWE teachers received professional development on establishing a respectful environment for students, understanding the content they teach, facilitation of

learning, teacher reflection, and other skills (use of technology, understanding of legal issues, and knowledge of CTE issues).

With regard to need for professional development that was provided, AC-LE teachers indicated a higher rate of endorsement for professional development on teacher leadership, advocacy, and ethics, establishing a respectful environment, facilitation of learning, and other skills (use of technology, understanding of legal issues, and knowledge of CTE issues). A higher percentage of AC-AWE indicated need for professional development on teacher reflection. TC teachers more highly endorsed need than the other routes for understanding the content that they teach.

With regard to professional development not received but desired, AC-LE indicated the highest rate of endorsement of desire for teacher leadership, advocacy, and ethics, establishing a respectful environment, and understanding the content that they teach. AWE indicated a higher rate of response for desire than the other two routes for teacher facilitation of student learning; TC teachers had a higher rate of endorsement for desire for professional development on other skills (use of technology, understanding of legal issues, and knowledge of CTE issues). TC and AC-LE reported the same percentage of desire for teacher reflection.

Statistically significant findings were that for Standard Four (facilitation of learning) TC teachers had a significantly lower mean professional development received than AC-AWE teachers and lower mean professional development need than AC-AWE and AC-LE. In Standard One (teacher leadership, advocacy, and ethics), TC teachers had significantly lower mean desire than AC-LE teachers. TC teachers had a statistically significant lower mean desire than AC-AWE teachers for Standard Four (facilitation of

learning) and AC-AWE teachers had a significantly lower mean desire than TC teachers for Other Skills (use of technology, understanding of legal issues, and knowledge of CTE issues).

CHAPTER FIVE: SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Chapter Four presented the analysis of data collected in the study of professional development support for AC and TC CTE teachers. Chapter Five presents a summary of the study and conclusions drawn from the data. The strengths and limitations of the study and implications for research and practice are also presented.

The purpose of this study was to describe professional development for beginning CTE teachers and determine if there were differences in the professional development content provided to AC-AWE, AC-LE, and TC beginning CTE teachers during their first five years.

The research questions that guided the study were:

1. What professional development content was provided to CTE beginning teachers during their first five years?

    a. Are there differences in the content provided to the three groups?

    b. Who provided those supports?

    c. What were the methods of delivery?

2. Of professional development content received by CTE beginning teachers during their first five years, which were most needed and unneeded?

    Are there differences in needed and unneeded professional development content between the three groups?

3. What professional development content do CTE beginning teachers desire to have received during their first five years?

    Are there differences in desired professional development between the three groups?

Beginning teachers are at greater risk for leaving their positions in the first five years (Darling-Hammond, 2001). AC teachers are at the greatest risk of leaving within the first *three* years (Ingersoll, 2002). Because new teachers are at a greater risk of leaving education, districts are encouraged to examine the level of support they provide to new educators (Darling-Hammond, 2001; Ingersoll & Smith, 2001). Teachers who stay likely received adequate professional development support ("Improving Teacher Retention," 2007; National Center for Education Statistics, 2001).

While the research clearly points to the importance of providing support, districts may not have resources to provide adequate support or may choose to redirect their resources to other areas. Only half of North Carolina teachers surveyed felt that enough resources were available for professional development support (Hirsch et al., 2006). While it may be costly for districts to provide support to beginning teachers, the cost to replace them is likely greater. Nationally, the amount spent on teacher turnover is estimated at $2.2 billion per year (Alliance for Excellent Education, 2005).

In 2006-07, approximately one-third of North Carolina's first-year teachers were AC (Holloman, 2007). Approximately one-fourth of the AC teachers did not return to the LEA the following year. The attrition rate was 50% higher among AC than TC teachers (Holloman, 2007). The current study surveyed beginning North Carolina CTE beginning teachers in order to determine how to best support them.

District CTE administrators were asked to forward an email to their beginning CTE teachers asking them to respond to a web-hosted survey. The survey incorporated the NCPTS as well as other skill standards supported by the related literature (Joerger & Bremer, 2001; Ruhland & Bremer, 2002a; Sander, 2007; Smith, 2007; Twomey, 2002).

Because of the length of the survey, matrix sampling was used and districts were assigned to one of four survey groups based upon affinity assignments so that equal numbers of small, medium, and large districts would be in all four groups. A 93% response rate was achieved after three emails to teachers via their administrators. Ease of survey access, small amount of time required to complete the survey, encouragement by the district CTE administrator, and a gift card incentive all contributed to the high response rate.

Teachers from all six CTE regions responded to the survey. Because I am the NCDPI CTE regional coordinator in the western region, I anticipated having a slightly higher response rate from this region. However, because of distribution of large LEAs into survey groups, some of which were disallowed from participating due to district policy, the western region did not have the highest response rate.

Findings of the Study

Question One: Professional Development Content, Providers, and Delivery Methods

In order to respond to the first research question, the survey asked respondents to choose from the NCPTS and other related skills the ones for which they were provided professional development support. Additionally, they were asked about the provider of the support as well as method of delivery. Strategies for employing a wide range of instructional techniques received the highest rate of receipt for professional development skills received followed closely by two related skills: learning new ideas that improve teaching and learning and teacher alignment of instruction. It is encouraging to know that teaching and learning are the predominant focus of skills being taught to beginning CTE teachers in North Carolina who responded to the survey. "If we are to keep quality

teachers, those newest to the profession must be given the support system of pedagogical knowledge that they need to succeed in the classroom," (Frieberg, 2002, p. 56).

AC teachers indicated the highest frequency of receipt of professional development for all standards with AC-AWE being highest for standards relating to diversity, content knowledge, facilitation of learning, reflection, technology, and legal, social and specific CTE issues. AC-LE teachers indicated the highest receipt of professional development in the standard relating to teacher leadership. TC teachers received significantly less professional development than AC-AWE teachers for Standard Four (facilitation of learning).

Regardless of the reason, for all six standards AC teachers reported higher percentages than TC teachers of professional development receipt aligned to those standards. Perhaps some TC teachers did not participate in optional professional development opportunities during their first five years because they had developed those skills in their teacher education courses prior to teaching. TC teachers might have felt more confident in their preparedness as suggested by a previous study (Joerger & Bremer, 2001) and declined opportunities that were made available to them. TC CTE teachers may have felt more prepared in pedagogy and knowledge of subject matter than did the AC CTE teachers (Ruhland & Bremer, 2002b). Perhaps AC teachers were in such need of professional development that the skills they received made a stronger impression upon them and they were better able to recall them for this survey. Possibly, AC teachers received most of these skills through coursework required for licensure that TC teachers were not required to take.

Districts were indicated as the most frequent sponsor of professional development. Previous professional studies related to beginning CTE teachers have not examined the predominant provider of support. Delivery methods indicated most were those that occur within the district such as workshops, job-embedded training, and mentors. Workshops, if offered long-term, are a successful way to support professional development. Professional development that is sustained and supported over time is more effective than one-day offerings (Perkins-Gough, 2002). Previous research emphasized the importance of job-embedded support (Chesley et al., 1997; Perkins-Gough, 2002) and mentors for beginning teachers (Heath-Camp et al., 1992; Ruhland & Bremer, 2002a; Wayman et al., 2003). Examples of successful job-embedded strategies are: in-class, planning periods, common planning periods, and restructured days (Rock, 2002). All of these strategies can be supported by, for example, district instructional facilitators, veteran teachers serving as mentors, and building administrators. If teachers receive job-embedded support by an expert or peer while implementing new strategies, they are more likely to retain and continue using those strategies (Showers, Joyce, & Bennett, 1987). While districts attempt to provide professional development to teachers, it is not always consistent with best practice.

Question Two: Professional Development Needs

After teachers indicated which professional development supports they received, they were asked to indicate their need for the skill at the time it was provided. The purpose of this section was to respond to the research question about needed and unneeded professional development and to determine if there were differences between the three groups. The overall highest rate of endorsement for need was to better

understand major educational legislation. This finding was supported by an earlier study in which typical beginning AC teachers were found to need support in educational law (Chesley et al., 1997). This high rate of endorsed need for a better understand of educational legislation could be related to the economic situation our schools are facing and the impending job losses in CTE. Unfortunately, the economy has diverted some of the focus statewide off instruction and placed the spotlight on legislative mandates such as maintenance of effort, supplementing and not supplanting, program support, and program improvement. Beginning teachers hear these terms during economic crises and must spend time learning how the funding works in order to help protect their jobs. Additionally, teachers are concerned about NCLB and its lack of focus on non-tested subjects. Clearly, teachers who responded are also very concerned about legislation dealing with special education, as was found by Ruhland and Bremer (2002a), and is further discussed later in this section.

However, other high need areas *are* focused on learning including implementation of improvement strategies and elimination of achievement gaps. Thinking systematically about learning was also indicated frequently as a high-need skill. This is supported by an earlier study that highlighted the need new teachers have for student-centered instructional strategies (Frieberg, 2002). Additionally, DuFour's (2002) work with professional learning communities reinforces the need to focus on learning rather than just on teaching.

The hypothesis for question two was that there is a difference in professional development needs with regard to route to licensure. AC-LE teachers indicated the highest rate of endorsement for need for 50 descriptors with TC and AC-AWE indicated

the highest rate for 32 and 27 descriptors respectively. An earlier study conducted in western North Carolina found that the support needs of AC and TC beginning teachers are similar in many ways (Cline 2002). However, Joerger & Bremer (2001) found that while AC and TC CTE teachers share some of the same professional development needs, the AC group needed higher levels of support.

Statistically significant mean differences in need were seen; TC teachers had a lower mean need than AC-AWE and AC-LE teachers for professional development in facilitation of instruction. A previous study supported this finding that TC CTE teachers felt more prepared in pedagogy and knowledge of subject matter than did the AC teachers (Ruhland & Bremer, 2002b). One of the most important factors that separates the three routes to licensure is that TC teachers begin teaching with less of a need for support regarding instruction because of their teacher preparation courses. However, this finding does not imply that AC teachers do not quickly develop those skills and then use their real-world experiences to create meaningful curriculum connections for their students. The value that AC teachers bring to the classroom must not be discounted.

While TC teachers did not indicate the highest overall frequency of need for the standard dealing with technology, legal, social, and CTE issues, the TC group did report the highest frequency of need for the technology descriptors within that set. However, overall AC teachers indicated a higher rate of need than did TC teachers for all professional development standards that were presented. This supports the earlier research of Wayman et al. (2003) that found AC teachers to have higher concerns than TC teachers in areas including lesson planning and classroom management.

It is interesting to note that in research question one, AC-AWE teachers indicated a higher rate of receipt for professional development than did the AC-LE teachers. However, the AC-LE teachers who also received the professional development reported a higher frequency of need in the following areas: teacher leadership, advocacy, and ethics, establishing a respectful environment, facilitation of learning, and other skills (use of technology, understanding of legal issues, and knowledge of CTE issues). It is possible that the AC-AWE teachers, because of their experience in business and industry, are better prepared to begin teaching than are AC-LE teachers. Because many AC-AWE teachers come to the profession as a second career, their ability to make connections to the world of work will be strong. They could have served as a manager, facilitator, or trainer in their previous career that would have provided them with teaching experiences. AC-LE teachers, while required to take licensure courses, may not be receiving the adequate support they need or may not be receiving it quickly enough through their coursework.

Another theory is perhaps districts predict that AC-AWE teachers will need more support and initially provide them with stronger levels of support such as through mentoring, instructional coaches, and more funds to attend staff development so that their needs are more quickly met. Because they likely lack a four-year postsecondary degree and may only possess a high school diploma (NCDPI, 2006a), administrators may assume they will need more support.

