ABSTRACT

WELFARE, RHONDA MARIE. Professional Development Experiences of Alternatively Certified Career and Technical Education Teachers in North Carolina. (Under the direction of Dr. Diane Chapman).

In an effort to increase the quantity and quality of available teachers, states have begun to offer alternate methods of teacher certification. This means that in addition to traditional teacher training, which involves graduation from an accredited teacher-education institution, states provide alternate routes to enable teachers to transition to the classroom in high-need fields. Exactly how alternate certification is defined and what standards are required vary from state-to-state. Providing professional development to turn these individuals, many of them successful professionals, into successful classroom teachers is a massive task.

This qualitative analysis investigated the role of professional development in helping alternatively certified teachers transition from their careers in business and industry to new positions as Career and Technical Education teachers in fields related to information technology and computers. The participants reported the greatest benefit of the professional development activities in which they took part was in the development of relationships and the potential for networking provided by the activity. The downside was the cost, both financial and in terms of time away from their classrooms. They also reported the training is sometimes duplicative and of inconsistent quality depending on the resources available and specific personnel involved.

Although alternatively certified teachers often bring skills they acquired in their previous jobs to their second careers as educators, the teachers reported the one-size-fits-all required training did not address gaps in their knowledge but instead required the same of

everyone. Because each alternatively certified teacher comes to the classroom via a different path, each brings different specific expertise to the job. The teacher-participants talked about the skills they learned in their previous careers and complained that these were not taken into account.

In addition, teachers with experience in adult learning as trainers also expressed concern about the design of specific professional development opportunities, which often seemed to be based on concepts of pedagogy, principles that guide the learning of children, as contrasted with andragogy, principles that guide the learning of adults. Although there is value in modeling pedagogical skills the teacher should use in the classroom, as adult learners the teacher-participants said they were sometimes frustrated by these experiences.

They also said an opportunity to spend time in a classroom as a sort of paid intern prior to actually stepping into a teaching role would be helpful. Those who had experience as long-term substitutes or teacher assistants said the informal learning from that experience helped prepare them for the transition to teaching, and those who did not have that opportunity seemed to recognize an unmet need. However, none of them could suggest a way to operationalize this suggestion that would make it attractive to school districts, which are short on funding and in many cases desperately in need of a teacher starting yesterday.

The teachers discussed the intrinsic rewards in teaching at length. Although for the most part they said they enjoyed their previous work, they said it did not compare with having the opportunity to help young people prepare for their successful futures. However, almost all of them mentioned low salaries for beginning teachers and lack of respect for Career and Technical Education teachers and teachers with alternate-route certification as elements that negatively affect teacher retention and quality.

This study suggests a number of topics for further research both within education and within HRD, including taking a closer look at how subject matter experts transition to training and development, a topic which is informed by the current study.

The study also recommends further study of how alternatively certified teachers are trained, including developing a mechanism to identify required teacher competencies and assess teachers' proficiency on each competency, then allowing teachers to choose from a buffet of professional development options that would meet their needs for learning styles, finances, time considerations and other factors; improving the use of alternatively certified teachers' prior experiences into training activities; and better using best practices from HRD in the design and implementation of teacher professional development.

Professional Development Experiences of Alternatively Certified Career and Technical Education Teachers in North Carolina

by
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DEDICATION

This dissertation is dedicated to my family:

To my son, Zachary Wooldridge, who during my years in graduate school grew from a child to an adult of whom I am very proud. Although Zack is grown now, he is never far from my thoughts. I wish for him health and happiness, and hope that, unlike his mother, it will not take 56 years for him to figure out what he wants to be when he grows up.

To my parents, Fred and Nancy Welfare, who encouraged me to reach for the stars and who always believed I would get there, sometimes despite evidence to the contrary. I hope my having two degrees from his alma mater will be thanks enough for my Dad.

To my brothers, Norris, Eric and Alan, and my sister, Sandy, who as children were both my most grave enemies and my strongest advocates and as adults have grown to be my closest friends. Sorry about being so bossy, and especially sorry about those letters I returned with grammar corrections.

And, finally, to the memory of my niece, Julia Renee Merritt, who during her brief time on earth taught all of us that your legacy is not in the accomplishments you can measure but in the lives you touch. We love you and miss you every day.

BIOGRAPHY

Rhonda Welfare was born at what was then Rex Hospital and is now the Employment Security Commission in Raleigh, NC, a few miles from where she currently lives. She grew up in Tennessee and Virginia, the oldest of five children, and was active in church, Girl Scouts, and high school activities including the school newspaper, theater, and band. Among her earliest memories is "playing school," usually with two or three of her younger siblings in the role of student with herself as the teacher, calling roll, making assignments, and writing in red pen all over their homework. Indeed, it appears she was destined to be a teacher, but somehow she ended up studying journalism at Northwestern University, using her teaching skills as a counselor at Girl Scout Camp, leading a Brownie troop, and working with children's choirs.

She worked as a newspaper reporter in Alabama, a technical writer and editor in Illinois and North Carolina, and a public relations consultant in North Carolina before joining the North Carolina Department of Public Instruction in 1987 as a public information specialist for what was then Vocational Education. During her more than 25 years at DPI, she also has worked writing documentation for a statewide instructional management system, training teachers and administrators in use of education-related software, and working with teacher teams developing curriculum for secondary Career and Technical Education (CTE). In 2006, she became CTE Senior Analyst for State and Federal Accountability, which involves writing a state plan for the expenditure of $32 million in federal CTE funds annually and reporting on resulting outcomes. In recent years she has worked with a team creating a longitudinal data system in North Carolina that will eventually link students from pre-

Kindergarten through employment and facilitate databased decision-making about what works and does not work in education.

Rhonda did graduate work in journalism at the University of North Carolina-Chapel Hill but eventually decided an education degree would be more beneficial based on her current employment. She earned a master's degree in Education from North Carolina State University in 2005 and immediately began work on her doctorate, which she is scheduled to complete in December 2013.

Rhonda has an adult son, Zack, who lives in Pittsburgh, PA. She lives in Raleigh with an elderly beagle named Bailey. She is an avid reader, particularly of mystery novels, a photographer, and enjoys spending time on the computer, chatting online, playing word games, and writing letters, blogs, emails, and random outlines of the novels she will get around to writing someday. She is a volunteer interpreter for the deaf, teaches a Sunday School class for senior adult women, and sings in her church choir. In recent years she has become a frequent volunteer supernumerary for Triangle Opera Studios, a non-profit organization in Durham, NC, that provides opportunities for aspiring professional opera singers to perform in semi-staged productions of operas.

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CHAPTER ONE: INTRODUCTION

Teacher-education institutions produce far fewer graduates each year than are needed in the classroom, particularly in high demand areas such as science and mathematics, Career and Technical Education (CTE), and Special Education (Ingersoll & Perda, 2010). The number of teachers who will be needed in education in 2018 is projected to increase to nearly 4 million, a 13 percent increase over the 3.5 million in place in 2008, the most recent year for which data are available, and the number of new teachers annually in public schools will increase from 284,000 in 2006 to as many as 450,000 in 2018 (Ingersoll & Perda, 2010; U.S. Department of Education, Institute of Education Sciences, 2009). The Bureau of Labor Statistics (BLS) projects increasing demand for teachers in the U.S., particularly those in mathematics, science, bilingual education, and foreign languages (U.S. Department of Labor, 2009a). BLS figures also show a high need for CTE teachers at both the middle and secondary levels (U.S. Department of Labor, 2009b). The BLS projects teacher demand will vary considerably by region, with the greatest job growth in fast-growing states in the South and West.

The exact impact of the recent economic recession on teacher supply and demand is unknown. While states report tens of thousands of teachers and other educators are among employees laid off since 2009 (Anderson, 2010; Siegel, 2011), education is still widely reported to be "recession proof" (BusinessKnowledgeSource.com, 2010; Roos, n.d.; Kaufman, 2011). However, other sources reported severe state-level budget cuts to education and other services will "slow the nation's economic recovery" (Williams, Leachman & Johnson, 2011). By mid-2013, the US was beginning to show signs of

economic recovery from the recession, which officially ended in 2009, but progress was slow (Wiseman, 2013). The recovery is complicated by 'sequestration,' a set of automatic federal budget cuts that went into effect on March 1, 2013. The exact effect of sequestration is unknown, but could mean cuts in teacher jobs and services that promote teacher training and retention (Strauss, 2013). However, for the purposes of this discussion, the long-term impact of the economic slowdown on teacher supply and demand is considered to be minimal, particularly in high-demand fields such as CTE, the main subject of this dissertation (Carrns, 2010).

Statement of the Problem

Failure to fill teacher vacancies with qualified teachers puts the education of children at risk (Futernick, 2004). Poor quality teachers have been blamed for everything from an increase in the dropout rate (Koedel, 2008), to declining student performance (Aslam & Kingdon, 2011; Kyriakides & Creemers, 2008), to the growing achievement gap on standardized achievement tests between U.S. students and their counterparts in other countries (Geary, 1996; Wagner, 2008), to increasing rates for basic skill remediation required by students entering two- or four-year colleges (Howell, 2011; U.S. Department of Education, Institute of Education Sciences, 2011). Recent research underscores the importance of quality teachers to student success (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2006a; Rivkin, Hanushek, & Kain, 2005; Taylor, Roehrig, Hensler, Connor, & Schatschneider, 2010), and the federal No Child Left Behind Act (2001), as the Elementary and Secondary Education Act is commonly known, focuses on improvements in teacher quality as an essential element in the improvement of student achievement (McGuinn, 2006).

In an effort to increase the quantity and quality of available teachers, states have begun to offer alternate methods of teacher certification (National Research Center for Career and Technical Education, 2011; U.S. Department of Labor, 2009a). This means that in addition to traditional teacher training, which involves graduation from an accredited teacher-education institution, states provide alternate routes to enable teachers to transition to the classroom in high-need fields. Exactly how alternate certification is defined and what standards are required vary from state-to-state. Historically, alternate-route teachers make up only a small percentage of those in the classroom (Constantine, Player, Silva, Hallgren, Grider, & Deke, 2009), but the number appears to be increasing, particularly in some geographical areas, for certain subjects, and in low-performing schools. Some reports indicate a third of new hires or more enter the classroom with alternate route licenses (Feistritzer, 2007). Although the exact number of alternatively certified teachers is difficult to determine, analysis of 2007-2008 National Center for Education Statistics Schools and Staffing Survey data, the most recent year for which results are available, finds more than 50,000 teachers entered the classroom that year with bachelor's degrees other than in education (Feistritzer, 2011). This includes recent college graduates as well as individuals with professional experience acquired since their college graduation years earlier, but does not include teachers without a degree, which is permitted in some CTE fields. Providing professional development to turn these individuals, many of them successful professionals, into successful classroom teachers is a massive task.

Much of the emphasis on research in alternate-route certification has involved the fields of mathematics and science, where school officials are desperately seeking new ways

to staff classrooms in these high need areas (Boyd et al., 2006b). In a review of teacher preparation literature, Wilson, Floden, and Ferrini-Mundy (2001) found only 14 articles relating to alternate-route certification in the United States published during the 1980s and 1990s that met their criteria for what they called "disciplined inquiry, presentations of research that describe the methods of investigation and analysis, as well as the findings, well enough that others can assess its validity" (p. 3). More than three-quarters of the articles reviewed during the preparation of their literature review, which comprised other topics in teacher preparation in addition to alternate-route certification, were discarded because "(1) they were not directly related to the [research] questions; (2) they lacked sufficient rigor; (3) they consisted of arguments based on opinion or principles without empirical evidence; or (4) they were based on a single course in a particular teacher education program" (p. 3).

The articles cited by Wilson et al. (2001) focused on comparison of the quality of traditionally certified teachers with those who had entered the profession through alternate routes, using a range of measures for teacher quality including such things as education level (Goldhaber & Brewer, 2000), teacher attitudes about their skills (Houston, Marshall, & McDavid, 1993; Lutz & Hutton, 1989), and student results on achievement tests (Goldhaber & Brewer, 2000; Miller, McKenna, & McKenna, 1998). The 14 articles studied elementary teachers or, for secondary teachers, focused on the areas of mathematics, English, and science. Most of the studies were quantitative in methodology, often involving analysis of databases collected for another purpose (Shen, 1998) or surveys of teachers to discover their perceptions about their teaching skills and the problems they encountered in the classroom (Miller et al., 1998).

Interest in issues surrounding alternate-route certification seems to be increasing, but the research published since the 2001 literature review primarily appears to use quantitative methodology to focus on elementary teachers or on secondary teachers of mathematics and science (Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2009; Clotfelter, Ladd, & Vigdor, 2007a; Ingersoll & May, 2010). The bulk of the literature examines the issue through the lens of K-12 education, ignoring the reality that adults are not children and neither learn nor behave as children, nor should be expected to do so. Additionally, the literature tends to consider all teachers who enter through alternate routes as a homogenous group in spite of the fact that such routes are wildly diverse and result in teachers with a wide range of academic and professional credentials (Boyd et al., 2006b; Wilson et al., 2001; Zeichner & Schulte, 2001). Also, little attention has been paid to CTE teachers and how they fit into this picture, in spite of the fact that they make up a major portion of alternate-route teachers and are likely to be quite different from teachers who enter the field through traditional routes.

Wilson et al. (2001) suggested the following research activities on the topic of alternative certification:

- Describe the content and components of high-quality alternative certification programs.
- Document and analyze the professional knowledge (both of subject matter and of teaching) that graduates of alternate routes acquire and how they acquire it, and relate that knowledge to teaching practice.
- Compare matched pairs of traditionally prepared and alternatively certified teachers to shed light on the impact of high-quality alternative routes into teaching

versus traditional preparation. Longitudinal designs would be useful in this area.

- Examine the effects of components of alternate routes (mentorship programs; university- or school district-based coursework; admissions standards, including grade point averages, and the like), on teaching practice.
- Strengthen the objectivity of studies of alternatively and traditionally certified teachers. Currently, the biases of the researchers (pro or con alternative routes) are often reflected in their analyses (p. 31).

Little appears to have changed in the intervening years. Much literature exists in the area of new teacher induction, but there is little concrete information tying that induction to specific professional development needs of teachers who come from alternate routes. The available research focuses on teachers' early teaching experiences rather than finding ways to look at long-term results. The literature does not seem to examine how different professional development experiences in their early years of teaching can help teachers overcome differences in preparation and ensure that all students have access to teachers of acceptable quality, assuming of course that "acceptable quality" can somehow be quantified.

Purpose of the Study

The purpose of this narrative study was to explore the role professional development plays in the development of CTE teachers who entered the profession through what are known as alternate routes (ways other than the traditional route of earning an undergraduate degree in education). Alternate routes are available to teachers who have undergraduate degrees in the content area in which they will teach or in some related field as well as those in areas in which no undergraduate degree is required.

Significance of the Study

The current study inhabits the intersection between adult education, specifically training and development, and K-12 instruction, and makes contributions in both these areas. First, the study expands on our understanding of Human Resource Development. Historically, training and development of K-12 teachers has resided outside of HRD, often resulting in training that was clearly ineffective or for which effectiveness could not be established (Sawchuk, 2010). There are no national data about how much money is spent on professional development in education, but estimates range from $6,000 to $8,000 per teacher per year, including the cost of teacher salaries for the time spent in training (Sawchuk, 2010). Even using the conservative end of that range means expenditure of more than $18 billion annually for teacher professional development, with little data to show how it impacts the quality of education. In recent years, researchers have begun to analyze education using accepted economic and business models (for example, see Boyd et al., 2006a). Examining teacher professional development through an HRD lens will enable us to determine ways in which it can become more professional and eventually should result in improvements in student achievement.

Learning more about the role of professional development for alternatively certified teachers also has applications to other fields in which employees come with a range of knowledge, skills and attitudes. For example, employees often come into the field of training and development through a circuitous path that provides extensive content knowledge but few skills in the techniques of instructional design and delivery of coursework (Castner & Jordan, 1989; Sappington, 2003; Swanson & Falkman, 1997; Williams, 2001). These subject

matter experts' "preparation to deliver training is often by trial and error" (Swanson and Falkman, 1997, p. 305) resulting in lack of effectiveness that can be costly to business and industry both in terms of the direct cost of training including employee time as well as in poor development of necessary job skills (Williams, 2001). Discussion of how these trainers can be "brought up to speed" quickly and effectively can add to the literature in Human Resources Development.

Second, this study is significant in light of the increasing number of alternatively certified teachers in K-12 education and the need to ensure that they provide quality instruction for students in their classes (Aslam & Kingdon, 2011; Futernick, 2004; Clotfelter, Ladd, & Vigdor, 2007a). Learning how to better design professional development to assist alternatively certified teachers in their transition to the classroom supports the focus on overall improvement of education (Boyd et al., 2006a; Goldhaber & Brewer, 2000; Koedel, 2008). It provides applications not only for alternatively certified teachers but for all teachers as well and suggests a number of directions for further research on the role of teacher professional development in improving the quality of education available to all students.

Research Questions

The study was guided by four research questions:

1. How do teachers with alternate-route licenses in Career and Technical Education describe their professional development experiences?
2. How does professional development help or hinder alternate-route teachers as they acquire the knowledge, skills, and attitudes they need to be successful and transfer that learning to the classroom?

3. What gaps do alternate-route teachers report between what they knew when they first entered the classroom and what they needed to know?
4. How did professional development succeed – or fail – at filling the gaps between what they knew when they first entered the classroom and what they needed to know?

Methodology

This study explored the experiences of selected CTE teachers to better understand the role professional development played in their effectiveness as teachers. The study is based on the conceptual framework of experiential learning, the idea that experience rather than formal education is the source of much knowledge. Experiential learning relates to these CTE teachers with alternate-route credentials in two ways. First, they bring the knowledge and experience they obtained as working professionals into the classroom, and second, they are working as teachers while they obtain their certification, learning not only by studying education, but through their actual experience as teachers.

In the study, I interviewed 10 teachers who came to education after other careers related to their teaching area and who did not earn bachelor or master's degrees in education, which meets my operational definition of alternate-route entry. The interviews were between 60 and 90 minutes long.

North Carolina has two main alternate certification routes (NC Department of Public Instruction, 2011):

- Lateral entry: Prospective teachers who have a bachelor's degree in a field related to the area in which they will be teaching are provisionally certified and have three years

to convert the provisional to standard certification through course work and passing required tests.

- Work experience alternate entry, also called provisional: Available only to CTE teachers, this allows prospective teachers with recent work experience to be provisionally certified. Teachers have three years to convert the provisional to standard certification through course work, induction activities, and passing tests (NC State Board of Education, 2010). Appendix A provides additional information about requirements for work experience alternate entry certification of CTE teachers.

This study included teachers with both types of alternate certification. This group of teachers included teachers with varying levels of education – high school diploma, some college, bachelor's degree, and beyond. As alternatively certified teachers, they were required to participate in a 40- to 80-hour New Teacher Induction Program, either sponsored by DPI or an approved alternate program. Most of these teachers have business experience although it is not required for those with lateral-entry certification. These requirements brought some degree of consistency to the group and made it easier to isolate the impact of the formal induction program and other professional development experiences. I focused on teachers from areas related to Information Technology and using computers, which occurs throughout CTE but mainly in Trade and Industrial Education (NC Public Schools-Career and Technical Education, n.d.e); Business, Finance, and Information Technology Education (NC Public Schools-Career and Technical Education, n.d.c); and Technology Engineering and Design (NC Public Schools-Career and Technical Education, n.d.d). This allowed me to examine teachers with a variety of backgrounds within an overall consistent framework.

Researcher Subjectivities

My undergraduate degree and early professional experience were in the field of journalism, and I learned well the fiction of the dispassionate observer. Looking back over my years as a professional and my personal experiences, I've learned that the ability to totally separate oneself from a story is not necessarily a good thing. When a reporter really cares about a story is when it comes to life. If you hear someone's story and are not touched, there's something wrong. As Shope (2006) quoted an old African saying, "You can't cross the river without getting wet."

The challenge for me in researching and writing on the topic of education was to care without letting that unduly influence my work. I have been an educator for more than 25 years and I am a strong advocate for public education. I am a product of the public school system and have spent the bulk of my professional life either writing about it or working within it to improve its quality. I am an employee of the NC Department of Public Instruction, which is the state agency that oversee public K-12 education. I have worked in secondary CTE as a public information specialist, as a curriculum developer, and now as an accountability specialist.

Definitions and Abbreviations Used in this Dissertation

Assistant Principal (AP)

The assistant principal assists the principal in the management of the school. Assistant principals have traditionally been responsible for the daily operation of the school (National Association of Secondary School Principal, n.d.). In many cases a large portion of their responsibilities involves student discipline, which is often why they were mentioned in

interviews with teacher-participants in this study. In recent years they have assumed more responsibilities in instructional leadership.

Career and Technical Education (CTE)

Program available in secondary and postsecondary education that "prepares youth and adults for a wide range of high-wage, high-skill, high-demand careers" (Association for Career & Technical Education, n.d.) CTE links high school with postsecondary education including both community and technical colleges and four-year universities to provide clear pathways for certifications and degrees. Historically known as vocational education.

Carl D. Perkins Career and Technical Education Improvement Act of 2006

Federal legislation that provides funding and regulates secondary and postsecondary technical education. Includes requirements for accountability and use of federal funding.

CTE post-assessments

End-of-course tests used to generate accountability data for NC CTE (NC Public Schools-Career and Technical Education, n.d.a). Results on post-assessments are also used in North Carolina's Educator Effectiveness Model, which provides teacher ratings based on student improvement for use in the state's teacher evaluation system (NC Public Schools-Educator Effectiveness Model, n.d.). CTE post-assessments are sometimes referred to by teacher-participants as "VoCATS," which is the name of the instructional management system used previously in NC CTE.

Elements

Computerized instructional management program used to plan, implement, and evaluate instruction in CTE classrooms in North Carolina (NC Public Schools-Career and Technical

Education, n.d.b). Sometimes referred to as "Thinkgate," which is the name of the company that produces the software application.

Microsoft IT Academy (MSITA)

Courses sponsored by Microsoft that prepare students for Microsoft Office Specialist (MOS) certifications (Microsoft, 2013). These courses are sometimes referred to by the name of the software they feature (such as Word or Excel).

No Child Left Behind (NCLB)

The name by which the Elementary and Secondary Education Act (ESEA) of 2002 is commonly known. NCLB spelled out specific accountability standards for K-12 education. CTE is regulated by the Carl Perkins Career and Technical Education Act, not by NCLB. However, links between the two laws, including shared accountability measures, mean NCLB strongly influences CTE (DeWitt, 2010).

North Carolina Department of Public Instruction (NCDPI)

State education agency (SEA) in North Carolina. NCDPI "provides leadership and service to the 115 local public school districts and 2,500+ traditional public schools, 100 charter schools, and the three residential schools for students with hearing and visual impairments" (NC Public Schools-Organization, n.d.). Among other things, DPI is responsible for passing through federal CTE funds to local school systems.

Personalized Education Plan (PEP)

An individualized plan for a student who is "at risk" of academic failure that lays out specific performance targets and the focused intervention necessary to meet them (NC Public Schools-Student Accountability Standards, n.d.). Personalized Education Plans are similar to

Individual Education Plans (IEPs), which are required for students with disabilities. A student with either a PEP or an IEP must also have a Career Development Plan+ (CDP+), which focuses on their career goals and the steps necessary to be successful.

PRAXIS

A series of examinations administered by the Educational Testing Service that are part of teacher licensure requirements. PRAXIS includes both a general examination and subject area tests. Testing requirements vary by state and by certification area (Educational Testing Service, 2013).

Professional Learning Community (PLC)

In an education context, groups of teachers that meet face-to-face (F2F) or online to share resources, collaborate on learning, or mutually solve problems. PLCs can be organized at the school level, by district, or by state. The statewide PLCs for CTE teachers are provided using a Moodle platform and are often referred to by teachers as "Moodle."

Regional Alternative Licensure Center (RALC)

Regional centers that assist alternatively certified teachers in pursuing licensure (Regional Alternative Licensing Centers, 2011-2012).

School Resource Officer (SRO)

School-based law enforcement officer. The SRO is specially trained to educate, counsel, and protect the school community (National Association of School Resource Officers, n.d.).

Chapter Summary

This chapter discusses the problem of providing appropriate professional development for CTE teachers who come to education from non-traditional routes (i.e., without an education degree) to enable them to make an effective transition from the workplace to the classroom. The consequences of failing to provide necessary training for teachers can be far-reaching, including high teacher turnover and decreases in student achievement.

Chapter 2 situates this discussion in the literature of K-12 teacher professional development and adult education. Chapter 3 explains the methodology used in this study. Chapter 4 presents the study findings, and Chapter 5 provides analysis and further discussion of the findings and suggests directions for further research.

CHAPTER TWO: LITERATURE REVIEW

The purpose of this narrative study was to explore the role professional development plays in the development of CTE teachers who entered the profession in ways other than the traditional route of earning an undergraduate degree in education. This includes teachers who have undergraduate degrees in the content area in which they will teach or in some related field as well as those in areas in which no undergraduate degree is required.

The study was guided by four research questions:

1. How do teachers with alternate-route licenses in Career and Technical Education describe their professional development experiences?
2. How does professional development help or hinder alternate-route teachers as they acquire the knowledge, skills, and attitudes they need to be successful and transfer that learning to the classroom?
3. What gaps do alternate-route teachers report between what they knew when they first entered the classroom and what they needed to know?
4. How did professional development succeed – or fail – at filling the gaps between what they knew when they first entered the classroom and what they needed to know?

This chapter describes the conceptual framework of the study and provides a review of related literature. For the purposes of this study, three bodies of literature are examined: experiential learning, alternate-route certification, and applications of Human Resource Development to education. The literature is placed in the context of the history and philosophy of CTE, which at times differs significantly from traditional pedagogy utilized with elementary and secondary students.

Conceptual Framework: Experiential Learning

This study is based on the conceptual framework of experiential learning, the concept that experience rather than formal education is the source of much knowledge. Experiential learning has come to represent the idea that "nondirected informal life experience" (Fenwick, 2000, p. 243) plays an important role in education. Experiential learning takes many forms, and there is not universal agreement on how it best operates and on what role educators should play in its implementation (Fenwick, 2003).