While there was a difference in rate of endorsement for most descriptors by route to licensure, there were some exceptions. For example, 100% of the teachers who received professional development regarding laws related to special education indicated

at least some need. All respondents valued this information regardless of their route to licensure. Some skills are so important in public education that licensure simply is not a factor. This finding is consistent with a previous study of AC teachers when it was found that they needed additional professional development support regarding how to work with students with special needs (Ruhland & Bremer, 2002a). Additionally, 100% of teachers reported at least some need for understanding major CTE legislation, teacher liability, and general laws relating to teaching.

In addition to understanding which skills are needed, it is also interesting to learn which skills were provided but unneeded. Overall, the skill that was taught to beginning teacher respondents that received the lowest rate of response for need was how to use email to communicate with people. Another unneeded but provided support was how to establish a safe and orderly environment. Approximately one-fifth of teachers responded they have no need for that skill. While this is highly concerning because of the need to provide children with a safe environment, there is no doubt that school administrators and teachers strive for their campuses to be safe places. Schools are required to have safety plans in place and conduct monthly drills to prepare for unforeseen events such as tornadoes, hurricanes, bomb threats, and acts of terror.

Professional development should fill gaps based on past experiences or lack thereof. As explained in Chapter Two, AC teachers' past experiences differ from those of TC teachers. Furthermore, AC-AWE teachers' past experiences differ from those of AC-LE teachers. Interestingly, one-fourth of AC-AWE teachers reported no need for training on how to participate in the hiring process. Most likely they were involved in hiring in their previous career and understand the skills needed for this activity. Also of interest is

that one-third of TC teacher respondents reported no need for how to organize the physical setting of their classroom and one-fourth indicated no need for how to control and maintain their classroom equipment, tools, and supplies. These skills were likely learned in their postsecondary education courses and supported through their student teaching.

Question Three: Professional Development Desires

To address the third research question, the survey asked respondents to indicate their level of desire for professional development skills that were not provided. The list of skills not provided was generated by ones not chosen previously as having been provided. Overall, the highest rate of endorsement for desire was support for understanding the influences on student learning and differential instruction. These were followed closely by the desire for professional development on collecting, analyzing, and using data.

The research hypothesis for this question was there are differences between the three groups with regard to professional development desired. In most standards, AC teachers more frequently indicated a desire than TC teachers for the professional development that was not provided. In the standard dealing with teacher leadership, TC teachers had significantly lower mean desire than AC-LE teachers. Because many descriptors within the leadership standard address skills not directly related to instruction but rather to the broader scope of education such as visioning, collaboration, and advocating for change, it is possible that AC-LE teachers see the larger picture of how education fits into society and have a greater desire for those skills. In traditional teacher preparation programs, the focus is narrow and specific to curricular issues and pedagogical strategies. However, AC-LE teachers were likely exposed to survey courses

such as business and marketing that broadened their view to include the bigger picture. AC-LE teachers obtained a degree other than education prior to pursuing a teaching degree and that possibly gave them a broader perspective.

Additionally significant, TC teachers had a lower mean desire than AC-AWE teachers for the standard dealing with facilitation of instruction. Clearly, traditional teacher education programs prepare students with instructional strategies that align to their curricula and age level of their students (Strombos, 2004; Ruhland & Bremer, 2002b) it is expected that TC teachers would not desire this as highly as AC-AWE teachers. AC-AWE teachers had a significantly lower mean desire than TC teachers for the standard dealing with use of technology, legal, social, and CTE issues. This supports the finding that AC teachers typically have strong technical skills but contradicts earlier research in which it was found that AC teachers typically need extra support in educational law (Chesley et al., 1997) and managing CTE organizations (Heath-Camp et al., 1992). Additionally, through their traditional preparation, TC teachers learn to use technology skills required of a teacher, appropriate laws, social, and CTE issues. However, as was stated previously, this does not imply that AC teachers cannot acquire these skills and become effective, master teachers. What it does imply is that district administrators should examine the skills that are needed most by beginning teachers with regard to the route to licensure and provide those accordingly.

Strengths, Limitations, and Delimitations

This study has many strengths. The response rate of 93% is an indication that professional development of beginning teachers is an area of high interest in North Carolina CTE. Whether it is because the CTE administrators were interested in the study

and encouraged their teachers to respond or because the teachers themselves wanted to share this information, it is obviously something important to many in North Carolina CTE.

Because of the increasing number of postsecondary CTE programs closing, the number of AC teachers will continue to rise. This study found that AC teachers require specific support. This study can inform district administrators who support beginning teachers so that they can provide teachers with specific professional development based upon their route to licensure.

Another strength of this study is the direct link to the NCPTS. These standards are the basis for the new teacher evaluation instrument. Supports can be put in place by local districts that directly align to the teacher evaluation instrument. Positive performance appraisal can be a powerful motivator. Beginning AC teachers need to be encouraged as found in a recent study. "The [AC] novice teachers are slow to recover their sense of efficacy following failures or setbacks. Because the [AC] novice teachers view insufficient performance as deficient aptitude, it does not require much failure for them to lose faith in their capabilities," (Anthony & Kritsonis, 2006, p. 6). Aligning professional development support with the teacher evaluation instrument will create clear expectations for teacher performance.

A limitation of this study is the difference between perceived need and usefulness. It is possible that a teacher could receive professional development in a skill that was initially perceived as unneeded but in reality proved to be quite useful.

Response rates from licensure groups were a concern. While the percentage of 2009-2010 CTE AC beginning teachers in North Carolina was 50%, (Cash, 2009), 75%

of the respondents were AC. Because of the overrepresentation of AC teachers, when overall percentages were reported for each standard they did not equally represent TC teachers.

Because licensure issues vary from state to state, it is likely that beginning CTE teachers from other states face different requirements with different timelines and varying degrees of support. North Carolina requires a beginning support program and other states may not.

This study had delimitations. When beginning teachers were asked about their needs, their responses indicated their perceived needs. It is unknown as to whether or not these were actual needs. However, the information is still valuable because teachers generally seek support in areas they perceive to be needs. Regardless of whether the professional development is provided or sought by the teachers, their level of engagement and interest will be higher if it is in an area of perceived need.

Another delimitation was that the survey included only CTE teachers with up to five years' experience. Additionally, I did not have access to those teachers who left the profession within the last five years. It is possible that they left due to lack of professional development support. Additionally, I did not have access to those with up to five years' experience who left the classroom to become CTE support services staff such as special populations' coordinators, career development coordinators, instructional management coordinators, or CTE administrators. Those individuals most likely received the support they needed which helped them become successful teachers and accept positions of leadership within CTE. Others who did not get to reply to the survey were those with

more than five years' experience who may have a different perspective on what would have been helpful to support their earlier career.

Because CTE administrators were the middle link between my broadcast email and teachers, it is possible that human error prevented the administrators from forwarding my email at all or in a timely manner. Additionally, because teachers with up to five years' experience were surveyed, accuracy of recall was a concern. Another related delimitation was the timing of the survey. It was deployed during the busiest time of the school year for teachers when they were preparing students for postassessments and events such as graduations, proms, and spring plays. They perhaps were distracted during completion of the survey or even took it quickly without fully considering all of the supports that had been provided them.

In the recruitment email, teachers were informed that their name would not be associated with the research findings in any way in an attempt to gain their honest feedback. However, because they received the email from the CTE administrator, socially desirable responses were a concern.

Because CTE licensure routes and requirements are defined by states, the three groups used in this study (TC, AC-AWE, and AC-LE) may have different attributes in other states. Additionally, postsecondary course provider content may not be comparable in some states.

<div align="center">Implications for Research</div>

As I conducted this study, I continued to think about those beginning teachers outside CTE. I believe that many of the findings could also be applied to all beginning teachers. While program areas outside of CTE do not have the AC-AWE route to

licensure, they do have the AC-LE route. Those beginning teachers would likely have the same needs and desires as the CTE AC-LE teachers. I recommend this study be revised and replicated to include program areas other than CTE. A study such as this would, unlike Cline's (2002) previous study, align to the NCPTS and include all of NC.

Another implication for research related to the recommendation above is for North Carolina to monitor and study the support for beginning teachers that is required by Board Policy TCP-A-004 (NCDPI, 2006b). Currently, districts are only required to report number of teachers served and do not have to report how teachers were served and if teachers were provided with what they needed. This study found that beginning CTE teachers are not receiving all of the supports that they desire, which indicates there is an opportunity to more effectively meet their needs. A recommendation would be for North Carolina to tie that study to the NCPTS because that is the basis for teacher evaluation. North Carolina should then study their findings to determine how districts could better support all teachers based upon their route to licensure. This study has implications for local research as well. Local school districts could replicate this study periodically to monitor their own effectiveness toward meeting the needs of their beginning teachers.

Other research questions to consider are: What district-level professional development support models are most effective and are there differences with respect to the three licensure routes? Are there career clusters that better prepare someone to be an effective AC-AWE teacher than others? Are there four-year degrees that better prepare someone to be an effective AC-LE teacher than others?

Recommendations for Practice

To increase teacher retention, beginning teachers' needs must be met (Frieberg, 2002). Based upon the findings of this study, providers of the coursework required by CTE AC teachers should align their support to the needs indicated by respondents to this survey. Postsecondary providers should respond directly to teacher needs and provide them with specific skill sets that they have indicated they are not currently receiving. Additionally, they should use these results to eliminate the unneeded skills they might be currently providing. This would result in a cost savings that could be redirected to areas of higher need.

It is incumbent upon local district administrators to align professional development support to the needs of teachers and not provide a one-size fits all approach (Rock, 2002; Sherin et al., 2002). Teachers absorb and apply information differently (Coburn, 2001), so it only makes sense that professional development should be delivered by specific design. Because of their student teaching and preservice experiences, TC teachers will likely have more confidence in their ability to translate newly acquired professional skills into practice. In contrast and because of their lack of exposure to practical teaching situations, AC teachers will most likely require more follow-up support and coaching by veteran teachers and mentors. However, some AC teachers could have served in managerial or supervisory positions in which they were required to teach new employees specific job skills and might require less follow-up support.

Because small districts and schools typically have only a few new teachers each year, they are in a better position to individualize their professional development to the needs of the teachers. The standards in which statistically significant differences were

found should be targeted for individualization. Beginning teachers in those districts should be assigned instructional coaches and mentors to provide ongoing, job-embedded support throughout the school year. Needs of beginning teachers should be interpreted as those strategies needed to improve practice rather than only their perceived needs. Experienced instructional coaches and mentors can ask leading questions to help beginning teachers discover their needs when, at times, they may be uncertain. They can help beginning teachers, in a non-threatening manner, to identify professional skill areas with opportunity for growth. While individualizing needs of teachers is ideal, districts must also respond to state and federal professional development compliance requirements such as data management and record keeping.

In an attempt to organize these efforts, tools such as the one provided by the National School Boards Association (2009) could be used by districts to help consider the current knowledge level of their staff members, equipment and supplies readily available, and budget. Another such resource was developed by the State of New Jersey Department of Education (2009) to help with professional development planning and includes templates, district profiles, rubrics, and webinars. As mentioned in the previous paragraph, state and federal compliance requirements are a factor in planning the professional development of teachers. However, district policy regarding professional development should be considered most important because it has the most direct impact on the personal and professional growth of a teacher. While adhering to state and federal mandates, districts must devise programs that increase teacher retention by providing necessary supports.

Not only should careful thought be given to the topics but also to the methods of delivery (Perkins-Gough, 2002). This study clearly establishes the fact that some professional development needs differ based upon route to licensure. Districts would profit in the end by providing the necessary supports because teacher retention would increase thus cutting costs.

CTE administrators can use the findings of this study to better understand the needs of their beginning teachers. They are in the best position in their local district to advocate for their teachers by requesting appropriate levels of funding for support whether it be provided by the district or outside the district but district-funded. Additionally, CTE administrators can help new building administrators, principals, and assistant principals see that AC teachers bring strengths to their schools and students because of their varied career experiences but that they need different types of supports in order to evolve into master teachers. These needs are all within the districts' realm of influence and administrators should understand what is needed before determining what is provided because they control the provider and methods that are most often used. Because districts have the most influence on what professional development is provided to beginning CTE teachers who responded to the survey, it is imperative that district CTE administrators understand what is needed by these three groups of teachers.

CTE administrators can also educate those involved in hiring new teachers. Unfortunately, many educators still undervalue work experience and, in some cases, consider AC-AWE teachers a second choice if a TC teacher candidate is not available. Furthermore, because AC-LE teachers typically possess a higher level of postsecondary education (see Appendix A) than AC-AWE teachers (see Appendix B), if candidates

from all three licensure routes applied for the same position, the AC-AWE would likely be considered a third choice option. However, this incorrect assumption works favorably toward AC-AWE teachers in some cases when stronger supports are put into place for them.

There are state implications as well. The NCDPI CTE division sponsors an annual CTE Summer Conference for a week each July. This is the premier professional development opportunity for CTE teachers in North Carolina. Approximately 3,000 CTE staff members including administrators, support services staff, and teachers attend this event in order to stay current with curricular and legal information as well as learn new instructional strategies. It would be helpful to new teachers, especially first-year teachers, to use this study to help direct them into areas in which they most need support. Because they are novices, they might not know the areas in which they should focus. Also, they may not fully understand how their needs will likely be specific to their route to licensure. Ideally, a "first-time conference attendee" pre-session could be held to provide new teachers with helpful tips on how to navigate this large conference and find those sessions that would be most beneficial to them. This is something that I have recommended to the North Carolina CTE leadership team. Additionally, I plan to make the results of this study available to the state leadership team for CTE Summer Conference planning purposes as well as to most effectively serve new teachers throughout the year.

Conclusions

Overall, the professional development skills receiving the highest rate of receipt were ways to grow professionally, methods to create an inviting and respectful classroom

environment, strategies to align instruction, implementation of a variety of instructional techniques, ways to investigate new ideas for teaching, and how to set up a grading system. However, of those received, the most highly endorsed according to need were participating in the implementation of improvement initiatives, seeking community involvement, promoting global awareness, eliminating achievement gaps, thinking systematically about learning, and understanding major education legislation.

Of professional development skills not received but wanted, the highest rate of response for desire by the group were for how to use a variety of assessment data, methods for collaboration, how to recognize the influences of diversity, strategies to direct students' curiosity into an interest in learning, how to understand instructional influences and differentiation, ways to analyze student performance data, and how to better understand teacher liability and laws relating to teaching. Table 32 displays the differences in route to licensure based upon what was provided, needed, and desired. For example, AC-LE teachers indicated a higher receipt than TC or AC-AWE for professional development on demonstrating leadership, advocacy, and ethics. Additionally, TC teachers who received professional development on understanding the content indicated a higher rate of endorsement for need for that standard than did AC-AWE or AC-LE teachers.

Table 32

Highest Rate of Endorsement by Licensure Route

Standard	Professional Development		
	Provided	Needed (of those provided)	Desired (of those not provided)
Demonstrate leadership, advocacy, and ethics	AC-LE	AC-LE	AC-LE
Establish a respectful environment	AC-AWE	AC-LE	AC-LE
Understand the content	AC-AWE	TC	AC-LE
Facilitate learning	AC-AWE	AC-LE	AC-AWE
Reflect on practice	AC-AWE	AC-AWE	AC-LE/TC
Other skills: use of technology, understanding of legal issues, and knowledge of CTE issues	AC-AWE	AC-LE	TC

Further research should be conducted at both the district and state level to examine the need of all beginning teachers as relates to the NCPTS. Districts should align their professional development support to the needs of teachers rather than what they believe these teachers should have. Coursework providers should align their topics to the needs of beginning AC teachers. State CTE leadership should use the results of this study to better support beginning teachers through the CTE Summer Conference and other activities offered throughout the year.

I embarked upon this study because I truly believe educators do a disservice to teachers by providing a one-size-fits-all approach to professional development. My other reason for conducting this study was that I believe that while AC teachers may need additional support as they begin their careers, they are worth the extra time, attention, and money that it takes. While the strengths of TC teachers cannot be ignored because they enter the profession ready to thrive as effective instructional leaders, we must not let administrators think of AC teachers as a second choice option. Just because they have different needs at the onset of their careers, does not mean they cannot quickly evolve into effective teachers.

Budget issues facing the nation will not allow us to neglect the needs of new teachers. We must take their needs seriously and provide them with necessary supports. As stated by Darling-Hammond (2001), 30% of all beginning teachers leave their positions in the first five years and 30% of AC beginning teachers leave within their first *three* years (Ingersoll, 2002). Nationally, the amount spent on teacher turnover is estimated at $2.2 billion a year (Alliance for Excellent Education, 2005). The current economy demands that we pay attention to the needs of new teachers.

REFERENCES

Alliance for Excellent Education. (2005). *Teacher attrition: A costly loss to the nation and to the states*. Washington, DC: Author.

Anderson, L., & Olsen, B. (2006). Investigating early career urban teachers' perspectives on and experiences in professional development. *Journal of Teacher Education*, *57*(4), 359-377.

Anthony, T. D., & Kritsonis, W. A. (2006). A mixed methods assessment of the effectiveness of strategic EMentoring in improving the self-efficacy and persistence (or retention) of alternatively certified novice teachers within an inner city school district. *Doctoral Forum--National Journal for Publishing and Mentoring Doctoral Student Research, 4*(1).

Association for Career and Technical Education. (2010). *CTE Information and Research*. Retrieved October 8, 2010, from http://www.acteonline.org/cteresearch.aspx

Bartlett, J. E. (2002). *Preparing, licensing, and certifying postsecondary career and technical educators.* Columbus, OH: National Dissemination Center for Career and Technical Education.

Berry, B., Turchi, L., Johnson, D., Hare, D., Owens, D., & Clements, S. (2003). *The impact of high-stakes accountability on teachers' professional development: Evidence from the South*. Chapel-Hill, NC: Southeast Center for Teaching Quality, Inc. Retrieved October 8, 2010, from http://www.teachingquality.org/legacy/Spencer_FinalReport.pdf

Blue Ridge Community College. (2009). *General education course schedule*. Retrieved

    October 8, 2010, from

    http://www.blueridge.edu/curriculum/generaleducationassociate.php

Brown, S. (2003, May). Working models: Why mentoring programs may be the key to

    teacher retention. *Techniques: Connecting Education & Careers*, *78*(5), 18–21,

    62.

Bruening, T. H., & Scanlon, D. C. (2001). *The status of career and technical education*

    teacher preparation programs. St. Paul, MN: National Research Center for

    Career and Technical Education.

Camp, W. G., & Heath-Camp, B. (2007). The status of CTE teacher education today.

    Techniques: Connecting Education and Careers, 82(6), 16-19.

Cash, M. (2009). [CTE licensure report]. Unpublished raw data.

Chambers, D. (2002). The real world and the classroom: Second-career teachers.

    Clearing House, 75, 212-217.

Chesley, L. S., Wood, F. H., & Zepeda, S. J. (1997). Meeting the needs of alternatively

    certified teachers. *Journal of Staff Development, 18*(1), 28-32.

Cleveland, D. (2003). A semester in the life of alternatively certified teachers:

    Implications for alternative routes to teaching. *High School Journal, 86*(3), 17-34.

Cline, B. W. (2002). Support desired by beginning teachers: A comparison of

    traditionally prepared and lateral entry teachers in western North Carolina

    (Doctoral dissertation, Western Carolina University, 2002). *Dissertation Abstracts*

    International, *63*, 12A, 206-4276.

Coburn, C. (2001). Collective sensemaking about reading: How teachers mediate reading

    policy in their professional communities. *Educational Evaluation and Policy*

    Analysis, 23(2), 145-170.

Cochran, L., & Reese, S. (2007). A successful induction into the teaching profession.

    Techniques: Connecting Education & Careers, 82(6), 25-27.

Creswell, J. (2005). *Educational research*: *Planning, conducting, and evaluating*

    quantitative and qualitative research. Upper Saddle River, NJ: Pearson

    Education.

Cutshall, S. (2002). Preparing with purpose. *Techniques: Connecting Education &*

    Careers, 77(5), 20.

Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of

    state policy evidence. *Education Policy Analysis Archives, 8*(1).

Darling-Hammond, L. (2001). The challenge of staffing our schools. *Educational*

    Leadership, 58(8), 12-17.

Darling-Hammond, L., & Richardson, N. (2009). Teacher learning: What matters?

    Educational Leadership, 66(5), 46-55.

Dillman, D., Smyth, J., & Christian L. (2009). *Internet, mail, and mixed-mode surveys:*

    The tailored design method. Hoboken, NJ: John Wiley & Sons, Inc.

DuFour, R. (2004). What is a "professional learning community"? *Educational*

    Leadership, 61(8), 6-11.

Elementary and Secondary Education Act. (1993). NC Article 20 § 115C, 295.1.

Elementary and Secondary Education Act. (1996). NC Article 20 § 115C, 295.2.

Freiberg, H. J. (2002). Essential skills for new teachers. *Educational Leadership, 59*(6), 56-60.

Glassroth, J., Mistretta, L., Reynolds, L., Rea, B., & Rizzo, D. (2005). *2005 Skills gap report – a survey of the american manufacturing workforce.* Retrieved October 8, 2010, from http://www.wiworkforce.com/reports/NAM-Deloitte-Skills-Gap-Report.pdf

Gordon, S. P., & Maxey, S. (2000). *How to help beginning teachers succeed* (2nd ed.). Alexandria, VA: Association for Supervision and Curriculum Development.

Gray, K. C., & Walter, R. A. (2001). *Reforming career and technical education teacher licensure and preparation: A public policy synthesis. information paper 1001.* Columber, OH: National Dissemination Center for Career and Technical Education.

Guskey, T. (2003). What makes professional development effective? *Phi Delta Kappan, 84*(10).

Guskey, T., & Yoon, K. (2009). What works in professional development? Phi *Delta Kappan, 90*(7).

Hay, L. (2000). Time to think: The missing link in professional development. *Education Update,* 42(5).

Heath-Camp, B., Camp, W. G., Adams-Casmus, E., Talbert, B. A., & Barber, J. D. (1992). *On becoming a teacher: An examination of the induction of beginning vocational teachers in American public schools.* (NCRVE Publication No. MDS-161). Berkeley, CA: National Center for Research in Vocational Education. (ERIC Document Reproduction Service No. ED 342 926).

Heppner, P., & Heppner, M. (2004). *Writing and publishing your thesis, dissertation & research*. Belmont, CA: Thomson Learning Inc.

Hirsch, E., Emerick, S., Church, K., & Fuller, E. (2006). *North Carolina teacher working conditions survey interim report*. Chapel Hill, NC: Center for Teaching Quality. Retrieved October 8, 2010, from

http://www.teachingquality.org/pdfs/2006nctwcinterim.pdf

Hoepfl, M. (2001). Alternative routes to certification of technology education teachers. *Journal of Technology Studies, 27*(2), 74-83.

Holloman, D. (2007). *Beginning teacher report*. Raleigh, NC: North Carolina Department of Public Instruction. Retrieved October 8, 2010, from

www.ncpublicschools.org

Holzer, H., & Lerman, R. (2007). *America's forgotten middle-skill jobs*. Washington, DC: The Workforce Alliance.

Huberman, M., Brounauer, M., & Marti, J. (1993). *The lives of teachers*.