John Dewey and Experiential Learning

Much of the credit for the beginnings of the experiential education movement lies with educational philosopher John Dewey (Smith, 2001), who not coincidentally was also instrumental in the early days of vocational education (Gordon, 1999). Dewey focused on "the organic connection between education and personal experience" (Dewey, 1997, p. 25) and advocated using experience as to develop students' knowledge and to prepare them as productive citizens. In addition, Dewey "strongly advocated vocational exploration as a means to acquire practical knowledge, apply academic content, and examine occupational and societal values" (Gordon, 1999, p. 29). Dewey believed that education had the power to transform the lives of all individuals, a dramatic change from the then-current notion that education was for people of culture and those whose economic backgrounds would enable them to live lives of leisure, while the masses destined for manual labor needed only simple job training (Dewey, 2009). Instead, pursuing one's calling, "what one is fitted to do" (p. 167), provides a structure that gives meaning to learning:

> A calling is also of necessity an organizing principle for information and ideas; for knowledge and intellectual growth. It provides an axis which runs through an immense diversity of detail; it causes different experiences, facts, items of information to fall into order with one another. (p. 168)

In *Education and Experience*, written 75 years ago, Dewey (1997) set out two elements that he said needed to be present for learning by experience to occur: continuity and interaction. *Continuity*, he wrote, "means that every experience both takes up something from those which have gone before and modifies in some way the quality of those which come after" (p. 35). Merriam, Caffarella and Baumgartner (2007) explained continuity as: "Experiences that provide learning are never just isolated events in time. Rather, learners must connect what they have learned from current experiences to those in the past as well as see possible future implications" (p. 162). *Interaction* is the term Dewey used to mean the interplay between "individuals and objects and other persons," the "series of situations" (p. 43) in which individuals find themselves. The concepts of continuity and interaction are different, yet closely interrelated in the educational process (Merriam et al., 2007).

Developments in Experiential Learning

The idea that "all learning is, in effect, learning from experience" (Moon, 2004, p. 104) has become more widely accepted in recent years. "Indeed, it might well be said that learning is an increasing occupation for us all; for in every aspect of our life and work, to stay abreast of events and to keep our skills up to the 'state of the art' requires more and more of our time and energy" (Kolb, 1984, p. 2).

Some researchers distinguish between “learning from experience,” the idea that we acquire knowledge through our daily experiences, and “experiential learning,” a more formal process that uses real and simulated experiences as a teaching tool (Newman, 1999; Usher, 1999). Others consider such a division to be “counterproductive” (Fenwick, 2001, p. 9), distracting users from the important concept of experience – learning by doing – as the source of much knowledge. How heavily the two are weighted and the role of educators in the mix are subjects of continuing debate.

Kolb (1984) wrote positively about both views of experience and learning, suggesting the greatest value might come from combining the two into “a holistic integrative perspective on learning that combines experience, perception, cognition, and behavior” (p. 21). He recommended that “the education process begin[s] by bringing out the learner’s beliefs and theories, examining and testing them, and then integrating the new, more refined ideas into the person’s belief systems” (p. 28), but admitted that in reality, “the wider ‘real-world’ environment at time seems to be actively rejected by educational systems at all levels” (p. 34).

Knowles (1984) focused on experience as one of the principles of what he called “andragogy,” as opposed to pedagogy. Although pedagogy is defined by Merriam-Webster (pedagogy, 2013) as “the art, science or profession of teaching,” the term is applied generally only to children. Pedagogy is contrasted with “andragogy,” “the art and science of facilitating adult learning” (Boucouvalas & Krupp, 1989, p. 183). In later years, Knowles further refined his thoughts about andragogy so that it appeared on a continuum with pedagogy rather than the two being mutually exclusive concepts (Merriam, 2001). Although Knowles and

andragogy are the subjects of continuing debate (Merriam, 2001), the idea of andragogy with its focus on giving learners a voice and using their experiences as an important part of the learning process continues to be influential in adult learning (Fenwick, 2001).

Scholars' explanations for how people learn through experience depend on their theoretical orientation (Merriam et al., 2007). Table 2.1 presents an overview of selected literature about learning through experience. Where possible, researchers are classified by their theoretical orientation. A number of the researchers cited in the table operated from a constructivist perspective. Constructivism is the idea that "human beings do not find or discover knowledge so much as construct or make it" (Schwandt, 2007, p. 38). Constructivists believe individuals create explanations of reality based on their experiences and then "continually test and modify these constructions in light of new experiences" (p. 38). Other researchers, however, believed that learning was more situative in nature, arguing that learning is influenced by the situation itself – the context in which the learning occurs.

In much of her writing, Fenwick (2001, 2003) focused on the constructivist perspective, which she said "essentially privileges individual human consciousness constructing knowledge by engaging in a cognitive process of reflection upon episodes of lived experience" (2001, p. 22). While this perspective provides value through its emphasis on reflection and on the need to adjust pedagogy to address learner needs, it oversimplifies the learning process and threatens its effectiveness, she wrote. Fenwick suggested four additional "currents of thought," which she called "interference," "participation," "resistance," and "co-emergence" (p. 27). *Interference* is the psychoanalytic perspective, with notions of conscious and unconscious desires and perceptions and contradictions of

Table 2.1

Selected Literature on How Adults Learn from Experience

Literature	Main ideas	Theoretical basis
Dewey, 1997; Dewey, 2009	Justified learning by doing For learning to occur, experience must exhibit two major principles: continuity and interaction.	
Kolb, 1984	Learning from experience requires four different kinds of abilities: • Ability to accept new experiences • Ability to observe and to think reflexively about observations • Ability to analyze experiences • Ability to apply learning to new experiences	Constructivism
Kolb & Kolb, 2005	Spelled out six elements of experiential learning theory (p. 194): • "Learning is best conceived as a process, not in terms of outcomes" • "All learning is relearning" • Learners must resolve the contradictions between reflection-action and thinking-feeling as ways of adapting to the world • Learning involves the "integrated functioning of the total person – thinking, feeling, perceiving, and behaving" • Learning comes about because of "synergetic transactions between the person and the environment" • "Learning is the process of creating knowledge"	Constructivism
*Jarvis (1987, 2001)	Two main types of learning by experiences: • Nonreflective learning • Reflective learning	Constructivism

Table 2.1 Continued

Literature	Main ideas	Theoretical basis
*Boud, Keogh & Walker (1985, 1996)	Three-stage model • Replaying the experience • Reliving the emotions the experience entailed • Re-evaluating the experience (and getting ready for new experience)	Situated
*Boud & Walker (1991)	Importance of individual context on learning How learning is impacted by differences in individuals Learner must be engaged	Situated
*Beard & Wilson (2002)	Role of affective domain in successful learning	Situated
*Usher, Bryant & Johnson (1997)	Experience must be interpreted Experience and learning create "an interactive dynamic" (p. 107)	Constructivism
Fenwick (2001, 2003)	Five views of experiential learning in adults • Constructivism • Interference (psycho-analytic) • Participation • Resistance • Co-emergence	
Knowles (1984)	Concept of "andragogy" The adult learner: • Is self-directed • Has life experiences that are a resource for learning • Has learning needs closely related to changing social roles • Wants to be able to apply learning immediately • Is motivated to learn by internal rather than external factors • Needs to understand why learning something is important	

*This chart includes information from literature reviews in Merriam, Caffarella, and Baumgartner (2007), Merriam (2001), and Fenwick (2001).

experience. Learning is at least in part coming to understand oneself. *Participation* is Fenwick's term for the situative perspective, which "maintains that learning is rooted in the situation in which a person participates" (p. 34). Knowledge is difficult to transfer to new situations because it "part of the very process of participation in the immediate situation" (p. 34). *Resistance* is another name for the critical cultural perspective espoused by writers such as Freire and Giroux, which "analyze[s] the structures of dominance that express or govern the social relationships and competing forms of communication and cultural practices within that system" (p. 39). *Co-emergence* is the interaction of systems and subsystems in a learning community, the relationships among elements, and focuses on learning by doing.

Connection to Vocational Education

The formal beginnings of secondary vocational education are linked to passage of the Smith-Hughes Act (1917). The Smith-Hughes Act established programs in agricultural education, homemaking, and trade and industrial education, partly as a reaction to perceived superiority of German vocational training that had become evident during World War I (Gordon, 1999). In opposition to Dewey's view of vocational education integrated with academic instruction as an educational tool that could be valuable to all students, a vision of vocational education began to emerge that set up a "dual system with two clearly separated components, one part being academic and the other vocational" (p. 26), based upon the work of Charles Prosser and David Snedden. Dewey himself was one of the major critics of this dual system, which he argued was costly and inefficient and perpetuated the status quo rather than providing students with a means to transform their lives (Dewey, 1915, cited in Gordon, 1999).

The history of public education through the 20th Century shows that while vocational education continued to grow in prominence, the impact of the dual systems hindered its potential transformational impact. It was not until passage of the Carl D. Perkins Vocational Education Act of 1990 that a major shift came about in the way vocational education was implemented. This act emphasized three elements (Gordon, 1999, p. 79): "(1) integration of academic and vocational education, (2) articulation between segments of education engaged in workforce preparation, and (3) closer linkages between school and work." The Perkins legislation, which has twice since been reauthorized, most recently as the Carl D. Perkins Career and Technical Education Improvement Act of 2006, focuses on programs for secondary students and adults that allow them to overcome physical, mental, and economic disadvantages and achieve their educational and employment potential.

Alternate-Route Certification

In the United States in the 19th century, it was common for each school district to certify its own teachers (Zeichner & Schulte, 2001) based on whatever factors the local officials deemed appropriate. Students who wished to become teachers and who wanted further training were able to attend "normal schools" (Lutz & Hutton, 1989). These schools provided specialized training, often as a substitute for high school, for prospective teachers (Goldhaber & Brewer, 2000). By early in the 20th century, normal schools had begun to transition to teachers' colleges. Gradually over the next 100 years, baccalaureate degree programs became widespread and certification requirements were expanded to include more formal education. Eventually, states took over setting licensure and certification policies,

resulting in the current situation with considerable differences in standards and how they are implemented among the states (Goldhaber & Brewer, 2000).

In recent years there has been a dramatic increase in the number of alternative routes to certification (Darling-Hammond, Berry, Haselkorn, & Fideler, 1999). Alternative certification is a general term frequently used to designate any type of certification for individuals who have not completed a bachelor's degree in education (Cohen-Vogel & Smith, 2007). "The individuals are often certified based upon work experience, completion of coursework, or completion of a baccalaureate degree in the subject area they were hired to teach" (Ruhland & Bremer, 2002a, p. 2). Types of certification that fall within this definition vary considerably, from those requiring post-baccalaureate degrees to those that mandate only a few weeks of training or even less before granting emergency or provisional certification and putting teachers in charge of a classroom (Darling-Hammond, Berry, Haselkorn, & Fideler, 1999). Alternate routes can include such things as occupational competency, professional experience, and eventual completion of a bachelor's degree in the subject area (Ruhland & Bremer, 2004).

Darling-Hammond et al. (1999) differentiated between two types of alternate-route certification: *alternate routes*, "those that provide options to the traditional undergraduate teacher education program without lowering existing standards" (p. 208), and *alternative certification*, which "reduces the standards for entry and allows individuals to assume roles as teachers even though they have not completed many of the requirements for a license in either the study of subject matter or of teaching and learning" (p. 208). It does not appear this distinction is used widely by others in the field. For the purposes of this paper, the terms

are used interchangeably. In addition, many researchers do not count post-baccalaureate study among the alternate routes although it technically meets the definition.

According to the National Center for Education Information (Feistritzer, 2007), people who come into teaching through alternative routes tend to have bachelor's degrees, although not in education, as well as work experience in the field in which they plan to teach. Some of the alternative certification programs are rigorous, and teachers who complete these programs are indistinguishable from baccalaureate graduates of education programs. In addition, these alternatively certified teachers "bring with them work and life experience that they expected would compensate for whatever gaps might exist in their condensed training" (Johnson, Birkeland, & Peske, 2005, p. 78).

Growth in Alternate Certification

One rationale for the expansion of alternate routes to certification focuses on anticipated shortages of teachers, particularly in fields such as science and math, second languages, and special education, and in hard-to-staff urban schools. In these fields and in CTE, the pay scale in the private sector is high enough to entice education graduates away from teaching (Erekson & Barr, 1985). Researchers argued that increasing student enrollments, opportunities for women to enter fields other than education, and large numbers of anticipated retirements in the future will mean even greater difficulties filling classrooms with qualified teachers. Prospective teachers are not willing to "return to a university to fulfill a host of requirements beyond their baccalaureate degree" (Cohen-Vogel & Smith, 2007, p. 733). "Increasingly, alternate routes to teacher certification programs are playing

important roles in school districts' efforts to staff their schools effectively" (Rhee & Keeling, 2008, p. 10).

But concerns about teacher shortages are only part of the explanation of the enthusiasm for alternate certification. Education has been in a period of reform over the last 30 years. Some reports have recommended utilizing content specialists rather than education specialists to teach. There is an undercurrent of dissatisfaction with the education status quo (Johnson et al., 2005; Lutz & Hutton, 1989; Ruhland & Bremer, 2002a). Some officials believe teacher education has not delivered the desired quality, particularly given its protected status in the certification process. "The theory of action behind the policy is that if America's teachers were of sufficiently high quality, then education would improve" (Berliner, 2005, p. 205).

The Elementary and Secondary Education Act (ESEA), of which the No Child Left Behind Act (2001) is the current iteration, provided federal funds to "establish, expand, or improve alternative routes for State certification of teachers and principals" (§ 2113). The Carl D. Perkins Career and Technical Education Act of 2006, which specifically guides the expenditure of federal funds for CTE, does not mention alternate route certification but does require activities to be coordinated with efforts related to No Child Left Behind. By 2007, all 50 states and the District of Columbia provided some form of alternate certification (Feistritzer, 2007). Both ESEA and the Perkins law are overdue for reauthorization, which there is no sign will occur soon. In the meantime, the U.S. Education Department has authorized waivers to some of the original ESEA requirements (Tabor, 2013), but continues to focus on improving recruitment and retention high quality teachers and tracking success

both for traditionally and alternatively certified teachers (U.S. Department of Education, 2010).

Effectiveness of Alternatively Certified Teachers

In the ongoing debate about alternative route certification, "political spectacle has taken precedence over the public's genuine concerns about quality in teaching" (Berliner, 2005, p. 212). While such debates are "replete with opinion, they are lean on data" (Boyd et al., 2006b, p. 156). Proponents on both sides of the debate write with exaggerated hyperbole and dismiss the other side's studies as ill-conceived and laden with error. In the mid-1980s, researchers started investigating the question of alternate certification and how it might impact the classroom. In one of the few qualitative studies that examined this issue, Shulman (1989) examined case reports written by nine alternatively certified teachers in California. Shulman found that the teachers struggled because "they did not have the pedagogical content knowledge for transforming what they knew into suitable instruction for their students" (p. 5). She also found that the teachers improved over the course of the year largely through trial and error. To better meet the needs of alternatively certified teachers, districts should focus on more effective induction activities and use mentors to assist with both content knowledge and general pedagogy, she said.

Two additional qualitative studies nearly 10 years apart (Stevens & Dial, 1993; Chambers, 2002) were consistent in their picture of alternatively certified teachers' self-reports of their strengths, weaknesses, and professional development needs.

In 1993, Stevens and Dial interviewed 100 teachers from a large school district in the Southwestern United State who were certified through alternate routes, either the district's

own Alternative Certification Program (ACP) or the national Teach for America (TFA) program. The ACP requires successful completion of a one-year internship for alternatively certified teachers, six college hours in Early Childhood Education, and participation in special training sessions. The TFA is a national organization that provides intensive summer training to recent graduates who agree to work for a period of time in large urban districts. The academic level and subject matter of the teachers in this study were not specified.

About a decade later, Chambers (2002) interviewed 10 “second career” teachers in the Chicago suburbs. She did not specify the type of certification these teachers had, but described them as late entry teachers who came to teaching after working in a first career for 1-30 years. Four of the 10 were still in preservice training, while the others had been teaching for 1-32 years.

Chambers found that most of the teachers she interviewed went into teaching because they wanted to make a difference in the lives of young people, and two referred to teaching as a calling. Stevens and Dial also found a substantial number of teachers who switched from their earlier careers because they wanted to make “a greater contribution to society” (p. 71). But three other reasons were mentioned: long-term desire to be a teacher, need to make a change from their current career, and lack of other options. A number of teachers gave reasons that seemed to overlap multiple categories, which was also true in my study. Chambers also found second-career teachers’ reasons for choosing education were “complex and personal” (p. 214) and generally combined altruism with more practical considerations such as job security and flexible summer schedules.

Both of the other studies focused on the benefits of the experience teachers bring to the classroom, both from the perspective of the real-world knowledge they've acquired and seeing how to connect it to their classrooms. This "transfer of skills applies not only to the content they teach but also to how they approach the task of teaching" (Chambers, 2002, p. 215). Alternatively certified teachers were more willing, or perhaps better able, to use examples from real life and to explain to students how what they were learning would benefit them in the future. They could also make connections across disciplines.

In Stevens and Dial (1993) teachers complained about the difficulty in managing the day-to-day classroom activities, but also said managing their personal time to ensure they had time for required activities was difficult.

Both studies talked about the value of having experienced teachers work with new personnel during their first years in teaching. Chambers (2002) mentioned the value of peer mentors. Stevens and Dial (1993) agreed that assigned mentors were sometimes helpful, but found it often was the informal relationships developed with other teachers through proximity of location or similar content that were the most helpful. Stevens and Dial said that teachers had suggestions for how the alternative entry programs could be improved but did not specify what those suggestions might be. Chambers said that it is important to recognize differences in the needs of traditionally certified and alternatively certified teachers through required coursework and ongoing professional development.

Other early studies looked quantitatively at the issue from two perspectives: How did the traditionally certified and alternatively certified teachers differ in their self-reports of measures of effectiveness and commitment to teaching, and how did the performance of their

students change depending on their certification? Research was focused on survey data and on secondary analysis of data collected for other purposes.

One study cited frequently by proponents of traditional certification was Shen (1997). Using data from the 1993-94 Schools and Staffing Survey, a national survey conducted by the National Center for Education Statistics, Shen compared outcomes for teachers who reported they held regular state certificates to those who completed "what the state calls an 'alternative certificate program' " (p. 277). Shen found that alternatively certified teachers had lower academic qualifications and were less likely to plan to remain in teaching over the long term. In another study looking at the same data, Shen (1998) found that alternative certification has a differential impact on white and minority teachers. Although alternative certification is successful at attracting minority teachers to the profession, these teachers tend to be younger than white alternatively certified teachers, more female, and less likely to have bachelor's degrees in math, science or engineering. Alternative certification, Shen (1998) wrote, "appears to be a double-edged sword in terms of diversifying and improving the teaching force in general and the minority teaching force in particular" (p. 39).

Advocates of alternate certification rejected Shen's conclusions, which they said were based on faulty self-reports of certification type by teachers. Re-interview studies of previous SASS data found "a high degree of response error" (Ballou, 1998, p. 313) to the item used to identify respondents as traditionally or alternatively certified. In addition, the large number of teachers who reported they were alternatively certified yet indicated elsewhere they had undergraduate degrees in education and those who reported they were alternatively certified

in states that did not have an alternative certification process suggest problems with the data (Ballou, 1998).

In another study cited by proponents of traditional certification, Clotfelter, Ladd, and Vigdor (2007b) compared results of students on North Carolina state achievement tests by teacher factors including years of experience, advanced degrees, certification by the National Board of Professional Teaching Standards, and type of certification. The authors examined results of students in grades 3, 4 and 5 between 1995 and 2004 and found that teachers with greater years of experience and National Board certification tended to have higher achievement test scores. There was no statistically significant correlation between teachers' having graduate degrees and higher achievement test scores. There was a negative correlation between teachers having non-standard certification and test scores, although the authors postulated their results were consistent with earlier studies that found such differences were "small and disappeared over time" (p. 678).

Study of alternative certification is made more difficult by the vast array of programs that fall under that heading, which range from rigorous programs requiring graduate study in education, to multi-year programs that include components of mentoring and coaching combined with college-level coursework, to programs that require a short period of prior extensive training and ongoing support for the teacher, to programs where the teacher begins teaching with no extra training (Berry, 2005; Cohen-Vogel & Smith, 2007; Darling-Hammond, 2009; Darling-Hammond et al., 1999; Miller et al., 1998; Roth, 1994). Studies report inconsistent and inconclusive results, often due to the variety of programs that are

classified as alternate route certification, methodological differences across studies, and other problems (Miller et al., 1998; Wilson et al., 2001).

In a series of three studies of an alternative certification model for middle grades teachers at a southeastern university, Miller et al. (1998) used surveys, observations, interviews, and analysis of achievement test results to compare traditionally and alternatively certified teachers. They found that after three years, "there appear to be no observable teaching behavior differences, student output differences, or attitudinal differences concerning perceptions of competence of people prepared under the two conditions" (p. 174). The authors suggested that the program they studied, which included "extensive mentoring with peer professionals, continued university support, and specifically constructed in-service classes during the first three years" (p. 174) might serve as a model of induction for all new teachers, regardless of certification.

Recent studies tend to find a less clear connection between type of teacher certification and student performance. For example, Boyd et al. (2006a) investigated outcomes of teachers who entered the profession through five specific pathways in New York. As distinctions between traditional and alternate certification are "increasingly blurry" (Boyd et al., 2006b, p. 159), the researchers found it more useful to divide these teachers into two groups: those who completed their education preparation prior to beginning teaching and those whose training took place largely during their first year of teaching. They found only "relatively small difference in student achievement improvement attributable to preparation pathways, and these effects typically exist only when comparing first-year teachers" (Boyd et al., 2006a, p. 211).

Researchers at both extremes of the issue claim to have right, in the form of quality education, on their sides. Johnson et al. (2005) said that "much of the research and writing about alternate certification programs has been used to advance one side or the other of a combative debate about the policy's value" (p. 65), but added that research has been inconclusive and the controversy persists. "No one would argue against the idea that all teachers should be fully qualified," wrote Goldhaber and Brewer (2000). "The question is whether conventional routes to licensure are more likely to prepare teachers" (pp. 129-130).

Cochran-Smith (2005) typified the ongoing debate as part "turf battles," part "political symbolism," and part "challenges to an unjust system" (p. 179). Tamir (2009) portrayed the struggle as going beyond a single issue. She explored the idea of education policy as a space where agents use their capital to obtain power, "which, if they are successful, provides them the necessary power to inscribe their beliefs, vision, and interests in the social and institutional fabric of the field" (p. 467). "In sum," she wrote, "these struggles over education policy reflect a collision of values and contrasting conceptions of a desired education system" (p. 466).

Alternate Certification in CTE

Historically, two routes existed for those who wanted to teach in CTE: a "traditional teacher preparation model, using colleges and universities with degree programs consisting of general education, technical content, and teacher pedagogy, including student teaching" (Zirkle, Martin, & McCaslin, 2007, p. 3), and an alternative pathway that "relies more on work experience in the discipline in which certification/licensure is sought" (Zirkle et al., 2007, p. 3). CTE certification requirements typically were more flexible than those in

traditional academic areas to better meet the needs of teachers and students. Teachers colleges could not produce enough graduates with technical knowledge and skills to teach in vocational programs and it became necessary to establish other means by which teachers could become certified (Lutz & Hutton, 1989). More importantly, the Smith-Hughes Vocational Education Act of 1917, which first established the longstanding federal role in vocational education, formalized the requirement that vocational teachers must have work experience in the specific program in which they taught (Zirkle et al., 2007; Erekson & Barr, 1985; U.S. Congress, Office of Technology Assessment, 1994). This requirement was based on the idea that it would be difficult to teach an occupational skill in which the teacher had no direct experience. "Thus the states enacted policies and procedures allowing competent, skilled workers to be employed and credentialed as vocational education teachers, without requiring them to earn a teacher education degree" (Erekson & Barr, 1985, p. 16).

The value of having teachers in CTE with practical experience in the field in which they are teaching has been long been recognized (National Research Center for Career and Technical Education, 2011; Erekson & Barr, 1985; Ruhland & Bremer, 2002a, 2002b, 2004). These teachers, who may have a degree in a related field or another field entirely, or perhaps no degree at all, "bring with them, in most cases, years of experience working as a professional in their field of instruction" (Ruhland & Bremer, 2004, p. 20). In some CTE fields, more than half of the teachers report that they came into education via an indirect route (Ruhland & Bremer, 2002a). This is particularly true in Trade and Industrial Education and Health Sciences Education, where alternative certification has long "been the primary method of entering teaching" (National Research Center for Career and Technical Education,

2011, p. 3), but it includes teachers in the other CTE areas – Agriculture; Business, Finance and Information Technology; Family and Consumer Sciences; Marketing and Entrepreneurship; and Technology Engineering and Design – as well (Erekson & Barr, 1985; Miller, 2008; Ruhland & Bremer, 2002b, 2004).

While a number of studies compare traditionally and alternatively certified teachers in core areas such as mathematics, Language Arts, and science, research looking at certification of CTE teachers and its impact is much less widespread, in spite of the fact that alternative certification continues to produce a significant percentage of CTE teachers (Erekson & Barr, 1985; Ruhland & Bremer, 2004). What research exists in this area is often inconclusive, "possibly a result of the wide range of background experiences and characteristics of provisionally certified vocational teachers" (Erekson & Barr, 1985, p. 17).

Teacher shortages in CTE have encouraged the development of policies that allow alternative certification procedures that recognize the value of professional credentials and years of experience working outside of education (National Research Center for Career and Technical Education, 2011; Ruhland & Bremer, 2002b). However, "provisional certification in vocational education brought with it a two-class system, teachers with standard certificates and those with alternative certificates" (Erekson & Barr, 1985, p. 17). This two-class system has been exacerbated in recent years as an increasing focus on accountability in CTE, particularly since passage of the Carl Perkins Vocational and Technical Education Act of 1998 (an earlier version of the current law) resulted in more rigorous certification policies and an emphasis on CTE teachers' role in improving student achievement in academic as

well as technical areas (National Research Center for Career and Technical Education, 2011; Ruhland & Bremer, 2002b).

Ruhland and Bremer (2002a, 2004) surveyed recently certified CTE teachers in 28 states to compare traditionally and alternatively certified teachers' attitudes about their preparation and work. The authors found that regardless of their certification, teachers reported they needed more support in classroom management and in working with special needs students. An equal percentage of traditionally and alternatively certified teachers felt positive about their classroom experiences and the reported likelihood of remaining in the teaching profession was about the same between the two groups. Where the two groups differed was in the areas in which they felt best prepared for the classroom: Traditionally certified teachers felt best prepared in pedagogy, while alternatively certified teachers felt best prepared in subject matter.

Joerger & Bremer (2001) found that while beginning CTE teachers, and specifically alternatively certified teachers, had some unique needs – such as introduction to Career and Technical Student Organizations, maintenance of equipment, and information on how to develop community support for work-based learning activities – they also had many of the same concerns as other beginning secondary teachers. "Needs of beginning secondary CTE teachers that reflect the common needs of beginning secondary teachers in all fields include the development of skills to address classroom management issues, student motivation, instructional methods, and personal time management" (p. 12).

Roberts & Dyer (2004) found that traditionally and alternatively certified Agricultural Education teachers in Florida expressed similar general training needs – such as improving

skills in instruction and curriculum; working with FFA, the Agricultural Education Career and Technical Student Organization; and increasing their knowledge about particular content. Traditionally certified teachers reported higher needs for training overall, and the two groups reported different specific needs within each major construct. It is not clear whether differences in teacher reports of training needs reflect actual differences in need or a difference in awareness of need.

In a recent quantitative dissertation, Edney (2010) surveyed new CTE teachers in North Carolina and compared what alternatively certified and traditionally certified teachers said about their professional development. Alternatively certified teachers reported a greater need for professional development overall, which Edney speculated might mean not actually a greater need but more awareness of their shortcomings. Specifically, the alternatively certified teachers expressed greater need for professional development related to facilitation of instruction, which makes sense because "in traditional teacher preparation programs, the focus is narrow and specific to curricular issues and pedagogical strategies" (p. 155). Edney said that professional development should fill gaps in teachers' skills based on their previous experience or education, and stressed that the needs of the two groups of teachers are different based on these criteria. To be most effective, professional development should be individualized to the needs of teachers.

Miller (2008) examined student results on standardized tests administered to CTE students in Trade & Industrial Education programs in North Carolina and found no statistically significant difference in the scores of students whose teachers had degrees and

those whose teachers did not. The data source used in this research identified only whether teachers had degrees and not whether those degrees were in education or some other field.

Connection to Human Resource Development

For too long, elementary and secondary education has operated alone, without taking advantage of what Adult Education and HRD can teach about such things as retention, induction of new employees, use of mentors, and design and evaluation of professional development. This section discusses specifics about each of the four issues within the education environment, relates the discussion to HRD literature, and then links it to similar issues within the HRD field.

Employee Retention

Problems maintaining an adequate supply of teachers in the classroom may not be the result of too few teachers, but of too high an attrition rate. "Our inability to support high-quality teaching in many of our schools is driven not by too few teachers coming in, but by too many going out, that is, by a staggering teacher turnover and attrition rate" (National Commission on Teaching and America's Future, 2002, p. 3). Analysis of teacher retention patterns in 1999-2000 shows that about a third of teachers leave the field sometime during their first three years in the classroom (National Commission on Teaching and America's Future, 2002), and almost half leave within the first five years (Moir, 2008). An analysis of the need for teachers of mathematics and science viewed through an economic lens (Ingersoll & May, 2010; Ingersoll & Perda, 2010) found teacher attrition:

> is a significant factor behind the need for new hires and the accompanying difficulties that schools encounter staffing classrooms with qualified teachers. …Hence, from a

policy perspective, the data suggest that improving teacher retention could be an important antidote to school staffing problems (Ingersoll & Perda, 2010, p. 566). Ingersoll and May characterize their research into teacher supply and demand as part of a tradition of research on employee turnover that includes both beneficial outcomes and possible problems. They maintain that high rates of teacher turnover can negatively impact student performance and hurt school improvement efforts. "With this recognition has also come a growing demand for evidence on the sources of, and reasons behind, teacher turnover and retention, especially for fields such as mathematics and science, to provide direction on how to improve retention" (p. 6).

Induction

All new employees go through a period when they begin employment, as they acclimate to their new positions, learn how to do their work, acquire the formal procedures for accomplishing specific tasks, and, often, master the informal mechanisms that are a far more effective way to get things done. Formal induction, however, attempts to incorporate "support, guidance and orientation programs" (Ingersoll & Smith, 2004, p. 28) into this period. Formal induction programs are found much less frequently in teaching than in professions such as medicine and law (Halford, 1999; Ingersoll & Smith, 2004), although formal induction of teachers is becoming more widespread throughout the world and there is "an almost universal belief that induction is important" (Britton, Paine, Pimm, & Raizen, 2003, p. 301).

Once teachers are hired, they generally begin a beginning professional development period known as induction (Ruhland & Bremer, 2002a). The activities that take place during

this period vary from state to state, district to district, and school to school. The fact that so many teachers leave the profession so early in their careers suggests that these teacher induction strategies are not adequate to provide for a smooth transition to the classroom. Even teachers who come to education with traditional four-year education degrees seem to find the transition to teaching difficult.

Coles and Knowles [cited in Kane & Russell (2005)] argue that while the focus in preservice education on teachers' acquisition of teaching skills is important, "little attention is placed on helping them become teachers" (p. 135). *Becoming* teachers involves not only continuing to refine and improve their teaching skills, but becoming part of the "growing network of shared expertise" (Fulton, Yoon, & Lee, 2005, p. 1). Development of "attitudes, beliefs and assumptions about teachers and teaching" (Kane & Russell, 2005, p. 134) is as important as being taught how to teach. In one survey, new teachers reported the need for "ongoing help with curriculum, teaching methods, and classroom management" (Ruhland & Bremer, 2002a) as well as personal support through individual mentoring experiences and activities such as peer support groups. "This support from other education professionals was seen as key to staying in the teaching profession, although there was no consensus on what would be most helpful" (p. xii).

Existing teacher induction programs attempt to provide new teachers with the knowledge, skills, and attitudes required to help them become successful in the classroom. These programs have broad goals that provide teachers with the tools they need to succeed in the long term rather than "shorthand recipes and quick orientations" (Britton et al., 2003a, p. 303). They are designed to provide ongoing assistance in developing and utilizing

curriculum, managing classrooms, and improving instruction (Brooks, 1999; Carver & Feiman-Nemser, 2008; Kane & Russell, 2005). Induction programs build a sense of community, a network of shared expertise that helps beginning teachers understand "they are not alone, that their experiences have been and continue to be experienced by others, and that there are ways to support each other" (Kane & Russell, 2005, p. 143). What is included in induction programs varies widely (Carver & Feiman-Nemser, 2008; Ruhland & Bremer, 2002a), depending on the needs of the individual and state and local requirements.

Failure to provide adequate induction does not stop people from entering teaching. "Whether officially inducted or not, new teachers begin teaching every year, all over the world" (Britton et al., 2003b, p. 1). However, it is costly, both in terms of financial resources and in lost opportunity for teachers to positively impact students. It contributes to high turnover, which exacerbates the perennial teacher shortage problems and undermines the sense of community that research shows is an important factor in school success (Carver & Feiman-Nemser, 2008; Ingersoll & Smith, 2004; National Commission on Teaching and America's Future, 2002). Effective induction programs are costly, but the benefits, both of increased teacher retention and of improvement in quality, appear to justify the expense (Carver & Feiman-Nemser, 2008; Moir, 2008).

Peer support groups also fulfill a valuable function in new teacher induction. Working collaboratively with other new teachers "reassures participants that as beginning teachers they were not alone, that their experiences have been and continue to be experienced by others, and that there are ways to support each other" (Kane & Russell, 2005, p. 143). Successful induction strategies contain opportunities for feedback and reflection (Guskey,

1995; Guskey & Huberman, 1995; Kane & Russell, 2005). Strategies also provide "pressure" that helps to create change among participants: "the encouragement, motivation, and occasional nudging that many practitioners require to persist in the challenging tasks that are intrinsic to all change efforts" (Guskey, 1995, p. 123). Quality induction activities can be costly, but not nearly so costly as the continual recruitment and retraining of new teachers to replace those who leave (Moir, 2008).

Mentoring

Nearly everyone has served as a mentor in an informal sense, providing motivation and support to a colleague or family member who needed encouragement during a challenging time. These ideas have led to formal mentoring programs "as a way of fostering workplace learning, particularly for historically neglected groups" (Hansman, 2000, p. 493). Mentoring involves "intense caring relationships in which persons with more experience work with less experienced persons to promote both professional and personal development" (Caffarella, cited in Hansman, 2000, p. 493). Typically, mentors are "experienced professionals who are involved in the career development of a junior professional" (Chao, 2009, p. 314). Organizations sponsor mentoring programs because they are beneficial to the individual and to the organization's bottom line, wrote Hansman (2000), who cited the following reasons for sponsoring mentoring programs:

> Accelerating the transfer of skills and knowledge pertinent to the organization, building teams, enhancing workforce diversity, implementing total quality management, and developing leadership skills. Other reasons why organizations sponsor mentoring programs are to increase trust among employees of

management, preserve corporate culture, promote sharing information among employees, create future leaders, reduce employee turnover, fulfill diversity goals, and build skills within the workforce (Hildebrand, 1998) (p. 496).

The use of mentors in education has become a significant part of teacher induction activities (Carver & Feiman-Nemser, 2008; Kane & Russell, 2005; Ruhland & Bremer, 2002b; Zeichner & Schulte, 2001). "During the past 20 years teacher mentoring programs have become the dominant form of teacher induction…indeed, the two terms are currently often used interchangeably" (Ingersoll & Smith, 2004, p. 29). The guidance of an experienced professional can be invaluable in teaching, where first-year teachers often are expected to perform with the same level of expertise as their more-experienced counterparts (Brooks, 1999; Heidkamp & Shapiro, 1999). However, it is critical that attention be given to appropriate matches in subject and grade level as well as personal factors that will enable the mentor and mentee to work together more effectively (Shulman, 1989).

In well-designed mentorships, mentors as well as mentees benefit. Mentors are able to update their content knowledge from those who recently have been studying or working in the field (Halford, 1999). Mentors also strengthen their own knowledge from the close examination of their practices and beliefs that is required to work effectively as a mentor (Brooks, 1999).

The value of mentors is cited frequently in the literature (Beijaard, Meijer, Morine-dershimer, & Tillema, 2005; National Commission on Teaching and America's Future, 2002). In a quality mentoring experience, new teachers are paired "with a more experienced mentor who provides support and assistance to help novices navigate difficult early years of

teaching as they perfect their teaching skills" (National Commission on Teaching and America's Future, 2002, p. 12). Moir (2008) describes the critical role of establishing a mentoring relationship with new teachers: "The impact of being alone in a classroom for the first time can be overwhelming. Providing an exemplary veteran teacher as a mentor, to guide and support the new teacher, can make all the difference in that teacher's success and effectiveness" (p. 36).

Professional Development

Elementary and secondary teachers are adults. The literature on adult learning is voluminous. Yet there appears to be little conversation about how the two can align. Continuing professional development is a critical part of the current reform efforts in elementary and secondary education as officials search for ways to improve teacher retention and minimize its negative impact on student achievement (Ruhland & Bremer, 2002b). "The premise is that the improvement of American education relies centrally on the development of a highly qualified teacher workforce imbued with the knowledge, skills, and dispositions to encourage exceptional learning in all the nation's students (Sykes, 1999, p. xv). Both the No Child Left Behind Act, which guides improvements in traditional academic areas, and the Carl Perkins Career and Technical Education Act of 2006, which focuses on secondary and postsecondary CTE, direct states to highlight professional development activities for novice teachers as well as those with more experience.

Yet in spite of the fact that school restructuring and reform "has begun to reflect research findings from human resources and organization theory" (Park & Rojewski, 2006, p. 23), not enough has been done to tie these efforts to what is known about how adults learn.

Even when research in how to design and carry out professional development for teachers supports concepts familiar to adult educators – the value of embedding professional development in teachers' daily activities or conducting formal needs assessment prior to beginning professional development activities, for example – there are few links to adult education literature. And, in reality, available professional development workshops for teachers frequently do not fulfill their promise but instead "are often intellectually superficial, disconnected from deep issues of curriculum and learning, fragmented, and noncumulative" (Ball & Cohen, 1999, p. 3).

The HRD Literature

These four issues – employee retention, induction of new employees, use of mentoring, and offering quality professional development – are of major concern to researchers in HRD and management. The issues are complex and interrelated; each impacts and is impacted by the others. Failure to retain quality employees, for example, "not only has economic impact but also adversely affects training, organizational development, and other HRD interventions" (Hatcher, 1999, p. 365). Costs of replacing departing employees and training their replacements can exceed 100% of the employee's annual salary (Allen & Bryant, 2012). "In addition to these direct financial costs, losing employees can also lead to work disruptions, loss of organizational memory and tacit knowledge, productivity or customer service decrements, loss of mentors, diminished diversity, and even turnover contagion where other valued employees follow the leavers out the door" (Allen & Bryant, 2012, p. xv).

One insidious effect of high employee turnover is the "vicious circle"(Carmeli & Weisberg, 2006, p. 192) that results in employers being less willing to invest in training and development for their employees because of the risk of losing their investment if the employee leaves. Such an action may increase the likelihood that employees will become frustrated and go to other employers where they believe they'll be treated more fairly.

The HRD literature finds what is referred to as "avoidable employee turnover" (Allen & Bryant, 2012, p. 6) tends to be correlated with such things as lack of a positive organizational learning culture and with job dissatisfaction (Marsick & Watkins, 2003; Egan, Yang, & Bartlett, 2004). A positive organizational learning culture, more recently known as "a learning organization," is one that "has an enhanced capacity to learn and to change" (Watkins, 2005). Job dissatisfaction and the related idea of "burnout" have been linked with a number of factors, including perception of low pay, few opportunities for promotion, inadequate training, and problems with supervisors or coworkers (Allen & Bryant, 2012; Brewer & Clippard, 2002).

Much of the research on employee retention and turnover has taken place in the specific area of nursing (Carmeli & Weisberg, 2006), which limits its generalizability to other occupations. To further the discussion, Carmeli and Weisberg in their 2006 study looked at three professions in Israel – financial services, social work, and the law – and evaluated employee "turnover intentions," the likelihood that "she/he will be leaving the organization she/he works for in the near future" (p. 193). Carmeli and Weisberg hypothesized that "the variability in turnover intentions is attributed to the type of profession," speculating that social workers would have a lower rate of turnover intentions

because of their affective commitment. Affective commitment is an employee's "emotional attachment to the organization" (p. 193). For social workers, such commitment occurs because their profession involves working in the public section and "entails a sense of contributing to the well-being of society as a whole" (p. 196).

Carmeli and Weisberg found that the social workers in their study did have a lower rate of turnover intentions, which supported the idea that affective commitment and job satisfaction were strong predictors of turnover intentions. However, they were unable to say how much of the difference was explained by affective commitment and how much was due to more extrinsic factors such as lack of better alternatives and the loss of seniority that would occur if they left their organizations. Carmeli and Weisberg advised human resource management departments in organizations that wished to improve their rate of employee turnover to focus on increasing affective commitment.

Other researchers have found one way to improve retention is providing quality training and development, particularly during employees' induction period (Holton, 1996; Allen & Bryant, 2012). Holton defines new employee development as "all development processes used to advance new employees to desired levels of performance" (p. 233). New employee development is successful if it produces "an employee who, first, performs at a targeted level of performance and, second, stays with the organization" (p. 234). This induction period provides employees with the technical skills needed to perform their job tasks, and with the socialization required to "learn the values, norms and culture of an organization and adapt to a new role" (p. 234). Holton separates new employee development into three parts: orientation, which generally occurs immediately after beginning a new job

and lasts only for a brief period; job-training, which focuses on “knowledges and skills necessary to complete job tasks” (p. 245); and workplace learning, “which include(s) all learning activities that occur in the workplace itself” (p. 245). The concept of workplace learning has expanded to include all types of learning, formally in a classroom and informally through planned and unplanned encounters (Salas & Kosarzycki, 2003; Torraco, 1999). In recent years, the concept of learning “embedded” in day to day work activities has become more accepted (Littlejohn, 2006; Camburn, 2010).

Korte (2009) presented an updated view of the socialization aspect of new employees in his study of newly hired engineers. Literature on socialization of newcomers indicates it is very powerful and is a strong predictor of job satisfaction, commitment and retention (Bauer, Bodner, Erdogan, Truxillo & Tucker, 2007; Saks, Uggerslev & Fassina, 2007). Korte (2009) interviewed engineers who had worked with a major U.S. company for 6-18 months and found that building relationships, particularly at the work group level, was critical to “how well newcomers learned the norms, tasks, and procedures of their jobs” (p. 300). In his study, Korte found the socialization responsibility was most effective when it was bidirectional – both the responsibility of the newcomer to become socialized to the new position and the responsibility of work group members to assist in that socialization.

Connection to Training and Development

Issues confronting alternatively certified teachers and their difficulties as beginning educators sound eerily similar to what the literature shows about subject matter experts making the transition to the classroom. These individuals rarely have formal training in designing and delivering professional development (Swanson & Falkman, 1997; Williams,

2001), often “finding themselves in the role of trainer without first receiving adequate preparation” (Swanson & Falkman, 1997, p. 306). Novice trainers report problems such as lack of confidence, lack of credibility, difficulty getting people to participate, and adjusting instruction to the specific audience (Swanson & Falkman, 1997), some of the same problems reported by beginning alternatively certified teachers (Houston et al., 1993; Miller et al., 1998). Efforts to increase the professionalism of trainers have been made, with varying degrees of success (Castner & Jordan, 1989; Sappington, 2003). Better understanding of how to transform someone with technical expertise into a quality instructor has implications both for K-12 instruction and in adult learning.

Chapter Summary

This chapter described the conceptual framework of the study and provided a review of related literature. For the purposes of this study, three bodies of literature are examined: experiential learning, alternate route certification, and applications of Human Resource Development to education. The literature is placed in the context of the history and philosophy of CTE, which at times differs significantly from traditional pedagogy utilized with elementary and secondary students.

There are a number of areas where further research is suggested:

- Assessing traditionally and alternatively certified CTE teachers and how they learn what they need to know to be effective.
- Identifying pre-service and in-service needs of CTE teachers, particularly alternatively certified CTE teachers.

- Determining how induction and professional development activities for both traditionally and alternatively certified CTE teachers could be redesigned to better utilize what is known about how teachers learn.
- Analyzing how Human Resource Development can impact induction, retention and professional development of alternatively certified CTE teachers.
- Analyzing teacher shortages in CTE and how they are impacted by high attrition rates.

This list expands on the areas cited by Wilson et al. (2001) as needing further study.

Chapter 3 describes the study's methodology.

CHAPTER THREE: METHODOLOGY

The purpose of this narrative study was to explore the role professional development plays in the development of CTE teachers who entered the profession in ways other than the traditional route of earning an undergraduate degree in education. This included teachers who have undergraduate degrees in the content area in which they are teaching or in some related field as well as those in areas in which no undergraduate degree is required.

The study was guided by four research questions:

1. How do teachers with alternate-route licenses in Career and Technical Education describe their professional development experiences?
2. How does professional development help or hinder alternate-route teachers as they acquire the knowledge, skills, and attitudes they need to be successful and transfer that learning to the classroom?
3. What gaps do alternate-route teachers report between what they knew when they first entered the classroom and what they needed to know?
4. How did professional development succeed – or fail – at filling the gaps between what they knew when they first entered the classroom and what they needed to know?

This chapter describes the methodology of the study, including the rationale for qualitative research and for the particular research approach, procedures for data collection and analysis, and other methodological considerations.

Rationale for Qualitative Research

If the solution to the crises currently facing the U.S. public education system could be found in quantitative research, our problems would be over. Education may be one of the most intensely examined institutions that exists, with thousands of articles appearing annually in hundreds of journals dedicated to research in education. Historically, results of quantitative research have been considered more credible in education, just as they have in most other fields (Lincoln, 2005; Mosteller & Boruch, 2002; Shavelson & Towne, 2002)

The movement in education is toward giving even greater credence to quantitative studies and reports. The No Child Left Behind Act (NCLB) emphasizes the use of research-based decision making, particularly utilizing quantitative data such as results on nationally recognized standardized tests. Although a number of educators and other stakeholders have questioned the legitimacy of such a narrow definition of accountability (for example, Duffy, Giordano, Farrell, Paneque, & Crump, 2008; Eisenhart & Towne, 2003; St. Pierre, 2006), NCLB continues to focus on a traditional, positivistic view of science and scientifically valid research. St. Pierre (2006) described the renewed focus on quantitative research as a backlash against the perceived failure of the education system to discover the reasons for its limited success and establish specific strategies for improvement:

> Whether the picture is as drear as it is made out to be is beside the point—today's fix is to make it “scientific,” and the federal government has taken the lead in this project by mandating scientific method in law. The fundamental idea is that better science will make better schools—that “quality” science will enable us to finally reengineer schools so they work (p. 240).

St. Pierre blamed this emphasis on "a corresponding accountability movement spurred on by a culture of surveillance that mandates increased auditing at every level of education to improve quality" (p. 241). The ultimate goal appears to be perhaps not the improvement of education, but appropriate allocation of "blame, shame, and punishment" (p. 241). Duffy et al. (2008) summarized this perspective as "the privileging of quantitative science over other methods of inquiry and assessment" (p. 53).

Relying solely on quantitative research to provide insight into what works and doesn't work in the classroom provides an incomplete snapshot of how schools operate and how they might be improved (Boyd et al., 2006b; Duffy & Chenail, 2008; Duffy et al., 2008). Using quantitative research implies a degree of certainly that does not it exist. It does not allow student learning to be directly measured; instead it must be estimated based on test scores or something else that can be observed. Some researchers maintain learning is too complex to measure solely on the basis of a single test score. "Statistical approximations of learning, as well as follow-up studies of performance, rarely capture well what has happened, what participants learned" (Lincoln, 2005, p. 225). Although imperfect, however, this type of measure is often the best thing available and does provide useful information:

> First, achievement tests measure only a small part of students' learning. By focusing on these measures, we are missing many important aspects of learning, as well as other valued outcomes of schooling; this is an inherent limitation to these kinds of data. However, although incomplete, the exams do measure outcomes that policy makers have agreed are important for students" (Boyd et al., 2006b, p. 163).

Recent evidence from studies being completed by the federal Institute of Education Sciences (IES), part of the focus on so-called scientifically based research that was launched in the wake of the passage of NCLB (Viadero, 2009) casts doubt on the efficacy of what was previously considered to be the "gold standard" of research – experimental protocols that randomly assign subjects to either a control or treatment group. Viadero reports that six of the eight studies released by the IES in 2008-2009 found "few, or no, significant positive effects on student achievement" (p. 1). However, this may result as much from poorly designed studies as from an inability to reach definitive conclusions, she wrote. Other education studies using the experimental design were able to achieve more definitive results.

Qualitative research methods emphasize context, which is of particular importance in education. In 2002, the authors of a National Research Council report argued "that a key implication of these features of education is the need to account for influential contextual factors within the process of inquiry and in understanding the extent to which findings can be generalized" (Shavelson & Towne, 2002, p. 80). Educational contexts include such obvious elements as socio-economic status and gender and race issues, as well as more complex factors such as the value given to education by community residents and current events taking place locally, nationally, and even worldwide. An example of context and its effect on student achievement was reported on in *The New York Times* shortly after the first inauguration of U.S. President Barack Obama, who took office in January 2009 as the nation's first African-American president (Dillon, 2009). The article cites an as-yet unpublished study that found the achievement gap usually seen in comparisons of the performance of African-American and White students became "statistically nonsignificant"

when a sample of African-American and White university students was tested immediately following important events in Obama's election campaign. Of course, one as-yet unpublished study cannot prove the existence of the so-called Obama Effect and what its long-term benefits might be. But this clearly illustrates that what is going on in the world matters in the education of students.

In order to truly understand what learning is occurring and the impact of context, education researchers must "immerse themselves in the participants' lives," which "allow(s) the researcher to observe, analyze, and integrate into the research process unexpected, constantly changing, and potentially influential aspects of what is being studied" (Shavelson & Towne, 2002, p. 82). Use of qualitative methods is preferred in such a situation, because "qualitative methods are simply better suited for collecting, analyzing, and interpreting respondent constructions than are quantitative methods, because they are immediate, processual, elaborative, and amenable to intersubjective interpretation" (Lincoln, 2005, p. 231).

Finally, using qualitative research methods to study education fills a need of participants, in this case classroom teachers, to tell their stories. Qualitative research "begins with the stories lived and told by individuals" (Creswell, 2007, p. 54). Schoolteachers are storytellers, partly because that is one of the tools they learn to use to reach students. But more important, teachers tell stories as a way to make meaning of their own experiences (Carter, 1993). The teachers' lounge is a modern-day campfire, around which teachers gather collegially to share stories of their day, to seek counsel from others with more experience, to reflect upon the particular challenges facing them with a troublesome student or a difficult

parent. Teachers often feel like a grain of sand facing an ocean of need. Allowing them to incorporate their stories into the research process legitimizes their efforts.

Rationale for Research Approach

This was a basic interpretive qualitative research study, as defined by Merriam (2009), but also included some elements of narrative analysis as it attempts to analyze the stories teachers tell. The focus of the study was on the three main areas of interest to qualitative researchers: "(1) how people interpret their experiences, (2) how they construct their worlds, and (3) what meaning they attribute to their experiences" (Merriam, 2009, p. 23). The study also explored the life histories of participants during their early years as CTE teachers to learn more about their development as teachers (Marshall & Rossman, 2011), not only how they acquire the knowledge, skills, and attitudes necessary to teach, but what allows them to become socialized as teachers.

Participant Selection

Institutional Review Board (IRB) approval was obtained before recruitment of any participants for this study. The IRB approval notice appears in Appendix B.

Ten teachers were recruited to participate in this study. To recruit participants, I emailed CTE teachers who participated in new teacher workshops sponsored or endorsed by the North Carolina Department of Public Instruction in 2011 and 2012 and invited them to be part of the study. To increase the number of volunteers, I also sent two follow up emails to the new teacher workshop participants. Participant names and email addresses were provided by the workshop sponsors. The original recruitment email and two follow up emails are included in Appendix C. I focused on teachers who teach courses related to computers and

other types of technology in Business, Finance, and Information Technology Education; Technology Engineering and Design Education; and Trade and Industrial Education.

Teachers interested in participating were asked for additional information about their current teaching assignment, years in teaching, route to licensure, and geographic location. Volunteers who were not alternatively certified were excluded and the 10 remaining teachers agreed to participate in the study. Brief descriptions of these teacher-participants appear in Appendix D. Table 3.1 provides an overview of selected characteristics of the teacher-participants.

They ranged in age from 28 to 55, with the majority between 45 and 55. Seven were men and three women. One was African American and the others were white. Their professional backgrounds included advertising, marketing, sales, accounts payable, management, financial services, manufacturing, electrical trades, information technology, human resources management, law enforcement, and recreation management, in various combinations. Several had more than 20 years as working professionals before becoming teachers.