Improving teacher retention with supportive workplace conditions. (2007). Center for Comprehensive School Reform and Improvement. Retrieved October 8, 2010, from

http://www.centerforcsri.org/index.php?option=com_content&task=view&id=466&Itemid=5

Ingersoll, R. M. (2002). The teacher shortage: A case of wrong diagnosis and wrong prescription. *NAASP bulletin, 86*(631), 16-32.

Ingersoll, R., & Smith, T. (2003). The wrong solution to the teacher shortage. *Educational Leadership*, *60*(8), 30-33.

Institute for a Competitive Workforce. (2008). *The skills imperative*. Retrieved October

    8, 2010, from

    http://icw.uschamber.com/sites/default/files/The_Skills_Imperative_0.pdf

Joerger, R. M., & Bremer, C. D. (2001). *Teacher induction programs: A strategy for*

    improving the professional experience of beginning career and technical

    education teachers. Columbus, Ohio: National Dissemination Center for Career

    and Technical Education.

Jorissen, K. T. (2003). Successful career transitions: Lessons from urban alternate route

    teachers who stayed. *High School Journal, 86*(3), 41.

Joyce, B., Murphy, C., Showers, B., & Murphy, J. (1989). School Renewal as Cultural

    Change. *Educational Leadership*, *47*(3), 70.

Joyce, B., Showers, B., & Rolheiser-Bennett, C. (1987). Staff Development and Student

    Learning: A Synthesis of Research on Models of Teaching. *Educational*

    Leadership, *45*(2), 11.

Joyce, B., & Showers, B. (1981). Transfer of training: The contribution of coaching.

    Journal of Education, 163(2).

Kaplowitz, M., Hadlock, T., & Levine, R. (2004). *A comparison of web and mail survey*

    response rates. Public Opinion Quarterly, 68(1), 94-101.

Kirby, S., Nelson, A., Shelley, K., Stringer, T. T., Tate, P., & Toossi, M. (2006).

    *Occupational projections and training data. 2006 edition. bulletin 2602.*U.S.

    Government Printing Office, Superintendent of Documents, Washington, DC.

Levine, A., & Haselkorn, D. (2008). Teaching at the precipice. *Education Week*, 32-26.

Lynch, J., DeRose, J., & Kleindienst, G. (2006). Mentoring new teachers. *Techniques: Connecting Education & Careers, 81*(6), 24-28.

McCaslin, N. L., & Parks, D. (2002). Teacher education in career and technical education: Background and policy implications for the new millennium. *Journal of Vocational Education Research, 27*(1), 65-103.

Miller, J. W., McKenna, B. A., & McKenna, M. C. (1998). A comparison of alternatively and traditionally prepared teachers. *Journal of Teacher Education, 49*(3), 165-76.

Nagy, C., & Wang, N. (2006). *The alternate route teachers' transition to the classroom: Preparation, support and retention*. Paper presented at the meeting of the American Educational Research Association, San Francisco, CA

National Center for Education Statistics. (2001). *2000-2001 Teacher follow-up survey*.

National Center for Education Statistics. (2009). *Projections of education statistics to 2018*. Retrieved October 8, 2010, from

http://nces.ed.gov/programs/projections/projections2018/sec5d.asp

National School Boards Association. (2009). *Planning professional development*. Retrieved October 8, 2010, from

http://www.nsba.org/sbot/toolkit/planningPD.html

National Staff Development Council. (2001). *NSDC's standards for staff development*. Retrieved October 8, 2010, from http://www.nsdc.org/standards/index.cfm

Natriello, G., & Zumwalt, K. (1992). Challenges to an alternative route for teacher education. In A. Lieberman (Ed.), *The changing contexts of teaching* (pp. 59-78). Chicago: University of Chicago Press.

Nieto, S. (2009). From surviving to thriving. *Educational Leadership, 66*(5), 8-13.

North Carolina Department of Public Instruction. (2006a). *Alignment of the initial*

licensure program policy with standard professional 1 license requirements.

Retrieved October 8, 2010, from

http://www.ncpublicschools.org/docs/stateboard/highlights/2006/07highlights.pdf

North Carolina Department of Public Instruction. (2006b). *State board of education*

policy TCP-A-004. Retrieved October 8, 2010, from

http://sbepolicy.dpi.state.nc.us/

North Carolina Department of Public Instruction. (2007). *Career and technical education*

data profile. Retrieved October 8, 2010, from

http://www.dpi.state.nc.us/docs/cte/publications/data/profile/2007.pdf

North Carolina Department of Public Instruction. (2008). *Numbers report: career and*

technical education. Retrieved October 8, 2010, from

http://www.dpi.state.nc.us/docs/cte/briefing/numbers.pdf

North Carolina Department of Public Instruction. (2009a). *A guide for administering*

career and technical education in the public schools of North Carolina. Retrieved

October 8, 2010, from

http://www.dpi.state.nc.us/docs/cte/publications/administrative/fiscalpolicy.pdf

North Carolina Department of Public Instruction. (2009b). *ABCs/AYP 2009*

accountability report background packet. Retrieved October 8, 2010, from

http://www.ncpublicschools.org/docs/accountability/reporting/abc/2008-

09/backgroundpacket.pdf

North Carolina Department of Public Instruction. (2009c). *Career and technical education: briefing paper.* Retrieved October 8, 2010, from

    http://www.ncpublicschools.org/docs/cte/briefing/cte.pdf

North Carolina Department of Public Instruction. (2009d). *Lateral entry teachers.* Retrieved October 8, 2010, from http://www.dpi.state.nc.us/licensure/lateral/

North Carolina Professional Teaching Standards Commission. (2007). *North carolina professional teaching standards*. Retrieved October 8, 2010, from

    http://www.ncptsc.org/

North carolina teachers of excellence for all children. (2007). Retrieved October 8, 2010, from http://ncteach.ga.unc.edu/

Onderi, H., & Croll, P. (2009, March). Teacher self-perceptions of effectiveness: A study in a district of Kenya. *Educational Research*, *51*(1), 97-107.

Perkins-Gough, D. (2002). EL Extra. *Educational Leadership*, 59(6), 92-93.

Porter, S., & Whitcomb, M. (2007). Mixed-mode contacts in web surveys. *Public Opinion Quarterly, 71*(4), 635-648.

Reese, S. (2009, March). Transitioning into teaching. *Techniques: Connecting Education & Careers*, *84*(3), 16-19.

Resta, V., Huling, L., & Rainwater, N. (2001). Preparing second-career teachers. *Educational Leadership, 58*(8), 60.

Rock, H. (2002). Job-embedded professional development and reflective coaching. *The Instructional Leader,* 5(8), 1-4.

Rotman, S., & Messelaar, T. (2005). Centered on teacher training. *Techniques: Connecting Education & Careers, 80*(6), 30-31.

Ruhland, S. K., & Bremer, C. D. (2002a). Professional development needs of novice career and technical education teachers. *Journal of Career and Technical Education, 19*(1), 18.

Ruhland, S. K., & Bremer, C. D. (2002b). *Alternative teacher certification procedures and professional development opportunities for career and technical education teachers.* Columbus, OH: National Dissemination Center for Career and Technical Education.

Sander, K. L. (2007). Alternative routes: To certify career and technical education teachers. *Techniques: Connecting Education & Careers, 82*(6), 31-33.

Saphier, J., & West, L. (2009). How coaches can maximize student learning. *Phi Delta Kappan*, *91*(4), 46-50.

Scherer, M. (2002). Job one. *Educational Leadership*. 59(6), 5.

SERVE Center at UNCG. (2006). *Teacher retention at low-performing schools*. Greensboro, NC. Retrieved October 8, 2010, from http://www.childandfamilypolicy.duke.edu/pdfs/pubpres/Research_Update_Dec06.pdf

Sherin, M., Drake, C., & Fuson, K. (2002). Curricula as a context for professional development. *Classroom Leadership*. *5*(6).

Showers, B., Joyce, B., & Bennett, B. (1987). Synthesis of research on staff development: A framework for future study and a state-of-the-art analysis. *Educational Leadership, 45*(3).

Smith, D. (2007). Teacher education in an interdisciplinary cohort model. *Techniques: Connecting Education and Careers, 82*(6), 28-30.

Smith, D., Wilson, B., & Corbett, D. (2009). Moving beyond talk. *Educational Leadership, 66*(5), 20-27.

Stafford, D., & Shaughnessy, M. (2006). An interview with Delia Stafford about alternative certification. *North American Journal of Psychology*, *8*(3), 497-502.

State of New Jersey Department of Education. (2009). *Professional standards and learning.* Retrieved October 8, 2010, from http://www.state.nj.us/education/profdev/pd/teacher/

Stoddart, T. (1993). Who is prepared to teach in urban schools? *Education & Urban Society, 26*(1), 29.

Strumbos, D. (2004). Tapping the potential: Retaining and developing high-quality new teachers. Washington, DC: Alliance for Excellent Education. Retrieved October 8, 2010, from http://www.connectforkids.org/node/592

Szuminski, K. (2003). Teacher development in CTE. *Fast Facts for Policy and Practice in Brief, 21*.

Tell, C. (2001). Making room for alternative routes. *Educational Leadership, 58*(8), 38-41.

Thompson, T. M. (2003). Candidates perception of training and self-efficacy in traditional versus alternative teacher preparation programs. *Dissertation Abstracts International, 64* (06A), 112-2048.

Thornton, H. J. (2004). What can we learn about retaining teachers from PDS teachers' voices? *Middle School Journal (J1), 35*(4), 5-12.

Threeton, M. (2007). The Carl D. Perkins career and technical education (CTE) act of 2006 and the roles and responsibilities of CTE teachers and faculty members. *Journal of Industrial Teacher Education, 44*(1), 66-82.

Tutterow, J. S. (2000). The relationship between demographic characteristics and current teaching performance of lateral entry teachers. *Dissertation Abstracts International, 61* (08A), 143-3044.

Twomey, S. M. (2002). The virtual teacher training center: A one-year program to transform subject-matter experts into licensed career and technical education teachers. *Journal of Vocational Education Research, 27*(1), 151-173.

United States Department of Education. (2002). *Public law 107 – 110.* Retrieved October 8, 2010, from http://www.ed.gov/policy/elsec/leg/esea02/107-110.pdf

United States Department of Education. (2004). *National assessment of vocational education.* Retrieved October 8, 2010, from http://www.ed.gov/rschstat/eval/sectech/nave/naveexesum.pdf

Walter, R. A., & Gray, K. C. (2002). Teacher Preparation/Licensure in career and technical education: A public policy analysis. *Journal of Vocational Education Research, 27*(1), 127-149.

Watkins, P. (2005). The principal's role in attracting, retaining, and developing new teachers: Three strategies for collaboration and support. *Clearing House: A Journal of Educational Strategies, Issues and Ideas, 79*(2), 83-87.

Wayman, J. C., Foster, A. M., Mantle-Bromley, C., & Wilson, C. (2003). A comparison of the professional concerns of traditionally prepared and alternatively licensed new teachers. *High School Journal, 86*(3), 35-40.

Zeichner, K., & Schulte, A. (2001). What we know and don't know from peer-reviewed

    research about alternative teacher certification programs. *Journal of Teacher*

    Education, 52(4), 266-282.