One of the teachers finished his first semester teaching shortly before his interview. Another was starting his seventh year, but had recently transitioned to a different program area. Most were in their second or third year of teaching and had completed or were nearing completion of their certification requirements. Teachers were included from the three different program areas in which I was interested. Several of them also taught Career Management, a course designed to help students find a career focus and develop so-called

Table 3.1

Selected Characteristics of Teacher-Participants and their Schools

	Gender	Age range	Degree status	Business experience	Region of state	Type of area (US Department of Commerce, 2010)	School characteristics (NC Public Schools, 2012)
Beth	Female	40s	Bachelors	<10	SW	Urban area	<750 students, alternative school
Bunyun	Male	50s	Bachelors	20-30	NE	Urban cluster	750-1,500 students, comprehensive HS
James	Male	50s	Bachelors	20-30	NE	Urban cluster	750-1,500 students, comprehensive HS
Joe Mack	Male	30s	Masters	10-20	C	Urban area	<750 students, magnet HS
Lee	Male	30s	None	10-20	NW	Urban cluster	>1,500 students, comprehensive HS
Marcus	Male	50s	Bachelors	22-30	SW	Urban area	750-1,500 students, magnet HS
Marie	Female	50s	Bachelors	20-30	SE	Rural	750-1,500 students, comprehensive HS
Owen	Male	20s	Bachelors	<10	W	Rural	<750 students, comprehensive HS
Roger	Male	50s	Masters	20-30	C	Urban area	750-1,500 students, magnet HS
Sandy	Female	30s	Masters	10-20	C	Urban area	>1,500 students, comprehensive HS

NOTES:

- The U.S. Census Bureau (2010) defines an urban area as having a population greater than 50,000; an urban cluster with a population between 2,500 and 50,000; and a rural area as less than 2,500.
- For the purposes of providing CTE services, North Carolina is divided into six geographic regions: Central, Northeast, Northwest, Southeast, Southwest, and West (NC Public Schools-Career and Technical Education, 2013).

“soft” workplace skills such as teamwork, customer service, and persistence. This course can be taught by a teacher with certification in any CTE area.

Data Collection

This study examined the early experiences of teachers who teach courses related to computers and other types of technology in Business, Finance, and Information Technology Education; Technology Engineering and Design Education; and Trade and Industrial Education. Business, Finance and Information Technology includes management and application of computer software and networks as well as traditional business-related coursework (NC Public Schools, Career and Technical Education, n.d.c). Technology Engineering and Design Education is a STEM (Science, Technology, Engineering, and Math) program that integrates science, technology, engineering, languages, and the arts (NC Public Schools, Career and Technical Education, n.d.c). Trade and Industrial Education encompasses traditional trades areas such as carpentry, masonry, and electronics, as well as information technology subjects that focus on hardware (NC Public Schools, Career and Technical Education, n.d.e). Use of teachers within these three different CTE program areas helped ensure different viewpoints were represented. All three areas provide a number of options for alternate certification, which allowed for a range of participant experiences while still retaining enough similarities to be able to determine common themes.

Participants were interviewed using a semi-structured interview guide, which appears in Appendix E. Interview questions were based on the literature, focusing on issues and areas where previous research suggested more detailed, contextual information would be helpful to understanding. In particular, participants were asked to provide qualitative responses related

to findings of quantitative studies on what factors are most helpful to beginning teachers (Ingersoll & Smith, 2004; Ruhland & Bremer, 2004; Heidkamp & Shapiro, 1999) and to discuss areas where the literature suggested further research would be helpful (Wilson et al., 2001). Participants were asked in each interview to think reflexively about incidents that occurred earlier in their teaching careers and to imagine what might happen in the future. This provided richer and more complete data on all points during the academic year. The interviews were semi-structured to allow for adaptation during the interview process. A preliminary coding scheme based on the literature was developed prior to any analysis.

Interviews were conducted at a time and location of the participants' choosing. I assumed that participants would prefer to hold these interviews in a neutral location, but six of the 10 elected to be interviewed at their schools, either during their regularly scheduled planning period, immediately after school, or on a teacher workday. Most of these interviews took place in their classrooms. Holding the interviews at their schools made it easier for the participants to schedule, but it meant that the interviews were subject to interruption by announcements over the public address system or people coming into the room. (A fire drill was just ending when I arrived at one school, so at least we avoided that disruption.) Of the remainder, two were interviewed during breaks at statewide conferences, one at his home, and one at a public library on a weekend afternoon.

Data Analysis

I recorded the interviews and transcribed verbatim using a Sony digital recorder and ExpressScribe software, with which I am experienced. Keying in the information myself was helpful because it forced me to review the comments closely in an iterative process, hearing

them firsthand during the interview, then hearing and seeing them simultaneously as they were keyed, before viewing a final keyed transcript. Interviews originally were keyed verbatim, but eventually I removed non-significant pauses and edited occasional spots where the participants' "steam of consciousness" style of speaking rendered their comments indecipherable. Specific names of colleagues and locations that provided clues to the participants' identities were redacted. Participants themselves were identified in the transcripts only using a self-selected pseudonym. Participants reviewed the transcribed interviews to check for accuracy. All interviews were completed, transcribed, and approved by the participant before any analysis occurred.

In Stage 1 of the analysis, the approved, unedited transcriptions were copied electronically and the originals saved for archival purposes. Each participant was assigned a code number, which replaced the pseudonym used in the transcripts (Ruona, 2005). Using a code number during the analysis stage removed the researcher one more step from the true identity of the teacher-participants and made it easier to sort and resort their comments. The interviewer name was replaced by the participant's code, followed by the letter R, so that the interview could be reconstructed if needed. The interviews were converted to a Microsoft Word table using the method described by Ruona (2005). Each segment of the participant response appeared as a separate record in the table and was identified by speaker and by line number or what Ruona calls "turn" (p. 253). At the conclusion of Stage 1, a copy of the edited transcripts was saved for archival purposes before moving to Stage 2.

In Stage 2 of the analysis, I read through each interview several more times. I recorded the number of the question that elicited each response and cleaned up the document

as needed. I converted the turn numbers to text so that the document would not automatically renumber when it was sorted by some other field. At the conclusion of Stage 2, a copy of the edited transcripts was saved for archival purposes before moving to Stage 3.

The first step in Stage 3 of the analysis was to revise the preliminary coding scheme based on what I had learned so far about the data. I also identified which codes seemed to be related to which research questions. When this was complete, I coded the first interview. Coding was an iterative process as I continued to divide and subdivide responses into meaningful segments and add codes as I worked through the interview. I decided to err on the side of too many, too specific codes, assuming it would be easier to consolidate at a higher level later if necessary. I also completed a Data Summary Sheet (Bloomberg & Volpe, 2008) to provide a visual representation of the data. I then coded the remainder of the interviews, continuing to revise the coding scheme as new information was uncovered by the analysis. As new codes were added, I revisited previously coded interviews to make any needed changes in the codes. The final Coding Scheme is provided in Appendix F and a sample section of the Data Summary Sheet is provided in Appendix G. At the conclusion of Stage 3, a copy of the edited transcripts was saved for archival purposes before moving to Stage 4.

In Stage 4 of the analysis, the individual tables were merged into a single table and sorted by code to identify emerging themes. Tables were sorted and resorted by different fields and by fields within other fields to identify patterns. The Data Summary Sheet was used as a guide to help focus on areas of concern and to target more detailed analysis.

Limitations

As qualitative research, this study reflects the direct experiences of participants. It cannot be generalized to other areas of education, teachers with other types of preparation, or personnel in other fields. Neither can it be used to predict the behavior of similar teachers in similar circumstances.

Because the study is based on interviews, it is limited to presenting the information as it was reported by participants in the interviews. Of necessity, the information is filtered through the perceptions of the participants and is a somewhat incomplete picture of what occurred. Participants may have self-censored to tell me what they believed I wanted to hear. In particular, although I was not previously acquainted with any of the participants, I did inform them that I was an employee of the state education agency. As a consequence, they may have been reluctant to be too critical of programs sponsored by the agency. In addition, the act of being interviewed likely had an impact on the participants. This is of particular concern because of research that shows the importance of critical reflexivity on teacher development (Brookfield, 1995). The interview and corresponding attention paid to the alternate-route license teachers in the study may provide an opportunity for them to reflect in depth on their experiences, which gives them a tool other teachers in their positions do not have available.

This study included only a small group of CTE teachers in their early years of teaching and results cannot be generalized to others – neither teachers pursuing alternate route certification, other teachers just beginning their teaching careers, or teachers in general. Participants were volunteers and as such may have different characteristics than more typical

CTE teachers. Teachers who generally were pleased with their experiences and making a successful transition might have been more likely to volunteer. Because I only included teachers who were still in education, the voice of teachers who began the process but left prior to the end point was not represented. It is certainly likely that these individuals would have a different, equally valuable, perspective on induction activities and the value of professional development. Learning more about this perspective will have to be left for later research.

Veracity and Trustworthiness

This study included several elements designed to increase its veracity and trustworthiness. First, I have been an employee in public education for more than 25 years, which provided me with unique insight to the issues that were included. While not directly part of this study, the time I have spent in the field allowed me to better understand the perspective of the study's participants, provide thick, rich description, and communicate effectively with all participants. I continually checked what I observed and was told against what I have come to know about teachers and education, providing immediate feedback and pinpointing areas where clarification was needed. These factors strengthen the trustworthiness of the study.

Participants in the study were treated in an ethical manner. Participants selected an alias by which their comments were recorded and determined how much personal or demographic information was associated with these comments. The study was conducted following guidelines of my institution's IRB.

In addition, I transcribed interviews immediately and gave participants an opportunity to check for accuracy. This "member check" helped ensure that the participants' words were recorded accurately and that they said what they meant. Participants made very few changes during this part of the process. Participants also had an opportunity to assess the findings and interpretations of the study "so that they can judge the accuracy and credibility of the account" (Creswell, 2007, p. 208).

I also worked with a colleague who was not part of this study as a form of peer debriefing (Creswell, 2007) to "keep the researcher honest; ask hard questions about methods, meanings, and interpretations; and provide the researcher with the opportunity for catharsis by sympathetically listening to the researcher's feelings" (p. 208). I kept detailed field notes and records to enhance reliability during the study.

Chapter Summary

This chapter described the methodology for the study in detail, including the rationale for qualitative research and for the particular research approach, procedures for data collection and analysis, and other methodological considerations.

Chapter Four discusses the study findings.

CHAPTER FOUR: STUDY FINDINGS

The purpose of this narrative study was to explore the role professional development plays in the development of CTE teachers who entered the profession in ways other than the traditional route of earning an undergraduate degree in education. This study included nine teachers who had undergraduate and/or graduate degrees in the content area in which they were teaching or in another field, and one teaching in a field in which no undergraduate degree is required.

The study was guided by four research questions:

1. How do teachers with alternate-route licenses in Career and Technical Education describe their professional development experiences?
2. How does professional development help or hinder alternate-route teachers as they acquire the knowledge, skills, and attitudes they need to be successful and transfer that learning to the classroom?
3. What gaps do alternate-route teachers report between what they knew when they first entered the classroom and what they needed to know?
4. How did professional development succeed – or fail – at filling the gaps between what they knew when they first entered the classroom and what they needed to know?

This chapter will review the study findings as they relate to the four research questions.

Overview

Between July 2012 and January 2013, I interviewed 10 alternatively certified secondary CTE teachers from North Carolina. Participants were recruited from among participants in new teacher workshops sponsored or endorsed by the North Carolina Department of Public Instruction over the last few years. Participants included teachers from nine different school districts, at least one from each of the six geographic regions through which CTE services are supported in the state. Districts included both rural and major urban areas in the state and a range of school size, economic status, and student demographics.

Brief descriptions of the teacher-participants appear in Appendix D. They ranged in age from 28 to 55, with the majority between 45 and 55. Seven were men and three women. One was African American and the others were white. Their professional backgrounds included advertising, marketing, sales, accounts payable, management, financial services, manufacturing, electrical trades, information technology, human resources management, law enforcement, and recreation management, in various combinations. Several had more than 20 years as working professionals before becoming teachers.

One of the teachers finished his first semester teaching shortly before his interview. Another was starting his seventh year, but had recently transitioned to a different program area. Most were in their second or third year of teaching and had completed or were nearing completion of their certification requirements. The teachers were from three different program areas – Business, Finance, and Information Technology (BFIT) Education, Technology Engineering and Design (TED) Education, or Trade and Industrial (T&I) Education – but all taught in areas connected to computers and information technology.

Several of them also taught Career Management, a course designed to help students find a career focus and develop so-called “soft” workplace skills such as teamwork, customer service, and persistence. This course can be taught by a teacher with certification in any CTE area.

Interviews were recorded and transcribed verbatim. Participants reviewed the transcripts and edited as necessary to ensure their meaning was clear. The interviews were coded using an open coding system described by Ruona (2005), which assigned categories, subcategories, and sub-sub categories. Segments were assigned multiple codes if appropriate. Additional codes were developed as the study progressed and each interview was reviewed multiple times during the coding process to confirm or revise the codes as necessary to align with the final coding scheme.

The remainder of this chapter discusses the findings and how they relate to the four research questions.

Findings: Teachers’ Stories

There were no questions in my interview guide on the importance of CTE, on the lack of respect for CTE teachers and specifically CTE teachers with alternate-route certification, or on low salaries for teachers and others in education, but every participant found a way to work one, two, or all three of these issues into his or her first few comments. Indeed, their feelings and experiences in these areas impact their attitudes about teaching as a career, how forgiving they are of induction and training activities that are not exactly what they need, and how likely they are to remain in the profession in spite of various obstacles in their paths.

CTE is as important, or perhaps even more important, than other, more traditional academic subjects, whether students are headed directly for the workplace or on for further education, the teachers agreed. All students need to know "real life stuff," an expression almost all of them used to describe things like how banks operate, the true cost of borrowing money, the importance of purchasing insurance to protect against emergency expenses, and how to use computers as a tool in their professional and personal lives.

James, a BFIT Education teacher in northeastern North Carolina, said he tells students that what they learn in his class goes beyond simply memorizing information for a test:

> That's what I tell them when they come in there. I said, "I promise you will learn something in this class that you will be able to take outside with you when you graduate whether you go to college or whether you go out on your own." I said, "I guarantee you don't know some of the material I'm going to teach you."

Beth, a BFIT teacher in a small alternative school in southwestern North Carolina, said one of the good things about CTE is that "so much of our content is real life stuff." She described an epiphany that occurred as she worked on a lesson about insurance and banking and realized how valuable the information is: "THIS is real life stuff, and nobody told me any of this stuff."

Marie, another BFIT teacher, said the skills students learn in CTE will be useful when they enter the workforce, whether that is soon after high school or after further education. Possessing business- and industry-recognized credentials can make a difference to young people in the job market, Marie said. Earning credentials, even for students at the secondary level, is a current emphasis in CTE (National Research Center for Career and Technical

Education, 2012). Many of her students earn Microsoft Office Specialist certifications in Word or Excel, the same certifications that adults earn. “That’s what I tell them. It’s money in the bank.”

Roger, who teaches Design Technology and Career Management at a magnet high school in the central part of the state, said his job not only is to teach students job skills but to help them make critical decisions about their futures. He said CTE gives students an opportunity to find out what they are passionate about and to figure out if there is a way to parlay that passion into a career:

> In careers you find a happy medium. Like my passion is playing golf, but I’m not a professional golfer. So I’m a golf coach. I chose a happy medium. And the same thing with the students. A lot of times we do all types of assessments to see exactly where their interest lies. And in doing that we find out their interest might lie in something that they’re actually not really good at, so it is more of a wish list than a passion. What I try to do is define the difference between the wish list, Santa Claus, and a passion, and then you find the reality.

Mighty important work for so little money, agreed the teachers, most of whom are now working for a fraction of what they earned in the business world. In fact, after teacher furloughs during the past economic downturn and increases in insurance and other expenses, most of them have a smaller paycheck that needs to go farther than when they started teaching. Although the interview guide included no questions directly linked to teacher pay, six of the teachers managed to work it into the conversation. James, for example, said he is

able to support his family as a teacher only because teaching is his second career, supplementing his retirement pay from his previous career in law enforcement:

> My biggest thing, and I know this is not about finances, but the pay structure for teachers is absolutely ridiculous. And I knew that when I got into it. But I have another source of income. I don't understand how you can recruit a young person to go into teaching and then their pay is such as it is for a beginning teacher. That's one of the biggest reasons I would tell someone not to come into it. For someone like me, I think it's fine, but I have another source of income.

In North Carolina, all certified employees of local school systems must be paid from a legislatively approved salary schedule (NC Public Schools, 2012). For 2012-13, a beginning teacher with a bachelor's degree and no experience earns $30,800 for a ten-month contract, sometimes supplemented by local funds. Under certain circumstances, teachers certified in CTE can be awarded experience credit on the salary schedule for work experience in their license area, which allows them to start above the beginning teacher level (NC Public Schools, 2009). Still, a teacher with a master's degree and 20 years on the salary schedule would earn only $47,100 annually.

Several of the teacher-participants also expressed concern about what they saw as a lack of respect for CTE teachers in general and specifically for teachers with alternate-route certification. As James put it:

> A lot of teachers look at lateral-entry teachers and I would say at CTE teachers, a lot of your core teachers look at CTE teachers like we're not real teachers. And they would be lying if they said different and lightning would hit them if they said they

> didn't feel that way, because they do. They do. Not exactly the same but it kind of is. Because we don't teach history, we don't teach English. They don't consider us because we don't teach English, but our tests are just as important as what theirs are.

Lee said the problem is even more pronounced in his case because he has no degree, which is permitted for alternatively certified teachers in his field. "I tell you the biggest thing, the thing that hurts me the most is respect in my building in general," he said. "And it ain't CTE. It's the 'core' that don't respect a lateral-entry teacher maybe in my situation because I don't have a bachelor's." These same teachers are "the first ones to call" when they have a project they need help with, Lee said, adding that he tries to accommodate requests as long as they complement his course objectives and don't take away time from class requirements. "But then sometimes you just feel like you're just not respected enough. That's something I wish would change but I don't know how you could change that, so I just keep doing my job."

Other teachers said they had not faced this problem, or had countered it by showing how their business experience gives them perspective on their teaching responsibilities. Bunyun, who came into teaching after working in manufacturing for more than 20 years, explained:

> I had one veteran teacher came up to me and she said, "You didn't know that teaching was going to be this difficult." I looked right at her and I said, "Well, you know what, I've yet to be called at 3:00 in the morning and be told a piece of equipment is broken down and there are 70 people doing nothing because generally speaking, I had to get up, put my clothes on, go in there and find someone to try and fix whatever, this piece

of equipment or something. I would get calls during the night throughout manufacturing when you work around the clock seven days 24 hours a day. So, yes, you know it's different."

All 10 of the teachers said the intrinsic rewards, particularly the ability to make a real difference in students' lives, do a lot to counter the low teacher salaries. "You leave feeling good," said Owen, a BFIT teacher in western North Carolina. "I mean, you make a difference in one kid and you feel like a million bucks." Bunyun said he thinks he can have more of an impact on young people in his classes now than he did with the young adults he trained in his more than 20 years in manufacturing. "I feel like I was doing the same thing. It's just you getting them at an earlier age and hope you are planting that seed that's going to make them go out and grow and expand and become productive citizens."

Marcus owned his own business prior to beginning work as a teacher. "There's one thing about my business experience that wasn't rewarding like this," he said. "I didn't get to see a person grow and grow up." Marcus said that sometimes people begin teaching because they have exhausted other job possibilities and are beginning to feel desperate: "Mine wasn't a *desperation*, it was an *inspiration*. It's what I always knew I was going to do and that I love because this is where I was meant to be." Joe Mack, who was interviewed during winter break after the end of his first semester as a teacher, said that teaching is "more of a calling" than a vocation. "As much as I loved the business world, just this past six months have been more rewarding than any work I've ever done, and it's awesome."

Research Question One

How do teachers with alternate-route licenses in CTE describe their professional development experiences?

In North Carolina, application for alternate-route certification is initiated by the school district that hires a teacher it believes qualifies (NC Public Schools, n.d.). This is true for lateral-entry teachers and for teachers pursuing the special work experience certification available to CTE teachers, both of which are discussed further in Chapter Two. Once teachers are approved for one of these types of licenses, they have two options:

1. Affiliate with an approved teacher education program, which determines what specific college-level courses the teacher must take for full licensure.
2. Submit transcripts to at a Regional Alternative Licensure Center, which provides customized plans of study that indicate required college courses that can be taken at an approved community college, college, or university.

Both types of alternate-route certification have additional requirements such as a passing score on a standardized teacher competency examination and attendance at required state and/or local induction programs. The teacher must earn at least six semester hours per year and has three years to fulfill all requirements. There is no easily accessible list of competencies or courses that fulfill each competency, and, in fact, the website cautions that users should be aware that just because a course is listed as available on the website does not mean it will be on any individual teacher's plan of study or meet any of their requirements. The CTE Alternative Work Experience requirements, which list courses and other

requirements more specifically, are available on the web only in a draft form and only after considerable search.

Confusing. That was the message from the teacher-participants. They complained that it was difficult to learn what their requirements were so they could go ahead and get started. Beth, who started teaching in October, said knowing she had to take six semester hours in the first year and had only three years to complete the process meant "figuring out what all that means and what all you have to do" was especially challenging:

> Like, you've got to take the PRAXIS. OK, what's that? This 40-hour New Teacher Induction, this is my third year, this is my LAST year, and I'm just now doing it. I feel like I got a later start on everything because I started in October and I did not get my plan of study back until after the first of the year. Too late, because nobody would talk to me until I had a plan of study; that was very frustrating. "We're sorry, we can't tell you what classes you may have to take because you have to have your plan of study." My hands were tied, it was the middle of January, semester's already started, can't get into a class.

James said he was able to get a head start on his required course work through an informal contact at the state education agency. But he said he was aware that he might end up with additional requirements or courses that didn't count.

Sandy, who took a regular teaching position after filling in as a long-term substitute, said the communications about licensure requirements were "a little ambiguous sometimes":

> There could be some more clarity in what is exactly going to be required with licensing, because I got mine in and I made three phone calls before I finally

deciphered one of the clauses in the letter I got. I'm like, "I don't even know what this is." Sometimes I think that all the agencies together, the counties and the state together, are not all that effectively communicating. And I know this is just an off-the-cuff, "no kidding" kind of comment. That was probably the most challenging.

Seven of the 10 teacher-participants earned undergraduate degrees in business prior to entering the teaching field. Two had undergraduate degrees in other fields but direct work experience in business. The 10th had some community college, but no degree. Three had an MBA or other master's degree in addition to their undergraduate degree. One teacher reported he was not required to take any college classes as part of his plan of work, but the other nine reported between three and six courses were required.

In addition to college coursework, the 10 teachers in this study identified themselves as participants in the following types of professional development, in order from the most frequently to least frequently cited:

1. Mentors
2. State 40-hour induction program
3. State online (Moodle) Professional Learning Community
4. On-the-job experience
5. Locally required induction program
6. Informal support group
7. Conferences
8. District-level Professional Learning Community

Use of mentors is a key element in the induction program for new teachers in North Carolina (NC Public Schools, 2010). Mentorship is one component of a support system designed to help new teachers "reach their fullest potential" (p. 3). Guidelines from the state education agency challenge education leaders to select mentors who are enthusiastic and positive teachers who can collaborate with new teachers to help them adapt instructional practices to meet the needs of all students in their classrooms and think reflectively about their experiences to "enhance his or her practice." However, implementation of the mentor program varies by district.

Most of the teachers in the study mentioned their interactions with mentors, and several of them said that was the most useful part of their induction experience. Owen said of his mentor:

> He's not in the same department as me. But he's been the most helpful. Not even as much in the classroom, but just showing me the ins and outs of the way things work like what paperwork I need to fill out and this is how I go about filling out my PEP and this is what this means. Not only in classroom stuff but with everything else outside the classroom because I would definitely be lost if it was not for him.

He said he learned a lot just from observing his mentor teacher even though they are not in the same subject area. Lee said his work with a mentor teacher also had been beneficial. Although they are both in CTE, they are in different program areas but sometimes have the same students in their classes, he said. "A lot of times we end up with the same kids. I went to him and just asked him and he's helped me a lot. He explained to me how you gotta adjust here and there to teach a lesson to some of the kids. He's really helped me on that."

Joe Mack described a more structured relationship between him and his mentor. She observes his class at least once a week and then they meet to discuss what she has seen. He can arrange for her to observe something specific if he thinks that would be particularly helpful. “The formal stuff has been great, but having her there informally to be able to bounce ideas off of or know that I have somebody that I can go to has been probably more beneficial than anything.”

Other teacher-participants said their informal support from non-mentor teachers was as valuable as what they got from their officially assigned mentor. James described his interactions with other teachers this way:

> The biggest thing that I did was talking to other teachers. “How do you do it?” Or, “I’m doing it this way, is there a better way for me to do it?” We have a lot of good teachers there that are not in CTE. They’re just good teachers. There’s just things that you can get from other teachers just from observing, which I did.

Beth said she was helped immensely by other CTE teachers in her first teaching job:

> CTE, the business department, was exactly what I needed. I needed somebody to say, “Beth, take my hand. This is what we’re going to do and this is how we’re going to do it.” And I was grateful for that. They kind of embraced you and we ate lunch together and collaborated all that time and I would say, “What are we going to do tomorrow?” “OK, next week?” It was the perfect place to start.

Roger said that while he has benefited from having a mentor, he also appreciates support from a group of teachers, family members, and friends from around the country that gives him a place to talk things through:

> I have a little think-tank of people that we talk all the time. We talk and we trade off different things that's going on with students, and I think that kind of helped me, having that think-tank of people that you kind of buy into their opinion. That helped me more than it would normally through some of the training."

Most of the participants said the online Professional Learning Communities (PLCs) offered to North Carolina CTE teachers had been particularly beneficial. The PLCs use a Moodle format to disseminate official information from the state agency, to allow teachers to share resources, and to provide a question-and-answer forum for users. "That is the best thing that I've ever had in any kind of job," said James, who added that the PLC has been a "lifesaver" in his classroom. "It was just very, very helpful for additional activities and stuff that are not in the curriculum. That when you read through them you go, "Hey, that really hits. That really goes where it's supposed to."

Sandy said, "Oh, yeah. I love Moodle. Moodle is the best. That works great for me because I can go out when I want to. I can go through and I can read and I can pick and choose and communicate and I post to it and I pull stuff off, so I love Moodle."

Beth said the PLC was particularly useful to new teachers still exploring the content and improving their teaching skills:

> First off, you're not reinventing the wheel. It's there, it's done, been created by teachers who have been in the classroom. Like I said, why would I reinvent the wheel? I don't know my content like they do, I'm not as familiar with the objectives as they are, it's just already there, and there's lots to pick and choose and it's not just one assignment. Here's the PowerPoint, here's the guided notes, here's this activity,

> and Oh! I loved this one and this one didn't work for me. I mean it's just all there, it's laid out for you.

The more formal components of their professional development, such as college courses, the state induction program, and other conferences, had value, the participants agreed. However, several of them mentioned the expense and time involved as negatives of these activities. For example, Sandy said the 40 hours of training in the state induction program was long, expensive, and duplicated information from other training she was required to attend:

> It was long. Very, very long. And expensive. It's a lot of time. It's a lot. Forty hours was a lot of time because I had already been through a 10-day session with the county and it was about the same time, so it was very repetitive for me. I know they had consolidated that from 80. I can't imagine what 80 would have been like because 40 was way long enough. I think they could almost have cut that in half, I think they could do it in 20 easily.

Whether to reimburse expenses for training is a local decision. Some districts do pay at least part of the travel or conference registration fees, but few help teachers with tuition costs for college courses. Beth, for example, said that while she would have preferred to affiliate with the online master's program for BFIT and Marketing and Entrepreneurship Education teachers at NC State University, the cost of the program was prohibitive. Instead she had to piece together a program with courses from several community colleges and smaller universities, with assistance from the Regional Alternative Licensing Center. "I

would have loved to have a master's degree out of it," she said. "Loved to, but you know. You've got to do what you can do."

Much of their improvement came not from any formal induction or new teacher support activities, or even from informal interactions with teachers face to face or through the online PLC, but from learning from their own experiences, the teachers said. Eight of them used specific expressions, such as "learning on the job" or "reflecting on my experience in the classroom," to describe that ongoing learning, and the others included descriptions of on-the-job learning in their interviews. For example, Lee credited the bulk of his improvement to the fact that "every day is another day that you been in there and done that." He said his successes have given him confidence, but that he has also learned by "trial and error" from things that haven't gone the way he planned. "Just through experience. When I do things a little different I learn from them. Don't be set in my ways, 'this is how it's going to be.' If it don't work, I've got to be willing to adjust."

But James said that for learning through experience to work, other supports for alternatively certified teachers must be present:

> But when it comes right down to it, you have to take those things and apply them in a classroom and knowing how to do that is one of the most important things I think for a lateral entry teacher. As we've kind of alluded to, you get no real in-class training or anything. You're just there and it's the school of hard knocks. And I think that drives a lot of lateral entry teachers right back out of the career field because I had a support system at my school. I'm not sure all teachers do.

Overall, the teachers seemed to believe the professional development experiences in which they participated were beneficial, although they agreed that the requirements were confusing, communication was often unclear, and the training sometimes duplicated other required activities. They praised the interaction with their mentors and other formal and informal support groups, particularly the online Professional Learning Communities that are now a standard part of ongoing CTE teacher professional development in North Carolina. But they agreed that much of their improvement came through learning from experience.

Research Question Two

How does professional development help or hinder alternate-route teachers as they acquire the knowledge, skills, and attitudes they need to be successful and transfer that learning to the classroom?

The 10 teacher-participants in this study are comfortable with their current teaching skill levels, although they all agree they still have room for improvement. But whether their comfort level is a result of the professional development and induction activities in which they have participated, or in spite of these activities, is unclear.

Owen articulated their ambiguous feelings:

> Now I feel very comfortable. I guess when I first started I was very nervous. I was afraid I was going to say something wrong or mess up in my classroom. Now I'm very comfortable. Just being here longer than three months in the semester you earn respect from the kids or a reputation with the kids one way or the other. That's helped me out, just me knowing the kids and them knowing me. And I was able to watch my mentor quite a bit in the classroom and I picked up a lot of stuff that he does. But I

> could probably improve in everything. I know I can. I'm still young and learning every day.

The workshops were also valuable, said James. "Well, actually, every workshop that I've been to in this, and I include the lateral entry training as part of the workshops, I never went to one of the lateral entry sessions that I didn't come out of it with a couple or three things that I could actually take back with me to the classroom and use or help me in some way."

Marcus agreed. "I just took a professional development class and it was classroom management. Did I feel like I needed a lot of classroom management? Maybe, maybe not. But I knew the woman who teaches it. I knew no matter what if I take class under her, I'm going to learn something."

Sandy said the best thing about both the induction program and the college classes she had to take in her program of work was getting to meet others who were at the same stage. She became close friends with a number of the people she met that way, and they continue to meet up at statewide events or share materials. Beth said she also enjoys the networking, but was particularly happy to meet teachers at the beginning of their journey as she was winding up the final piece of her induction program:

> I was like the veteran. That makes you feel good when you've got somebody at your table that this is their first semester. To say, "Oh, it gets easier, it really does. It really does." All those things. "You know what, you're never going to have a first day again. You know – you're done with that."

On a less positive note, as was mentioned earlier, a number of teachers mentioned time and cost as problems. Joe Mack said he missed six or seven days of class during his first semester with the required state induction program as well as other professional development activities. He said he was fortunate to live nearby so he could drive back and forth to the training each day, but other teachers had hotel expenses on top of everything else. His biggest concern, though, was that there was no way to get credit for things he already knew or content that was part of other required training, so sessions were sometimes duplicative. And he sometimes felt like the sessions were designed without taking the adult learners into account, he said. “My biggest pet peeve about the whole thing is when they talk to us like we are 5 years old or 10 years old. They talk to us like we are the teenagers instead of adults. We’re adult learners and they don’t treat us like that.”

In fact, several of the teacher-participants had extensive prior experience as trainers, managers, and salespeople working with adult learners. This helped them quickly identify deficiencies in the training, but also gave them a leg up as teachers, they said. “See, I completely know that there’s a very big difference between adult training and student training,” said Sandy. “But I had done so much training and training design, I guess. I don’t have trouble transitioning. I’m really easy going and I pick up stuff really easily. And I think I’m fortunate that a lot of the things I’ve had the opportunity to work with I have real world experience with.”

Marie described the difference in her prior experience preparing adults for Microsoft Office Specialist certification examinations and her current work with high school students:

> Children are very different. I mean adults, you learn it in a week. Word, Excel, whatever. In less than that. There was only one-day classes to go over things and they're going at a rapid pace. They expect you to pay attention and follow through. Keep up. And you need to keep up. And you're doing what they're doing on the board. Half my class – you know how many times I have to say something over and over and over again? The same thing. We don't even get through one thing.

Bunyun said he did not think his current position was much different than his previous work in manufacturing:

> I have one teacher that questioned that I did not have enough psychology and understanding the minds of children. I mean what you've got to look at is when you're supervising people that are 18 to 21 to 22 years old, or you're teaching them from age 14-18, very, very little difference. As I've always joked, the only thing is I can't fire these students. When I was in the working world I could say, "Don't come back to work tomorrow, you're done," and they didn't. But I've often joked about that, that the kids they're going to come back. You've just got to figure out a way to manage them and get them to do what they're supposed to do.

Roger said as a manager in business, "you're teaching all the time." He used project-based learning to keep his staff members motivated and interested in learning. When he started teaching in high school, he discovered the same technique would work well here:

> The biggest challenge is trying to reach the weakest link. The challenge is coming up with creative ways to teach them, to capture their attention, and keep their attention, because kids nowadays, they'll sleep right in front of you. Tell them to wake up! I

> found that using the project and little visual kinesthetics and a lot of things is that it kind of captured their attention and they were intrigued. And some of my students say, "I can't wait until tomorrow." And that is a good thing. That means you're on the right track.

The teacher-participants had a number of suggestions about how to improve their induction activities. The items most frequently mentioned were to move away from theory and presentations by college professors and more to presentations by classroom teachers who could talk about how things really are in the classroom. Almost all of them said they'd like to see more opportunities for hands-on training and for teachers to spend time in the classroom before they have charge of a class.

Owen said taking multiple classes about education theory was not particularly helpful as he started actually working with students:

> I think theory classes are great to have, but maybe not three sections of them, maybe just one or two because it never really works out that way. I've never had the perfect class or the perfect mix of the students that actually want to be there and LEARN, which would make all the difference in the world if they showed up wanting to learn.

James agreed that while the education coursework and induction training were useful, they did not totally prepare him for what it would be like as the teacher in charge of a class:

> You come in, they show you the classroom, give you the key and say, "Here you go." And that's pretty much how it is, that's pretty much it. I don't think teachers who have not come lateral entry, I don't think they can even remotely relate to what it's like being a lateral-entry teacher. Because they've had student teaching and they've

had things that you don't get in the lateral entry. That's the whole point in the lateral entry program, I know. But it's different because basically you hit the ground running and you may get help from other teachers, but you're on your own and you kind of create your own environment within your class.

Sandy worked as a long-term substitute prior to taking a position as a regular teacher. She said that experience helped her understand what teaching involved and recommends that everyone "try out" teaching that way first. "I mean, I didn't have a lot of surprises when I came in. I knew what I was getting myself into." But substitutes are protected from some of the greatest challenges in the classroom, she cautioned. "When you're subbing and you say, 'I have a discipline problem' – 'OK, send them to me, I'll take care of it.' When you're full-time and you have a discipline problem, there's some expectation that you're going to take different steps than you are with a sub."

Marcus, who spent time both as a substitute and as a teacher assistant in a special education class, said he benefitted from his exposure to teaching in a more protected environment as well. But actually being a teacher is different. He said he started a support group for new teachers, not limited to alternatively certified teachers, because he saw how many of them struggled in the classroom. "I wanted a safe place where they can say whatever they want to because of the struggles they're having with discipline, with long hours and everything else." Eventually, the cure for these problems is to just do it, he said. "Golly, they have got to spend time in the classroom by themselves. It's just there's no way around it. It's like any job. The only way you are going to get good at it and the only way you are going to learn is experience."

The teacher-participants agreed that the professional development in which they participated during their early years as teachers helped them to develop expertise, but seemed to think much of its value was indirect. The helping hand up they received from other teachers was particularly beneficial, as was the opportunity to provide that same support to others coming behind them. They suggested the training would be improved by more emphasis on hands-on opportunities, especially if there were some way to acquire actual teaching experience similar to how traditionally trained teachers use student-teaching. Those who had worked in developing training during their years in business also suggested more emphasis on using principles of adult learning.

Research Question Three

What gaps do alternate-route teachers report between what they knew when they first entered the classroom and what they needed to know?

Content. All 10 of the teacher-participants in this study said they were knowledgeable about the content of the courses they were going to teach or knew how to get required information prior to going through training or starting in the classroom. Marcus, for example, said, "I love business a lot. The marketing of it, the sales, and, you know, I knew I could teach it. Felt like it was falling out of the boat for me."

Bunyun rated his business experience as an 11 on a 10-point scale, saying one big advantage that gives him is being able to explain to students why they need to learn something:

> Relate, doing, making kids understand why we're teaching something and there is a reason you will need this one day. It's just like when I used to teach spreadsheets.

> Folks, folks, believe me, this will not be the first nor the last time you will see spreadsheets in your life, I said. And I would give them examples of different jobs I had and the reason they did it.

Lee, the electronics technology teacher, said experience in the field is critical in his area:

> I would like to see somebody that comes straight from the college classroom with no experience come in and teach some of this. You can't do it. I could see it being impossible to teach it the way it needs to be done at all if you haven't done it. Anybody probably could stand there who knew how to teach and could teach the textbook, but can you actually take this here to show this kid how to do that and get that kid actually [successful]?

Sandy said her business experience helps her not only with content, but with knowing the "little stuff" that can help students be successful. For example, she said she gave students their first business lesson during an open house that occurred the night before our interview:

> And they're all giving me the "handshake" [mimics a weak handshake]. And I stopped them. I said, "Here's your first business education. When you shake somebody's hand, MEAN IT! MEAN IT!" And so they'd look at me for a second and I'd say, "All right, let's try that again." And every one of them would shake my hand better the second time. I had several girls who looked at me and I said, "Just because you're a female does not mean you shouldn't shake somebody's hand with purpose. You are not in the royal family, you do not need to tap and curtsy."

Roger said his enthusiasm for his subject matter, born of his business experience, has made him a better teacher. “I think to be effective as a teacher, the teacher must have just as much passion and interest in what they are teaching as the students, otherwise the students can feel when you’re really not interested, you’re just there because you’re there.”

Pedagogy. Nearly all of the teachers professed weaknesses in pedagogy, using the CTE curriculum, and developing and using appropriate instructional activities when they entered the classroom. Only Sandy and Roger, both of whom came into teaching after extensive experience in training and development, felt comfortable in these areas. Lee explained the frustration in trying to turn what he knew into lessons that would be meaningful for his students: “OK, I knew my content. I felt good on the content. I felt really good on my content. My biggest deficiency was, and I found out real quick, was I know how to do all this stuff, but how can I teach the kids how to do this?”

Owen agreed:

> I felt like I knew the material enough to get by on but classroom management and I guess methods would be my biggest problem. The different teaching strategies, how to reach all the different learners, was a new concept to me. I thought everybody learned the same. You just throw it out there.

Joe Mack described what he felt like was his greatest deficiency when he began teaching:

> I guess they call it, I say it wrong even now, pedagogy, and just learning to be a teacher in itself. I knew my content area, I know business very well. But learning how

> to actually *deliver*. And I taught corporate training classes and things of that nature, but there's so many abbreviations and strategies, it's just mind-numbing.

Using the secondary CTE curriculum presented its own challenges. In North Carolina, CTE courses are defined by a series of course objectives, each with resources, suggested teaching strategies, and items for formative and summative assessment. Several teachers said at first they did as much homework as their students, frantically getting ready for the next day's class. Lee said observing his mentor to see how he interacted with the students was especially helpful, but he cautioned that it is critical to model a teacher who is actually following correct strategies:

> The biggest thing I've seen in my area, I've seen some that wanted to come in there and just teach, teach, lecture, lecture, lecture, and then I've seen some they didn't want to do any of that, they wanted to do it all hands on. You know, you gotta have some of both but in our area kids don't sign up for the hour and a half lecture, they don't. You've got to be able to balance it.

Joe Mack said at his school, teachers are "expected to use tremendous amounts of teaching strategies so that students are learning in various ways":

> Because the curriculum might say, "OK, do this lecture, have the kids do this worksheet and then have them complete this activity." Well, if you look at it so cut and dry, you would literally do it just like that, which I have. Or I guess if you learn how to do the strategies, even though it doesn't say, "Use a literacy group to go through this activity," or this lecture or whatever, that's where it seems like the good

> teachers can say, "OK, I've gotta do X, Y, and Z, but I'm going to apply these strategies to them to make it happen."

None of the 10 teacher-participants in the study mentioned working with students with disabilities as an area where they needed professional development although that is often mentioned in teacher surveys as an area of particular need (Bradley & West, 1994; Lesar, Benner, Habel & Coleman, 1997). In fact, most of the teachers specifically said they experienced no special problems in that area. For example, James described his experience working with students with learning disabilities:

> I tend to gravitate to those students because most of them that I've had almost without exception are just like a sponge. Most of them, if you can sit down (and I don't always have the time to sit down unfortunately) but if you can sit down beside them or get them started on an activity and show them how to do it, they can do it – they can do the activities. That type of thing is a rewarding thing and I think that's part of being a good teacher is being able to reach all your students.

Marie said the students she works with who are part of the Exceptional Children's Program generally are happy to have an opportunity to be in the class and try hard to master the material. Technology provides tools to help with these students by customizing instruction and providing assessments with fewer response choices or that can automatically be read aloud. Lee said that he's heard other teachers say having students with special needs in the class slows down the pace for everyone, but that hasn't been his experience:

> I think them kids deserve every opportunity and I think it's the teacher's responsibility not to let it slow the class down but to keep them up. There's some of

them they don't grasp it if you're sitting up there lecturing and talking with PowerPoint. That's the ones where you've gotta put something in front of them, get their hands on something. I've heard people talk about the pace was too hard, and I thought, did I miss something here?

Classroom Management. All 10 of the teachers mentioned one or more issues related to classroom management as a concern when they started teaching. Surprisingly, discipline was only a concern for a few of the teachers, but all of them talked about dealing with difficult students or described incidents that seemed related to discipline issues.

Joe Mack, for example, said he was reluctant to claim "I have a handle on it," but said he was generally pleased with how things went in his classroom. "I got a lot of compliments from the administration on that when they'd visit my room. They could see that the students respected me. If I did have a hiccough of some kind, I would try to handle it on my own, trying to build that trust with the student." Bunyun said that while he had a few issues, "classroom management has really not been a terrible issue for me. I don't know if it's because of my age that the kids may have a little more respect for me because I may be their parents' ages or a little older. And maybe they have a little fear, I don't know. Because I can get loud."

Lee said he is able to use withholding time in the electronics laboratory as punishment for misbehavior, which generally keeps students toeing the line. "I don't think it's that I've let them run my class, but I handled it alternatively if there's an issue I feel like we're supposed to handle. I tend to use an alternative assignment if I have to. If a kid's going

to give me some trouble when we go in the lab, I'm not going to let them do the lab. They're going to do the alternative."

Roger said he wants to keep students interested and engaged, which means they are less likely to be causing a problem. But he still runs into behavior issues every day, he said. "It's not one day, every day you have a different one." He said he tries not to take students' comments personally, but instead focus on the student and continuing to make connections. "A lot of times it takes a lot of time out of your day when you do that but you can actually eliminate a lot of problems if we just take a little time, spend a little time with the child. Most of the kids, when they act out, they want attention and they have different ways to get that."

Marcus also said he focuses on building relationships with the students as a way to keep the class under control. He said this is especially important in an inner-city school with students who may not have had a lot of support in their personal lives up to that time. However, Bunyun said he sees the same sorts of issues at the small-town high school where he teaches:

> The problem is, some of these kids we're the only structure they get during the daytime. You see a lot of kids, they hang around school, hang around school, hang around school and just don't want to go home, and you know. Sometimes a sad situation but working with those kids I think it has become special. Meaningful. Sort of feel like you've had an accomplishment or maybe a change in their lives.

Even James, the former law enforcement officer, said he occasionally encounters problem students:

> Now I'd be lying if I said I haven't had problem students. I've learned how to deal with that, besides grabbing them by the collar and putting them out of the class. I had a student last year, that at first I thought, I can turn this kid around. You know, I can get him zeroed in. And I really tried hard for about a month, month and a half. And then I saw he had absolutely zero support at home, which meant I had zero support at home. I always ask other teachers, "Are you having a problem with them? What are you having a problem with them with? That type thing. And then I saw that he was having a lot of discipline problems in everybody else's class, too, it wasn't just me.

Beth said defining boundaries is an important part of maintaining discipline in the classroom:

> I'm a strict teacher. I was a strict mama and I bring that in the classroom. So you know, their opinion is important and they can express their thoughts and opinion in a respectful way. I'm not your homie, I'm not your buddy, I'm your teacher. We can have that relationship but it's like I said, I'm not their friend. It's a different relationship, they don't need any more friends, they've got plenty of friends.

Half of the teachers in the study started teaching in the middle of the semester, often taking over a class that had operated for weeks with a succession of substitutes. This compounded difficulty for the new teacher, who may have inherited a difficult situation over which he or she had no control. Beth described her first few weeks like this:

> That's what they kept telling me. "Next semester." Because I started in October. "In January they'll be yours from the beginning and it will be different. Just wait. It'll be different because they'll be yours from the beginning," and they were so right. So

> that's what they kept telling me, "When they're yours from the get-go, you lay out the rules and the procedures and the policies and the expectations and they're going to meet them," and they did!

Six of the seven male teachers are also coaches, which they all agreed was helpful as they started teaching. Owen said he felt like students were more cooperative for coaches. The students on the team don't want to disappoint their coach, and they use peer pressure to keep the other students in line. "I think they tend to try harder for you if you are their coach or they know you're a coach. I think they're more willing to try hard. They'll not give you a whole lot of grief."

Roger, who was coaching at the school before he started teaching, said his coaching skills served him well in the classroom:

> Coaching prepared me probably best for teaching because coaching you get a lot of different personalities and a lot of students and a lot of different skill levels and yet you want to get them at this targeted skill level and you have to have certain plans or preparations for getting them there to prepare them. So I can use a lot of things from coaching to help out with the students.

The other issue that came up frequently as an area of need when they started was time management, by which the teachers seemed to mean both managing their day-to-day schedules and planning student instruction. Joe Mack, who just finished his first semester, said he was working on days off and Saturdays in an attempt to get everything done. Improving his skills in planning and time management were major priorities for the next few months. He explained how his efforts would be focused:

> Planning a lesson further down the line so you can completely see all the activities you want to do and put them together where it's not so much day-to-day or every day or two. And then just time. I look at the other teachers and I could see them goofing off if you will, and I was like, "When do you have time to? How do you plan? When do you do all this?"

Bunyun said he learned early on to be over prepared:

> I learned a quick lesson to be sure you have plenty of work for the kids. Don't ever run out of work. It is especially (evident) when they're staring at you and there's a pause in the room and there's no sound to be made and you realize you have not prepared properly. So being properly prepared on a weekly basis, I like to stay a week ahead if I can, sometimes it's only a night it seems that you are ahead of the kids.

In addition to the items mentioned previously in this section, the teacher-participants also reported they had difficulty managing student records in the electronic student information system and struggled to understand education jargon and remember the acronyms in wide use.

Overall, the teacher-participants said they felt like they were knowledgeable about their content based largely on skills they brought with them to teaching. Their biggest gap, they agreed, was in pedagogy, knowing how to prepare lessons and materials and engage students in learning. Although for the most part they appeared reluctant to say they had problems with discipline, the teacher-participants mentioned classroom management and dealing with difficult students as among their greatest challenges. On a personal level, nearly

all of them mentioned the need for better time management in order to eliminate the necessity of putting in extra hours to get their jobs done.

Research Question Four

How did professional development succeed – or fail – at filling the gaps between what they knew when they first entered the classroom and what they needed to know?

Continuing struggles. The major gaps reported by teachers between what they knew when they started teaching and what they needed to know were the following, listed in order by frequency cited:

1. Using CTE curriculum
2. Utilizing appropriate instructional strategies
3. Planning and pacing instruction
4. Managing their own personal time

In addition, individual teachers reported problems with maintaining discipline and dealing with difficult students, using the electronic student information system, and understanding education jargon and acronyms.

At the time of their interviews, one teacher had just completed his first semester in the classroom. Another was starting his seventh year. The remainder were in between, clustered largely at between two and three years of teaching experience. They had taken a number of college courses and were either in the midst of or had completed the required induction program, had attended numerous conferences and other special activities, and had participated in online and face-to-face professional learning communities.

The major gaps reported by teachers between what they needed to know when they started teaching and what they knew at the time of the interviews were the following, listed in order by frequency cited:

1. Using CTE curriculum
2. Utilizing appropriate instructional strategies
3. Planning and pacing instruction
4. Managing their personal time

In addition, individual teachers reported problems with maintaining discipline and dealing with difficult students.

In other words, while the teachers saw improvement in their skills overall, the only two areas they thought the gaps had been filled were using the electronic student information system and in understanding education jargon and acronyms, neither of which was considered a significant shortcoming when they started.

Most of the teachers reported improvement in their use of the CTE curriculum and using required teaching strategies to reach all their students. Even Joe Mack, who was just finishing his first semester at the time of our interview, felt like he had already improved over where he started. “I’m nowhere near you know where I want to be or need to be, but I definitely improved,” he said.

James, several years further along in his teaching journey, also said he thought he was improving, but felt like he had a long way to go. “I always feel deficient,” he said. “I’ve been teaching going on my fourth year, I still feel deficient. I always think I can do better. I’m not

just saying that, it's truly the way I feel." Teachers struggle to hit a moving target as new courses are released each year, existing materials revised, and teaching schedules changed.

Most of teacher-participants have begun using the online CTE Instructional Management System, also known as Elements, which allows teachers to create customized assessments aligned to course objectives and to report by objective on student performance. Lee said he tells other teachers, "that's where CTEs got their act together." However, he said he is frustrated by the fact that materials for his courses and others are not available in the system. It is particularly frustrating when he receives software training but cannot utilize the program, he said. "I wish we could better benefit from Elements. The more I learn about it and those workshops I go to and learn about something I can't use," he said. Other teachers are unhappy with what they see as inconsistent quality in test items and assessments, particularly in the IT area, where much of the material is developed by vendors external to the state agency. Marie, for example, said she uses the system for one course but finds the test items for another one to be "horrific."

Half the teachers continue to report problems with planning and pacing student instruction and managing their own personal time. Just a few days earlier, Lee said he had a problem when a scheduled guest speaker did not show up until just before the end of class. "And you know I was scrambling. Maybe it's my bad for not planning, but when they said the day before they would be there, it's pretty bad. That's the thing I guess, just constantly keeping a backup plan."

Joe Mack described his improvement in planning for instruction this way:

> First started off just being, "OK, figure out what X, Y, and Z was, in enough time to be able to present it," and then it was, "OK, I need to get THROUGH X, Y, and Z," and then it's like, "OK, I can kind of see … OK, I'm going to have to do it." And now I'm to the point where I know how to do it, but I want to do it not only for today and tomorrow, but I want to do it for next week and the week after.

Marcus said he continues to work on improvement goals that include planning his own personal time better:

> Sometimes I am here early and I'm awful about being late. I promised my wife that this year I would try to leave at 5:30 every day, but there have been nights that I've been here at 8:00 and 9:00. I'm going to learn this and I'm going to get good at this and I'm going to be organized and I'm going to learn something new every day. Whether I do or not…I'm sure I do. I feel so much more comfortable this year than I did last year. I know it's experience.

Although all of the teacher-participants told stories about behavior problems or dealing with difficult students, Marie was the only one who really appeared frustrated by her continuing problems with discipline issues in the class. However, she had spent some time thinking through the problem and had a plan for day one of the second semester:

> I look back and look at the things I've done and I realize I don't have enough. I'm not teaching them, I'm not pushing them hard enough. This is why I have a class that's out of control. That's my honest opinion. I don't blame it all on the students 100%. It shouldn't be as out of control as it is and I would be my first critic.

She said she plans to adopt a more structured approach for the next semester, “so many minutes of this, so many minutes of that.” Giving the students a clear understanding of what is expected and making sure they have to focus to accomplish their goals “will quell some of these behavioral issues, so no one is floundering, no one can say, ‘I don’t know what I’m doing.’”

Measures of success. The teachers agreed that in spite of occasionally encountering bumps on the road, in general they felt like their teaching experiences had been positive. The main evidence they cited to illustrate their success was student performance on standardized post-assessments in the CTE classes, student attainment of industry-recognized credentials, evaluation by principals and others, and stories about particularly challenging students who achieved success. They all claimed to be satisfied with their teaching careers and several said they had definitely found their niche. All but one said they planned to remain in teaching for the foreseeable future, although several indicated interest in moving into administration or other areas in the education field.