Zirkle, C., Martin, L., & McCaslin, N. L. (2007). *Study of state certification/licensure*

    requirements for secondary career and technical education teachers. Retrieved

    October 8, 2010, from

    http://136.165.122.102/UserFiles/File/pubs/State_Certification_secondary_teache

    rs.pdf

Appendices

Appendix A

Qualifying for Lateral Entry in North Carolina

Must have a Bachelors Degree or higher from a regionally accredited college or university **and** a combination of one (1) from each side of the below grid to qualify for Lateral Entry

ONE OF THE FOLLOWING:		ONE OF THE FOLLOWING:
A bachelors degree or higher that is relevant to subject area being taught		2.5 GPA or above
OR		OR
24 Semester Hours of course work in core area with the following exceptions: • Elementary Education <u>or</u> Exceptional Children (Teacher of Record) requires <u>prior to employment</u>, a passing score on the Praxis II subject assessment • English as a Second Language requires a degree in English, <u>or</u> 24 semester hours in English <u>or</u> Linguistics, <u>or</u> a passing score for the Praxis II subject assessment	**AND**	At least five (5) years of relevant experience
OR		OR
Passing score on the Praxis II subject assessment test(s) for the area of license - or - Passing score on the (ACTFL) American Council on the Teaching of Foreign Languages (Note: this only applies for world languages, and does not apply to English)		Passing score on Praxis I, <u>or</u> a total SAT score of 1100, <u>or</u> a total ACT score of 24 **plus** one of the following: GPA of 3.0 in the major field of study - or - GPA of 3.0 in all courses in senior year - or - GPA of 3.0 on a minimum of 15 semester hours of courses completed within the last five years after the bachelor's degree or higher

Revised 1/9/2009

Note. From "Lateral Entry Teachers," by North Carolina Department of Public Instruction, 2009. Retrieved October 8, 2010, from http://www.dpi.state.nc.us/licensure/lateral/

LICENSURE

LATERAL ENTRY TEACHERS

The Licensure Section of the North Carolina Department of Public Instruction is pleased to assist candidates for lateral entry with information on how to enter the teaching profession. Lateral entry is an "alternate" route to teaching for qualified individuals outside of the public education system. Lateral entry allows qualified individuals to obtain a teaching position and begin teaching right away, while obtaining a license as they teach. The NC Dept of Public Instruction authorizes lateral entry licenses on a provisional basis in licensure areas that correspond to the individual's academic study. Please review the following information and remember that **only the hiring school system can initiate the process for lateral entry status.**

Graduates of approved education programs who are not recommended for licensure by their college or university are not eligible for a lateral entry license. However, a person who has satisfied all major degree requirements but has a minor deficiency or technical requirement can apply for a lateral entry license if employed by a school system. Such a deficiency cannot exceed six semester hours and must be corrected during the first year of licensure. **Individuals who have completed all education program requirements except the Praxis Series tests (if applicable) are not eligible for lateral entry licensing.**

LATERAL ENTRY STEPS

What are the steps for becoming a lateral entry teacher and pursuing a "professional" teaching license?

Step 1: Qualify

The individual must first qualify as a lateral entry teacher to be able to seek a position with a school system.

- To Qualify for Lateral Entry in North Carolina
  (pdf, 28kb)   UPDATED: Jan 9, 2009
  - Praxis Series Tests

Step 2: Employment

The individual is hired by a school system, which recommends the individual to the NC Department of Public Instruction for a lateral entry license. The individual is issued a three year lateral entry provisional license.

Step 3: Plan of Study

Upon being issued the initial provisional lateral entry license, the individual affiliates with a college or university with an approved teacher education program in the license area or with one of the Regional Alternative Licensing Centers (RALC) in North Carolina. An individual plan of study is prescribed for the lateral entry teacher.

Step 4: Coursework and Testing

The individual follows their plan of study prescribed by the college or university or the RALC. A minimum of six semester hours per year from the plan of study must be taken until the plan has been completed. All coursework and the Praxis II exam for their licensure area must be completed within three years.

Step 5: Recommendation for Standard Professional 1 License

When the individual completes the required coursework prescribed by the college, university or RALC and satisfies licensure testing requirements, he/she is recommended for licensure by the institution or RALC. This recommendation is sent to the NC Department of Public Instruction where it is evaluated and if the individual has met all their requirements, they are issued a Standard Professional 1 License.

Resources

NC Teach

NC TEACH is an alternative teacher preparation program designed to recruit, train, support, and retain mid-career professionals as they become licensed teachers in NC.

Regional Alternative Licensing Centers (RALC)

Teaching candidates with a lateral entry license have another option for pursuing full licensure and that is to utilize one of the states' three regional alternative licensing centers located in Charlotte, Fayetteville and Nashville, NC.

The regional alternative licensing centers were created by the Department of Public Instruction (DPI) specifically to help lateral entry teachers in North Carolina achieve full licensure. The centers will assist teaching candidates by evaluating their applications, prescribing a course of study, recommending requirements they need in order to receive full licensure, and clearing the license so that they become fully licensed. Candidates can take the necessary coursework at any of the state's colleges or universities.

The regional alternative licensing centers complement what local universities and colleges provide teaching candidates - not replace it. The centers provide a number of benefits for lateral entry teachers including more consistent evaluations, evaluations targeted to the requirements the teacher needs to attain full licensure, flexibility as to where candidates can take their coursework, and training opportunities through local school systems to meet some of the licensing requirements.

Note. From "Lateral Entry Teachers," by North Carolina Department of Public Instruction, 2009. Retrieved October 8, 2010, from http://www.dpi.state.nc.us/licensure/lateral/

Appendix B

Trade and Industrial Education
CTE Work Experience Alternative Route License

Career and Technical Ed Program Area Choose one of the three levels of academic preparation:	Eligibility Requirements for Employment	License Requirements

Trade and Industrial Education
 	
Bachelor's Degree
	Degree
	    • Bachelor's Degree in field of certification
	
	Work Experience
	    • Two years work experience within past five years
	
	Credential
	    • Industry Certification/Credential
	    For the following courses, the listed exams are required before employment:
	
	Courses **Credentials**
	Auto Service Tech ASE Brakes & Electrical/ Electronics
	Cosmetology Cosmetic Arts Board Instructor License
	For the following courses training in the certification area is required before employment:
	Courses **Credentials**
	Networking I NET + OR CCNA
	NET II,III CCNA
	CET I, II A+ (CompTIA)
		Coursework *(21 hours --- 6 hours per year)
		• Curriculum, Instructional Planning and Assessments in Trade and Industrial Education OR INTRODUCTION TO TRADE AND INDUSTRIAL EDUCATION (required)
		• Instructional Methods in Trade and Industrial Education OR INSTRUCTIONAL METHODS (required) [this requirement can be met by the 80 hour induction program]
		• Reading in the Content Area Methods OR READING AND WRITING METHODS (required)
		• Teaching Diverse Learners OR Special Populations OR SPECIAL POPULATIONS (required)
		• Classroom Management OR Learning Theory; Learning Styles; Motivation; How Adolescents Learn OR GENERAL PSYCHOLOGY (required)
		• Environmental Safety and Health OR ENVIRONMENTAL SAFETY AND HEALTH (required)
		• CAREER AND TECHNICAL STUDENT ORGANIZATION(required)
		
		Induction
		• 80-hour T&I Teacher Induction Program sponsored by Career-Technical Education, State Department of Public Instruction is required. [not required if instructional methods has been completed]
		Credential
		• Industry Certification/Credential:
		  For the following courses,

		the listed exams are required: **Courses Credentials** Networking I NET + (CompTIA) OR CCNA (CISCO) NET II, III CCNA (CISCO) CET I, II A+ (CompTIA) For the following courses, the listed exams are recommended: **Courses Credentials** See attached T&I Credential Matrix

* All capitalized courses are community college courses and non-capitalized courses are university courses. If teacher intends to complete a master's degree,   complete the courses at the university or verify community college articulation with the university in writing.

** Prior to third year of teaching

Trade and Industrial Education (Continued)
CTE Work Experience Alternative Route License

Career and Technical Ed Program Area	Eligibility Requirements for Employment	License Requirements

Trade and Industrial Education
 	
Associate's
 	
Degree
	Degree
	  Associate's Degree in field of certification
	
	Work Experience
	• Four years related work experience within past eight years.
	  Two years experience is held in escrow and released for pay purposes if four year degree is completed.
	
	Credential
	• Industry Certification/Credential
	 For the following courses, the listed exams are required before employment:
	
	Courses **Credentials**
	Auto Service Tech ASE Brakes &
	                 Electrical/
	                 Electronics
	Cosmetology Cosmetic Arts board
	                 Instructor License
	 For the following courses, training in the certification area is required before employment
	
	Courses **Credentials**
	Networking I NET + OR CCNA
	NET II,III CCNA
	CET I, II A+ (CompTIA)
		Coursework *(21 hours --- 6 hours per year)
		• Curriculum, Instructional Planning and Assessments in Trade and Industrial Education OR INTRODUCTION TO TRADE AND INDUSTRIAL EDUCATION (required)
		• Methods/Teaching Strategies in Trade and Industrial Education OR INSTRUCTIONAL METHODS (required) [this requirement can be met by the 80 hour induction program]
		
		• Reading in the Content Area Methods OR READING AND WRITING METHODS (required)
		• Meeting Special Learning Needs; Exceptionalities; Diversity OR SPECIAL POPULATIONS (required)
		• Classroom Management OR Learning Theory; Learning Styles; Motivation; How Adolescents Learn OR GENERAL PSYCHOLOGY (required)
		• Environmental Safety and Health OR ENVIRONMENTAL SAFETY AND HEALTH (required)
		• CAREER AND TECHNICAL STUDENT ORGANIZATION (required) **Induction**
		• 80-hour T&I Teacher Induction Program sponsored by Career-Technical Education,
		  State Department of Public Instruction is required. [not required if instructional methods has been completed]
		
		Credential
		• Industry Certification/Credential:
		 For the following courses, the listed exams are required:
		
		Courses **Credentials**
		 Networking I NET + (CompTIa
		                  CCNA (CISCO)
		
		 NET II, III CCNA (CISCO)
		
		 CET I, II A+ (CompTIA)
		
		 For the following courses, the listed exams are recommended:
		Courses **Credentials**
		
		 See attached T&I Credential Matrix

Trade and Industrial Education (Continued)
CTE Work Experience Alternative Route License

Career and Technical Ed Program Area	Eligibility Requirements for Employment	License Requirements
Trade and Industrial Education **High School Diploma**	**Degree** • High School Diploma **Work Experience** • Six Years Related Work Experience within the past ten years is required. Four years experience is held in escrow. Two years of the work experience being held in escrow will be released for pay purposes when complete associate's degree and the additional two years will be released if complete bachelor's degree. **Credential** • Industry Certification/Credential For the following courses, the listed exams are required before employment: **Courses** **Credentials** Auto Service Tech ASE Brakes & Electrical/ Electronics Cosmetology Cosmetic Arts board Instructor License For the following courses training in the certification area is required before employment: **Courses** **Credentials** Networking I NET + OR CCNA NET II,III CCNA CET I, II A+ (Comp TIA)	**Coursework (21 hours --- 6 hours per year)** • Curriculum, Instructional Planning and Assessments in Trade and Industrial Education OR INTRODUCTION TO TRADE AND INDUSTRIAL EDUCATION (required) • Instructional Methods in Trade and Industrial Education OR INSTRUCTIONAL METHODS (required) [this requirement can be met by the 80 hour induction program] • Reading in the Content Area Methods OR READING AND WRITING METHODS (required) • Meeting Special Learning Needs; Exceptionalities; Diversity OR Special Populations OR SPECIAL POPULATIONS (required) • Classroom Management OR Learning Theory; Learning Styles; Motivation; How Adolescents Learn OR GENERAL PSYCHOLOGY (required) • Environmental Safety and Health OR ENVIRONMENTAL SAFETY AND HEALTH (required) • CAREER AND TECHNICAL STUDENT ORGANIZATION (required) **Induction** • 80-hour T&I Teacher Induction Program sponsored by Career and Technical Education, State Department of Public Instruction is required. [not required if instructional methods has been completed] **Credential** • Industry Certification/Credential: For the following courses, the listed exams are required: **Courses** **Credentials** Networking I NET + (CompTIA) OR CCNA (CISCO) NET II, III CCNA CET I, II A+ (CompTIA) For the following courses, the listed exams are recommended: **Courses** **Credentials** See attached T&I Credential Matrix **Core Academic Competence (prior to 2nd year of teaching) *** • Praxis I Pre-Professional Skills Test OR • Asset Test OR • Accuplacer Test OR • Work Keys

* All capitalized courses are community college courses and non-capitalized courses are university courses. If teacher intends to complete a bachelor's degree, complete the courses at the university or verify community college articulation with the university in writing.