The teachers cited their students’ post-assessment scores and earned business and industry credentials as evidence of their success. Lee, for example, said more than 80 percent of his students in the previous semester met the requirement for proficiency on the statewide post-assessments. “Whether people say it or not they look at your test scores. That’s bottom line, they can say it or not. When you talk to your administrators, they can say whatever they want but they look at them.” Most North Carolina secondary CTE students take a 100-item multiple-choice post-assessment at the end of each course (NC Public Schools, Career and

Technical Education, n.d.b). The post-assessment results are scaled to where a 77, a low C on a standard grading scale, counts as the student met required proficiency.

Owen said he is not worried about the addition of test scores to how teachers are evaluated. “I’m not nervous. I hope they take just my test scores, just because the tests they’ve been giving from the state, we’re pretty good on that.” He said that since he normally has students in his class during their freshman year, he is not as focused on their eventual entry into the workplace as other teachers might be. “I mean I had them as freshmen. I’m just trying to get them to where they can be sophomores.”

Marie said that while her students did well on their post-assessments, she is more concerned about whether they earn industry-recognized credentials in her class. In the previous year, most of the students in one of her classes focusing on Microsoft Office applications were able to earn credentials, she said. “I think if they pass their certification they should be able to get an A for the class. That’s my personal opinion because that shows in the business world, I’m a business-minded individual. You (can) take that certificate out anywhere.”

Sandy said she doesn’t believe scores tell the whole story, either positive or negative. Although in one of her classes in the previous year nearly all the students scored at or above proficiency on the post-assessment, she does not consider the class a success, she said. “The whole class was a challenge. It wasn’t a good grouping of students, it wasn’t a good grouping for the curriculum, and it was a constant battle of frustration. The *course* was very successful. The student population that I had was a nightmare.”

Lee said that even in his short teaching tenure he's been able to place graduates in employment in the electrical trades technology field. When he hears from his former students that they have already received a raise, or hears from employers that the new employee is doing well, that gives him a real feeling of satisfaction, Lee said.

Beth said she thinks success as a CTE teacher is difficult to quantify by test scores or performance on an evaluation. "Just when a light comes on. I think that's what it's all about. You know, when a kid goes, "OOOOHHHHHH, that's what that means. Yes! Yes!' " she said. Marcus also said he gets feedback from students to let them know they have been changed by his class. Students who were in his class the previous year stop by to visit and tell him how much they miss the class, he said, choking up when he thought of particular students who went through struggles during the year.

Bunyun said the lasting connections he's made with students are the greatest measure of success:

> Following kids through and seeing their success when they may have had a little problem. I don't know specifically. You may see a kid recovering a second semester, or second nine weeks. Basically they struggle, struggle, struggle, and then you see if you work with them a little bit, all of a sudden it might click. The light may go on.

The teacher-participants in this study said much of their improvement over the course of their teaching careers resulted – either directly or indirectly – from the professional development in which they participated. However, the teacher-participants faced the same challenge as others who try to measure the quality of teachers or teaching – difficulty in quantifying what makes good teachers. They cited test scores and credentials earned as

evidence of their success, but stressed that much of what they do as teachers is not reflected in typical teacher quality data. A more significant measure is the difference they've made in students' lives, the teachers said.

Chapter Summary

This study looked at alternatively certified CTE teachers' perceptions of professional development activities in which they participated. The 10 teacher-participants in the study were recruited from among teachers who had gone through new teacher induction activities during the past few years. The teachers came from three different program areas, but all were involved in fields that focused on technology and computers. Teacher demographics and other characteristics varied and included different educational backgrounds, work experience, ages, genders, length of tenure in teaching, geographic locations, size of the school districts and schools, rural or urban nature of the area in which the schools were located, and socioeconomic characteristics of their students. The teachers participated in semi-structured interviews at their school or another location of their choosing and were able to clarify any comments they wished during a review of the interview transcription. An overview of selected teacher and school characteristics was presented earlier in Table 3.1. Brief descriptions of the teachers, using the pseudonym each selected for the research, appear in Appendix D.

The interviews were analyzed using open coding to identify themes that became apparent as the participants told their stories about how they started teaching, the professional development in which they took part or continue to participate, and its impact on their performance as teachers. Six themes became apparent in the analysis. Table 4.1 shows how

the themes relate to the study's four research questions. It is obvious from this table how interconnected and overlapping the themes were and how strongly each related to each research question. The teachers could not talk about their current skill levels without talking about their skill levels upon entry into the profession, the professional development in which they participated, and how it or helped or hindered them on their professional journey. The teachers' stories, too, were similar in spite of their disparate backgrounds. They often used the same expressions to talk about their experiences and described the same continuing frustrations no matter where they taught. This suggests that the questions they raise have meaning beyond these 10 people and the specific training in which they have taken part.

This chapter discussed the six major findings of this study:

1. The teachers seem to believe in the importance of what they are doing, although almost all of them mentioned low salaries for beginning teachers and lack of respect for CTE teachers and teachers with alternate route certification as elements that negatively affect teacher retention and quality.
2. All 10 teachers felt like they came into the classroom with adequate content knowledge, or the ability to acquire any additional content knowledge they needed on their own. However, most of them said they needed help aligning that content knowledge with the CTE curriculum and developing appropriate instructional activities.
3. The teachers talked about the benefits of their informal, on-the-job learning, which they did not tend to label "professional development."

4. The teachers said they continued to need help in time management, by which they seemed to mean both their own day-to-day activities and how to plan and implement instruction for the students.
5. The teachers had vastly different work experience and educational backgrounds, resulting in significant differences in their professional development needs. They did not think this fact was considered in the design of required professional development.
6. Teachers were about evenly divided on the value of current professional development activities, although they had a number of suggestions for improvement.

Information from the interviews was presented to illustrate these findings. Direct quotations were provided when appropriate. These are examples only. In all cases, numerous other direct quotations could have been used instead of or in addition to the material selected.

Chapter Five provides further discussion, conclusions, and implications of the study.

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Table 4.1

Themes in the Study and their Relationship to the Four Research Questions

Themes	Preliminary	Research Question 1: How do teachers with alternate-route licenses in Career and Technical Education describe their professional development experiences?	Research Question 2: How does professional development help or hinder alternate-route teachers as they acquire the knowledge, skills, and attitudes they need to be successful and transfer that learning to the classroom?	Research Question 3: What gaps do alternate-route teachers report between what they knew when they first entered the classroom and what they needed to know?	Research Question 4: How did professional development succeed – or fail – at filling the gaps between what they knew when they first entered the classroom and what they needed to know
Value of teaching and of Career and Technical Education (Finding 1)	X	X	X	X	X
Teacher content knowledge upon entry/current (Finding 2)		X	X	X	X
Teacher pedagogical knowledge upon entry/current (Finding 2)		X	X	X	X
Teacher classroom management knowledge upon entry/current (Finding 2 and 4)		X	X	X	X
Value of current PD for new alternatively certified teachers (Finding 3 and 6)		X	X	X	X
Need for customized PD requirement based on knowledge upon entry/current (Finding 5)		X	X	X	X

CHAPTER FIVE: CONCLUSIONS

The purpose of this narrative study was to explore the role professional development plays in the development of CTE teachers who entered the profession in ways other than the traditional route of earning an undergraduate degree in education. This can include teachers who have undergraduate degrees in the content area in which they will teach or in some related field as well as those in areas in which no undergraduate degree is required.

The study was guided by four research questions:

1. How do teachers with alternate-route licenses in Career and Technical Education describe their professional development experiences?
2. How does professional development help or hinder alternate-route teachers as they acquire the knowledge, skills, and attitudes they need to be successful and transfer that learning to the classroom?
3. What gaps do alternate-route teachers report between what they knew when they first entered the classroom and what they needed to know?
4. How did professional development succeed – or fail – at filling the gaps between what they knew when they first entered the classroom and what they needed to know?

Chapters One and Two discussed what the literature shows about the scope of alternative certification and major issues involved in recruiting, training, and retaining high-quality alternatively certified teachers. There is increasing interest in using alternatively certified teachers, particularly in subject areas and geographic regions where not enough teachers are produced by traditional teacher education mechanisms (Boyd et al., 2006b;

Feistritzer, 2007, 2011). Much of the considerable research done on the topic of alternatively certified teachers has focused on quantitative studies of elementary teachers or on secondary teachers of mathematics and science, two areas of particularly significant need (Wilson et al., 2001; Boyd et al., 2009; Clotfelter et al., 2007a, Ingersoll & May, 2010). As stated earlier, little attention has been paid to CTE teachers.

Chapter Three presented the methodology used in this study. Ten alternatively certified CTE teachers in North Carolina who taught courses related to computers or other types of technology were interviewed about their transition into teaching. The teachers discussed the impact of required professional development on their journeys.

Findings were presented in Chapter Four, organized by the study's four research questions. Overall, the participants thought there was value in most of the professional development activities in which they participated, but had a number of suggestions for improvement. In particular, they felt like the process could be streamlined and customized for individuals depending upon the skills they brought to teaching from their previous careers. The teachers, who ranged from brand new teachers to those with several years of experience under their belts, continued to experience gaps in their knowledge and the performance required of them in the classroom.

The six major findings of the study were as follows.

1. The teachers seem to believe in the importance of what they are doing, although almost all of them mentioned low salaries for beginning teachers and lack of respect for CTE teachers and teachers with alternate-route certification as elements that negatively affect teacher retention and quality. Although this was

not directly related to professional development, the main subject of this dissertation, it is clearly connected through the bigger picture of Human Resource Development, of which employee retention and quality are two significant pieces. The fact that teachers do not feel adequately remunerated or well respected has the potential of seriously undermining successful training programs and illustrates the fact that education is a system. Truly improving quality means paying attention to every facet of the system.

2. All 10 teachers felt like they came into the classroom with adequate content knowledge, or the ability to acquire any additional content knowledge they needed on their own. However, most said they needed help aligning that content knowledge with the CTE curriculum and developing appropriate instructional activities. This topic came up repeatedly during the interviews, often as part of the discussion of how teachers would be better served by more customized professional development that focused on elements where their backgrounds were weakest.
3. The teachers talked about the benefits of their informal, on-the-job learning, although, interestingly, they tended not to think of this type of learning as "professional development." This reinforces the idea that the best professional development is embedded in employees' day-to-day activities and suggests that this might be an area that could be better utilized in education.
4. The teachers said they continued to need help in time management, by which they seemed to mean both their own day-to-day activities and how to plan and

implement instruction for their students. This perception was mentioned repeatedly as a gap when they started teaching that became more evident as time passed. It is a potential issue because lack of time to plan and carry out assigned tasks could seriously impact student outcomes. This could lead to teachers being penalized in measures of teacher quality, which could affect decisions about tenure and continued employment. In addition, teachers who feel like they must put in extra, unpaid hours may be less satisfied with their jobs, which could influence their decisions about remaining in the classroom or looking for other employment.

5. The teachers had vastly different work experience and educational backgrounds, resulting in significant differences in their professional development needs. They did not think this fact was considered in the design of required professional development. The teachers stressed the fact they would like a way to assess their specific professional development needs and customize training to fit those needs rather than using what they saw as a one-size-fits-all model that sometimes led to too much training on one hand and too little on the other.
6. Teachers were about evenly divided on the value of current professional development activities, although they had a number of suggestions for improvement.

This chapter provides further discussion of these findings, the study's conclusions and implications.

Discussion

Learning through Experience

This study is based on the conceptual framework of experiential learning, the idea that experience rather than formal education and training is the source of much knowledge. Experience fits into this study in two major ways (Newman, 1999; Usher, 1999):

1. Learning from prior experience the teacher brought to the classroom
2. Learning through experience as a teacher

Merriam et al. (2007) wrote that "Clearly, people learn from experience" (p. 163). The concept of andragogy (Knowles, 1984) mentioned earlier focuses on the value of the adult learner's experiences, both as the source of learning and as a way to interpret and apply what is being learned by giving it a real-world context (Merriam, et al., 2007; Tennant & Pogson, 1995).

First, alternatively certified teachers bring with them the knowledge they acquired during their years of experience in the business world. Indeed, this learning is the sum of a number of separate components: the businessperson-turned-teacher's educational background, formal training for his or her job(s) in business, and informal learning on-the-job. Because each teacher has had different experiences and has learned differently from these experiences, each has different strengths and weaknesses and different professional development needs. This was evident from a cursory look at the backgrounds of the 10 teacher-participants in this study, who had worked for different lengths of time at different careers and who had significant differences in the skills they brought with them to the classroom. Unfortunately, standardized professional development requirements fail to

distinguish between these individuals, providing beginning teachers with more than they need in some areas and less than they need in others. Few seem to find the fit to be just right.

Second, learning from experience in the classroom plays a significant role in new teachers' development of expertise (Merriam et al., 2007; Tennant & Pogson, 1995). The teacher-participants in the study talked about the idea that there is "no substitute for experience" and credited much of their improvement to the things they learned on their own each day. Even after only a short time on the job, their behavior has changed significantly as they see what works, what could work better with a few tweaks, and what does not work and should never be tried again. Because each alternatively certified teacher starts from a different place, and the teachers' experiences continue to differ – different students with different capabilities, different behavior issues, different parents, even different classroom environments – teachers continue to develop differently.

We cannot avoid learning from our day-to-day experiences, and indeed, sometimes this learning is critical. But without any direction, learning by happenstance may not result in appropriate learning, or even learning at all. Substantial improvement does not just happen. On their own, teachers may learn the quickest place to stop for coffee on the way to work, which meetings are truly required and which can be missed without penalty, or which coworker is not to be trusted. And certainly these are valuable lessons that contribute to teachers' effectiveness. Indeed, most teachers probably would demonstrate some small improvement in their teaching, simply learning through trial-and-error. Although "workplace learning can also occur 'naturally' where the individual interacts with a workplace setting" (Van Woerkom & Poell, 2010b, p. 222), such learning is difficult to measure and does not

meet the needs of today's performance-based, highly accountable education environment (Guskey, 2000). That involves including more structured experiential learning.

The idea of incorporating learning into employees' experience has become more widely accepted in recent years, first in business (Van Woerkom & Poell, 2010a), then in education (West, 2002; Huffman, Hipp, Pankake & Moller, 2001; Rhodes & Beneicke, 2002). Still, in spite of what is known about what makes quality professional development, much of what occurs in educator professional development continues to feature guest speakers addressing topics of concern without input from teachers in its development, without taking their experiences into account, and without developing plans for how new knowledge will be transferred to the classroom (Herner-Patnode, 2009; Gennaoui & Kritschmer, 1996; Guskey, 2000; Salas & Kosarzycki, 2003). Some of the teacher-participants in the study had opportunities to build upon their experiences in a formal way, but others reported their learning by experience was more a matter of trial-and-error than a structured component of their required professional development.

Alternate-Route Entry Teachers' Professional Development

There is no universally accepted model for training teachers that guarantees success in the classroom. Even prospective teachers at traditional teacher-education institutions find requirements vary from institution to institution or even between programs within an individual institution, depending on state licensure requirements and specific institution guidelines (Goldhaber & Brewer, 2000).

Consensus on how best to prepare alternatively certified teachers is even harder to come by. Some states have few opportunities for alternatively certified teachers to enter the

classroom, while others make it relatively easy to transition to a teaching career (Feistritzer, 2007, 2011). Some alternatively certified teachers are required to complete a degree, either at a bachelor's or post-graduate level (Darling-Hammond et al., 1999; Ruhland & Bremer, 2004), while others receive minimal training before taking charge of a classroom (Darling-Hammond et al., 1999).

What is clear is that all new teachers, whether they are traditionally or alternatively certified, need support, including quality professional development, in order to successfully make the transition to the classroom (National Research Center for Career and Technical Education, 2011; Chambers, 2002; Freiberg, 2002; Nieto, 2009). "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" (Freiberg, 2002, p. 57). Otherwise, teachers learn through "trial and error" (Freiberg, 2002, p. 56), in a "haphazard process" (p. 56) that contributes to an increasing teacher attrition rate that is often blamed for teacher shortages (Ingersoll & Smith, 2003; National Commission on Teaching and America's Future, 2002, 2007). In 2001, Darling-Hammond reported that about a third of new teachers leave the classroom within five years. By 2008, Moir calculated the attrition rate within five years at almost 50 percent! The annual attrition rate in 2007 was 16.8 percent, a 50 percent increase in 15 years (The National Commission on Teaching and America's Future, 2007).

For the most part, alternatively certified teachers have different support needs than do those teachers with traditional certification (Chambers, 2002; Roberts & Dyer, 2004; Edney, 2010; Schonfeld & Feinman, 2012). Alternatively certified teachers frequently have strong technical content knowledge but need instruction in pedagogical skills such as planning,

lesson design, time management, classroom management including strategies for dealing with violent students, student-centered instructional approaches, working with students with disabilities, and use of formative and summative assessment (Schonfeld & Feinman, 2012; Freiberg, 2002). CTE teachers may also need additional training in operation of career and technical student organizations, supervision of students' work-based learning experiences, and program management (Roberts & Dyer, 2004).

The Southern Regional Education Board (SREB), a coalition of 16 states centered in the southeastern US, has developed a model for induction of alternatively certified teachers (Bottoms, Egelson, Sass, & Uhn, 2012) designed to prepare them for the classroom:

> In partnership with the NRCCTE, SREB developed an induction model for new CTE teachers pursuing an alternative route to certification that increases their career commitment, competency and self-efficacy. The model is designed to build the capacity of beginning CTE teachers to offer instruction that is intellectually demanding and standards-focused and thus more likely to improve CTE students' academic achievement. The model also builds CTE teachers' capacity to design instruction that is actively engaging using strategies like project-based learning and cooperative learning. Students who are actively engaged intellectually and emotionally in the high school courses are more likely to stay in school and graduate on time and less likely to need developmental (remedial) courses at the postsecondary level. (p. ii)

The SREB model provides 196 hours of professional development including two 10-day summer institutes, one prior to and one following the teachers' first year in the classroom,

and three two-day workshops during the year. It also includes informal activities such as "support of coaching from the professional development instructor, on-site guidance from a mentor and administrator, and participation in an electronic community of practice" (p. iii). The SREB's five-year study of the model found it was effective in impacting "teaching commitment, competence and self-efficacy" (p. iii).

In an earlier, preliminary report on the SREB project and another NRCCTE initiative related to professional development (National Research Center for Career and Technical Education, 2011), the authors conceded such a high-quality – and costly – new teacher induction program faces significant implementation challenges. "The current economic climate may make it increasingly difficult to provide time for professional development of sufficient intensity and duration to be effective," they wrote (p. 5). North Carolina appears unlikely to adopt the SREB model, which would increase the financial cost of the training and require more time out of the classroom for teachers. In fact, the state phased in a 40-hour rather than 80-hour induction program over the last few years, and even that is under further study and likely to change. Anticipated changes include limiting the length of the face-to-face component of the training, utilizing online options where feasible, and better synchronizing requirements at the local and state levels to avoid duplication (Curt Miller, Personal Communication, February 2013).

The teacher-participants in this study would probably support these changes, which reflect some of the concerns they expressed about the professional development opportunities in which they participated. Table 5.1 provides an overview of existing professional development from the users' perspective.

Table 5.1

Participant Evaluations of Positive and Negative Factors Associated with Each Type of Professional Development

PD Strategy	Positive	Negative
College coursework	Good information Customized	Inconsistent requirements Expensive Time consuming
Local induction	Networking	Sometimes duplicative
Mentors	Relationship	Variation in quality and helpfulness
On the job learning	Embedded	Not structured, Have to make mistakes so you can learn from them Need strong support system
State induction	Good information Networking	Should be customized Costly Time consuming Sometimes duplicative
State Online PLC	Good information Networking	Not all equally active

Actually, participants' evaluation of professional development opportunities was strangely similar, no matter what type of professional development they were discussing. The sessions had value and they were able to learn no matter the specific type of professional development, but by far the greatest benefit was in the development of relationships and the potential for networking provided by the activity. The downside was the cost, both financial and in time, which sometimes did not seem worth it for the amount learning involved. The

training was sometimes duplicative and of inconsistent quality depending on the resources available and specific personnel involved.

Several teachers mentioned the fact that requirements for training were almost always standardized rather than providing opportunities to design programs that acknowledged the skills they brought to teaching as a result of their educational backgrounds and work experience. Interestingly, they seemed frustrated by the requirements for specific college courses although those were mandated by a plan of work specifically designed for the individual teacher. Lack of transparency in how they were set made course requirements seem arbitrary and inconsistent.

Alternatively certified teachers often bring skills they acquired in their previous jobs to their second careers as educators. In addition to the content knowledge they have acquired through their experiences, the literature cites other types of expertise, including communication, the ability to multi-task, higher order thinking skills, and a strong work ethic (Chambers, 2002). And because each alternatively certified teacher comes to the classroom via a different path, each brings different specific expertise to the job. The teacher-participants talked about the skills they learned in their previous careers and complained that these were not taken into account. No matter how they got there and what they brought with them, the teachers' requirements for what professional development they had to complete were quite similar.

In addition, teachers with experience in adult learning as trainers expressed concern about the design of specific professional development opportunities, which often seemed to be based on concepts of pedagogy, principles that guide the learning of children, as

contrasted with andragogy, principles that guide the learning of adults. Andragogy, as posited by Malcolm Knowles, says that adults need to understand why they are learning something, that they learn best through experience, and that they need to put learning to immediate use (Knowles, 1984). A learning environment based on the concept of andragogy would be led by a facilitator rather than a traditional teacher or instructor, and adult learners would be in charge of their own learning (Brookfield, 1989). Although there is value in modeling pedagogical skills the teacher should use in the classroom (Ingersoll, Merrill & May, 2012; Freiberg, 2002), as adult learners the teacher-participants said they were sometimes frustrated by these experiences.

Contribution of Professional Development to Teacher Success

Defining "good teacher" is beyond difficult. In fact, the more we learn about teaching and education, the more difficult it becomes. Nearly 40 years ago, education professor Allan Ornstein (1976) bemoaned the fact that there was no consensus on what makes a good teacher in spite of "literally thousands of studies on the subject" (p. 201). Studies may yield statistically significant findings, but they "often correlate with trivia or bear scant relevance to the classroom. Thus, the research findings usually turn out to be meaningless to classroom teachers" (p. 201). Presumably thousands more studies have been published in the intervening years, adding confusion rather than bringing clarity to the topic.

Recent years have seen increasing emphasis on test scores as part of – or even the only measure of – teacher quality (Nolen, Haladyna, & Haas, 2005; Donegan & Trepanier-Street, 1998). Critics warn that overemphasis on test scores has led to well-publicized cases of cheating, such as an ongoing case in the Atlanta Public Schools (Vogell, 2011), and

presents an inaccurate snapshot of teacher quality. Yet the 10 teacher-participants, when asked about their teaching performance, all cited their students' test scores as evidence of their teaching skills or as improvement goals for the future.

Teachers reported gaps between what they knew when they started teaching and what they needed to know, with little change between the beginning of their teaching careers and their present status. Table 5.2 shows major self-reported gaps and whether these gaps were present when the teachers started teaching and at the time they were interviewed. "Yes" on this chart indicates that half or more of the teachers saw that area as an area where significant gaps existed between their skill level and what is required to be a successful teacher.

According to Table 5.2, the alternatively certified teacher-participants thought their business backgrounds had prepared them well in terms of content knowledge, where they did not report a knowledge gap at either reference point. They also reported no gap in the areas of classroom management/discipline and working with students with disabilities. According to their self-evaluations, the teachers thought they needed help with instructional strategies, working with CTE curriculum, and time management, both when they started and continuing to the present. This chart shows change in self-ratings in only two areas – understanding education jargon and using the student information management system. A number of the teacher-participants credited their perceived improvement in these areas to required "soft" workplace skills such as teamwork, customer service, and persistence. This course can be taught by a teacher with certification in any CTE area.

Almost all the teachers agreed that informal learning through the actual experience of teaching was extremely helpful in developing their expertise. Perhaps consideration of how

Table 5.2

Teacher Self-Reports of Gaps in their Teaching Skills

	Gap at beginning of teaching career	Gap at time of interview
Content	No	No
Instructional strategies	Yes	Yes
Curriculum	Yes	Yes
Students with disabilities	No	No
Classroom Management/discipline	No	No
Time management	Yes	Yes
Understanding education jargon	Yes	No
Using the student information management system	Yes	No

NOTE: At the time of their interviews, the teacher-participants' experience ranged from a few months to six years.

to incorporate such informal learning into their induction in a more formal way would be beneficial, although making it more structured might decrease its usefulness. They also said an opportunity to spend time in a classroom as a sort of paid intern prior to actually stepping into a teaching role would be helpful. Those who had experience as long-term substitutes or teacher assistants said the informal learning from that experience helped prepare them for the transition to teaching, and those who did not have that opportunity seemed to recognize an unmet need. None of the teacher-participants could suggest a way to operationalize this

suggestion that would make such an internship attractive to school districts, which are short on funding and in many cases desperately in need of a teacher starting yesterday. However, recent literature is beginning to use the language of apprenticeship to describe an induction program similar to the apprenticeship model familiar to trainers and educators focused on preparing students for careers in industry (Shanks & Robson, 2012).

The answer to whether professional development "helps or hinders" alternate-route teachers is clearly "Yes." It *does* introduce them to new ideas that they can build upon to improve their expertise. It helps them establish a professional network of fellow teachers and others they can go to for help in solving problems they encounter as teachers. It connects them to credible resources and develops their skills in evaluating references as they build their library of teaching activities and strategies. On the other hand, it sometimes encourages them to focus on compliance – checking off a series of requirements – rather than building competence as teachers. And it rarely articulates a way to transfer learning to the classroom.

Transfer of training has been widely studied in a business context (Baldwin & Ford, 1988; Blume, Ford, Baldwin, & Huang, 2010). Transfer of training is the degree to which participants in training apply over a period of time what they learned in training (Broad & Newstrom, 1992). Generally, effectiveness measures look at whether participants can use their newly acquired knowledge and skills on the job, both immediately and over the long term (Broad & Newstrom, 1992). In a 1988 meta-analysis of research on transfer of training, Baldwin and Ford found "researchers have similarly concluded that much of the training conducted in organizations fails to transfer to the work setting" (p. 63-64). A follow up study (Blume et al., 2010) found little change: "Despite the large investments in and potential

benefits of training, organizational decision makers are often not sure to what extent employees perform differently back on the job" (p. 1066).

Education presents even greater challenges in determining how effectively participants are able to transfer their learning to the classrooms. In his model for evaluating professional development in education, Guskey (2000) proposed five levels of evaluation of professional development:

1. Participants' reactions
2. Participants' learning
3. Organizational support and change
4. Participants' use of new knowledge and skills
5. Student learning outcomes

Evaluation at all five levels is important to understanding the quality of professional development, how it can be improved, and its ultimate impact on the bottom line, Guskey said:

> Evaluation at any of these five levels can be done well or poorly, convincingly or laughably. The information gathered at each level is important and can help improve professional development programs and activities. But as many have discovered, tracking effectiveness at one level tells you nothing about impact at the next. Although success at an early level may be necessary for positive results at the next higher one, it is clearly not sufficient. That is why each level is important. Sadly, the bulk of professional development today is evaluated only at Level 1, if at all. Of the

rest, the majority stop at Level 2 (Cody & Guskey, 1997; Frechtling et al., 1995) (p. 86).

Without detailed study and gathering data from multiple data sources, it is impossible to determine the true impact of professional development activities that are part of induction of alternatively certified CTE teachers. The teachers in this study report the training was useful to some extent, that they acquired knowledge and skills that they were able to use in the classroom, and that their training had a positive impact on student achievement. But whether their perceptions were accurate and the role required professional development played will have to wait for further study.

Relationship to Human Resource Development Issues

Literature related to the four major issues HRD issues examined in this study – employee retention, induction, mentoring, and professional development – is surprisingly consistent whether it comes at the issues from an education or an HRD perspective, although there are some differences in terminology. What the education literature frequently calls "retention and attrition" is often called "turnover" in HRD and management; "induction" may be called "new employee development"; and "professional development," "training and development," and "workplace learning," while not exactly used interchangeably, refer to similar concepts.

Table 5.3 shows the major points made by teacher-participants about professional development and their relationship to the literature. Most of the teacher comments were supported by the literature, although there were small differences, largely a result of the specific set of teachers that participated in this study.

Table 5.3

Relationship Between Teacher Comments and the Literature

Teacher comments	Relationship to literature	Selected References
Positive		
The sessions had value and they were able to learn no matter the specific type of professional development	Not discussed	
Relationships and networking	Supported	Nieto (2009) Korte (2009) Stevens & Dial (1993)
Negative		
Cost	Not discussed	
Sometimes duplicative and of inconsistent quality	Supported	Chambers (2002) Guskey (2000, 1995)
Training requirements standardized	Supported	Chambers (2002) Freiberg (2002)

For the most part, the literature supported what teachers reported in their professional development experiences, both positives and negatives. For example, the teachers said the value of building relationships and developing a structure for networking in the school and district, as well as around the state, were the most beneficial parts of their induction experiences. Mentors and online and face-to-face peer support groups were helpful not only

in developing their expertise as teachers, but in helping them *become* teachers – such things as learning the education jargon; negotiating the landmines of supervisors, parents, and students; and developing confidence in their teaching as the years progress. The education literature stressed the value of becoming part of the shared belief system of teachers (Fulton et al., 2005; Kane & Russell, 2005; Ruhland & Bremer, 2002a). The HRD literature referred to it as "socialization" and found that such affective commitment has an important role in lowering turnover (Carmeli & Weisberg, 2006; Korte, 2009).

Both education and HRD literature found that having access to quality professional development is critical to employee success (Ruhland & Bremer, 2002b; Holton, 1996; Allen & Bryant, 2012). The gap is not between the literature in the two fields, but between best practices supported by the literature and what often occurs in practice (Ball & Cohen, 1999; Salas & Kosarzycki, 2003). Although for the most part the teacher-participants were not familiar with the terminology of andragogy (Knowles, 1984), they did recognize related shortcomings of their professional development experiences. With the exception of actual post-secondary coursework, the activities in which they were required to participate were the same no matter what their backgrounds, they reported. Although they did have access to activities such as peer support groups and mentors, they would have liked to see more opportunities for applied learning in the workshops they attended, with presentations by classroom teachers rather than university faculty and hands-on activities rather than lectures. They also suggested that there were better ways to set up training so that it provided more efficient use of resources including both time and money. Note that no attempt was made to

study actual activities in which these teachers participated to evaluate whether their perceptions of shortcomings were real.

Recommendations

Suggestions for Further Research

CTE has had alternate routes to certification for more than 100 years (National Research Center for Career and Technical Education, 2011; Bruening et al., 2001). Providing pathways to teaching other than the traditional undergraduate degree in education satisfies two needs in CTE. It strengthens the links between business and education to help schools better prepare students for careers in technical fields, and helps meet the demand for CTE teachers beyond what can be produced by teacher-education institutions (National Research Center for Career and Technical Education, 2011; Bruening et al., 2001; Erekson & Barr, 1985; Ruhland & Bremer, 2002a, 2002b, 2004). Increasing focus on accountability in CTE in the years since the Carl Perkins law was reauthorized in 1998 has increased demands on teachers, who are expected to be experts not only in technical content but in academic areas as well (National Research Center for Career and Technical Education, 2011; Ruhland & Bremer, 2002b), which Bruening et al. (2001) call being "equipped to implement the new vocationalism in an atmosphere of educational reform" (p. xi).

Studies of professional development and induction needs of alternatively certified CTE teachers through self-reports have not been conclusive. In some cases, alternatively certified teachers reported needs similar to those of other CTE teachers, or even secondary teachers in general. But other studies found unique needs that must be addressed through specialized training. Joerger & Bremer (2001), for example, found that beginning CTE

teachers regardless of certification had unique needs in areas as introduction to Career and Technical Student Organizations, maintenance of equipment, and information on how to develop community support for work-based learning activities. Roberts & Dyer (2004) found that both traditionally and alternatively certified Agricultural Education teachers in Florida expressed training needs such as improving skills in instruction and curriculum; working with FFA, the Agricultural Education Career and Technical Student Organization; and increasing their knowledge about particular content. Ruhland and Bremer (2002a, 2004), that regardless of their type of certification, CTE teachers reported they needed more support in classroom management and in working with special needs students. Briggs and Zirkle (cited in National Research Center for Career and Technical Education, 2011) said teachers reported needs in time management, student assessment, classroom management, and understanding how schools work.

There were few surprises in the current study, which supported and was supported by existing CTE research. Teacher-participants reported high levels of expertise in their content but wanted to learn more about the CTE curriculum; to improve their skills in pedagogy; and to develop or use more extensively both online and face-to-face support networks. They cited the need to improve their skills in time management. Although they maintained they had few issues with discipline, they all told stories about classroom management issues or problems with individual students.

This study suggests topics for further research. More in-depth study of teachers, and particularly alternatively certified teachers, as a group of interest within HRD practice would expand on both HRD literature and education literature. For example, examining teacher

induction programs through an HRD lens would help pinpoint areas where they could better align with best practice. In addition, formal program evaluation in an education setting is rare (Guskey, 2000). Developing such an evaluation of professional development for alternatively certified teachers would make it possible to make more specific decisions about quality, and developing a framework for this evaluation would have applications throughout education. Additional study of how professional development can be better transferred to the classroom and how this transfer can be measured would be a valuable tool in improving the quality of education.

Further study of outcomes of students of alternatively certified teachers, particularly CTE teachers, using multiple data sources and controlling for type of certification, years of experience, and student demographics that have been shown to affect student learning would also inform the discussion of alternative routes to teacher certification. This would expand upon previous research (for example, Miller et al., 1998) that attempted to overcome some of the problems in the research design of earlier studies.

Research was difficult to find related to two areas where the participants in this study made strong recommendations on how to improve professional development and the licensure process – communication/transparency and financial responsibility. Both of these appear to intuitively make sense, but further research on specific applications would be useful.

Further study of how to better utilize experiential learning in the training of alternatively certified teachers is also needed as that was found to be a shortcoming of the current training. In addition, a companion study that compares successful teachers with

alternative certification with those individuals who were not successful would help put this study into perspective.

Relationship to Practice

Alternatively Certified Teachers. This study, considered in conjunction with related literature, suggests a number of possible changes in how alternatively certified teachers are trained:

1. Individualizing instruction
    a. Develop a list of required teacher competencies with ways teachers can demonstrate mastery of each based on prior learning.
    b. Design multiple strategies for the required learning in each competency and allow teachers to select the strategy that works best for them based on their own learning styles, finances, time considerations, and other factors.
2. Embedding training in teachers' daily activities and utilizing web training options where practical rather than always requiring teachers to be out of the classroom for a workshop (Guskey & Yoon, 2009; Chesley, Wood & Zepeda, 1997).
3. Communicating licensure requirements more effectively – both in information presented on the web and in individual letters to teachers. More transparency in requirements.
4. Including a stronger hands-on component in professional development designed for new teachers and focusing on presentations by master classroom teachers that provide a focus on what the classroom is really like (Guskey & Yoon, 2009).

5. Offering a program that would allow new teachers to spend time in a classroom with a master teacher before being responsible for a class on their own, perhaps using the apprenticeship model familiar to many who work in CTE (Smith, Cronin & Laurits, 1964; Gardner & Henry, 1968).
6. Providing financial assistance to teachers in paying for required training.
7. Consistently using mentor teachers, from recruitment and selection to training to responsibilities to how it is all paid for (Shulman, 1989; Miller et al., 1998; Ruhland & Bremer, 2002a, Brooks, 1999; Hansman, 2000).

Similarities between the needs of alternatively certified secondary CTE teachers and CTE instructors at the community college level suggest an opportunity to for the two levels of education to work together to design an initiative to recruit, train, and improve the quality of teachers in both systems. Using a collaborative model, secondary and community college CTE could develop programs that would increase each group of teachers' knowledge of their own curriculum and how to better prepare students for careers and further education in their fields. In addition, working together could also improve alignment between secondary and post-secondary CTE and provide a route to increase opportunities for articulation of students between the two. Eventually such a program could expand beyond CTE to general education and beyond community college to four-year colleges and universities.

This study presents one perspective on the issue of professional development for alternatively certified teachers. Further study is required before wholesale changes can be made. In addition, requirements for teachers to be alternatively certified vary from state to state and sometimes even district to district. However, although this study took place in

North Carolina and many of the teacher-participant references are to issues specific to North Carolina, the suggestions for changes to practice might be applicable in any state and certainly deserve a closer look.

Training and Development. Learning more about the role of professional development for alternatively certified teachers also has applications to other fields in which employees come with a range of knowledge, skills and attitudes. Trainers, for example, often bring extensive content knowledge from their old jobs but few skills in the techniques of instructional design and delivery of coursework (Castner & Jordan, 1989; Sappington, 2003; Swanson & Falkman, 1997; Williams, 2001). The similarities between teachers who come into education after a period of time in another career and subject matter experts who leave their original positions to begin training others is striking. It is tempting to suggest that the same sorts of induction and ongoing professional development would be beneficial to both groups. However, further research is required to have adequate evidence to reach such a conclusion. This study suggests a closer look may be warranted to determine how trainers acquire the necessary skills to do their jobs and how the system might be improved.

Summary and Conclusions

Chapter Five provides further discussion of the findings of this study, its conclusions and implications.

This qualitative analysis investigated the role of professional development in helping alternatively certified teachers transition from their careers in business and industry to new positions as CTE teachers in fields related to information technology. The 10 teacher-participants interviewed in the study reported that while they learned valuable lessons from

the required professional development, they would have benefitted from more customized requirements that built upon their existing knowledge, skills and attitudes.

The study was guided by four research questions:

1. How do teachers with alternate-route licenses in Career and Technical Education describe their professional development experiences?

    Participants' descriptions of professional development in which they participated were similar, no matter what type of professional development they were discussing. The sessions had value and they were able to learn no matter the specific type of professional development, but by far the greatest benefit was in the development of relationships and the potential for networking provided by the activity. The downside was the cost, both financial and in time. The training is sometimes duplicative and of inconsistent quality depending on the resources available and specific personnel involved.

    Although alternatively certified teachers often bring skills they acquired in their previous jobs to their second careers as educators, the teachers reported the one-size-fits-all required training did not address gaps in their knowledge but instead required the same of everyone. Because each alternatively certified teacher comes to the classroom via a different path, each brings different specific expertise to the job. The teacher-participants talked about the skills they learned in their previous careers and complained that these were not taken into account.

    In addition, teachers with experience in adult learning as trainers also expressed concern about the design of specific professional development

opportunities, which often seemed to be based on concepts of pedagogy, principles that guide the learning of children, as contrasted with andragogy, principles that guide the learning of adults. Although there is value in modeling pedagogical skills the teacher should use in the classroom (Ingersoll et al., 2012; Freiberg, 2002), as adult learners the teacher-participants said they were sometimes frustrated by these experiences.

2. How does professional development help or hinder alternate-route teachers as they acquire the knowledge, skills, and attitudes they need to be successful and transfer that learning to the classroom?

Professional development helps alternatively certified teachers by introducing them to new ideas that they can build upon to improve their expertise. It helps them establish a professional network of fellow teachers and others they can go to for help in solving problems they encounter as teachers. It connects them to credible resources and develops their skills in evaluating references as they build their library of teaching activities and strategies. On the other hand, it sometimes encourages them to focus on compliance – checking off a series of requirements – rather than building competence as teachers. And it rarely articulates a way to transfer learning to the classroom.

Without detailed study and gathering data from multiple data sources, it is impossible to determine the true impact of professional development activities that are part of induction activities for alternatively certified CTE teachers. The teachers in this study report the training was useful to some extent, that they

acquired knowledge and skills that they were able to use in the classroom, and that their training had a positive impact on student achievement. But whether their perceptions were accurate and the role required professional development played must wait for further study.

3. What gaps do alternate-route teachers report between what they knew when they first entered the classroom and what they needed to know?

The teacher-participants reported their greatest need for professional development when they first entered the classroom was in use of instructional strategies and understanding the curriculum. They also reported gaps between what they knew and what they needed to know in the areas of time management, understanding education jargon, and use of student management software. They said their content knowledge was sufficient without further training. Surprisingly, they also reported no additional training was needed in working with students with disabilities, which is not consistent with the literature in this area. The only explanation I can think of is that perhaps these teachers are still new enough that they don't know what they don't know.

4. How did professional development succeed – or fail – at filling the gaps between what they knew when they first entered the classroom and what they needed to know?

At the time of their interviews the teacher-participants in this study thought they had improved overall but reported they still needed additional training in instructional strategies, curriculum, and time management. No

additional help was needed in the areas of understanding education jargon and using the student information management system. The teachers felt like the coursework and training they attended had been beneficial, but almost all them agreed that informal learning through the actual experience of teaching was even more useful. They recommended that a program that assessed individual proficiency and set requirements based on individual needs rather than one-size-fits-all would be an improvement.

They also said an opportunity to spend time in a classroom as a sort of paid intern prior to actually stepping into a teaching role would be helpful. Those who had experience as long-term substitutes or teacher assistants said the informal learning from that experience helped prepare them for the transition to teaching, and those who did not have that opportunity seemed to recognize an unmet need. However, none of them could suggest a way to operationalize this suggestion that would make it attractive to school districts, which are short on funding and in many cases desperately in need of a teacher starting yesterday.

The teachers discussed the intrinsic rewards in teaching at length. Although for the most part they said they enjoyed their previous work, they said it did not compare with having the opportunity to help young people prepare for their successful futures. However, almost all of them mentioned low salaries for beginning teachers and lack of respect for CTE teachers and teachers with alternate-route certification as elements that negatively affect teacher retention and quality.

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APPENDICES

APPENDIX A. Alternative Work Experience Requirements for Licensure in CTE

License area	Eligibility requirements			Clearing specific requirements			Limits
	Course work required	**Related work experience within 5 yr**	**Credential**	**Course work required**	**Credential**	**Induction**	
Agricultural Education	Bachelors degree in related area	2 years	None	18 semester hours	None	40-hour New Teacher Induction Program	
Business & Information Technology Education	Bachelors degree in related area	2 years	Praxis II and selected IT certifications required	18 semester hours	No additional	40-hour New Teacher Induction Program	
	Associate degree in related area (certain IT only)	4 years	Selected IT certifications required	18 semester hours	No additional	40-hour New Teacher Induction Program	Available only for teachers of certain IT courses
Family & Consumer Sciences Education	Bachelors degree in General Family & Consumer Sciences	2 years	Selected foods-related industry credentials to teach specific courses	18 semester hours	Praxis II	40-hour New Teacher Induction Program	
	Bachelors degree in area related to apparel	2 years	None	18 semester hours	None	40-hour New Teacher Induction Program	May only teach apparel and fashion courses
	Bachelors degree in area related to child development	2 years	None	18 semester hours	None	40-hour New Teacher Induction Program	
	Bachelors degree in area related to foods	2 years	Selected foods-related industry credentials	18 semester hours	No additional	40-hour New Teacher Induction Program	May only teach foods and nutrition courses
	Associate degree in area related to foods	4 years	Selected foods-related industry credentials	18 semester hours	No additional	40-hour New Teacher Induction Program	May only teach foods and nutrition courses
	Bachelors degree in area related to interior design	2 years	None	18 semester hours	None	40-hour New Teacher Induction Program	May only teach interior design courses

License area	Eligibility requirements			Clearing specific requirements			Limits
	Course work required	**Related work experience within 5 yr**	**Credential**	**Course work required**	**Credential**	**Induction**	
Health Sciences Education*	Bachelors degree in nursing	2 years	RN	18 semester hours	No additional	80-hour New Teacher Induction Program	
	Associate degree in nursing	4 years	RN	18 semester hours	No additional	80-hour New Teacher Induction Program	
	Diploma in nursing	5 years	RN	18 semester hours	No additional	80-hour New Teacher Induction Program	
	Bachelors degree in non-RN allied health or medical field	2 years	Active license in same field as educational degree	18 semester hours	No additional	80-hour New Teacher Induction Program	
	Associate degree in non-RN allied health or medical area	4 years	Active license in same field as educational degree	18 semester hours	No additional	80-hour New Teacher Induction Program	
	Bachelors degree in specific biology-related area and at least 6 semester hours in specified courses	2 years		18 semester hours	None	80-hour New Teacher Induction Program	May only teach courses in health sciences biotechnology
Marketing Education	Bachelors degree in related area	2 years	None	18 semester hours	Praxis II	40-hour New Teacher Induction Program	
Technology Education* +	Bachelors degree in related area	2 years	None	18 semester hours	Praxis II	40-hour New Teacher Induction Program	

License area	Eligibility requirements			Clearing specific requirements			Limits
	Course work required	**Related work experience within 5 yr**	**Credential**	**Course work required**	**Credential**	**Induction**	
Trade & Industrial Education	Bachelors degree in related area	2 years	Specific industry credential required to teach most courses	21 semester hours	No additional	40-hour New Teacher Induction	
	Associate degree in related area	4 years	Specific industry credential required to teach most courses	21 semester hours	No additional	40-hour New Teacher Induction	
	High school diploma	6 years	Specific industry credential required to teach most courses	21 semester hours	Praxis I (prior to second year of teaching)	40-hour New Teacher Induction	

∗ Teaching individual courses may have additional requirements for university-level course work, vendor training, or industry credentials.

\+ Teachers with certification in non-CTE areas can obtain endorsements that allow them to teach certain Technology Education courses.

(NC State Board of Education, 2010)

APPENDIX B. IRB Approval

North Carolina State University is a land-grant university and a constituent institution of the University of North Carolina

Office of Research and Innovation
Division of Research Administration

NC STATE UNIVERSITY

Campus Box 7514
Raleigh, North Carolina 27695-7514

919.515.2444 (phone)
919.515.7721 (fax)

From: Deb Paxton, IRB Administrator
North Carolina State University
Institutional Review Board

Date: May 24, 2012

Title: Perceptions of Professional Development: Alternatively Certified Career and Technical Education Teachers

IRB#: 2457

Dear Rhonda Welfare

The project listed above has been reviewed by the NC State Institutional Review Board for the Use of Human Subjects in Research, and is approved for one year. **This protocol will expire on May 17, 2013 and will need continuing review before that date.**

NOTE:

1. You must use the attached consent forms which have the approval and expiration dates of your study.

2. This board complies with requirements found in Title 45 part 46 of The Code of Federal Regulations. For NCSU the Assurance Number is: FWA00003429.

3. Any changes to the protocol and supporting documents must be submitted and approved by the IRB prior to implementation.

4. If any unanticipated problems occur, they must be reported to the IRB office within 5 business days by completing and submitting the unanticipated problem form on the IRB website.

5. Your approval for this study lasts for one year from the review date. If your study extends beyond that time, including data analysis, you must obtain continuing review from the IRB.

Sincerely,

Deb Paxton
NC State IRB

North Carolina State University
Institutional Review Board for the Use of Human Subjects in Research
SUBMISSION FOR NEW STUDIES
GENERAL INFORMATION

1. **Date Submitted:** *4/23/2012* 1a. **Revised Date:** *5-20-2012*
2. **Title of Project:** *Perceptions of Professional Development: Alternatively Certified Career and Technical Education Teachers*
3. **Principal Investigator:** *Rhonda M. Welfare*
4. **Department:** *Leadership, Policy and Adult and Higher Education*
5. **Campus Box Number:** _____
6. **Email:** *rwelfare@mindspring.com*
7. **Phone Number:** *919-599-7367*
8. **Fax Number:** *919-807-3656*
9. **Faculty Sponsor Name and Email Address if Student Submission:** *Dr. Diane Chapman, diane_chapman@ncsu.edu*
10. **Source of Funding? (required information):** *NA*
11. **Is this research receiving federal funding?:** *No*
12. **If Externally funded, include sponsor name and university account number:** *NA*
13. RANK: ☐ Faculty ☐ Student: ☐Undergraduate; ☐ Masters; or ☐EdD ☐ Other (specify):

As the principal investigator, my signature testifies that I have read and understood the University Policy and Procedures for the Use of Human Subjects in Research. I assure the Committee that all procedures performed under this project will be conducted exactly as outlined in the Proposal Narrative and that any modification to this protocol will be submitted to the Committee in the form of an amendment for its approval prior to implementation.

Principal Investigator:

Rhonda M. Welfare _____ * *4-23-2012*
(typed/printed name) (signature) (date)

As the faculty sponsor, my signature testifies that I have reviewed this application thoroughly and will oversee the research in its entirety. I hereby acknowledge my role as the ***principal investigator of record****.*

Faculty Sponsor:

Diane Chapman _____ * *4-23-2012*
(typed/printed name) (signature) (date)

(typed/printed name) (signature) (date)

***Electronic submissions to the IRB are considered signed via an electronic signature. For student submissions this means that the faculty sponsor has reviewed the proposal prior to it being submitted and is copied on the submission.**

Please complete this application and email as an attachment to: debra_paxton@ncsu.edu or send by mail to: Institutional Review Board, Box 7514, NCSU Campus (Administrative Services III). **Please include consent forms and other study documents with your application and submit as one document.**

****

For SPARCS office use only
Reviewer Decision (Expedited or Exempt Review)

☐ Exempt ☐ Approved ☐ Approved pending modifications ☐ Table

Expedited Review Category: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8a ☐ 8b ☐ 8c ☐ 9

Reviewer Name Signature
Date

North Carolina State University
Institutional Review Board for the Use of Human Subjects in Research
PROPOSAL NARRATIVE

In your narrative, address each of the topics outlined below. Every application for IRB review must contain a proposal narrative, and failure to follow these directions will result in delays in reviewing/processing the protocol.

A. INTRODUCTION

1. Briefly describe in lay language the purpose of the proposed research and why it is important.

The purpose of this study is to explore the role professional development plays in the development of secondary Career and Technical Education (CTE) teachers who entered the profession through alternate routes, pathways other than the traditional method of earning an undergraduate degree in education. Alternatively certified teachers make up a significant portion of CTE teachers. These teachers bring a high level of content knowledge to the classroom but frequently have serious deficiencies in their knowledge and skills in pedagogy. This project will increase our specific knowledge of how to design professional development to meet the specialized needs not only of alternatively certified teachers but of employees in other fields who come with a range of knowledge, skills and attitudes. In addition, this study focuses attention on factors that contribute to improvement of educational achievement in elementary and secondary education, currently a matter of national and international concern.

2. If student research, indicate whether for a course, thesis, dissertation, or independent research.

This student research is for a dissertation.

B. SUBJECT POPULATION

1. How many subjects will be involved in the research?
   Estimates or ranges are acceptable. Please be aware that if you recruit over 10% more participants than originally requested, you will need to submit a request to modify your recruitment numbers.

This qualitative research study will involve in-depth interviews with 10 North Carolina Career and Technical Education teachers currently pursuing or having recently completed requirements for alternative certification in Business, Finance, and Information Technology Education or Trade and Industrial Education.

2. Describe how subjects will be recruited. Please provide the IRB with any recruitment materials that will be used.

I will obtain contact information for Business, Finance and Information Technology Education and Trade and Industrial Education teachers who have gone through 40- or 80-hour induction programs sponsored or endorsed by the North Carolina Department of Public Instruction (NCDPI) over the last four years. I estimate this will be about 100 people. A sample letter requesting access to contact information for these teachers appears in Attachment 2. Potential participants will be contacted via email (see Attachment 3) and sent a link to an online questionnaire (see Attachment 4) that provides general information about the study and what participation would involve and asks if they would be willing to take part in an approximately 90-minute follow up interview. The document will provide a way for those interested in participating in the interview process to provide basic demographic information and details about their current employment and certification status, which will be used to determine which volunteers are appropriate for further interviews and to confirm that the sample is similar to the population of teachers who have participated in the 40- or 80-hour induction program and that the study population is similar to the larger population of alternatively certified CTE teachers in North Carolina.

3. List specific eligibility requirements for subjects (or describe screening procedures), including those criteria that would exclude otherwise acceptable subjects.

Participants who meet the following criteria will be eligible for inclusion in the study:

1. Participation in 40- or 80-hour induction programs sponsored or endorsed by the North Carolina Department of Public Instruction (NCDPI) over the last four years.
2. Recently completed or currently pursuing alternative certification in Business, Finance and Information Technology Education or Trade and Industrial Education.
3. Currently teaching courses connected to information technology.
4. Not acquainted with the primary investigator.

Volunteers who otherwise meet the criteria for inclusion but who are not currently teaching courses connected to information technology or who are acquainted with the primary investigator may be solicited for a small (3 participant) pilot study to test the interview guide and look for gaps.

Information on the following criteria will be collected and used to select study participants that are similar to the population as a whole:

1. Gender
2. Race

3. Certification status (completed or ongoing)
4. Age
5. Certification area (Business, Finance and Information Technology Education or Trade and Industrial Education)
6. School type (socioeconomic breakdown of students, rural v. urban)

When appropriate, potential participants will be segmented by the above criteria and final participants randomly selected from within the segment.

4. Explain any sampling procedure that might exclude specific populations.

This procedure will exclude any alternatively certified teachers who did not participate in NCDPI-sanctioned 40- or 80-hour induction programs. Although participation in an induction program is required for teachers pursuing alternate-route certification, there are alternatives to the official NCDPI-sanctioned programs. Specific information on teachers who go through other types of induction programs is not available, but it appears likely that it would involve mostly teachers from the largest school districts in the state, which would have enough new teachers that it would be more efficient and cost effective to offer their own induction programs.