** Scores on attached page.

Career and Technical Ed Program Area	Eligibility Requirements for Employment Continued	License Requirements

High School Diploma Teacher Requirement*
 	
 Core Academic Competence
 The Core Academic Assessment is required for Trade and Industrial Education teachers with the high school diploma being their highest degree in education. Teachers must pass one of the following assessments prior to their second year of teaching
		Choices
		 1. Praxis I Pre-Professional Skills Assessments (PPST)
		 Tests **Scores**
		 Reading 176
		 Mathematics 173
		 Writings 173
		 OR
		 2. Asset
		 Tests **Scores**
		 Writing 40
		 Numerical Skills 40
		 Reading Skills 40
		 Elementary Algebra 40
		 OR
		 3. Accuplacer: Scores are calculated by conversion to 40
		    aligned with Asset
		 Tests
		 Reading Comprehension
		 Sentence Skills
		 Arithmetic Elementary Algebra
		 College Level Mathmatics
		 OR
		 4. Work Keys: Scores are calculated by conversion to 40
		    aligned with Asset
		 Tests
		 Applied Math
		 Locating Information
		 Reading
		 Technical Writing

* Teachers with a four year degree or two year associate degree in Trade and Industrial Education are not required to take the listed core academic competence assessment.

Trade and Industrial Education Credentials for High School Degree Candidates

CREDENTIALS REQUIRED BEFORE EMPLOYMENT		
Licensure Code	**Licensure Description**	**Industry Credential**
74015	Automotive Service Technology	Two ASE Certifications: Brakes and Electrical/Electronics
74030	Cosmetology	Cosmetic Art Board Certified Instructor
CREDENTIALS REQUIRED BEFORE LICENSE GRANTED		
Licensure Code	**Licensure Description**	**Industry Credential**
	Computer Engineering Technology	A+ (CompTIA[9])
	Networking I Network Engineering Technology II, III	Net+ (CompTIA[9]) or CCNA CCNA
CREDENTIALS RECOMMENDED		
Licensure Code	**Licensure Description**	**Industry Credential**
74010	Collision Repair Technology	I-CAR[1] or minimum of two ASE[2] Certifications
74020	Cabinetmaking/Furniture	NCCER[3] Cabinetmaking Assessment or Woodlinks Certification
74025	Construction Technology/Carpentry	NCCER[3] Instructor Certification Training Program and either a Contractor's License or the Carpentry Assessment (NCCER[3])
74035	Electrical Trades	NCCER[3] Instructor Certification Training Program and either an Electrical Contractor's License or the Electrician's Assessment (NCCER[3])
74040	Electronics	NOCTI[10], or ETA – I[4], or ISCET[5]
74045	Printing and Graphics	NOCTI[10]– Graphic Imaging Technology (Test #0137) or GAERF Certification[6]
74050	Electro-Mechanical Maintenance	NCCER[3] Instructor Certification Training Program and Industrial Maintenance Assessment (NCCER[3])
74055	Masonry	NCCER Instructor Certification Training Program and either a Masonry Contractor's License or the Masonry Assessment (NCCER[3])
74060	Mechanical Systems – HVAC or Plumbing	NCCER[3] Instructor Certification Training Program and either an HVAC Contractor's License or the HVAC Assessment (NCCER[3])
74065	Metals Manufacturing	NIMS[7] Level 1
74070	Drafting	NOCTI[10] – Drafting Occupations (Test #0360)
74080	Welding	NCCER[3] Instructor Certification Training Program and either the Welding Assessment (NCCER[3]) or AWS[8] Certified Welding Educator
74085	Trade and Industrial Cooperative Training	Completion of credential in primary T&I certification area; BS degree in T&I area required
74095	Specialized	Determined by Specialized Request

I-CAR[1] – Inter-Industry Conference On Auto Collision Repair

ASE[2] – Automotive Service Excellence

NCCER[3] – National Center for Construction Education Research

ETA-I[4] – Basic Electronics Associate (ETA) International. Journeyman Certified Electronics Technician.

ISCET[5] – Certified Electronics Associate Technician. Journeyman Certified Electronics Technicians

GAERF[6] – Graphic Arts Education and Research Foundation

NIMS[7] – National Institute for Metalworking Skills

AWS[8] – American Welding Society

CompTIA[9] – Vendor neutral certification organization for the IT Industry.

NOCTI[10]– National Occupational Competency Testing Institute

NATEF[11] – National Automotive Technician's Education Foundation

Note. From "Alignment of the Initial Licensure Program Policy with Standard Professional I License Requirements," by North Carolina Department of Public Instruction, 2006. Retrieved September 1, 2009, from http://www.ncpublicschools.org/sbe_meetings/0608/0608_qp/0608qp.pdf

Appendix C

CTE Professional Development Survey

Survey introduction, demographic questions, and Standard 1.1
Completion and submission of the web survey implies that you have read the information in the invitation email and you consent to participate in the research.
The survey is divided into the following sections:
1. Demographic information
2. Professional development questions
3. Concluding questions
Please provide the following demographic information by selecting the appropriate choices.
Are you currently a full-time Career and Technical Education (CTE) teacher?
Yes
No
In what month and year did you begin full-time employment as a CTE teacher?
Have you worked in another state since beginning full-time employment as a CTE teacher?
Yes
No
What month and year did you begin teaching in North Carolina?
Choose the CTE program areas(s):
In which you teach this school year
Agriculture
Business
Career Exploration
Family and Consumer
Sciences
Health Occupations
Marketing
Technology
Trade and Industry
Which grade level do you currently teach? (Choose all that apply.)
6-8
9-12
Do you hold any of the following other teaching certifications in addition to CTE? (Choose all that apply.)
Elementary (014, 015, 025 or 16000)
Middle Grades Language Arts (78180)
Middle Grades Mathematics (78200)
Middle Grades Science (78300)
Middle Grades Social Studies (78400)
Secondary English (100)
Secondary Mathematics (200)

Secondary Science (300, 302, 310, 320, or 330)

Secondary Social Studies (400, 405, 410, 420, 431, 432, or 433)

Secondary Foreign Language (510, 520, 530, 540, 550, 560, 580, 590)

Exceptional Children (88001, 88002, 88004, 88081, 88083, 88084, 88085, 88086, 88087, 88088, 88089, 88091, 88092,

88100, 88200, 88300, or 88400)

K-12 Physical Education (090)

K-12 Safety and Driver Education (096)

K-12 Health Education (097, 098)

K-12 Theater Arts (108)

K-12 Speech Communication (109)

K-12 English as a Second Language (110)

K-12 Reading (190)

K-12 Music (800)

K-12 Dance (805)

K-12 Art (810)

Junior ROTC (999)

Other

No other certifications besides CTE

Have you taught in any of the areas in which you are certified besides CTE?

Yes

No

Indicate the number of years you taught in areas other than CTE:

Less than 1 year

1 year

1 1/2 years

2 years

2 1/2 years

3 years

3 1/2 years

4 years

4 1/2 years

Which statement applies to you?

I graduated from a four-year college or university with a teaching degree in a CTE program area before beginning to teach CTE classes. (Traditionally Certified)

When I began teaching CTE classes, I was required to take additional coursework to receive my CTE teaching license. I had related work experience that was applied to my teaching pay scale. (Alternatively Certified - Alternate Work

Experience)

When I began teaching CTE classes, I was required to take additional coursework to receive my CTE teaching license. I did not have related work experience to apply to my teaching pay scale. (Alternatively Certified - Lateral Entry)

Other: Please describe.

In which district do you currently teach?

Professional Development Experiences

Instructions: The next sections ask for information about your experiences with professional development since you began work as a CTE teacher in North Carolina. The questions are based on common standards and expectations for teachers in North Carolina.

Teacher leadership in the classroom

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Take responsibility for all students' learning

Communicate my vision to students

Use data to organize, plan, and set goals.

Use a variety of assessment data throughout the year to evaluate progress.

Establish a safe and orderly environment.

Empower students.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Take responsibility for all students' learning.

Communicate my vision to my students.

Use data to organize, plan, and set goals

Use a variety of assessment data throughout the year to evaluate progress.

Establish a safe and orderly environment.

Empower students.

Standard 1.2
Teacher leadership in the school.
Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.
Received professional development
Work collaboratively with all school personnel to create a professional learning community.
Analyze data.
Develop goals and strategies through the school improvement plan.
Assist in determining school budget and professional development.
Participate in the hiring process.
Collaborate with colleagues to mentor and support teachers to improve effectiveness.
My level of need for this skill at the time I received it was:
Not needed Needed very little Needed somewhat Needed very much
Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)
District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)
Self-funded (not reimbursed by district)
Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)
Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)
College/University Course
Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)
Mentor (a more experienced teacher who shares resources, advice, materials, etc.
Online (distance learning)
Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)
Workshop - one day
Workshop - more than one day
Other: Please describe
Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:
No desire Some desire Strong desire Very strong desire
Work collaboratively with all school personnel to create a professional learning community.
Analyze data.
Develop goals and strategies through the school improvement plan.
Assist in determining school budget and professional development.
Participate in hiring process.
Collaborate with colleagues to mentor and support teachers to improve effectiveness.

Standard 1.3
Teacher leadership in the profession.
Please select from the list below all of the skills for which you were encouraged to develop since beginning as a NC CTE teacher.
Received professional development
Strive to improve the profession.
Contribute to the establishment of positive working conditions.
Participate in decision-making structures.
Grow professionally.
My level of need for this skill at the time I received it was:
Not needed Needed very little Needed somewhat Needed very much
Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)
District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)
Self-funded (not reimbursed by district)
Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)
Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)
College/University Course
Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)
Mentor (a more experienced teacher who shares resources, advice, materials, etc.)
Online (distance learning)
Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)
Workshop - one day
Workshop - more than one day
Other: Please describe
Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:
No desire Some desire Strong desire Very strong desire
Strive to improve the profession.
Contribute to the establishment of positive working conditions.
Participate in decision making structures.
Grow professionally.
Standard 1.4
Teacher advocacy for school and students.
Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.
Received professional development
Advocate for positive change in policies and practices affecting student learning.

Participate in the implementation of initiatives to improve education.
My level of need for this skill at the time I received it was:
Not needed Needed very little Needed somewhat Needed very much
Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)
District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)
Self-funded (not reimbursed by district)
Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)
Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)
College/University Course
Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)
Mentor (a more experienced teacher who shares resources, advice, materials, etc.)
Online (distance learning)
Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)
Workshop - one day
Workshop - more than one day
Other: Please describe
Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:
No desire Some desire Strong desire Very strong desire
Advocate for positive change in policies and practices affecting student learning.
Participate in the implementation of initiatives to improve education.
Standard 1.5
Teacher ethics.
Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.
Received professional development
Uphold the Code of Ethics and Standards for Professional Conduct.
My level of need for this skill at the time I received it was:
Not needed Needed very little Needed somewhat Needed very much
Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)
District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)
Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)
Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)
College/University Course
Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)
Mentor (a more experienced teacher who shares resources, advice, materials, etc.)
Online (distance learning)
Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)
Workshop - one day
Workshop - more than one day
Other: Please describe
Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:
No desire Some desire Strong desire Very strong desire
Uphold the Code of Ethics and Standards for Professional Conduct.
Standard 2.1
Professional Development Experiences
Instructions: The next sections ask for information about your experiences with professional development since you began work as a CTE teacher in North Carolina. The questions are based on common standards and expectations for teachers in North Carolina.
Teacher-created environment.
Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.
Received professional development
Create an environment that is inviting, respectful, supportive, inclusive, and flexible.
My level of need for this skill at the time I received it was:
Not needed Needed very little Needed somewhat Needed very much
Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)
District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)
Self-funded (not reimbursed by district)
Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)
Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)
College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Create an environment that is inviting, respectful, supportive, inclusive, and flexible.

Standard 2.2

Teacher embraces diversity.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Demonstrate knowledge of diverse cultures.

Select materials and develop lessons that counteract stereotypes and incorporate contributions.

Recognize the influences of diversity on a child's development, personality, and performance.

Consider and incorporate different points of view.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies

and student achievement)
Workshop - one day
Workshop - more than one day
Other: Please describe
Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:
No desire Some desire Strong desire Very strong desire
Demonstrate knowledge of diverse cultures.
Select materials and develop lessons that counteract stereotypes and incorporate contributions.
Recognize the influences of diversity on a child's development, personality, and performance.
Consider and incorporate different points of view.

Standard 2.3

Teacher treatment of students.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.
Received professional development
Maintain high expectations for all students.
Appreciate differences and value contributions by building positive, appropriate relationships.
My level of need for this skill at the time I received it was:
Not needed Needed very little Needed somewhat Needed very much
Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)
District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)
Self-funded (not reimbursed by district)
Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)
Book Study
College/University Course
Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)
Mentor (a more experienced teacher who shares resources, advice, materials, etc.)
Online (distance learning)
Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)
Workshop - one day
Workshop - more than one day
Other: Please describe
Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Maintain high expectations for all students.

Appreciate differences and value contributions by building positive, appropriate relationships.

Standard 2.4

Teacher adaptation for students with special needs.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Collaborate with specialists.

Engage students.

Utilize inclusion and other models of effective practice.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Collaborate with specialists.

Engage students.

Utilize inclusion and other models of effective practice.

Standard 2.5

Teacher collaboration with families and community.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Improve communication and collaboration between the school and the home and community.

Promote trust and understanding and build partnerships with school community.

Seek solutions to overcome obstacles that prevent family and community involvement.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Improve communication and collaboration between the school and the home and community.

Promote trust and understanding and build partnerships with school and community.

Seek solutions to overcome obstacles that prevent family and community involvement.

Standard 3.1

Teacher alignment of instruction.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Teach the North Carolina Standard Course of Study.

Develop and apply strategies to make the curriculum rigorous and relevant.

Develop literacy skills appropriate to specialty area.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Teach the North Carolina Standard Course of Study.

Develop and apply strategies to make the curriculum rigorous and relevant.

Develop literacy skills appropriate to specialty area.

Standard 3.2

Teacher knowledge of content.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Know subject beyond the content I teach.

Direct students' curiosity into an *interest* in learning.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)
College/University Course
Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)
Mentor (a more experienced teacher who shares resources, advice, materials, etc.)
Online (distance learning)
Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)
Workshop - one day
Workshop - more than one day
Other: Please describe
Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:
No desire Some desire Strong desire Very strong desire
Know subject beyond the content I teach.
Direct students' curiosity into an interest in learning.
Standard 3.3
Teacher recognition of linkages to other disciplines.
Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.
Received professional development
Know links between grade/subject and the North Carolina Standard Course of Study.
Relate content to other disciplines.
Promote global awareness and its relevance.
My level of need for this skill at the time I received it was:
Not needed Needed very little Needed somewhat Needed very much
Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)
District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)
Self-funded (not reimbursed by district)
Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)
Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)
College/University Course
Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)
Mentor (a more experienced teacher who shares resources, advice, materials, etc.)
Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Know links between grade/subject and the North Carolina Standard Course of Study.

Relate content to other disciplines.

Promote global awareness and its relevance.

Standard 3.4

Teacher makes instruction relevant.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Incorporate life skills which include leadership, ethics, accountability, adaptability, personal productivity, personal responsibility, people skills, self direction, and social responsibility.

Demonstrate the relationship between the core content and 21st Century content that includes global awareness; financial, economic, business and entrepreneurial literacy; civic literacy; and health and wellness awareness.

My level of need for this skill at the time I received it was:

Not needed at all

Somewhat unneeded Somewhat needed Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Incorporate life skills which include leadership, ethics, accountability, adaptability, personal productivity, personal responsibility, people skills, self-direction, and social responsibility.

Demonstrate the relationship between the core content and 21st Century content that includes global awareness; financial, economic, business and entrepreneurial literacy; civic literacy; and health and wellness awareness.

Standard 4.1

Professional Development Experiences

Instructions: The next sections ask for information about your experiences with professional development since you began work as a CTE teacher in North Carolina. The questions are based on common standards and expectations for teachers in North Carolina.

Teacher understanding of how students think and learn.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Know how students think and learn.

Understand the influences on student learning and differentiate instruction.

Keep abreast of evolving research.

Adapt resources to address the strengths and weaknesses of students.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Know how students think and learn.

Understand the influences on student learning and differentiate instruction.

Keep abreast of evolving research.

Adapt resources to address the strengths and weaknesses or students.

Standard 4.2

Teacher instructional planning.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Use data for short and long range planning.

Engage students in the learning process.

Monitor and modify plans to enhance student learning.

Respond to cultural diversity and learning needs of students.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Use data for short and long range planning.

Engage students in the learning process.

Monitor and modify plans to enhance student learning.

Respond to cultural diversity and learning needs of students.

Standard 4.3

Teacher use of instructional methods.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Choose methods and materials as they strive to eliminate achievement gaps.

Employ a wide range of techniques using information and communication technology, learning styles, and differentiated instruction.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Choose methods and materials as they strive to eliminate achievement gaps.

Employ a wide range of techniques using information and communication technology, learning styles, and differentiated instruction.

Standard 4.4

Teacher use of technology with students.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Appropriately use technology.

Help students use technology to learn content, think critically, solve problems, discern reliability, use information, communicate, innovate, and collaborate.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Appropriately use technology.

Help students use technology to learn content, think critically, solve problems, discern reliability, use information, communicate, innovate, and collaborate.

Standard 4.5

Teach critical thinking and problem-solving skills.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Teach students to ask questions, think creatively, develop and test innovative ideas, synthesize knowledge and draw conclusions.

Help students exercise and communicate sound reasoning; understand connections; make complex choices; and frame, analyze, and solve problems.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies
and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Teach students to ask questions, think creatively, develop and test innovative ideas, synthesize knowledge and draw conclusions.

Help students exercise and communicate sound reasoning; understand connections; make complex choices; and frame, analyze, and solve problems.

Standard 4.6

Teacher facilitation of teamwork and leadership.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Teach the importance of cooperation and collaboration.

Organize learning teams in order to help students define roles, strengthen social ties, improve communication and collaborative skills, interact with people from different cultures and backgrounds, and develop leadership qualities.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Teach the importance of cooperation and collaboration.

Organize learning teams in order to help students define roles, strengthen social ties, improve communication and collaborative skills, interact with people from different cultures and backgrounds, and develop leadership qualities.

Standard 4.7

Teacher communication.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Communicate clearly with students in a variety of ways.

Assist students in articulating thoughts and ideas clearly and effectively.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Communicate clearly with students in a variety of ways.

Assist students in articulating thoughts and ideas clearly and effectively.

Standard 4.8

Teacher use of assessment.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Use multiple indicators, both formative (interim) and summative (end of course), to evaluate student progress.

Provide opportunities for the students to self-assess.

Use assessment systems to inform instruction and demonstrate evidence of students' 21st Century knowledge, skills, performance, and dispositions.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Use multiple indicators, both formative (interim)and summative (end of course), to evaluate student progress.

Provide opportunities for the students to self-assess.

Use assessment systems to inform instruction and demonstrate evidence of students' 21st Century knowledge, skills, performance, and dispositions.

Standard 5.1 and 5.3

Professional Development Experiences

Instructions: The next sections ask for information about your experiences with professional development since you began work as a CTE teacher in North Carolina. The questions are based on common standards and expectations for teachers in North Carolina.

Teacher reflection.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Think systematically and critically about learning in their classroom: why learning happens and what can be done to improve student achievement.

Collect and analyze student performance data to improve effectiveness.

Actively investigate and consider new ideas that improve teaching and learning.

Adapt practice based on data.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Think systematically and critically about learning in their classroom: why learning happens and what can be done to improve student achievement.

Collect and analyze student performance data to improve effectiveness.

Actively investigate and consider new ideas that improve teaching and learning.

Adapt practice based on data.

Other Skills (Technology)

Teacher use of technology.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Use a word processing program. (Ex. Microsoft Word)

Use a spreadsheet program. (Ex. Microsoft Excel)

Use a database program. (Ex. Microsoft Access)

Use email to communicate with people.

Use the Internet to locate resources and gather information.

Use multimedia combining text, video, graphics, and sound to convey ideas and information.

Set up a grading system.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Use a word processing program. (Ex. Microsoft Word)

Use a spreadsheet program. (Ex. Microsoft Excel)

Use a database program. (Ex. Microsoft Access)

Use email to communicate with people.

Use the Internet to locate resources and gather information.

Use multimedia combining text, video, graphics, and sound to convey ideas and information.

Set up a grading system.

Other Skills (Legal/Social Issues)

Teacher understanding of legal and social issues.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Locate and use employment materials.

Understand major legislation which impacts CTE.

Understand teacher liability and laws relating to teaching.

Understand laws related to special education.

Understand social issues such as substance abuse, teen pregnancy, child abuse, and homelessness.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day

Workshop - more than one day

Other: Please describe

Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:

No desire Some desire Strong desire Very strong desire

Locate and use employment materials.

Understand major legislation which impacts CTE.

Understand teacher liability and laws relating to teaching.

Understand laws related to special education.

Understand social issues such as substance abuse, teen pregnancy, child abuse, and homelessness.

Other Skills (CTE Issues)

Teacher knowledge of CTE issues.

Please select from the list below all of the skills for which you were provided professional development since beginning as a NC CTE teacher.

Received professional development

Understand the articulation process between secondary and post secondary schools.

Establish or maintain a CTE advisory committee.

Establish or maintain a CTE student organization.

Understand the roles and functions of CTE professional organizations.

Organize the physical setting of the classroom.

Control and maintain equipment, tools, and supplies in a class/laboratory.

My level of need for this skill at the time I received it was:

Not needed Needed very little Needed somewhat Needed very much

Please select whether the professional development for these skills was district-sponsored, provided through licensure coursework or self-funded. (Choose as many as apply.)

District-sponsored (This refers to support provided by district personnel, through district funds. These activities could be offered at a school, district office, or another site inside or outside the district in which travel was funded by the district.)

Self-funded (not reimbursed by district)

Please select the professional development method(s) of delivery for these skills: (Choose all that apply.)

Book Study (a series of meetings to discuss a book that members of the group are reading; this could be face-to-face or online)

College/University Course

Job-embedded (in-class, planning periods, common planning periods and restructured days; could be delivered by an administrator, curriculum coordinator, instructional coach, etc.)

Mentor (a more experienced teacher who shares resources, advice, materials, etc.)

Online (distance learning)

Professional learning community (a group of teachers who collaborate regularly with regard to instructional strategies and student achievement)

Workshop - one day
Workshop - more than one day
Other: Please describe
Please indicate your level of desire for professional development on these skills since beginning as a CTE teacher:
No desire Some desire Strong desire Very strong desire
Understand the articulation process between secondary and post secondary schools.
Establish or maintain a CTE advisory committee.
Establish or maintain a CTE student organization.
Understand the roles and functions of CTE professional organizations.
Organize the physical setting of the classroom.
Control and maintain equipment, tools, and supplies in a class/laboratory.