5. Disclose any relationship between researcher and subjects - such as, teacher/student; employer/employee.

None

6. Check any vulnerable populations included in study:

- ☐ minors (under age 18) - if so, have you included a line on the consent form for the parent/guardian signature
- ☐ fetuses
- ☐ pregnant women
- ☐ persons with mental, psychiatric or emotional disabilities
- ☐ persons with physical disabilities
- ☐ economically or educationally disadvantaged
- ☐ prisoners
- ☐ elderly
- ☐ students from a class taught by principal investigator
- ☐ other vulnerable population.

7. If any of the above are used, state the necessity for doing so. Please indicate the approximate age range of the minors to be involved.

None

C. PROCEDURES TO BE FOLLOWED

1. In lay language, describe completely all procedures to be followed during the course of the experimentation. Provide sufficient detail so that the Committee is able to assess potential risks to human subjects. In order for the IRB to completely understand the experience of the subjects in your project, please provide a detailed outline of everything subjects will experience as a result of participating in your project. Please be specific and include information on all aspects of the research, through subject recruitment and ending when the subject's role in the project is complete. All descriptions should include the informed consent process, interactions between the subjects and the researcher, and any tasks, tests, etc. that involve subjects. If the project involves more than one group of subjects (e.g. teachers and students, employees and supervisors), please make sure to provide descriptions for each subject group.

1. Potential participants will receive an email that includes a link to an online document (see Attachment 4) that provides information about the research project, asks about their willingness to participate in the research, and requests general information that will be used to select appropriate participants. Participant responses will be kept confidential. Responses will be stored electronically in a password-protected area of the primary investigator's personal computer. Where it is necessary to retain hard copies of confidential documents, these will be stored in a locked file cabinet and destroyed when they are no longer needed.
2. Selected participants will be contacted to confirm their participation in the study and make arrangements for the interview. Interviews will be arranged at a time and location determined by the participant, not during regular school hours or on school property to further protect participant confidentiality.
3. Interviews will be conducted as scheduled. The draft interview guide appears in Attachment 5. Participants will sign a consent form (see Attachment 1) prior to the interview and will select a pseudonym under which their comments will be reported.
4. Interviews will be transcribed immediately by the primary investigator or a transcription service using available transcription software. Any individuals involved in transcribing interviews must meet the same requirements for maintaining participant confidentiality and for secure transmission and storage of electronic and hard copy files as the principal investigator.

5. The transcribed interview will be sent via snail mail to the address designated by the participant. The participant will have an opportunity to review the transcribed interview and make appropriate edits. The participant will return the transcribed interview with any edits in the stamped, addressed envelope provided. (See Attachment 6).
6. The principal investigator will code interviews and analyze data and prepare a report of results.

7. How much time will be required of each subject?

Interview, approximately 90 minutes
Review of interview transcript, 60 minutes or less

D. POTENTIAL RISKS

1. State the potential risks (psychological, social, physical, financial, legal or other) connected with the proposed procedures and explain the steps taken to minimize these risks.

The primary potential risk to the participant is compromising of confidentiality, which could result in personal or professional embarrassment. Care will be taken to protect the confidentiality of participants throughout the study by:

1. Contacting potential participants directly via NC State email.
2. Setting up a response system that submits responses directly to the principal investigator.
3. Allowing participants to set up the interviews at the time and place of their choosing, not during regular school hours or on school property.
4. Allowing participants to select a pseudonym by which their responses will be collected, stored, and reported.
5. Storing electronic materials in a password-protected area of the principal investigator's personal computer.
6. Storing hard copies when necessary in a locked file cabinet.
7. Destroying hard copies of materials when they are no longer required.

2. Will there be a request for information that subjects might consider to be personal or sensitive (e.g. private behavior, economic status, sexual issues, religious beliefs, or other matters that if made public might impair their self-esteem or reputation or could reasonably place the subjects at risk of criminal or civil liability)?

No

a. If yes, please describe and explain the steps taken to minimize these risks.

3. Could any of the study procedures produce stress or anxiety, or be considered offensive, threatening, or degrading? If yes, please describe why they are important and what arrangements have been made for handling an emotional reaction from the subject.

No

4. How will data be recorded and stored?

Interviews will be recorded on a Sony digital recorder and transcribed using available transcription software. Files will be stored on a password-protected area of the principal investigator's personal computer.

a. How will identifiers be used in study notes and other materials?

Participants will select a pseudonym by which their comments will be collected, stored, and reported. Information linking participants to their pseudonym will be stored separately from other study documents.

The identities of any third parties mentioned by the participant will be masked during the transcription process.

b. How will reports will be written, in aggregate terms, or will individual responses be described?

Individual responses will be included in reports to illustrate findings, but pseudonyms will be used to protect confidentiality.

5. If audio or video recordings are collected, will you retain or destroy the recordings? How will recordings be stored during the project and after, as per your destruction/retention plans?

Digital audio recordings will be stored in a password-protected area of the principal investigator's personal computer during collection, analysis and reporting of this research. Audio files will be destroyed when they are no longer needed.

6. Is there any deception of the human subjects involved in this study? If yes, please describe why it is necessary and describe the debriefing procedures that have been arranged.

No deception will be used.

E. POTENTIAL BENEFITS

This does not include any form of compensation for participation.

1. What, if any, direct benefit is to be gained by the subject? If no direct benefit is expected, but indirect benefit may be expected (knowledge may be gained that could help others), please explain.

Participants will receive no direct benefit from their participation in the study. Increased understanding of the role of professional development in the development of alternatively certified CTE teachers could make the process of pursuing alternative certification smoother for future teachers, both alternatively and traditionally certified and both CTE teachers and those in other fields.

F. COMPENSATION

Please keep in mind that the logistics of providing compensation to your subjects (e.g., if your business office requires names of subjects who received compensation) may compromise anonymity or complicate confidentiality protections. If, while arranging for subject compensation, you must make changes to the anonymity or confidentiality provisions for your research, you must contact the IRB office prior to implementing those changes.

1. Describe compensation

No compensation is provided to participants in this study.

2. Explain compensation provisions if the subject withdraws prior to completion of the study.

3. If class credit will be given, list the amount and alternative ways to earn the same amount of credit.

G COLLABORATORS

1. If you anticipate that additional investigators (other than those named on **Cover Page**) may be involved in this research, list them here indicating their institution, department and phone number.

None

2. Will anyone besides the PI or the research team have access to the data (including completed surveys) from the moment they are collected until they are destroyed.

Any individuals involved in transcribing interviews must meet the same requirements for maintaining participant confidentiality and for secure transmission and storage of electronic and hard copy files as the principal investigator.

H. CONFLICT OF INTEREST

1. Do you have a significant financial interest or other conflict of interest in the sponsor of this project? *No*

2. Does your current conflicts of interest management plan include this relationship and is it being properly followed? _____

I. ADDITIONAL INFORMATION

1. If a questionnaire, survey or interview instrument is to be used, attach a copy to this proposal.
   See Attachment 5.

2. Attach a copy of the informed consent form to this proposal.
   See Attachment 1.

3. Please provide any additional materials that may aid the IRB in making its decision.

J. HUMAN SUBJECT ETHICS TRAINING

*****Please consider taking the Collaborative Institutional Training Initiative (CITI), a free, comprehensive ethics training program for researchers conducting research with human subjects. Just click on the underlined link.

Attachment 1

North Carolina State University

INFORMED CONSENT FORM for RESEARCH

This Form is Valid from May 17, 2012 through May 17, 2013

Title of Study: Perceptions of Professional Development: Alternatively Certified Career and Technical Education Teachers

Principal Investigator: Rhonda M. Welfare Faculty Sponsor: Dr. Diane Chapman

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What are some general things you should know about research studies?

You are being asked to take part in a research study. Your participation in this study is voluntary. You have the right to be a part of this study, to choose not to participate or to stop participating at any time without penalty. The purpose of research studies is to gain a better understanding of a certain topic or issue. You are not guaranteed any personal benefits from being in a study. Research studies also may pose risks to those that participate. In this consent form you will find specific details about the research in which you are being asked to participate. If you do not understand something in this form it is your right to ask the researcher for clarification or more information. A copy of this consent form will be provided to you. If at any time you have questions about your participation, do not hesitate to contact the researcher(s) named above.

What is the purpose of this study?

The purpose of this study is to explore the role professional development plays in the development of secondary Career and Technical Education (CTE) teachers who entered the profession through alternate routes, pathways other than the traditional method of earning an undergraduate degree in education. Alternatively certified teachers make up a significant portion of CTE teachers. These teachers bring a high level of content knowledge to the classroom but may need additional training to develop appropriate knowledge and skills in pedagogy. This project will increase our specific knowledge of how to design professional development to meet the specialized needs not only of alternatively certified teachers but of employees in other fields who come with a range of knowledge, skills and attitudes. In addition, this study focuses attention on factors that contribute to improvement of educational achievement in elementary and secondary education, currently a matter of national and international concern.

What will happen if you take part in the study?

If you agree to participate in this study, you will be asked to do the following:

- Sign a consent form and select a pseudonym under which your comments will be reported.
- Participate in an interview at a time and location of your choosing. The interview will focus on your experiences as a CTE teacher going through the alternative certification

process, focusing primarily on how you acquired the skills and knowledge needed to be an effective teacher. The interview should take approximately 90 minutes to complete. You may choose to stop participating at any time or skip any question without penalty.

- Review the transcribed interview and make appropriate edits. This review should take an hour or less.

Risks

The primary risk to you is compromising of confidentiality. Every effort will be made to protect the confidentiality of participants throughout the study by:

- Contacting you directly via NC State University email.
- Setting up a response system that submits responses directly to the principal investigator.
- Allowing you to set up the interviews at the time and place of your choosing, not during regular school hours or on school property.
- Allowing you to select a pseudonym by which your responses will be collected, stored, and reported.
- Storing electronic materials in a password-protected area of the principal investigator's personal computer.
- Storing hard copies when it is necessary to maintain hard copies in a locked file cabinet.
- Destroying electronic and hard copies of materials when they are no longer required.

Benefits

Although you will receive no direct benefits from your participation in the study, you will be contributing to our understanding of professional development and the role it plays in preparation both of alternatively certified and traditionally certified teachers as well as employees in other fields.

Confidentiality

The information in the study records will be kept confidential to the full extent allowed by law. Electronic materials will be stored securely in a password-protected area of the principal investigator's personal computer. If it is necessary to maintain hard copies, they will be stored in a locked file cabinet. Both electronic and hard copies of materials will be destroyed when they are no longer required. No reference will be made in oral or written reports that could link you to the study. Data will be stored and reported using the pseudonym you provide.

Compensation

You will not receive any compensation for participating.

What if you have questions about this study?

If you have questions at any time about the study or the procedures, you may contact the researcher, Rhonda M. Welfare, at rmwelfar@ncsu.com or [919/599-7367].

What if you have questions about your rights as a research participant?
If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Deb Paxton, Regulatory Compliance Administrator, Box 7514, NCSU Campus (919/515-4514).

Consent To Participate

"I have read and understand the above information. I have received a copy of this form. I agree to participate in this study with the understanding that I may choose not to participate or to stop participating at any time without penalty or loss of benefits to which I am otherwise entitled."

Subject's signature_____ Date _____
Investigator's signature_____ Date _____

APPENDIX C. Recruitment Emails

RECRUITMENT EMAIL

TO: Selected participants in CTE new teacher induction programs

I am a doctoral student at North Carolina State University conducting a qualitative research study exploring the role professional development plays in the development of alternatively certified Career and Technical Education teachers. This project will increase our specific knowledge of how to design professional development to meet the specialized needs not only of alternatively certified teachers but of employees in other fields who come with a range of knowledge, skills and attitudes. In addition, this study focuses attention on factors that contribute to improvement of educational achievement in elementary and secondary education, currently a matter of national and international concern.

As a participant in 40- or 80-hour DPI-sanctioned induction programs over the last four years, you may be eligible to participate in this study. Participants will take part in a 90-minute interview at a time and location of their choice. Interviews will focus on the experiences of teachers as they pursue alternative certification in CTE. If you are interested in participating in this study, please complete the attached information sheet. Press the submit button when the form is complete. Information provided will be used to ensure that a representative group of teachers is included in the study.

Your participation in this study and any information you provide will be kept confidential to the full extent allowed by law.

Please contact me (rmwelfar@ncsu.edu or 919-599-7367) if you need more information about my proposed study or would like to discuss it further.

Rhonda M. Welfare
rnwelfar@ncsu.edu
919-599-7367

APPENDIX D. Descriptions of Participants

Beth

Beth had a business degree and experience working in business prior to becoming a stay-at-home mom. After her children started school she worked as a substitute teacher, including a long-term sub position in an Exceptional Children's classroom, before begin working in a non-certified position in the apprenticeship program. She also worked in a CTE clerical position before starting to teach Business, Finance, and Information Technology Education. She is now in her third year and teaches at a small alternative school.

Bunyun

Bunyun spent more than 20 years working in manufacturing and sales at several different companies before becoming a Business, Finance, and Information Technology Education and Career Development teacher at a small rural high school in the eastern part of the state. His wife and both his daughters are also teachers. In recent years he has also taught IT-related courses in Trade & Industrial Education.

James

Before his retirement in law enforcement, James earned a bachelor's degree in business and took additional courses to ease his transition to teaching. He started teaching in Business, Finance, and Information Technology Education in a middle school in the northeastern part of the state and has since moved to a nearby high school.

Joe Mack

Joe Mack always planned to be a teacher, but his path through college was sidetracked by marriage and parenthood. While he worked in construction sales around the country, he continued to chip away at his degree requirements. He earned a bachelor's degree in business and an MBA before he was able to find his first permanent position in Business, Finance, and Information Technology Education at a small magnet high school in a major urban area of the state.

Lee

Lee had worked as an electrician for the school system for more than a decade when a position teaching electrical technology became available. He jumped at the chance to make a move into teaching at the same rural high school in the northwestern part of the state where he had been a student years earlier. Lee had two years of community college work but no degree. He is currently completing college courses required for certification and plans to go on to earn a bachelor's degree.

Marcus

Marcus worked in business for nearly 30 years as a salesman, manager, and business owner. When he sold his business, it gave him an opportunity to move into education, where he "always knew" he would end up. Marcus worked briefly as a substitute teacher and classroom assistant before moving to his current position teaching Business, Finance, and Information Technology at both middle and high school levels at a magnet school in a major urban area.

Marie

Marie worked for more than 20 years in the information technology field, several in management. After her position was outsourced, she moved to the southeastern part of the state in search of better weather and a more relaxed lifestyle. Marie worked for several years as an IT technician for the county school system before taking a position teaching high school Business, Finance, and Information Technology Education. She teaches in a medium-sized high school in a mostly rural county.

Owen

Owen was a high school and college athlete and had always been interested in teaching and coaching. However, he majored in business in college because it was the easiest thing to work around his sports schedule. After graduation he worked briefly in construction before joining a county recreation department working with sports programs. Before long he realized that job wasn't quite what he wanted and began trying to move into teaching. He currently teaches Business, Finance, and Information Technology Education in a small comprehensive rural high school in the western part of the state.

Roger

Roger was volunteering as a coach at a magnet high school in an urban area in the state while he waited for the economy to turn around so he could return to the financial services industry, where he and his partners had previously operated a large firm. The school's principal convinced him to give teaching a try, first in a nearby middle school and then back at the high school. He currently teaches Technology Education and Career Development.

Sandy

Sandy has an undergraduate degree in business and an MBA and worked for several years in Human Resources Management. After her children were born she continued to work part-time and also volunteered regularly at her children's schools, which eventually, and with a little prodding from her mother, led to work as a substitute. After filling in as a long-term substitute for a teacher on medical leave, she was offered a position teaching Business, Finance, and Information Technology Education at a large high school in a major urban area in the state.

APPENDIX E. Interview Guide

Interview Guide

The following questions will provide a basis for this semi-structured interview. Questions will be added or removed if necessary for clarity and to pursue thoughts or ideas brought up in the discussion. Prompts listed under each set of questions may be used if needed to encourage the participant to elaborate on previous responses.

References indicate where the question is suggested by the literature.

Teaching as a career

1. Tell me about your pathway to teaching.
2. How did you prepare yourself to go into teaching?
3. What was the best thing about your previous job? The worst?

Prompts for additional information if needed

a. Draw a timeline of your professional journey.
b. What particular person was especially important in your decision to go into teaching?
c. Was there a pivotal event that prompted you to enter the teaching field?
d. What made you think teaching was the right career for you?
e. What sort of training did you go through prior to beginning teaching?
f. What other training options did you consider?

Ongoing learning

4. Describe your first day in the classroom. What did you expect? What did you find? What did you tell your spouse/parents/friends when you came home after the first day? (Ruhland & Bremer, 2002a)
5. What were the students like?
6. Tell me a story about your biggest challenge in the classroom.
7. Who was most helpful to you as your started your journey?
8. What did you see as your biggest deficiencies as your started teaching?
    a. Discipline (Ruhland & Bremer, 2002a, 2004; Brooks, 1999; Carver & Feiman-Nemser, 2008; Kane & Ru8ssell, 2005)
    b. Working with Exceptional Children (Ruhland & Bremer, 2002a, 2004)
    c. Using curriculum (Brooks, 1999; Carver & Feiman-Nemser, 2008; Kane & Ru8ssell, 2005)
    d. Instructional strategies (Brooks, 1999; Carver & Feiman-Nemser, 2008; Kane & Ru8ssell, 2005)
    e. Using CTE curriculum (blueprints, curriculum guides, test items)
9. What was your plan for learning what you needed to know? Were you in control of the plan? How was it executed?
10. What 40- or 80-hour induction program did you participate? What was the value of that program? Were you able to correct your deficiencies? Would you recommend this program to others? (Britton et al., 2003a; Brooks, 1999; Carver & Feiman-Nemser, 2008; Kane & Russell, 2005)
11. In what other activities did you participate? What was the value of those activities? Were you able to correct your deficiencies? Would you recommend these activities to others? (Kane & Russell, 2005; Guskey, 1995)

    Prompts for additional information if needed

    a. Do you belong to a state-level PLC? If so, which one(s)?
    b. Do you belong to a PLC at your district or school? Describe.
    c. What conferences did you attend in the first year? What conferences have you attended since?
    d. Did you have a mentor? How was that experience? (Hansman, 2000, Chao, 2009; Shulman, 1989)

Current status (Houston, Marshall & McDavid, 1993; Lutz & Hutton, 1989)

12. Describe an ideal teacher in your area. OK, that's a 10, where would you put yourself now? Where would you say you started?
13. Tell me a story about your greatest success as a teacher.
14. Tell me a story about your most serious failure.
15. What is your current greatest deficiency? What evidence suggests that?
16. What is your plan for continuing to improve?
17. What has been the most valuable in developing competence to teach?
18. How does your principal evaluate your qualifications/skills? Is that a fair measure? What would you suggest?
19. Would you do it again/advise your child to do it? If so, what would you suggest they do differently?
20. In what areas do you still need improvement?
21. How would you change the system to make it more useful?

Prompts for additional information if needed

a. Describe your competence in the following:
  - *i.* ability to teach subject matter?
  - *ii.* ability to motivate students?
  - *iii.* dealing with fellow teachers?
  - *iv.* organizing instruction?
  - *v.* managing time?
  - *vi.* Dealing with administrative hierarchy?
  - *vii.* classroom management?
  - *viii.* classroom discipline?

b. Valuable in developing competence
  - *i.* Clinical/field-based experiences
  - *ii.* One's own teaching experiences
  - *iii.* Other teachers/colleagues
  - *iv.* Courses in subjects being taught
  - *v.* Life experiences in general
  - *vi.* Professional development activities (WHICH ONES??)
  - *vii.* Education methods courses
  - *viii.* Faculty in one's subject area
  - *ix.* Studying on one's own
  - *x.* College of education faculty
  - xi. Experiences in non-school occupations

Future perspective

22. Will you still be teaching in five years? Describe the sort of teacher you think you will be. (Ruhland & Bremer, 2002a, 2004)
23. Describe your training plan.

APPENDIX F. Coding Scheme

10000 Value of CTE
- 10100 Real life
- 10200 Don't get no respect
- 10300 Competition w/CCP
- 10400 Credentials

11000 Available resources
- 11100 Moodle
- 11200 Classroom guides
- 11300 Elements

12000 Pathway into teaching
- 12100 External work experience
  - 12110 Certifications
  - 12120 Advantage of business experience
  - 12130 Advantage of delay
- 12200 Reason for leaving previous position
  - 12210 Laid off or position ended
  - 12220 It was my choice
  - 12230 Stay-at-home mom going back to work
- 12300 Reason for choosing education
  - 12310 Stable financial position
  - 12320 Inspire someone
  - 12330 Add value
  - 12340 Promotion
  - 12350 Long-term career goal
    - 12351 Yes
    - 12352 No
  - 12360 Enjoy working with kids
  - 12370 It was the family business
  - 12380 Easy transition
- 12400 Influential people
- 12500 Prior employment in LEA
  - 12510 Experience with students
  - 12520 Idea of what teaching involved
  - 12530 Familiarity with jargon

1. How do teachers with alternate-route licenses in Career and Technical Education describe their professional development experiences?

    - 13000 Preservice Training
        - 13100 Undergraduate degree
        - 13200 RALC
        - 13500 Value

    - 14000 Professional Development
        - 14100 Required 40-hour induction
        - 14200 Locally required induction
        - 14300 Mentor/colleagues
        - 14400 Reflective practice
        - 14500 Learning through on-the-job experience
        - 14600 Required college courses
        - 14700 PLCs
            - 14710 State-level Moodle
            - 14720 District
            - 14730 Other
        - 14800 Other conferences
        - 14900 National boards

2. How does professional development help or hinder alternate-route teachers as they acquire the knowledge, skills, and attitudes they need to be successful and transfer that learning to the classroom?

- 19000 Help or hinder?
  - 19100 Help
    - 19110 Now I'm very comfortable
    - 19120 Pedagogy
    - 19130 Organizations
    - 19140 Networking
    - 19150 Terminology
    - 19160 Familiarity with processes
  - 19200 Hinder
    - 19210 Too much time out of classroom
    - 19220 Not efficient use of time
    - 19230 Sometimes seems like compliance rather than learning
    - 19240 I already knew this stuff
    - 19250 Expensive
    - 19260
    - 19270 Duplicative
    - 19280 Did not use andragogy concepts
  - 19300 Neutral
    - 19310 OK once you distilled out useful content

- 22000 Suggestions for improvement of system
  - 22100 Focus on curriculum
  - 22200 How to handle emergency situations
  - 22300 Less theory, more time in the classroom
  - 22400 Reflective practitioner
  - 22500 Clear expectations, especially on evaluation
  - 22600 System needs to communicate better
  - 22700 Processes and procedures
  - 22800 Streamline

3. What gaps do alternate-route teachers report between what they knew when they first entered the classroom and what they needed to know?

- 20000 Different from expectations
  - 20100 Pedagogy v androgogy
    - 20110 The same
    - 20120 Different
  - 20200 Variation by class
  - 20300 Kids are lazy
  - 20400 Variation by school
  - 20500 How well it went

- 15000 Initial Gaps
  - 15100 Content knowledge
    - 15110 PRAXIS
    - 15120 Brought it with me
  - 15200 Pedagogy
    - 15210 Using CTE curriculum
    - 15220 Instructional Management (Elements)
    - 15230 Exceptional Children (Students with Disabilities)
  - 15300 Classroom Management
    - 15310 Administrivia
    - 15320 Discipline
    - 15330 terminology
    - 15340 Dealing with difficult students
    - 15350 Keeping up with changing technology
    - 15360 Relating to your students
    - 15370 Time management
    - 15380 Establishing boundaries
  - 15400 Other stuff
    - 15410 Parents

- 16000 Initial teaching experience
  - 16100 Circumstances under which hired
    - 16110 Mid-year replacement
    - 16120 Subbed first
    - 16130 Other job in LEA first
  - 16200 Attitude on first day
    - 16210 I can do this
    - 16220 Nerves
    - 16230 Impression of Students
  - 16300 Difficulty asking for help
  - 16400 Advantage of also being a coach
  - 16500 Doubts about career choice

4. How did professional development succeed – or fail – at filling the gaps between what they knew when they first entered the classroom and what they needed to know?

23000 Current gaps
- 23100 Content knowledge
  - 23110 PRAXIS
  - 23120 Brought it with me
- 23200 Pedagogy
  - 23210 Using CTE curriculum
  - 23220 Instructional Management (Elements)
  - 23230 Exceptional Children (Students with Disabilities)
- 23300 Classroom Management
  - 23310 Administrivia
  - 23320 Discipline
  - 23330 terminology
  - 23340 Dealing with difficult students
  - 23350 Keeping up with changing technology
  - 23360 Relating to your students
  - 23370 Time management
  - 23380 Establishing boundaries
- 23400 Other stuff
  - 23410 Parents

17000 Current status (including job duties)
- 17100 Measures of success
  - 17110 Postassessment scores
  - 17120 Students earn credentials
  - 17130 Teacher Effectiveness (evaluation)
- 17200 Success Stories
  - 17210 LOVE IT LOVE IT LOVE IT
- 17300 Failure Stories
- 17400 Comparison of teaching and previous career
  - 17410 Lifestyle
  - 17420 Less respect
  - 17430 Not enough money
  - 17440 Intrinsic rewards
  - 17450 What's better about teaching
  - 17460 Frustrations
  - 17470 Lack of due process
  - 17480 Very connected to previous employment

18000 Future directions
- 18100 Plan for improvement
  - 18110 Further education

18120 Other classes to teach
18130 PD needs
18131 Reflective practice
18200 Recommend to others
18300 Have you improved
` 18400 Long term plans to remain in field
18410 Problems with going into administration
18500 Helping/training others

APPENDIX G. Sample Section of Data Summary Sheet

	001	002	003	004	005	006	007	008	009	010
13000 Preservice Training			X							
13100 Undergraduate degree	B	B+	B	B	HS	B	BX	B	B+	B++
13200 RALC			X				X			
13500 Value										
14000 Professional Development		X								N
14100 Required 40-hour induction	X	X	X	X	X	X		X	X	X
14200 Locally required induction		X		X	X	X	X	X	X	
14300 Mentor/colleagues	X	?	X	X	X	X	X	X	X	X
14400 Reflective practice										
14500 Learning through on-the-job experience	X	X			X	X	X	X	X	X
14600 Required college courses	X	X	X	X	X	X	X	X	X	
14700 PLCs										
14710 Moodle	X	X	X	X	X	X	X	X	X	
14720 District	X			X						
14730 Other	X									
14800 Conferences	X			X		X		X	X	