Additional Questions
Is there any other type of professional development you wish you had received in your first five years as a CTE teacher that was not listed on this survey?
Yes (If yes, please describe below.)
No
Is there anything else you would like to share about your professional development experiences?
Summary and Drawing for Prize
Yes No
Would you like to receive a summary of results from this study?
Would you like to be entered in the drawing for a gift certificate?
In order to receive a summary of the results and/or to be entered into the drawing for prizes, please provide a summer email address and phone number as backup. Your email address and phone number will not be used to identify your personal responses and will not be disclosed to anyone. I will only use your phone number if I am unable to reach you via email.

Appendix D

Email to Survey Expert Panel

To: Survey expert panel
Date: March 16, 2010
Subject: Survey Review

I am emailing to ask you to review a survey I have prepared to use for my dissertation. I plan to ask all CTE teachers in NC with up to five years experience to complete the survey. I am seeking to determine if there are differences in the professional development content provided to alternatively certified and traditionally certified beginning teachers during their first five years. Additionally, my study seeks to determine if there are differences in the professional development needs of these teachers.

I would like you to review the survey and use the attached document titled "Survey Feedback Form." Please record your feedback on this form and email back to me at wfedney1@catamount.wcu.edu   Please return by Tuesday, March 23, 2010. Your help in reviewing this survey will help with advancing the professional development content provided to CTE beginning teachers. For the survey website, please click on the link below or copy and paste the survey link into your Internet browser.

Survey Link: http://wcu.qualtrics.com/SE/?SID=SV_b9s7v37SOwJ8jqc&SVID=Prod

Also attached is the recruitment email I plan to use with teachers and a hard copy of the survey.

Thank you,

Wendy Edney
Doctoral Student
Western Carolina University

Expert Panel
Survey Feedback Form

The research questions and purpose of the study appear below:

Research Questions:
The questions this study will address appear below:

1. What professional development content was provided to CTE beginning teachers during their first five years?
   a. Who provided those supports?
   b. What were the methods of delivery?
   c. Are there differences in the content provided to the three groups?
2. Of professional development content received by CTE beginning teachers during their first five years, which were most needed and unneeded?
   Are there differences in needed and unneeded professional development content between the three groups?
3. What professional development content do CTE beginning teachers desire to have received during their first five years?
   Are there differences in desired professional development between the three groups?

Purpose:
This study will specifically examine professional development as it relates to beginning CTE teachers. Teachers come to CTE from three different licensure routes so it is important to understand the professional development needs of teachers from all three routes. The purpose of this study is to determine if there are differences in the professional development content provided to alternatively certified (AC) and traditionally certified (TC) beginning CTE teachers during their first five years. The first five years are important because Darling-Hammond (2001) found that 30% of all beginning teachers leave their positions in the first five years. Additionally, this study seeks to determine if there are differences in the professional development needs of the three types of beginning CTE teachers, TC, AC-lateral entry and AC-alternative work experience, during their first five years.

Instructions: Please describe your responses clearly and refer to specific question numbers as examples.

1. Does the survey measure the concepts as outlined above in the research questions? Please explain.

2. Did any survey items seem to be missing a correct or possible answer? Please explain.

3. Was any terminology in the survey unfamiliar? Please explain.

4. Are any of the survey questions difficult to understand? Please explain.

5. Could any of the instructions to respondents be stated more clearly? If so, please explain how.

6. Did you experience difficulty navigating the online survey? Please explain.

7. Should the order of the questions be changed? If so, please explain how.

8. Given the research questions for this study, are there survey questions that should have been asked but were not? Please explain.

9. Please explain any further advice regarding this survey:

Thank you for taking time to help me with the design of this survey!

Wendy Edney
wfedney1@catamount.wcu.edu

Appendix E

Email to Survey Pilot Group

To: Survey pilot study group
Date: March 28, 2010
Subject: Survey Review

Please help me with your advice and opinion regarding an upcoming study I plan to conduct with CTE teachers in NC who have up to five years of teaching experience. I am seeking to determine if there are differences in the professional development content provided to alternatively certified and traditionally certified beginning teachers during their first five years. Additionally, I am seeking to determine if there are differences in the professional development needs of these teachers.

I am emailing to ask for your participation in a pilot group, which includes teachers with more than five years teaching experience, who will test the survey instrument I have developed. Your responses to this survey are very important and will help with advancing the professional development content provided to CTE beginning teachers. You will be asked about the professional development content that was provided to you **during your first five years** of teaching, what you received but did not need and what you needed but did not receive. I would like for you to complete the survey and then provide your advice using the attached document named "Feedback Form for Pilot Study Group." Please email the feedback form to me at the address that appears below. Please complete the survey and feedback form this week **by Friday, April 2nd**. I also ask that you retake the survey in two weeks so that I can determine the survey's reliability. **I will email you a reminder in two weeks.**

Please click on the link below to go to the survey website (or copy and paste the survey link into your Internet browser).

Survey Link: http://wcu.qualtrics.com/SE/?SID=SV_b9s7v37SOwJ8jqc&SVID=Prod

Your participation in this survey is entirely voluntary and all of your responses will be kept confidential. No personally identifiable information will be associated with your responses in any reports of this data.   Should you have any further questions or comments, please feel free to contact me at wfedney1@catamount.wcu.edu or 828-606-5785

I appreciate your time and consideration in completing this survey and feedback form. It is only through the help of teachers like you that we can provide the most appropriate professional development support to beginning CTE teachers.

Wendy Edney
Doctoral Student
Western Carolina University

Feedback Form for Pilot Study Group

1. Were the survey instructions clear?

2. Did you experience any problems with the online access? Please describe.

3. Were any of the questions difficult to understand? Please describe.

4. Were unfamiliar terms used in the survey? Please describe.

5. Did you find any technical problems in the survey? Please describe.

6. Are there questions that should have been asked but were not? Please describe.

7. If you did not respond to a survey question, please explain why.

8. Did you need an additional answer option for any of the questions? Please describe.

9. How long did it take you to complete the survey?

10. Please describe any further advice regarding this survey:

Appendix F

Emails to CTE Administrators

To: CTE Administrators
Date: May 2, 2010
Subject: CTE Teacher Survey

(Please forward the email below to your CTE teachers. Thank you!)

I am requesting your participation in a survey that I am conducting with CTE teachers who have up to five years teaching experience and who began full time in June 2005 or later. The purpose of the survey is to determine if there are differences in the professional development content provided to alternatively certified and traditionally certified beginning CTE teachers during their first five years. Additionally, this study seeks to determine if there are differences in the professional development needs of these teachers.

Your responses to this survey are very important and will help advance the professional development content provided to CTE beginning teachers. You will be asked about the professional development content that was provided to you, what you received but did not need and what you needed but did not receive. The survey should take you no more than 10 minutes to complete. I would appreciate your response within one week. As an incentive for those who complete the survey, a **random drawing for eight $25 gift cards** will take place.

You should be aware that you are free to decide not to participate or to withdraw at any time. Completion of the survey is your consent for your responses to be compiled with others. Do not hesitate to ask questions about the study before participating or during the study. I will be happy to share the findings with you after the research is completed. Your name will not be associated with the research findings in any way. There are no known risks and/or discomforts associated with this study. The expected benefit associated with your participation is the summary of the study I will provide.

Please click on the link below to go to the survey website or copy and paste the survey link into your Internet browser.

Survey Link: http://wcu.qualtrics.com/SE/?SID=SV_b9s7v37SOwJ8jqc&SVID=

Your participation in this survey is entirely voluntary and all of your responses will be kept confidential. No personally identifiable information will be associated with your responses in any reports of this data.   If you have any questions about the study, please feel free to contact me at wfedney1@catamount.wcu.edu or 828-606-5785, or you may contact the Western Carolina faculty supervisor, Dr. Meagan Karvonen at 828-227-3323. If you have questions or concerns about your treatment as a participant in this study,

please contact the chair of Western Carolina University's Institutional Review Board at 828-227-7212.

Many thanks,

Wendy Edney
Doctoral Student
Western Carolina University

To: CTE Administrators
Date: May 10, 2010
Subject: CTE Teacher Survey

(Please forward to your CTE teachers with up to 5 years experience.)

To: CTE teachers who began teaching during or after the 2005-06 school year

I recently sent you an email asking you to respond to a brief survey about your professional development experiences as a CTE beginning teacher. Your responses to this survey are important and will help with advancing the professional development content provided to CTE beginning teachers.

This survey is short and should only take you ten minutes to complete. If you have already completed the survey, I appreciate your participation. If you have not yet responded to the survey, I encourage you to take a few minutes and complete the survey. I would appreciate your response by May 18, 2010. **As an incentive for those who complete the survey, a random drawing for eight $25 gift cards will take place.**

I will be happy to share the findings with you after the research is completed. There are no known risks and/or discomforts associated with this study. The expected benefit associated with your participation is the summary of the study I will provide.

Your participation in this survey is voluntary and all of your responses will be kept confidential. Your name will not be associated with the research findings in any way. You should be aware that you are free to decide not to participate or to withdraw at any time. No personally identifiable information will be associated with your responses in any reports of this data.

Do not hesitate to ask questions about the study before participating or during the study. If you have any questions about the study, please feel free to contact me at wfedney1@catamount.wcu.edu or 828-606-5785, or you may contact the Western Carolina faculty supervisor, Dr. Meagan Karvonen at 828-227-3323. If you have questions or concerns about your treatment as a participant in this study, please contact the chair of Western Carolina University's Institutional Review Board at 828-227-7212.

Please click on the link below to go to the survey website (or copy and paste the survey link into your Internet browser) and then enter the personal access code to begin the survey.

Survey Link: http://wcu.qualtrics.com/SE/?SID=SV_b9s7v37SOwJ8jqc&SVID=

Your response is important. Getting direct feedback from teachers is crucial in improving the quality of professional development provided to CTE beginning teachers. Thank you for your help by completing the survey.

Sincerely,

Wendy Edney
Doctoral Student
Western Carolina University

To: CTE Administrators
Date: May 18, 2010
Subject: CTE Teacher Survey

(CTE Administrators: Please forward the message below to your teachers with up to five years of experience. Thank you for all of your help with this study. I'm thrilled to share with you that the current survey response rate is 77%. Your support made that possible. I look forward to sharing the results of the study with you.)

Spring is a busy time for teachers, and I understand how valuable your time is. I am hoping you may be able to give about ten minutes of your time in the next week to help me collect important information regarding professional development provided to CTE beginning teachers.

If you have already completed the survey, I really appreciate your participation. If you have not yet responded, I would like to urge you to complete the survey. I plan to close the survey Wednesday, May 26th, so I wanted to email everyone who has not responded to make sure you had a chance to participate. **As an incentive for those who complete the survey, a random drawing for eight $25 gift cards will take place.**

You should be aware that you are free to decide not to participate or to withdraw at any time. Do not hesitate to ask questions about the study before participating or during the study. If you have any questions about the study, please feel free to contact me at wfedney1@catamount.wcu.edu or 828-606-5785, or you may contact the Western Carolina faculty supervisor, Dr. Meagan Karvonen at 828-227-3323. If you have questions or concerns about your treatment as a participant in this study, please contact the chair of Western Carolina University's Institutional Review Board at 828-227-7212.

Please click on the link below to go to the survey website or copy and paste the survey link into your Internet browser.

Survey Link: http://wcu.qualtrics.com/SE/?SID=SV_b9s7v37SOwJ8jqc&SVID=

I would be happy to share the findings with you after the research is completed. Your name will not be associated with the research findings in any way. There are no known risks and/or discomforts associated with this study. The expected benefit associated with your participation is the summary of the study I will provide.

Thank you, in advance, for completing the survey. Your responses are important! Teachers are the best source of information to help shape the future of professional development.

Sincerely,

Wendy Edney
Doctoral Student

Western Carolina University

Note: The three email scripts above were adapted from models presented on pages 277 – 279 of Dillman, Smyth and Christian (2009) as well as page 152 of Cresswell (2005). Some sentences were modified and some were used verbatim as appear in textbook.